

DIP

Product Selection Guide



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DIP

DIP											
Series	TDP	TDA	SDA	SD	BD	BPA	TDD	SPA	RTE	CD	CRD
Switch Type	Half-pitch .050" Side actuated	Half-pitch .050"	Low Profile	Low Profile	Standard Profile	Side Actuated	Jumper Switch	Single In-line Package	Rotary & Coded	8 mm Coded Rotary	10 mm Coded Rotary
No. of Positions	2-10 (even only)	1 & 2-10 (even only)	1-12 (except 11)	2-12 (except 11)	1-12 (except 11)	1-12 (except 11)	1	2-10 (even only)	4 10,16	8, 10 & 16	10 & 16
Contact Style	SPST	SPST	SPST	SPST	SPST	SPST	SPDT	SPST	Coded	Coded	Coded
Profile off PCB	.173 (4,4)	.087 (2,2)	.189 (4,80) Thru-hole .177 (4,5) SMT	.168 (4,27) Thru-hole .160 (4,06) SMT	.297 (7,55) Vertical .380 (9,65) Rt. Angle	.287 (7,3) Thru-hole .277 (7,04) SMT	.090 (2,3)	.244 (6,2) Vertical .169 (4,3) Rt. Angle	.167 (4,25) Thru-hole .335 (8,5) Rt. angle	.168 (4,27) Thru-hole .340 (8,6) Rt. angle	.272 (6,9) Vertical .414 (10,5) Rt. angle
Process Sealed	washable with tape seal	washable with tape seal	washable (tape not required)	washable with tape seal	washable (tape not required)	washable (tape not required)	washable with tape seal	washable (tape not required)	NA	washable (tape not required)	washable (tape not required)
Extended Actuator	•		•	•	•	•		•	•		•
Flush Actuator	•	•	•	•			•	•	•	•	•
Thru-hole			•	•	•	•		•	•	•	•
Vertical		•	•	•	•		•	•	•	•	•
Right Angle	•				•	•		•	•	•	•
Surface Mount	•	•	•	•		•	•	•	•	•	•
Tape & Reel (SMT only)	•	•	•	•		•	•	•	•	•	•
Maximum Current	100mA	100mA	100mA	100mA	100mA	100mA	100mA	10mA	100mA	0.4VA	0.4VA
Retention Feature								•	•	• C option	
Page No.	H-3	H-6	H-9	H-13	H-16	H-18	H-21	H-23	H-25	H-31	H-35

TDP Series Ultra-miniature Surface Mount Half-pitch Side-Actuated DIP Switches



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Features/Benefits

- World's first ultra-miniature SMT half-pitch side-actuated DIP
- Side actuation allows visual indication of on/off position in horizontal applications
- Process sealed for surface mount soldering and washable processing
- RoHS compliant
- Lead free

Typical Applications

- Hand-held electronic devices
- Portable computer and electronic devices
- Instrumentation and controls



Specifications

SWITCH FUNCTION: SPST — 2, 4, 6, 8, 10 positions.

CONTACT RATING:

24 V DC, 25 mA (switching).

50 V DC, 100 mA (steady state).

MECHANICAL AND ELECTRICAL LIFE: 1,000 cycles.

CONTACT RESISTANCE: 100 mΩ max.

INSULATION RESISTANCE: 100 MΩ @ 100 V DC min.

DIELECTRIC STRENGTH: 300 V AC min.

STORAGE TEMPERATURE: -40°C to 85°C.

OPERATING TEMPERATURE: -40°C to 85°C.

OPERATING FORCE: 4,9N max.

SOLDERABILITY: Per MIL-STD-202F method 208D, or

EIA RS-186E method 9 (1 hour steam aging).

PACKAGING: Switches supplied in rigid dispensing tubes in full tube quantities only, this may affect order quantity. Tape and reel packaging also available.

Materials

CASE & COVER: glass filled PPS (UL94V-0).

ACTUATOR: PA6T (UL94V-0).

CONTACTS: Copper alloy with gold plate over nickel plate.

TERMINALS: Copper alloy, with gold over nickel plate.

All terminals are insert molded.

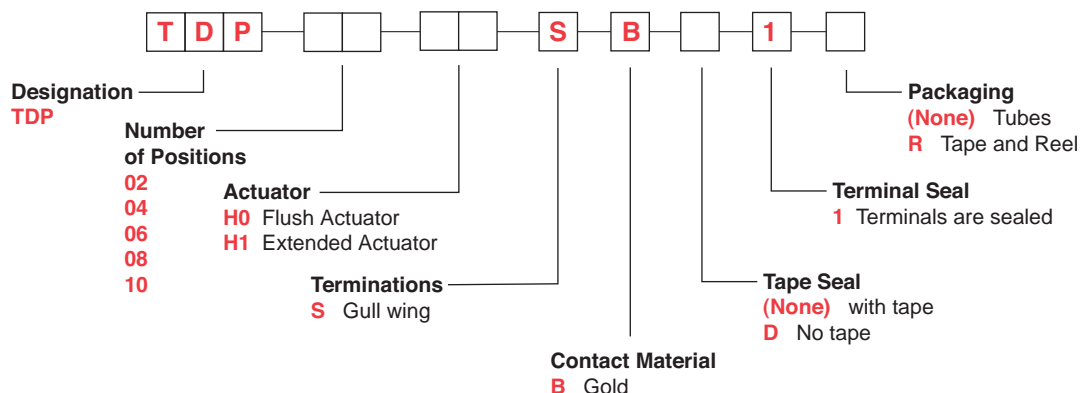
TAPE SEAL: Polyimide.

Note: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

How To Order

The Build-A Switch concept allows you to mix and match options to create the switch you need. Below is a complete listing of options shown in catalog. To order, simply select desired option from each category and place in the appropriate box.

All switches supplied in "OFF" position.



Note: Tape seal is not available with H1 Extended Actuators.



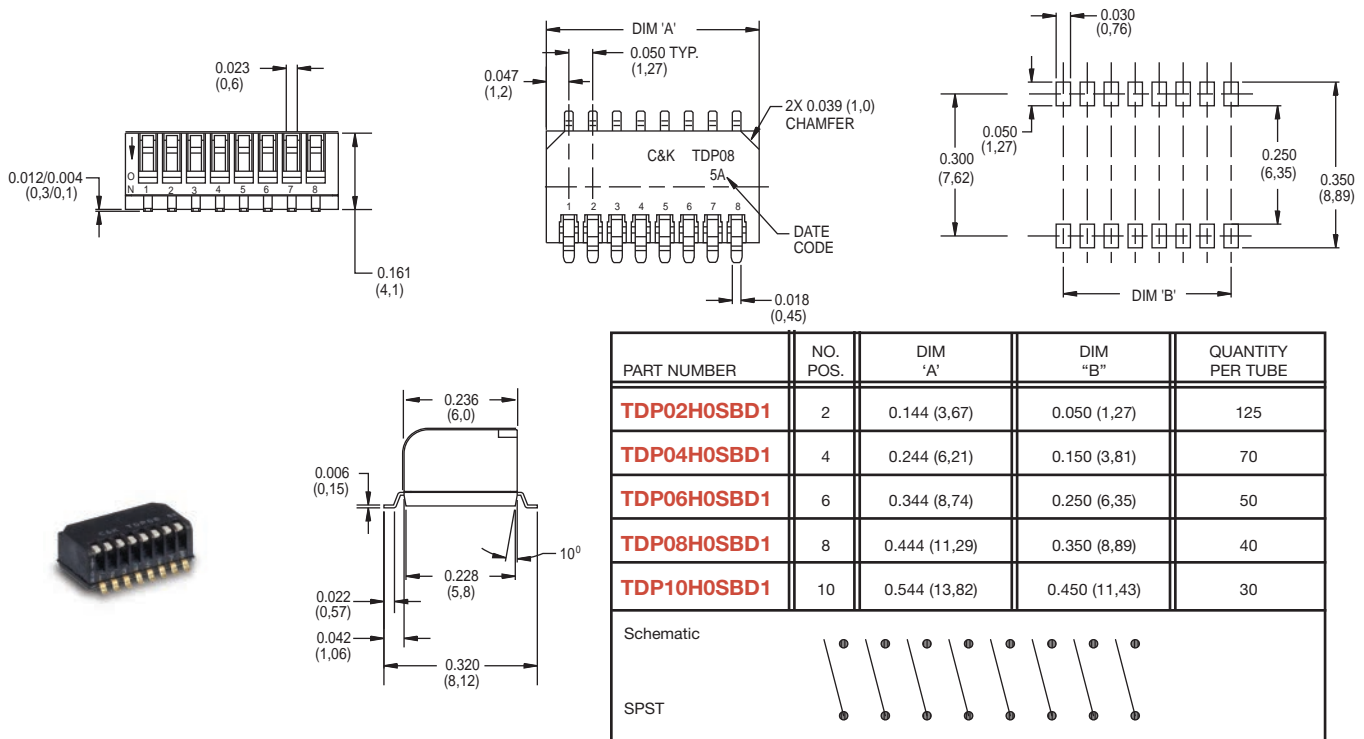
Third Angle
Projection



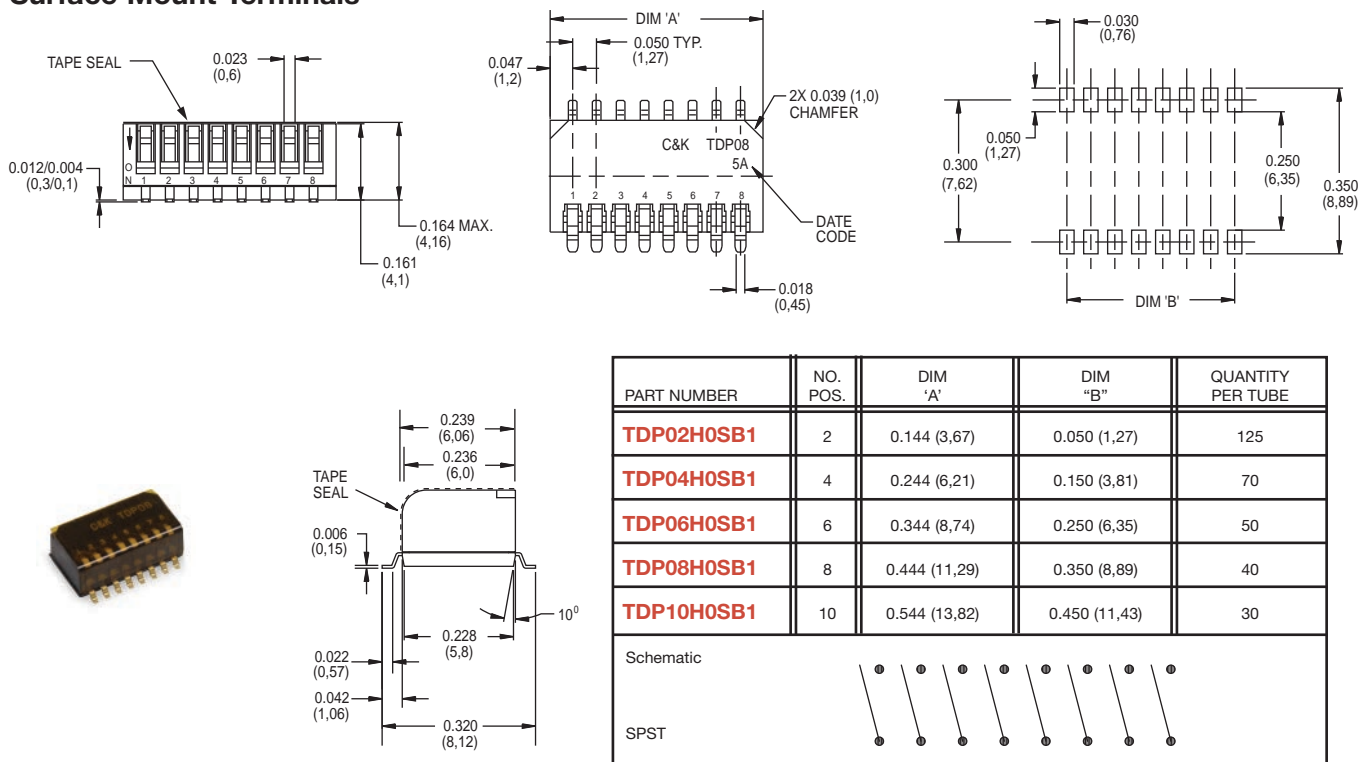
Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

TDP Series Ultra-miniature Surface Mount Half-pitch Side-Actuated DIP Switches

Flush Actuator-No Top Tape,
Surface Mount Terminals



Flush Actuator-with Top Tape,
Surface Mount Terminals



Third Angle
Projection

Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

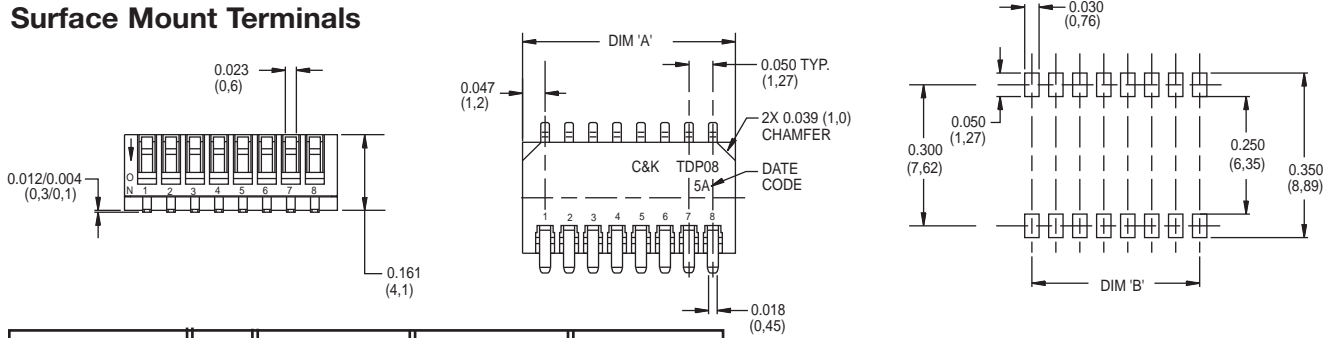


TDP Series Ultra-miniature Surface Mount Half-pitch Side-Actuated DIP Switches



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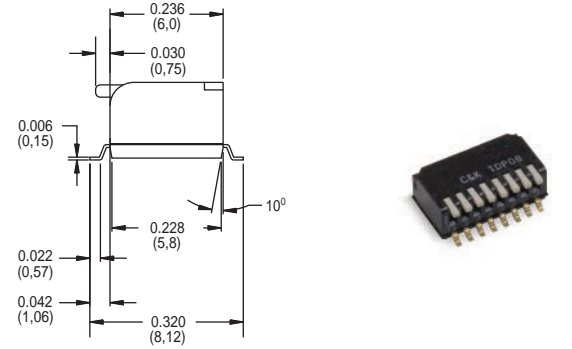
Extended Actuator-No Top Tape, Surface Mount Terminals



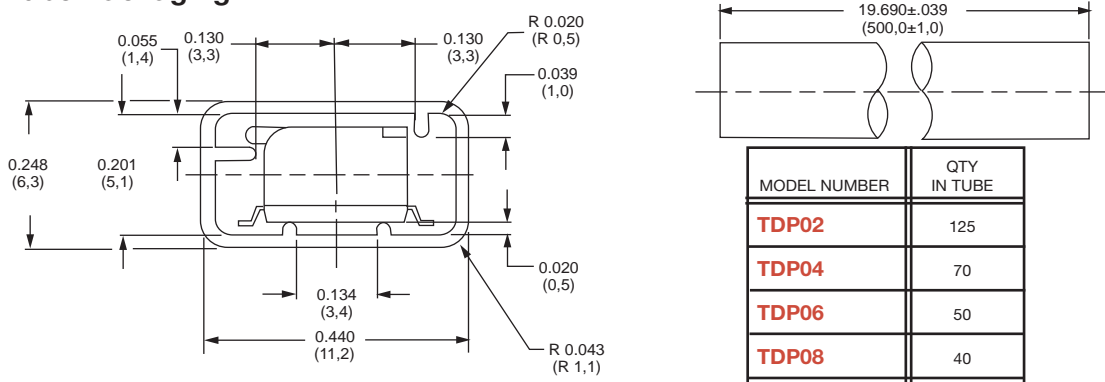
PART NUMBER	NO. POS.	DIM 'A'	DIM "B"	QUANTITY PER TUBE
TDP02H1SBD1	2	0.144 (3,67)	0.050 (1,27)	125
TDP04H1SBD1	4	0.244 (6,21)	0.150 (3,81)	70
TDP06H1SBD1	6	0.344 (8,74)	0.250 (6,35)	50
TDP08H1SBD1	8	0.444 (11,29)	0.350 (8,89)	40
TDP10H1SBD1	10	0.544 (13,82)	0.450 (11,43)	30

Schematic

SPST



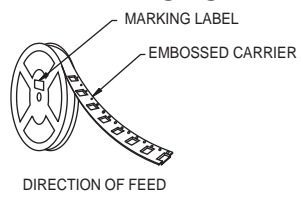
Tube Packaging



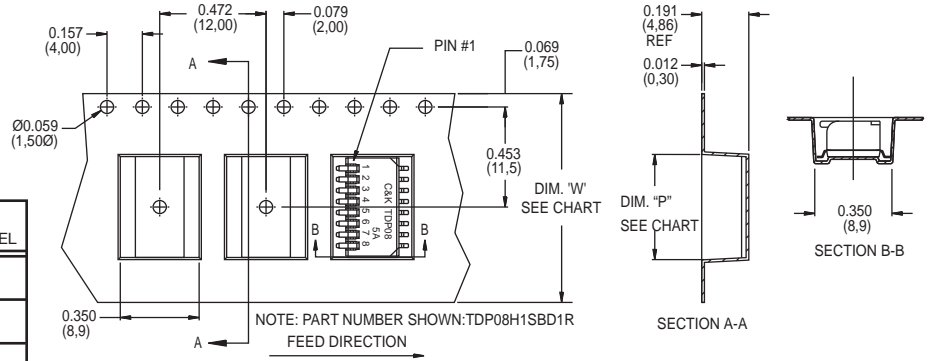
MODEL NUMBER	QTY IN TUBE
TDP02	125
TDP04	70
TDP06	50
TDP08	40
TDP10	30

Note: Switch shown has H1 extended actuator.

Tape and Reel Packaging



DIM PART NUMBER	DIM. 'W'	DIM "P"	PER REEL
TDP02	0.630 (16,0)	0.175 (4,45)	1,000
TDP04	0.630 (16,0)	0.276 (7,0)	1,000
TDP06	0.630 (16,0)	0.376 (9,55)	1,000
TDP08	0.945 (24,0)	0.476 (12,1)	1,000
TDP10	0.945 (24,0)	0.576 (14,65)	1,000



Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change



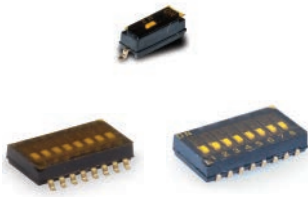
TDA Series

Ultra-miniature Surface Mount Half-pitch DIP Switches



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DIP



Features/Benefits

- Bifurcated contact for increased electrical reliability
- Process sealed for surface mount soldering and washable processing
- RoHS compliant

Typical Applications

- Hand-held electronic devices
- Portable computer and electronic devices
- Instrumentation and controls

Specifications

SWITCH FUNCTION: SPST – 1, 2, 4, 6, 8 & 10 positions.
 CONTACT RATING:
 24 V DC, 25 mA (switching).
 50 V DC, 100 mA (steady state).
 MECHANICAL AND ELECTRICAL LIFE: 1,000 cycles.
 CONTACT RESISTANCE: 100 mΩ max.
 INSULATION RESISTANCE: 100 MΩ @ 100 V DC min.
 DIELECTRIC STRENGTH: 300 V AC min.
 STORAGE TEMPERATURE: -40°C to 85°C.
 OPERATING TEMPERATURE: -40°C to 85°C.
 OPERATING FORCE: 4.9N max.
 SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

PACKAGING: Switches supplied in rigid dispensing tubes in full tube quantities only, this may affect order quantity. Numbers of switches per tube varies with model. Tape and reel packaging quantity varies with model.

Materials

CASE & COVER: PPS (UL94V-0)
 ACTUATOR: LCP (UL94V-0).
 CONTACTS: Copper alloy, with gold plate over nickel plate.
 TERMINALS: Copper alloy, with gold flash over nickel plate.
 All terminals are insert molded.
 TAPE SEAL: Polyimide.

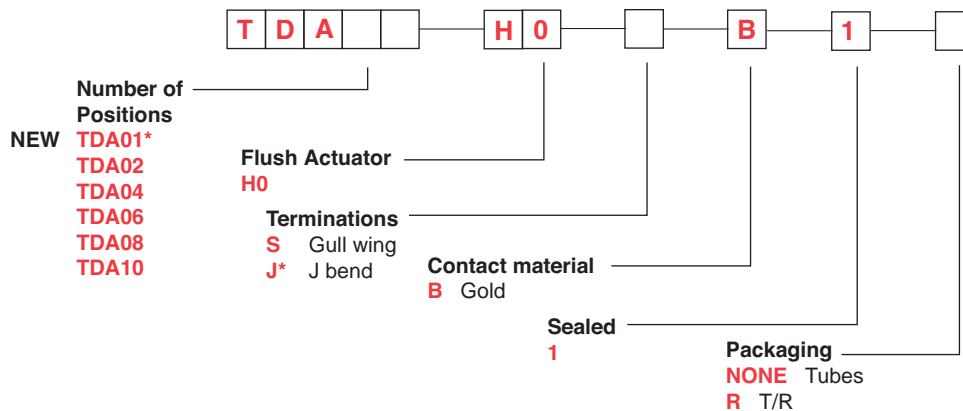
Note: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Note: All switches supplied in "OFF" position.

How To Order

The Build-A Switch concept allows you to mix and match options to create the switch you need. Below is a complete listing of options shown in catalog. To order, simply select desired option from each category and place in the appropriate box.

All switches supplied in "OFF" position.



* TDA01H0JB1R is not available, TDA01 only offered in tape & reel



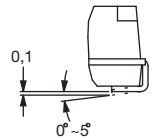
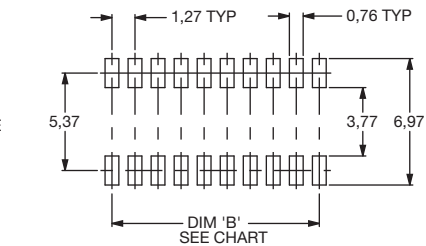
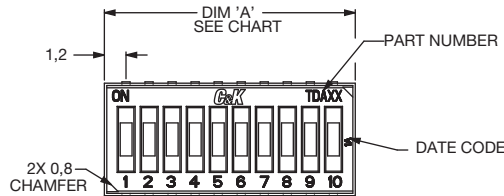
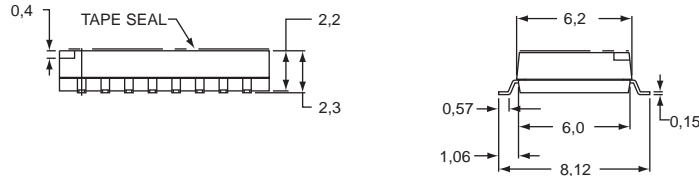
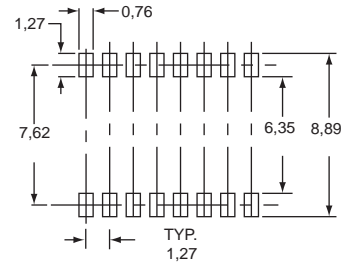
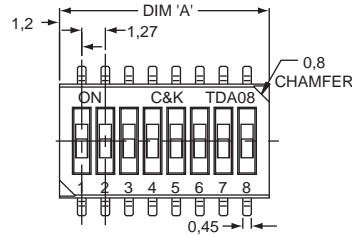
Dimensions are shown: mm
 Specifications and dimensions subject to change



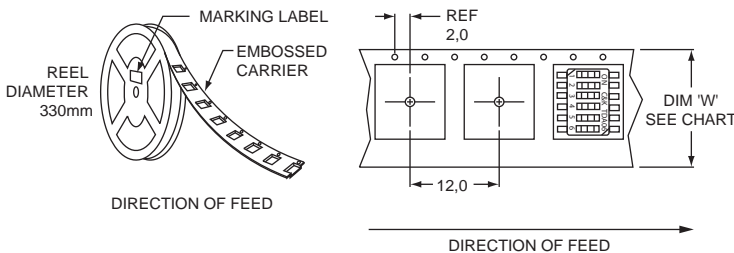
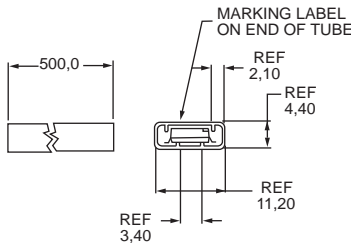
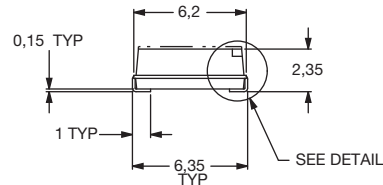
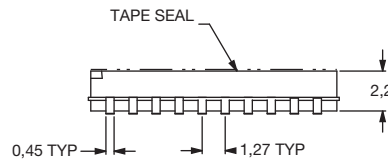
TDA Series Ultra-miniature Surface Mount Half-pitch DIP Switches



TDA08H0SB1



TDA10H0JB1



Tube Package

ROHS PART NUMBER	NO. POS.	DIM. 'A'	DIM. 'B'	QUANTITY PER TUBE
TDA01H0SB1	1	2,40	NA	NA
TDA02H0_B1	2	3,67	1,27	125
TDA04H0_B1	4	6,21	3,81	70
TDA06H0_B1	6	8,75	6,35	50
TDA08H0_B1	8	11,29	8,89	40
TDA10H0_B1	10	13,83	11,43	30

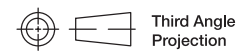
Schematic

SPST

Tape & Reel Package

ROHS PART NUMBER	NO. POS.	DIM. 'W'	QUANTITY PER REEL
TDA01H0SB1R*	1	16,0	2500
TDA02H0_B1R	2	16,0	2000
TDA04H0_B1R	4	16,0	2000
TDA06H0_B1R	6	16,0	2000
TDA08H0_B1R	8	24,0	2000
TDA10H0_B1R	10	24,0	2000

* see next page for TDA01 tape & reel drawing



Dimensions are shown: mm
Specifications and dimensions subject to change



TDA Series

Ultra-miniature Surface Mount Half-pitch DIP Switches

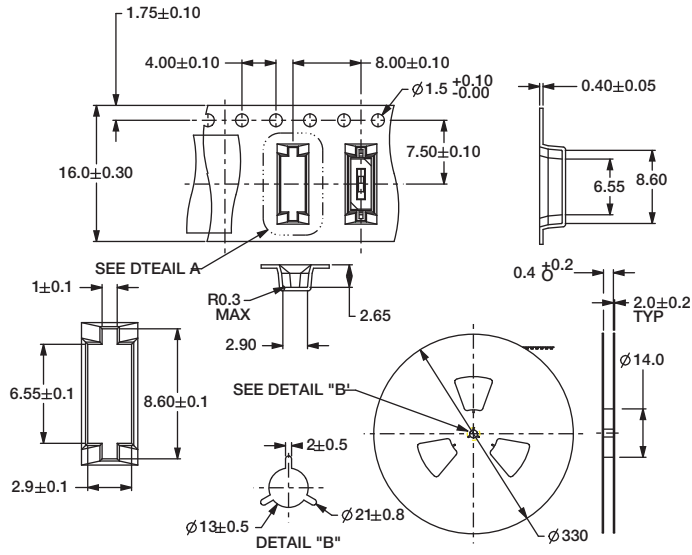


DIP

DIP



TDA01H0SB1R



Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

SDA Series Low Profile DIP Switches



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Features/Benefits

- Low profile design saves space
- Thru-hole and surface mount models
- Tape and reel packaging available
- RoHS compliant

Typical Applications

- Address switch for industrial controls
- Logic switching for computers and peripherals
- Function controlling for numerous applications



Specifications

CONTACT RATING: 25 mA @ 24 V DC or 100 mA @ 5 V DC.
 MECHANICAL AND ELECTRICAL LIFE: 1,000 cycles at rated loads.
 CONTACT RESISTANCE: 50 mΩ max. initial.
 INSULATION RESISTANCE: 100 MΩ between terminals.
 DIELECTRIC WITHSTANDING VOLTAGE: 300 V DC min. for 1 minute.
 STORAGE TEMPERATURE: -40°C to 85°C.
 OPERATING TEMPERATURE: -40°C to 85°C.
 OPERATING FORCE: 800 grams max.
 SOLDERABILITY: Dip and look solderability testing per C&K spec. #448. Unplated edges of terminals permitted.
 PACKAGING: Switches supplied in rigid dispensing tubes in full-tube quantities only, this may affect order quantity. Numbers of switches per tube varies with model. Tape and reel packaging also available for surface mount options.

Materials

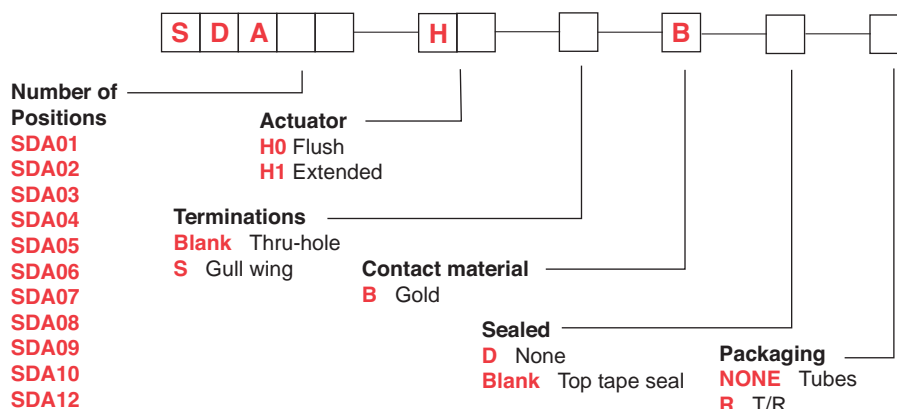
HOUSING: PPS, color black (UL94V-0).
 COVER: PPS, color black (UL94V-0).
 ACTUATOR: PA6T (UL94-0)
 CONTACTS: Gold plated Beryllium copper.
 TERMINALS: Gold plate over nickel plated brass.
 TAPE SEAL: Polyimide.

Note: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center. For Tin Lead options consult customer service center.

How To Order

The Build-A Switch concept allows you to mix and match options to create the switch you need. Below is a complete listing of options shown in catalog. To order, simply select desired option from each category and place in the appropriate box.

All switches supplied in "OFF" position..



Dimensions are shown: Inch (mm)
 Specifications and dimensions subject to change



SDA Series Low Profile DIP Switches



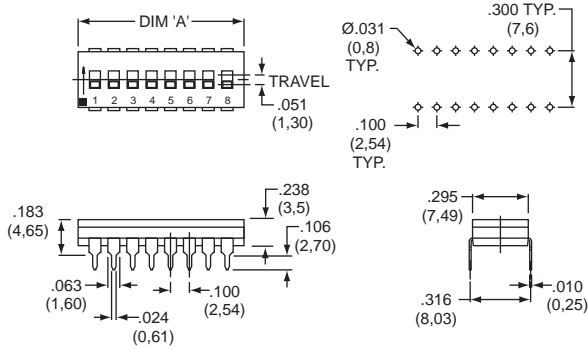
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Flush Actuator – No Tape, Thru-hole Terminals



SDA08H0BD



NOTE: SDA 01 options are 4,25mm thick

ROHS PART NUMBER	NO. POS.	DIM. 'A'	QUANTITY PER TUBE
SDA01H0BD	1	.178 (4,52)	100
SDA02H0BD	2	.278 (7,06)	60
SDA03H0BD	3	.378 (9,60)	45
SDA04H0BD	4	.476 (12,10)	35
SDA05H0BD	5	.578 (14,68)	30
SDA06H0BD	6	.676 (17,18)	25
SDA07H0BD	7	.778 (19,76)	20
SDA08H0BD	8	.876 (22,26)	20
SDA09H0BD	9	.978 (24,84)	15
SDA10H0BD	10	1.076 (27,34)	15
SDA12H0BD	12	1.279 (32,50)	14

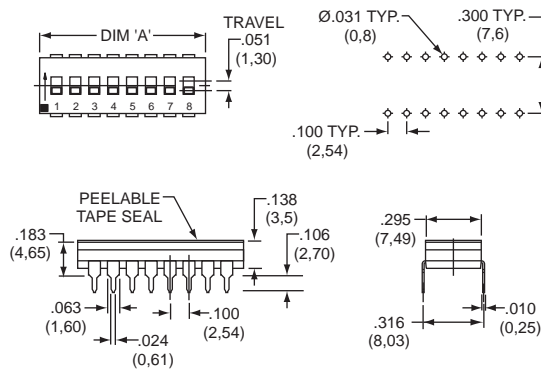
Schematic

SPST

Flush Actuator – With Top Tape, Thru-hole Terminals



SDA08H0B



NOTE: SDA 01 options are 4,25mm thick

ROHS PART NUMBER	NO. POS.	DIM. 'A'	QUANTITY PER TUBE
SDA01H0B	1	.178 (4,52)	100
SDA02H0B	2	.278 (7,06)	60
SDA03H0B	3	.378 (9,60)	45
SDA04H0B	4	.476 (12,10)	35
SDA05H0B	5	.578 (14,68)	30
SDA06H0B	6	.676 (17,18)	25
SDA07H0B	7	.778 (19,76)	20
SDA08H0B	8	.876 (22,26)	20
SDA09H0B	9	.978 (24,84)	15
SDA10H0B	10	1.076 (27,34)	15
SDA12H0B	12	1.279 (32,50)	14

Schematic

SPST

SDA Series Low Profile DIP Switches

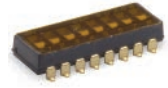
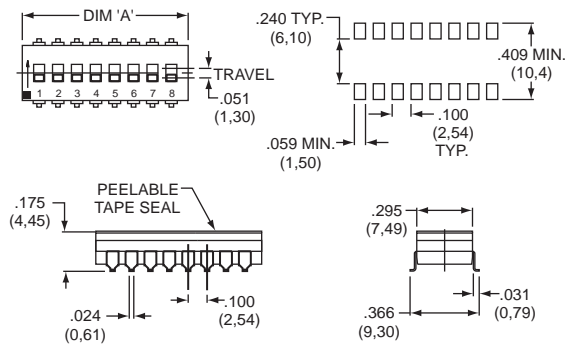


Flush Actuator – With Top Tape, Surface Mount Terminals

ROHS PART NUMBER	NO. POS.	DIM. 'A'	QUANTITY PER TUBE
SDA01H0SB	1	.178 (4,52)	100
SDA02H0SB	2	.278 (7,06)	60
SDA03H0SB	3	.378 (9,60)	45
SDA04H0SB	4	.476 (12,10)	35
SDA05H0SB	5	.578 (14,68)	30
SDA06H0SB	6	.676 (17,18)	25
SDA07H0SB	7	.778 (19,76)	20
SDA08H0SB	8	.876 (22,26)	20
SDA09H0SB	9	.978 (24,84)	15
SDA10H0SB	10	1.076 (27,34)	15
SDA12H0SB	12	1.279 (32,50)	14

Schematic

SPST



SDA08H0SB

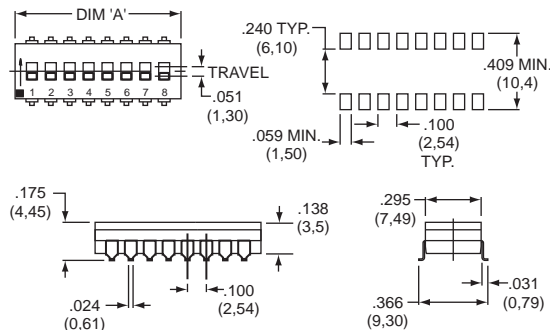
NOTE: SDA 01 options are 4,25mm thick

Flush Actuator – No Tape, Surface Mount Terminals

ROHS PART NUMBER	NO. POS.	DIM. 'A'	QUANTITY PER TUBE
SDA01H0SBD	1	.178 (4,52)	100
SDA02H0SBD	2	.278 (7,06)	60
SDA03H0SBD	3	.378 (9,60)	45
SDA04H0SBD	4	.476 (12,10)	35
SDA05H0SBD	5	.578 (14,68)	30
SDA06H0SBD	6	.676 (17,18)	25
SDA07H0SBD	7	.778 (19,76)	20
SDA08H0SBD	8	.876 (22,26)	20
SDA09H0SBD	9	.978 (24,84)	15
SDA10H0SBD	10	1.076 (27,34)	15
SDA12H0SBD	12	1.279 (32,50)	14

Schematic

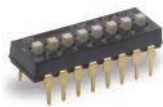
SPST



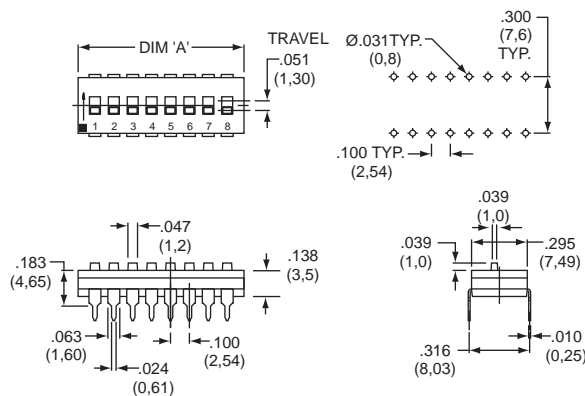
SDA08H0SBD

NOTE: SDA 01 options are 4,25mm thick

Extended Actuator – No Top Tape, Thru-hole Terminals



SDA08H1BD

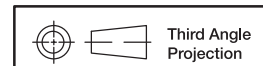


NOTE: SDA 01 options are 4,25mm thick

ROHS PART NUMBER	NO. POS.	DIM. 'A'	QUANTITY PER TUBE
SDA01H1BD	1	.178 (4,52)	100
SDA02H1BD	2	.278 (7,06)	60
SDA03H1BD	3	.378 (9,60)	45
SDA04H1BD	4	.476 (12,10)	35
SDA05H1BD	5	.578 (14,68)	30
SDA06H1BD	6	.676 (17,18)	25
SDA07H1BD	7	.778 (19,76)	20
SDA08H1BD	8	.876 (22,26)	20
SDA09H1BD	9	.978 (24,84)	15
SDA10H1BD	10	1.076 (27,34)	15
SDA12H1BD	12	1.279 (32,50)	14

Schematic

SPST



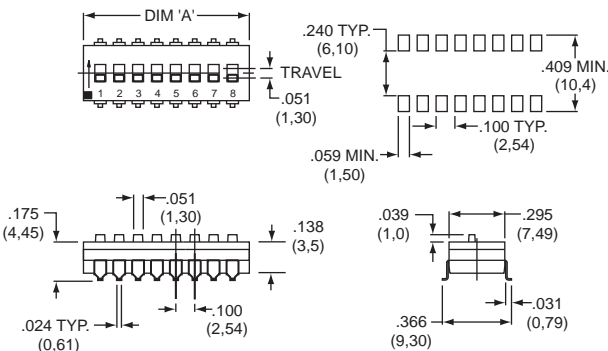
Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

SDA Series Low Profile DIP Switches

Extended Actuator – No Top Tape, Surface Mount Terminals



SDA08H1SBD



NOTE: SDA 01 options are 4,25mm thick

ROHS PART NUMBER	NO. POS.	DIM. 'A'	QUANTITY PER TUBE
SDA01H1SBD	1	.178 (4,52)	100
SDA02H1SBD	2	.278 (7,06)	60
SDA03H1SBD	3	.378 (9,60)	45
SDA04H1SBD	4	.476 (12,10)	35
SDA05H1SBD	5	.578 (14,68)	30
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SDA10H1SBD	10	1.076 (27,34)	15
SDA12H1SBD	12	1.279 (32,50)	14

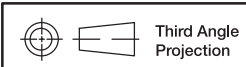
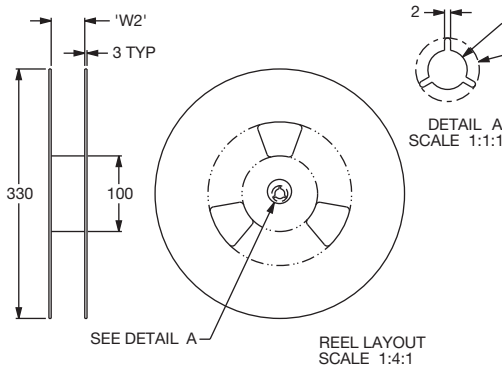
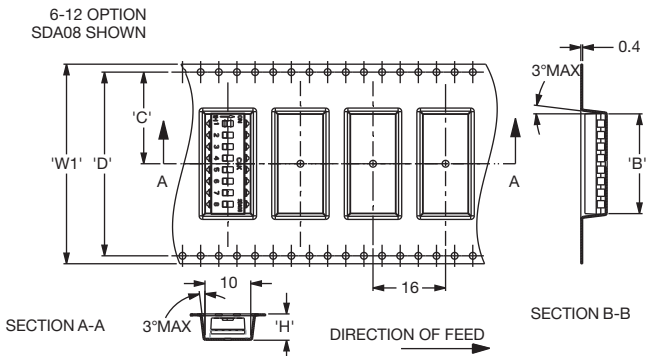
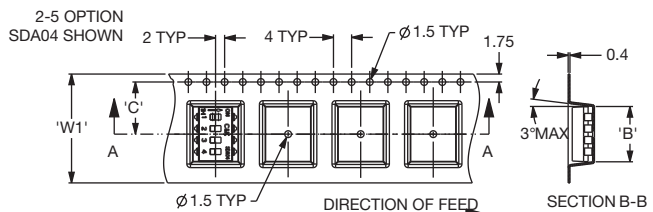
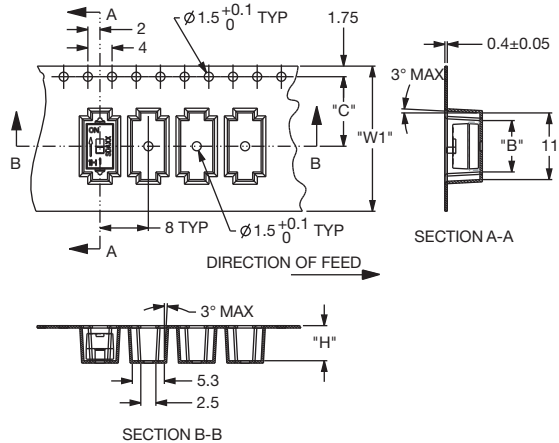
Schematic

SPST

Tape & Reel Packaging – Surface Mount Options only

MODEL NO. 'S' OPTION	DIM. 'H' (REF.)	DIM. 'W1' (REF.)	DIM. 'W2' (REF.)	DIM. 'B' (REF.)	DIM. 'C' (REF.)	DIM. 'D' (REF.)	QUANTITY PER REEL	
SDA01	H0	5.2	24.0	24.4	8.5	11.5	1500	
	H1	5.8					1450	
SDA02	H0	4.8	24.0	24.4	7.9	11.5	750	
	H1	5.8					700	
SDA03	H0	4.8	24.0	24.4	10.4	11.5	750	
	H1	5.8					700	
SDA04	H0	4.8	24.0	24.4	12.9	11.5	750	
	H1	5.8					700	
SDA05	H0	4.8	24.0	24.4	15.4	11.5	750	
	H1	5.8					700	
SDA06	H0	4.8	32.0	32.4	18.0	14.2	28.4	750
	H1	5.8					28.4	700
SDA07	H0	4.8	32.0	32.4	20.5	14.2	28.4	750
	H1							NOT CURRENTLY AVAILABLE IN TAPE AND REEL
SDA08	H0	4.8	44.0	44.4	22.7	20.2	40.4	750
	H1	5.8						700
SDA09	H0	4.8	44.0	44.4	25.5	20.2	40.4	750
	H1	5.8						700
SDA10	H0	4.8	44.0	44.0	28.1	20.2	40.4	750
	H1	5.8						700
SDA12	H0	4.8	44.0	44.4	33.2	20.2	40.4	750
	H1							NOT CURRENTLY AVAILABLE IN TAPE AND REEL

SDA01H1SBD OPTION SHOWN



Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change



SD Series Low Profile DIP Switches

H
DIP

Features/Benefits

- Low profile design saves space
- Thru-hole and surface mount models
- Tape and reel packaging available
- Sealed with top tape
- RoHS compliant

Typical Applications

- Address switch for industrial controls
- Logic switching for computers and peripherals
- Function controlling for numerous applications



Specifications

SWITCH FUNCTION: SPST - 2, 3, 4, 5, 6, 7, 8, 9, 10 & 12 positions

CONTACT RATING:

Carry: 100 mA @ 50 V DC max.

Switch: 0.1 mA @ 5 V DC min to 100 mA @ 25 V DC max.

MECHANICAL AND ELECTRICAL LIFE: 2,000 make-and-break cycles at full load, each circuit.

CONTACT RESISTANCE: Below 50 milliohms typ. initial @ 2-4 V DC, 100mA.

INSULATION RESISTANCE: 10⁹ ohms min.

DIELECTRIC STRENGTH: 500 V RMS min. @ sea level between adjacent terminals.

STORAGE TEMPERATURE: -40°C to 85°C.

OPERATING TEMPERATURE: -40°C to 85°C.

OPERATING FORCE: 100-700g initial.

PACKAGING: Thru-hole switches supplied in rigid dispensing tubes in full-tube quantities only: this may effect order quantity. Surface mount switches available in tape and reel packaging by added 'R' to end of part number; 1,000 pieces per reel. Switch position 1 denotes pin number 1. All switch actuators in 'OFF' position, standard.

Materials

CASE & COVER: (PPA), flame retardant (UL 94V-0)

ACTUATOR: Nylon, flame retardant (UL 94V-0)

CONTACTS: BeCu with gold plate.

TERMINALS: Bright tin-plated brass.

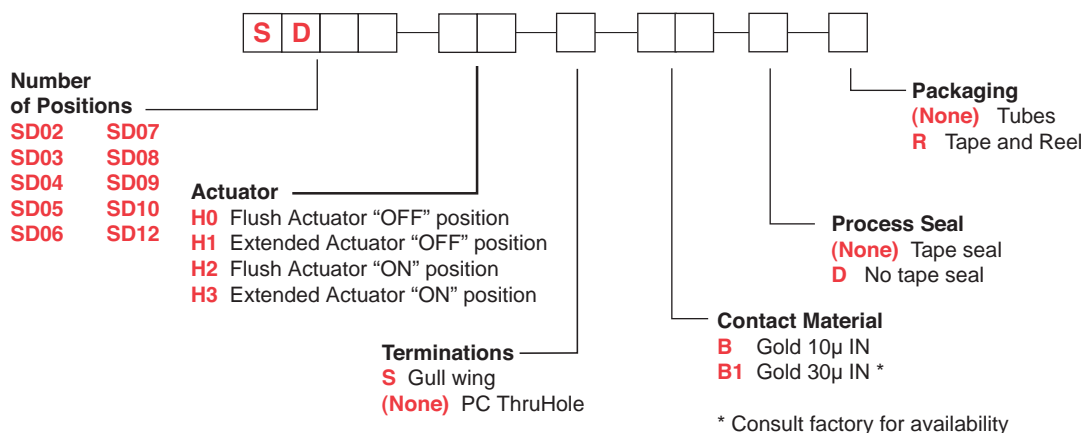
TERMINAL SEAL: All terminals insert molded.

TAPE SEAL: Polyimide.

Note: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

How To Order

The Build-A Switch concept allows you to mix and match options to create the switch you need. Below is a complete listing of options shown in catalog. To order, simply select desired option from each category and place in the appropriate box.



Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

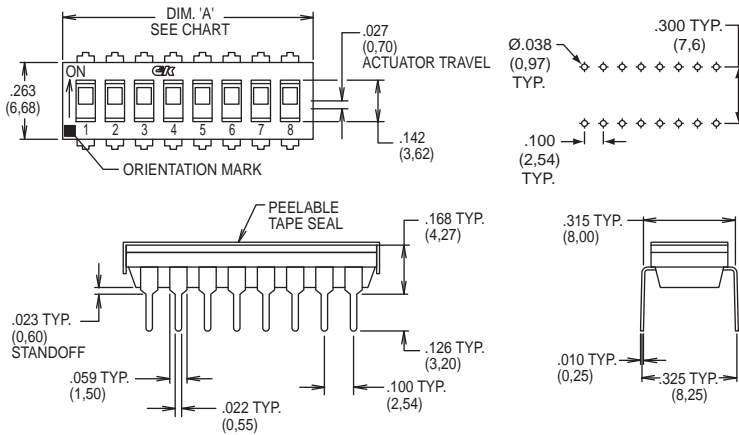
SD Series Low Profile DIP Switches



DIP

Sealed Flush Actuator – With Top Tape, Thru-hole Terminals

Process sealed - withstands soldering and cleaning processes

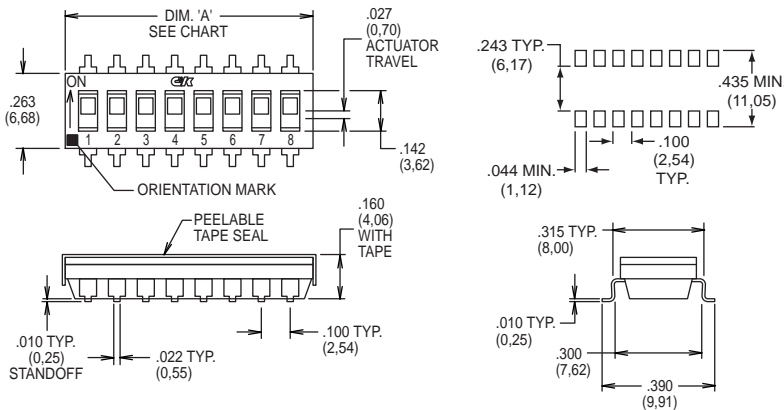


ROHS PART NUMBER	NO. POS.	DIM. 'A'	QUANTITY PER TUBE
SD02H0B	2	.258 (6,55)	85
SD03H0B	3	.358 (9,09)	60
SD04H0B	4	.458 (11,63)	45
SD05H0B	5	.558 (14,17)	40
SD06H0B	6	.658 (16,71)	30
SD07H0B	7	.758 (19,25)	25
SD08H0B	8	.858 (21,79)	25
SD09H0B	9	.958 (24,33)	20
SD10H0B	10	1.058 (26,87)	20
SD12H0B	12	1.258 (31,95)	15



Table applicable to "H0" and "H2" actuator options.

Sealed Flush Actuator – With Top Tape, Surface Mount Terminals

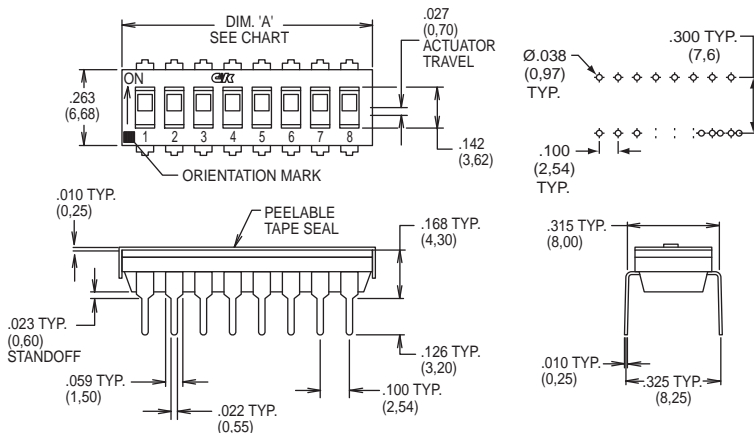


RoHS PART NUMBER	NO. POS.	DIM. 'A'	QUANTITY PER TUBE
SD02H0SB	2	.258 (6,55)	85
SD03H0SB	3	.358 (9,09)	60
SD04H0SB	4	.458 (11,63)	45
SD05H0SB	5	.558 (14,17)	40
SD06H0SB	6	.658 (16,71)	30
SD07H0SB	7	.758 (19,25)	25
SD08H0SB	8	.858 (21,79)	25
SD09H0SB	9	.958 (24,33)	20
SD10H0SB	10	1.058 (26,87)	20
SD12H0SB	12	1.258 (31,95)	15



Table applicable to "H0" and "H2" actuator options.

Sealed Extended Actuator – With Top Tape, Thru-hole Terminals



RoHS PART NUMBER	NO. POS.	DIM. 'A'	QUANTITY PER TUBE
SD02H1B	2	.258 (6,55)	85
SD03H1B	3	.358 (9,09)	60
SD04H1B	4	.458 (11,63)	45
SD05H1B	5	.558 (14,17)	40
SD06H1B	6	.658 (16,71)	30
SD07H1B	7	.758 (19,25)	25
SD08H1B	8	.858 (21,79)	25
SD09H1B	9	.958 (24,33)	20
SD10H1B	10	1.058 (26,87)	20
SD12H1B	12	1.258 (31,95)	15



Table applicable to "H1" and "H3" actuator options.



Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change



SD Series Low Profile DIP Switches

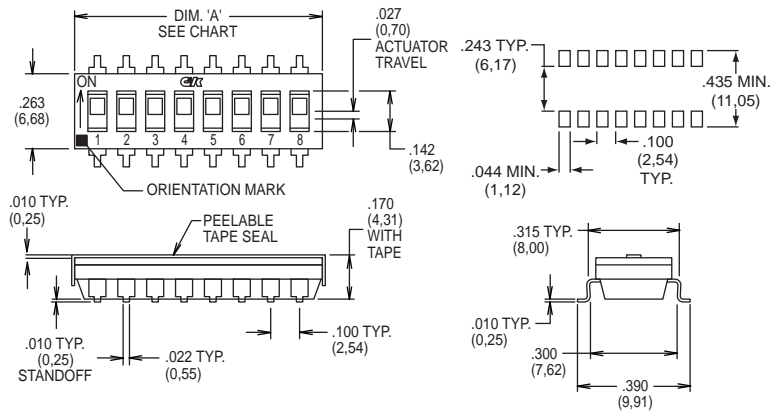


Sealed Extended Actuator – With Top Tape, Surface Mount Terminals

RoHS PART NUMBER	NO. POS.	DIM. 'A'	QUANTITY PER TUBE
SD02H1SB	2	.258 (6,55)	85
SD03H1SB	3	.358 (9,09)	60
SD04H1SB	4	.458 (11,63)	45
SD05H1SB	5	.558 (14,17)	40
SD06H1SB	6	.658 (16,71)	30
SD07H1SB	7	.758 (19,25)	25
SD08H1SB	8	.858 (21,79)	25
SD09H1SB	9	.958 (24,33)	20
SD10H1SB	10	1.058 (26,87)	20
SD12H1SB	12	1.258 (31,95)	15



Table applicable to "H1" and "H3" actuator options.

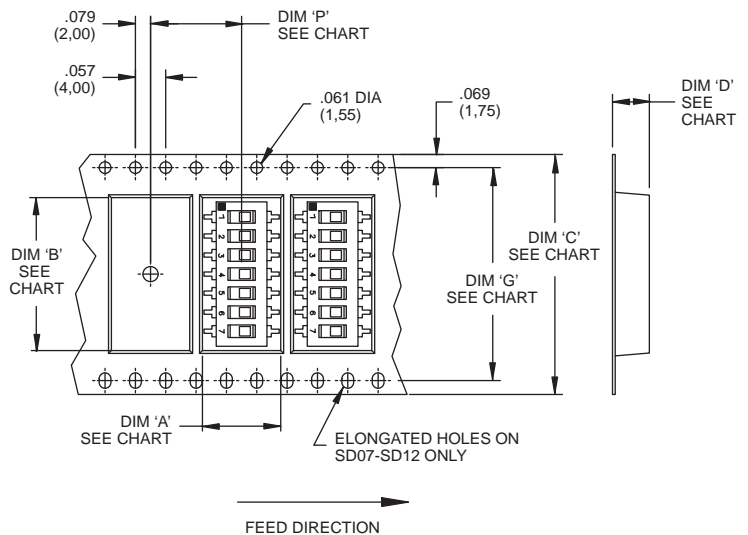


TAPE & REEL PACKAGING – SURFACE MOUNT OPTIONS ONLY

RoHS PART NUMBER	NO. POS.	DIM. 'A'	QUANTITY PER REEL
SD02H0SBR	2	.258 (6,55)	1000
SD03H0SBR	3	.358 (9,09)	1000
SD04H0SBR	4	.458 (11,63)	1000
SD05H0SBR	5	.558 (14,17)	1000
SD06H0SBR	6	.658 (16,71)	1000
SD07H0SBR	7	.758 (19,25)	1000
SD08H0SBR	8	.858 (21,79)	1000
SD09H0SBR	9	.958 (24,33)	1000
SD10H0SBR	10	1.058 (26,87)	1000
SD12H0SBR	12	1.258 (31,95)	1000



Table applicable to "H0" and "H2" actuator options.



SWITCH NO.	DIM 'A' POCKET LENGTH @ BOTTOM	DIM 'B' POCKET LENGTH @ BOTTOM	DIM 'C' TAPE WIDTH	DIM 'D' POCKET DEPTH	DIM 'G' SPROCKET HOLE SPACING	DIM 'P' PITCH BETWEEN POCKETS
SD02	.413(10,5)	.315(8,0)	.630(16,0)	.177(4,5)	N/A	.472(12,0)
SD03	.406(10,3)	.406(10,3)	.630(16,0)	.177(4,5)	N/A	.472(12,0)
SD04	.429(10,9)	.476(12,1)	.954(24,0)	.177(4,5)	N/A	.472(12,0)
SD05	.406(10,3)	.602(15,3)	.954(24,0)	.177(4,5)	N/A	.472(12,0)
SD06	.406(10,3)	.701(17,8)	.954(24,0)	.177(4,5)	N/A	.472(12,0)
SD07	.406(10,3)	.803(20,4)	1.260(32,0)	.177(4,5)	1.118(28,4)	.472(12,0)
SD08	.406(10,3)	.854(21,7)	1.732(44,0)	.177(4,5)	1.591(40,4)	.472(12,0)
SD09	.406(10,3)	1.028(26,1)	1.732(44,0)	.177(4,5)	1.591(40,4)	.472(12,0)
SD10	.406(10,3)	1.055(26,8)	1.732(44,0)	.177(4,5)	1.591(40,4)	.472(12,0)
SD12	.406(10,3)	1.303(33,1)	1.732(44,0)	.177(4,5)	1.591(40,4)	.472(12,0)

Reel Information

Outside diameter 13.00 (333,0)
 Pilot hole .512 (13,0)



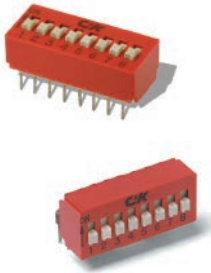
Dimensions are shown: Inch (mm)
 Specifications and dimensions subject to change



BD Series Standard Profile DIP Switches



DIP



Features/Benefits

- Traditional full profile DIP switch
- Extended actuator for easy actuation
- Open bottom construction allows for solder washing without the need for tape seal
- RoHS compliant

Typical Applications

- Address switch for industrial controls
- Logic switching for computers and peripherals
- Function controlling for numerous applications

Specifications

SWITCH FUNCTION: SPST - 1 thru 12 position available (except 11 position).

CONTACT RATING:

Carry: 100 mA max. @ 50 V DC.

Switch: 100 mA max. @ 5 V DC or 25 mA max. @ 25 V DC.

MECHANICAL AND ELECTRICAL LIFE: 10,000 make-and-break cycles at full load, each circuit.

CONTACT RESISTANCE: Below 50 milliohms typ. initial @ 2-4 V DC 100mA.

INSULATION RESISTANCE: 10⁹ ohms min.

DIELECTRIC STRENGTH: 500 V RMS min. @ sea level between adjacent terminals.

CAPACITANCE: 5pF max. between adjacent terminals.

STORAGE & OPERATING TEMPERATURE: -40°C to 85°C.

SHOCK: Withstands 20g 11 ms sawtooth waveform with no contact opening greater than 10 microseconds.

VIBRATION: No contact opening greater than 10 microseconds and no contact closure when exposed to vibration .06 in DA or 5g, whichever is less, from 10 to 55 Hz, and 10g from 55 to 500 Hz.

SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

PACKAGING: Switches supplied in rigid dispensing tubes in full-tube quantities only: this may effect order quantity. Number of switches per tube varies with model. Switch position 1 denotes pin number 1. All switch actuators in 'OFF' position, standard.

Materials

CASE & COVER: Glass filled polyester (PBT), flame retardant (UL 94V-0).

ACTUATOR: Glass filled nylon 6/6, flame retardant, heat stabilized (UL 94V-0)

CONTACTS: Gold over nickel over phosphor bronze.

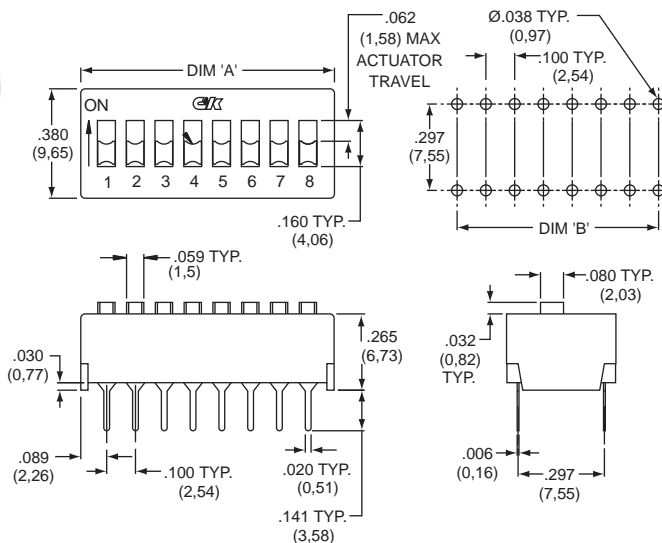
TERMINALS: Matte-tin over nickel over phosphor bronze.

Note: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Vertical Full Profile DIP



BD08



PART NUMBER	NO.POS.	DIM. 'A'	DIM. 'B'	QUANTITY PER TUBE
BD01	1	.180 (4,57)	NA	115
BD02	2	.280 (7,11)	.100 (2,54)	74
BD03	3	.380 (9,65)	.200 (5,08)	54
BD04	4	.480 (12,19)	.300 (7,62)	43
BD05	5	.580 (14,73)	.400 (10,16)	35
BD06	6	.680 (17,27)	.500 (12,75)	30
BD07	7	.780 (19,81)	.600 (15,24)	26
BD08	8	.880 (22,35)	.700 (17,78)	23
BD09	9	.980 (24,89)	.800 (20,32)	21
BD10	10	1.080 (27,43)	.900 (22,86)	19
BD12	12	1.280 (32,51)	1.100 (27,94)	16

Schematic



SPST



Third Angle Projection



Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

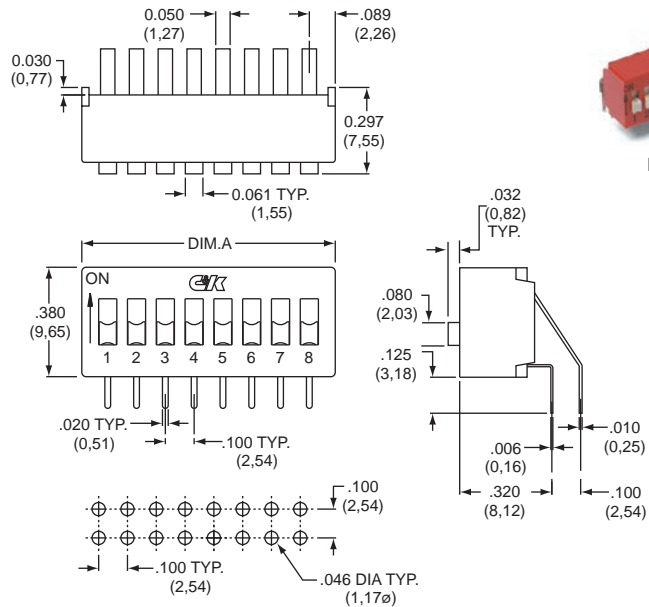
BD Series Standard Profile DIP Switches

Open Base and AV Right Angle Terminal Style

PART NUMBER	NO.POS.	DIM. 'A'	QUANTITY PER TUBE
BD02AV	2	.280 (7,11)	72
BD03AV	3	.380 (9,65)	52
BD04AV	4	.480 (12,19)	42
BD05AV	5	.580 (14,73)	35
BD06AV	6	.680 (17,27)	29
BD07AV	7	.780 (19,81)	26
BD08AV	8	.880 (22,35)	23
BD09AV	9	.980 (24,89)	20
BD10AV	10	1.080 (27,43)	18
BD12AV	12	1.280 (32,51)	15

Schematic

SPST



H

DIP

Installation, Soldering and Cleaning

All BD Series Standard Profile DIP Switches can be hand soldered or machine soldered without the use of boot, caps, tapes or special attention. Open base washable models have unique design, allowing solvent cleaners and water/detergent solutions to flush and clean the electrical contacts of the contaminants and fluxes. For best results, follow these directions:

- 1) Wave soldering recommended at 500° F (260°C) solder temperature.
- 2) Hand solder using 30 watt small tip iron controlled at 500° F (260°C), 10 seconds max./terminal.
- 3) Open base washable models: Clean flux using forced rinse, high agitation or triple bath cleaning method.
DO NOT mask or cover switch in any way during cleaning. Switch is designed for easy solvent flush out.
- 4) All switch actuators must be in 'OFF' position during soldering and cleaning processes.



Third Angle
Projection

Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change



BPA Series Side Actuated DIP Switches

10
9
8
7
6
5
4
3
2
1

H

DIP



Features/Benefits

- Side actuated contacts
- Available in thru-hole or SMT models
- High pressure contact system does not require tape seal for washing
- RoHS compliant & compatible

Typical Applications

- Address switch for industrial controls
- Logic switching for computers and peripherals
- Function controlling for numerous applications

Specifications

SWITCH FUNCTION: 1 thru 10 and 12 position available.
 CONTACT RATING: 100 mA max. @ 5 V DC or 25 mA max. @ 24 V DC.
 MECHANICAL AND ELECTRICAL LIFE: 1,000 cycles min. @ 5 V DC 10mA.
 CONTACT RESISTANCE: 50 milliohms initial max.
 INSULATION RESISTANCE: 100 V DC 100 megohms min.
 DIELECTRIC WITHSTAND VOLTAGE: 300 V AC for 1 minute.
 STORAGE TEMPERATURE: -40°C to 85°C.
 OPERATING TEMPERATURE: -20°C to 85°C.
 OPERATING FORCE: 800 grams max.
 SOLDERABILITY: Flow solderable and washable (soldering: 260°C for 10 sec. max.)

PACKAGING: Switches supplied in rigid dispensing tubes in full-tube quantities only, this may affect order quantity. Numbers of switches per tube varies with model. Tape and reel packaging available for SMT options.

Materials

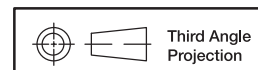
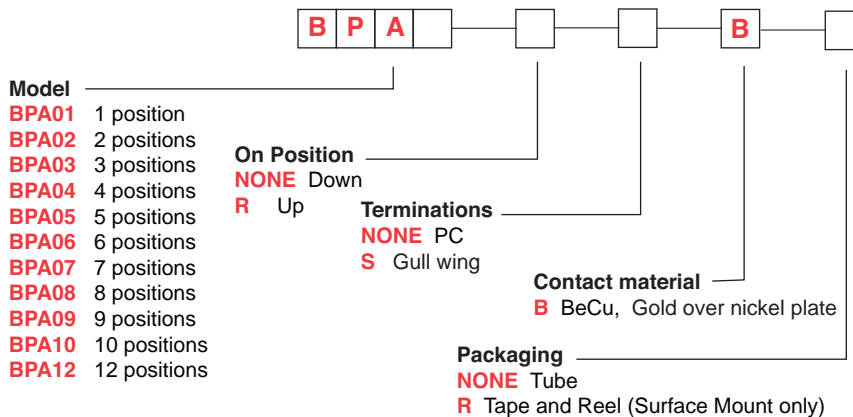
HOUSING: PPS, color black (UL94V-0).
 COVER: PPS, color black (UL94V-0).
 ACTUATOR: PA-6T UL94V-0).
 CONTACTS: Beryllium Copper with Gold over Nickel plate.
 TERMINALS: Brass, Gold over Nickel plate.

Note: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

How To Order

The Build-A Switch concept allows you to mix and match options to create the switch you need. Below is a complete listing of options shown in catalog. To order, simply select desired option from each category and place in the appropriate box.

All switches supplied in "OFF" position.

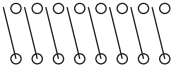


Dimensions are shown: Inch (mm)
 Specifications and dimensions subject to change

BPA Series Side Actuated DIP Switches

Side Actuator – Thru-hole Terminals

ROHS PART NUMBER	NO. POS.	DIM. 'A'	DIM. 'B'	QUANTITY PER TUBE
BPA01B	1	.176 (4,48)	N/A	100
BPA02B	2	.276 (7,0)	.100 (2,54)	60
BPA03B	3	.376 (9,6)	.200 (5,08)	45
BPA04B	4	.476 (12,1)	.300 (7,62)	35
BPA05B	5	.575 (14,6)	.400 (10,16)	30
BPA06B	6	.677 (17,2)	.500 (12,70)	25
BPA07B	7	.776 (19,7)	.600 (15,24)	20
BPA08B	8	.878 (22,3)	.700 (17,78)	20
BPA09B	9	.976 (24,8)	.800 (20,32)	15
BPA10B	10	1.075 (27,3)	.900 (22,86)	15
BPA12B	12	1.280 (32,5)	1.100 (27,94)	14

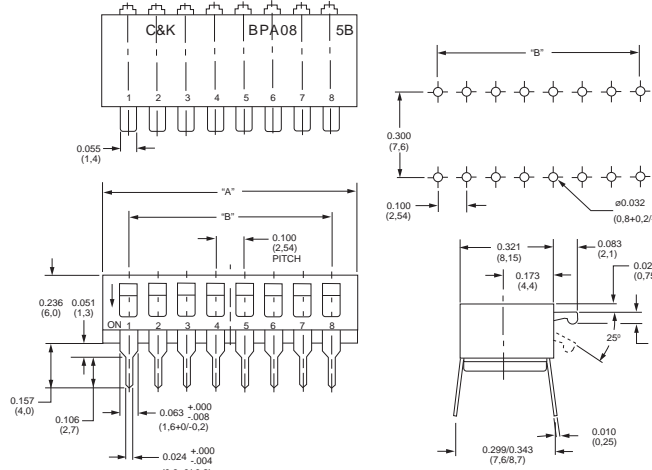
Schematic 

SPST

NOTE: Reverse throw available, contact C&K for P/N and quote.

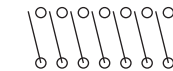


BPA08B



Side Actuator – Surface Mount Terminals

ROHS PART NUMBER	NO. POS.	DIM. 'A'	DIM. 'B'	QUANTITY PER TUBE
BPA01SB	1	.176 (4,48)	N/A	100
BPA02SB	2	.276 (7,0)	.100 (2,54)	60
BPA03SB	3	.376 (9,6)	.200 (5,08)	45
BPA04SB	4	.476 (12,1)	.300 (7,62)	35
BPA05SB	5	.575 (14,6)	.400 (10,16)	30
BPA06SB	6	.677 (17,2)	.500 (12,70)	25
BPA07SB	7	.776 (19,7)	.600 (15,24)	20
BPA08SB	8	.878 (22,3)	.700 (17,78)	20
BPA09SB	9	.976 (24,8)	.800 (20,32)	15
BPA10SB	10	1.075 (27,3)	.900 (22,86)	15
BPA12SB	12	1.280 (32,5)	1.100 (27,94)	14

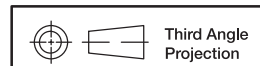
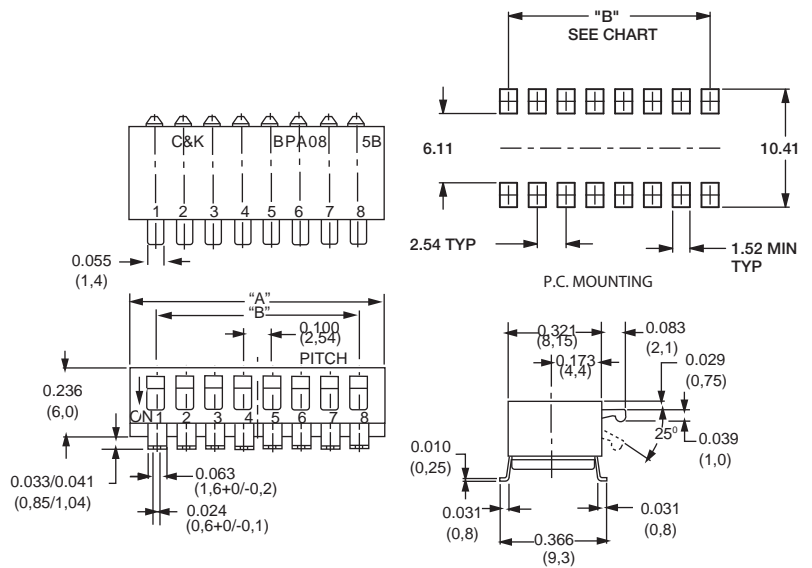
Schematic 

SPST

NOTE: Tape and reel packaging available by adding "R" to end of project number.



BPA08SB



Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change



BPA Series Side Actuated DIP Switches

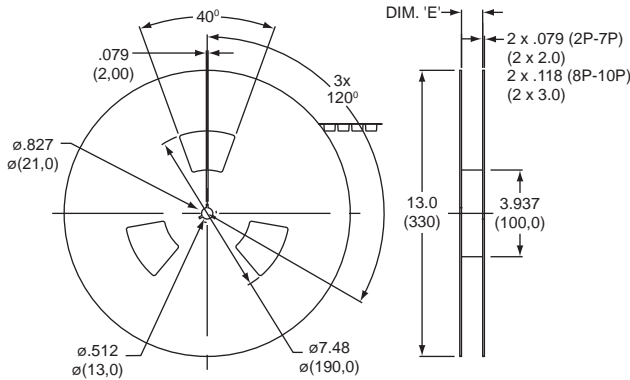


DIP H

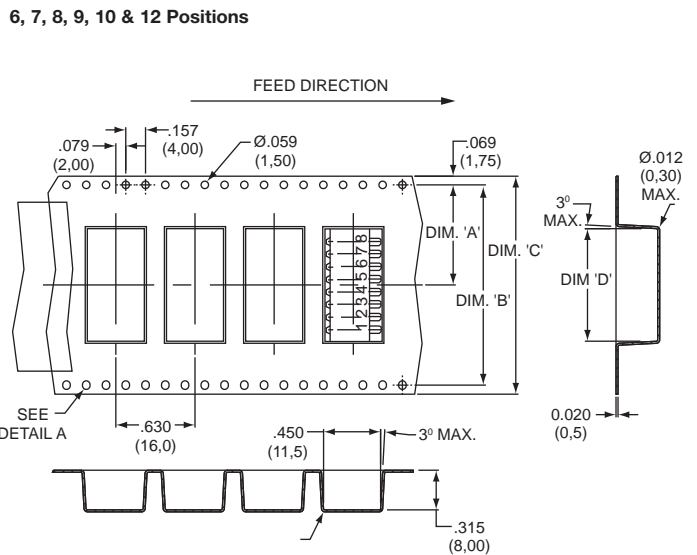
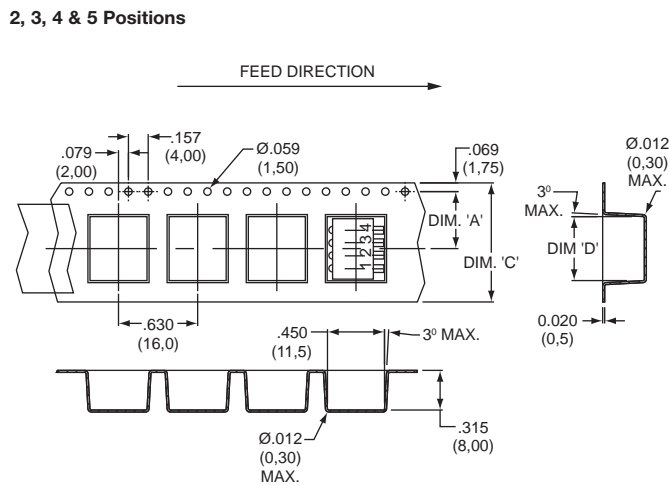
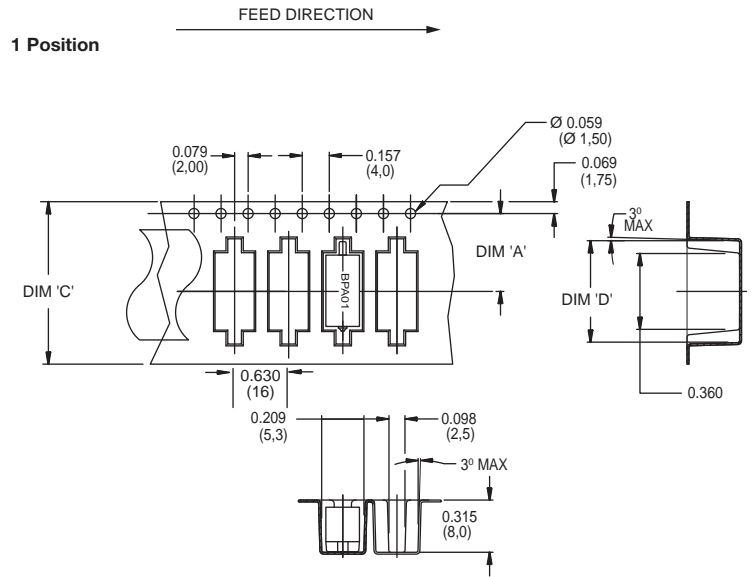
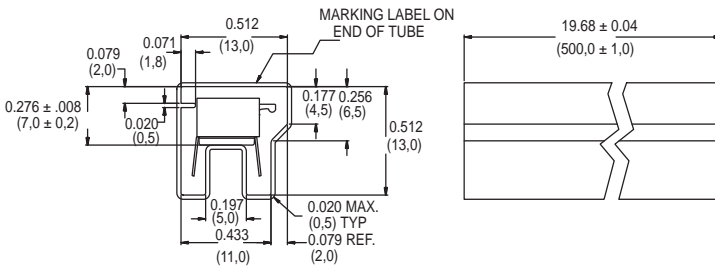
Tape & Reel Packaging – Surface Mount Options Only

QTY/ REEL	POLES	DIM. 'A'	DIM. 'B'	DIM. 'C'	DIM. 'D'	DIM. 'E'
500	1	.453 (11,5)	—	.945 (24,0)	.530 (13,45)	.960 (24,4)
500	2	.453 (11,5)	—	.945 (24,0)	.311 (7,9)	.960 (24,4)
500	3	.453 (11,5)	—	.945 (24,0)	.409 (10,4)	.960 (24,4)
500	4	.453 (11,5)	—	.945 (24,0)	.508 (12,9)	.960 (24,4)
500	5	.453 (11,5)	—	.945 (24,0)	.606 (15,4)	.960 (24,4)
500	6	.559 (14,2)	1.118 (28,4)	1.260 (32,0)	.709 (18,0)	1.275 (32,4)
500	7	.559 (14,2)	1.118 (28,4)	1.260 (32,0)	.807 (20,5)	1.275 (32,4)
500	8	.795 (20,2)	1.590 (40,4)	1.732 (44,0)	.894 (22,7)	1.748 (44,4)
500	9	.795 (20,2)	1.590 (40,4)	1.732 (44,0)	1.004 (25,5)	1.748 (44,4)
500	10	.795 (20,2)	1.590 (40,4)	1.732 (44,0)	1.106 (28,1)	1.748 (44,4)
500	12	.795 (20,2)	1.590 (40,4)	1.732 (44,0)	1.311 (33,3)	1.748 (44,4)

Note: For tape and reel packaging, add 'R' to end of part number.



Tube Packaging



Third Angle
Projection

Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change



TDD Series Jumper Switch



H

DIP

Features/Benefits

- **Bifurcated contact for increased electrical reliability**
- **Process sealed for surface mount soldering and washable processing**
- **RoHS compliant**

Typical Applications

- **Hand-held electronic devices**
- **Portable computer and electronic devices**
- **Instrumentation and controls**
- **Inverters**



Specifications

CONTACT RATING: 25 mA @ 24 V DC (switching) or 100 mA @ 50 V DC (steady state).
 MECHANICAL AND ELECTRICAL LIFE: 200 cycles at rated loads.
 CONTACT RESISTANCE: 100 mΩ max. initial. @ 2 V DC /10 mA
 INSULATION RESISTANCE: 100 MΩ @ 100 V DC min.
 DIELECTRIC STRENGTH: 300 V AC /minute
 STORAGE TEMPERATURE: -40°C to 85°C.
 OPERATING TEMPERATURE: -30°C to 85°C.
 OPERATING FORCE: 4.9 N max.
 SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).
 PACKAGING: 1,000 pieces tape & reel

Materials

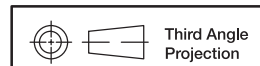
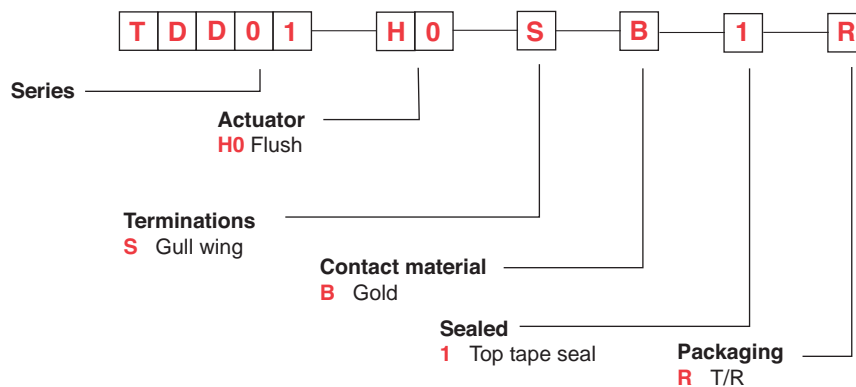
CASE AND COVER: PPS, color black (UL94V-0).
 ACTUATOR: LCP (UL94-0)
 CONTACTS: Copper alloy with gold plate over nickel plate
 TERMINALS (INSERT MOLDED): Copper alloy gold flash over nickel plate
 TAPE SEAL: Polyamide

Note: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center. For Tin Lead options consult customer service center.

How To Order

The Build-A Switch concept allows you to mix and match options to create the switch you need. Below is a complete listing of options shown in catalog. To order, simply select desired option from each category and place in the appropriate box.

All switches supplied in "OFF" position..



Third Angle Projection
 Dimensions are shown: Inch (mm)
 Specifications and dimensions subject to change

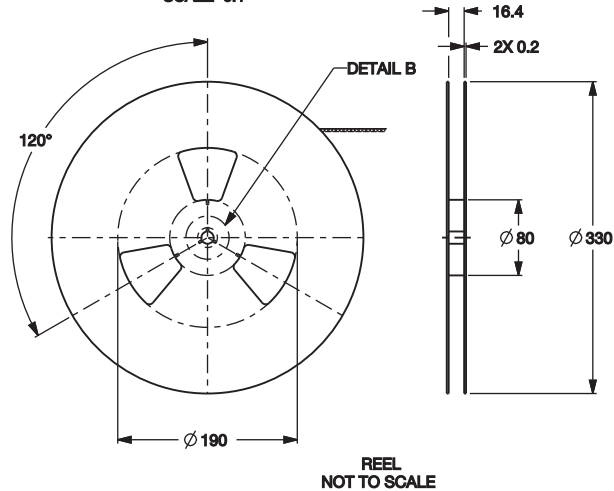
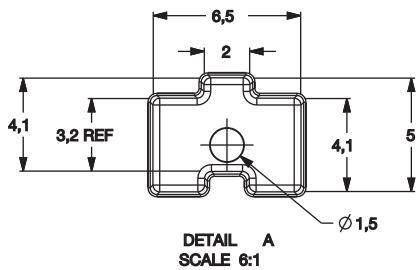
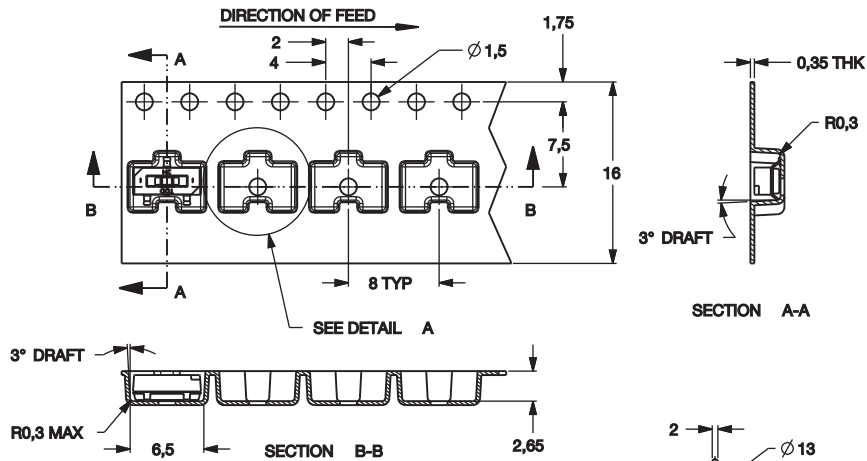
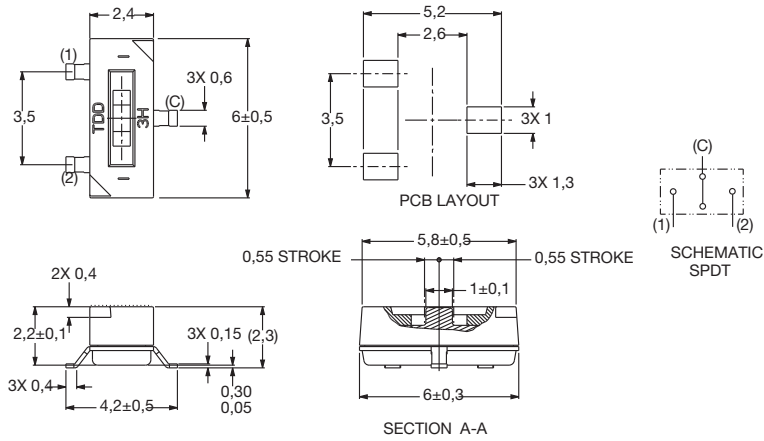


TDD Series Jumper Switch



DIP

H



Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

SPA Series Single In-line Package Switches



Features/Benefits

- **Thin Single In-line Packaging saves PCB space**
- **Retention feature holds part to PCB prior to soldering**
- **Available in vertical or right angle models**
- **High pressure contact system does not require tape sealing**
- **RoHS compliant**

Typical Applications

- **Address switch for industrial controls**
- **Logic switching for computers and peripherals**
- **Function controlling for numerous applications**



Specifications

CONTACT RATING:

Carry: 10 mA @ 5VDC
Switching: 0.1 mA @ 0.1m VDC min.

MECHANICAL AND ELECTRICAL LIFE: 1,000 cycles min.

CONTACT RESISTANCE: 50 mΩ max. @ 20 V DC 10mA.

INSULATION RESISTANCE: 100 MΩ min. @ 100 V DC.

DIELECTRIC STRENGTH: 1 minute @ 300 V AC.

CAPACITANCE: 5pF max. between adjacent terminals.

OPERATING TEMPERATURE: -30°C to 60°C.

STORAGE TEMPERATURE: -30°C to 80°C.

OPERATING FORCE: 5.9N max.

SOLDERABILITY: Dip & look solderability testing per C&K spec. #448. Unplated edges of terminals permitted.

PACKAGING: Switches supplied in rigid dispensing tubes in full-tube quantities only, this may affect order quantity. Numbers of switches per tube varies with model.

Materials

BASE: PPS (UL94V-0).

COVER: PBT (UL94V-0).

ACTUATOR: 4/6 Nylon (UL 94V-0).

MOVABLE CONTACT: Beryllium copper alloy, gold over nickel plate.

FIXED CONTACT: Copper alloy, gold over nickel plate.

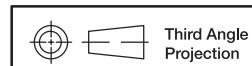
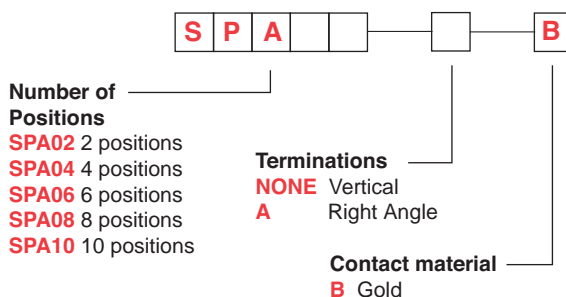
CLIP: Phosphor bronze wire. Phosphor bronze, Tin over nickel plate.

Note: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

How To Order

The Build-A Switch concept allows you to mix and match options to create the switch you need. Below is a complete listing of options shown in catalog. To order, simply select desired option from each category and place in the appropriate box.

All switches supplied in "OFF" position.



Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change



SPA Series Single In-line Package Switches

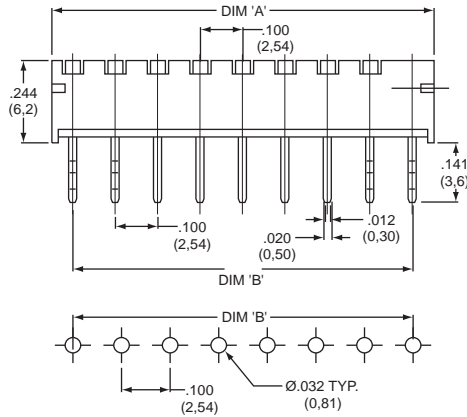
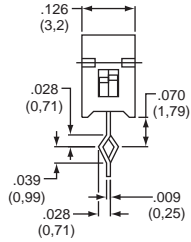
Vertical



DIP H



SPA08B



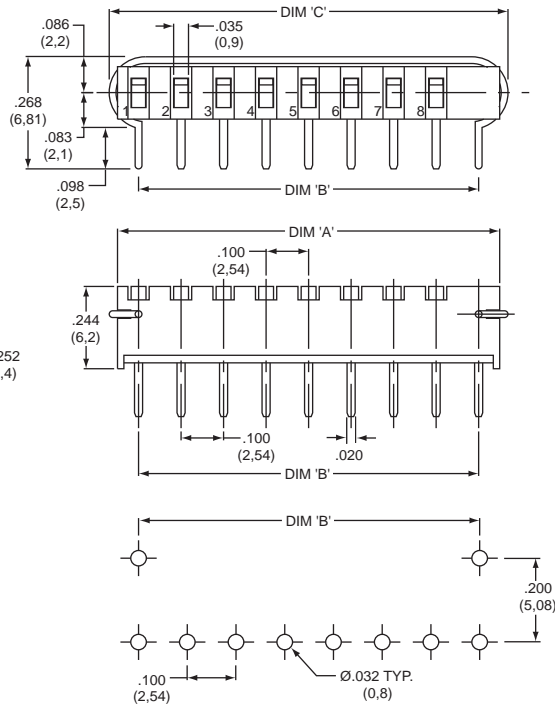
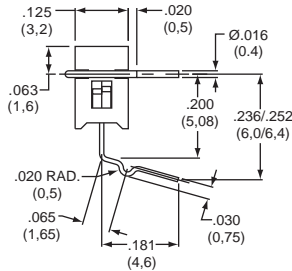
ROHS PART NUMBER	NO. POS.	DIM. 'A'	DIM. 'B'	QUANTITY PER TUBE
SPA02B	2	.342 (8,68)	.200 (5,08)	50
SPA04B	4	.542 (13,76)	.400 (10,16)	30
SPA06B	6	.742 (18,84)	.600 (15,24)	25
SPA08B	8	.942 (23,92)	.800 (20,32)	20
SPA10B	10	1.142 (29,00)	1.000 (25,40)	15

Schematic

SPST



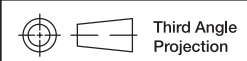
SPA08AB



ROHS PART #	NO. POS.	DIM. 'A'	DIM. 'B'	DIM. 'C'	QTY PER TUBE
SPA02AB	2	.342 (8,68)	.200 (5,08)	.339 (8,6)	50
SPA04AB	4	.542 (13,76)	.400 (10,16)	.540 (13,7)	30
SPA06AB	6	.742 (18,84)	.600 (15,24)	.736 (18,7)	25
SPA08AB	8	.942 (23,92)	.800 (20,32)	.937 (23,8)	20
SPA10AB	10	1.142 (29,00)	1.000 (25,40)	1.138 (28,9)	15

Schematic

SPST



Dimensions are shown: Inch (mm)
 Specifications and dimensions subject to change



RTE Series Low Profile Rotary DIP Switches

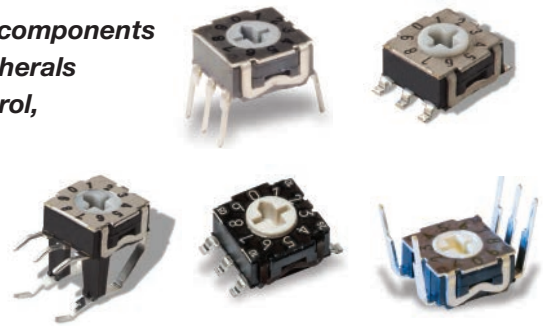


Features/Benefits

- Thru-hole and surface mount models
- Miniature size with robust metal cover in black or silver nickel finish
- 4, 10, & 16 positions
- Large choice of codings
- Vertical or reverse versions
- RoHS compliant

Typical Applications

- Timers, automation components
- Computer and peripherals
- Alarms, access control, smoke detectors
- Instrumentation



Specifications

CONTACT RATING:
Gold: 100 mA max. 10µ A min. 30 V DC max. 20 mVDC min.
MECHANICAL LIFE: 20,000 actuations
CONTACT RESISTANCE: 100 mΩ max. initial;
150 mΩ after life
INSULATION RESISTANCE: 10¹⁰ Ω min. initial
DIELECTRIC STRENGTH: 300 Vrms 1 mn
OPERATING TEMPERATURE: -25°C to 85°C.
STORAGE TEMPERATURE: -40°C to 85°C.
PACKAGING: N or R terminations in tube.
V termination in box. G termination in reel, 750 pieces per reel. G termination with flush actuator, 1250 pieces per reel.

Materials

COVER: Brass, nickel plated (black or silver)
BASE: PPS
ACTUATOR: LCP
MOVABLE CONTACTS: Bronze, gold plated.
STATIONARY CONTACTS: Brass, gold plated.
TERMINALS: See page I-28 to I-29
O-RING: Silicone

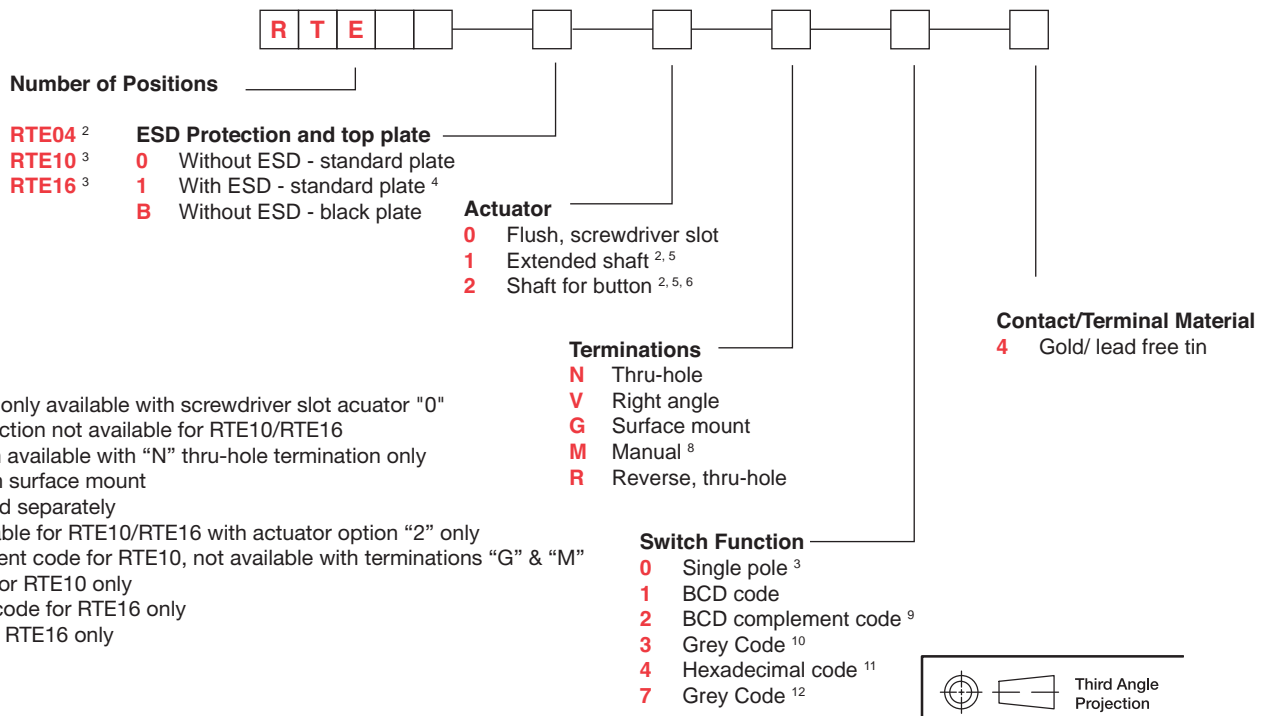
Note: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Solderability: Wave soldering 260°/10 s.
SMT are reflow compatible according to C&K lead free specification for SMT components PS-LF-001.

How To Order

The Build-A Switch concept allows you to mix and match options to create the switch you need. Below is a complete listing of options shown in catalog. To order, simply select desired option from each category and place in the appropriate box.

NOTE: Some of the configurations may not be available or could require some development.



2 - RTE04 version only available with screwdriver slot acuator "0"
3 - Single pole function not available for RTE10/RTE16
4 - ESD protection available with "N" thru-hole termination only
5 - Not available in surface mount
6 - Buttons ordered separately
8 - Manual - available for RTE10/RTE16 with actuator option "2" only
9 - BCD complement code for RTE10, not available with terminations "G" & "M"
10 - Grey Code - for RTE10 only
11 - Hexidecimal code for RTE16 only
12 - Grey code for RTE16 only



Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

RTE Series Low Profile Rotary DIP Switches

SWITCHES WITH STANDARD OPTIONS

PC Mount-Terminal Option N



PART NUMBER WITHOUT ESD PIN	WITH ESD PIN	NO. POS.	FUNCTION	QTY PER TUBE
RTE0400N04	RTE0410N04	4	SP4T	65
RTE1000N14	RTE1010N14	10	BCD	65
RTE1600N44	RTE1610N44	16	HEXADECIMAL	65

Right Angle Mount-Terminal Option V



PART NUMBER	NO. POS.	FUNCTION	QUANTITY
RTE0400V04	4	SP4T	150 per box
RTE1000V14	10	BCD	150 per box
RTE1600V44	16	HEXADECIMAL	150 per box

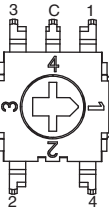
Surface Mount-Terminal Option G



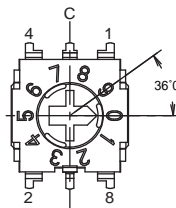
PART NUMBER	NO. POS.	FUNCTION	QUANTITY PER REEL
RTE0400G04	04	SP4T	1250
RTE1000G14	10	BCD	1250
RTE1600G44	16	HEXADECIMAL	1250

NUMBER OF POSITIONS

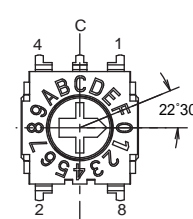
RTE04 4 POSITION



RTE10 10 POSITION



RTE16 16 POSITION



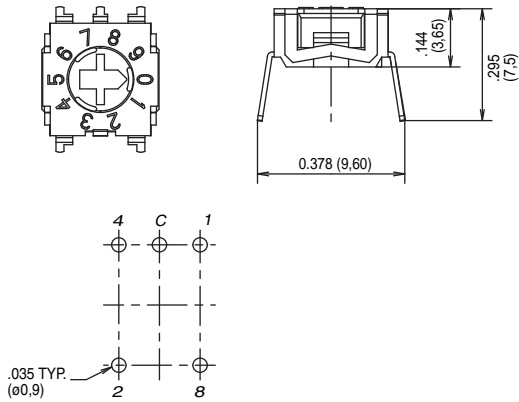
RTE Series Low Profile Rotary DIP Switches

ESD PROTECTION

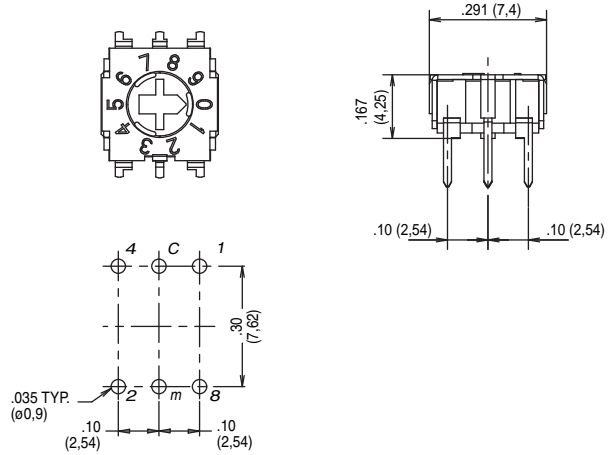


H
DIP

0 WITHOUT



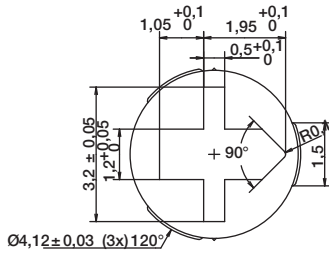
1 WITH



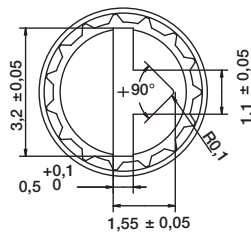
ACTUATOR



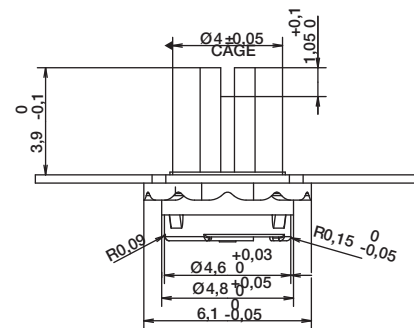
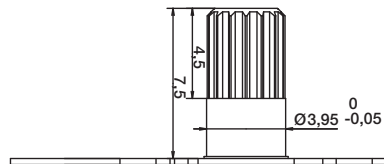
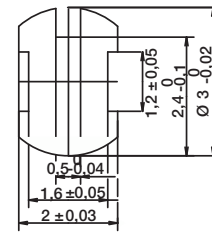
0 FLUSH, SCREWDRIVER SLOT



1 EXTENDED SHAFT (not available in surface mount)



2 SHAFT FOR BUTTON



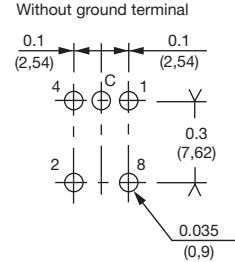
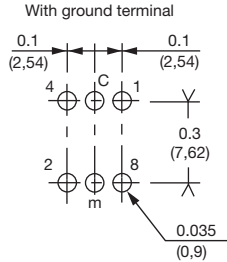
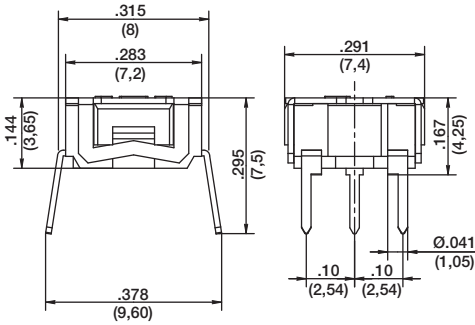
RTE Series Low Profile Rotary DIP Switches

TERMINATIONS

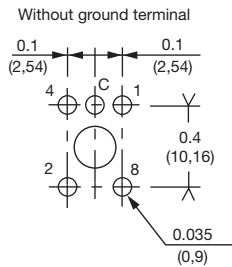
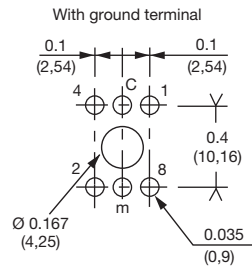
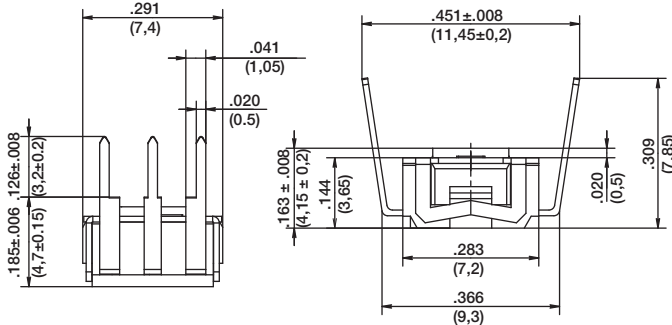


DIP H

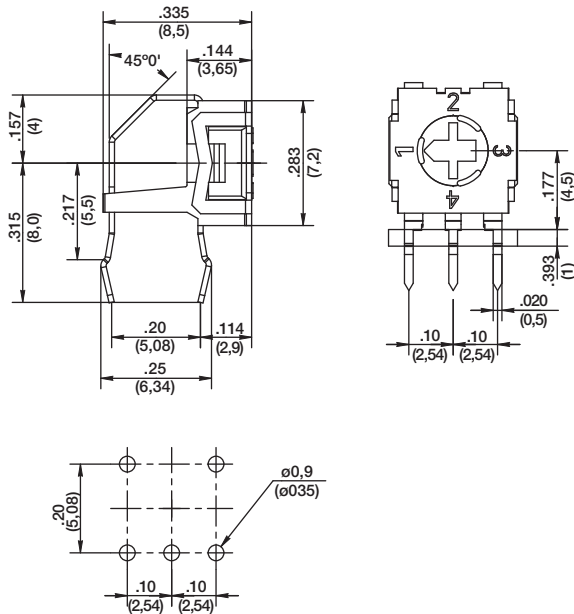
N THRU-HOLE



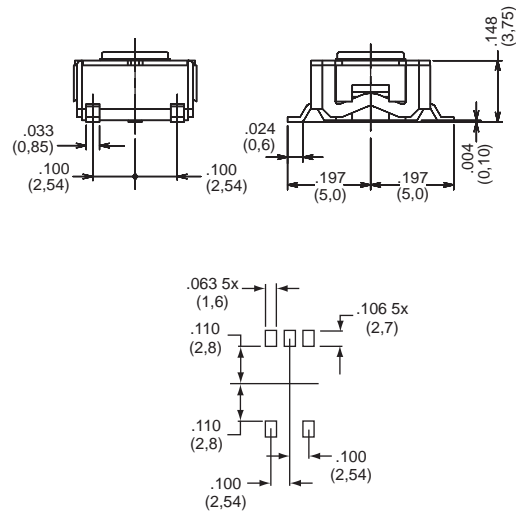
R REVERSE, THRU-HOLE



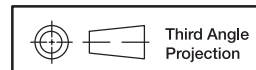
V RIGHT ANGLE, THRU-HOLE



G SURFACE MOUNT



PCB layout seen component side



Third Angle
Projection

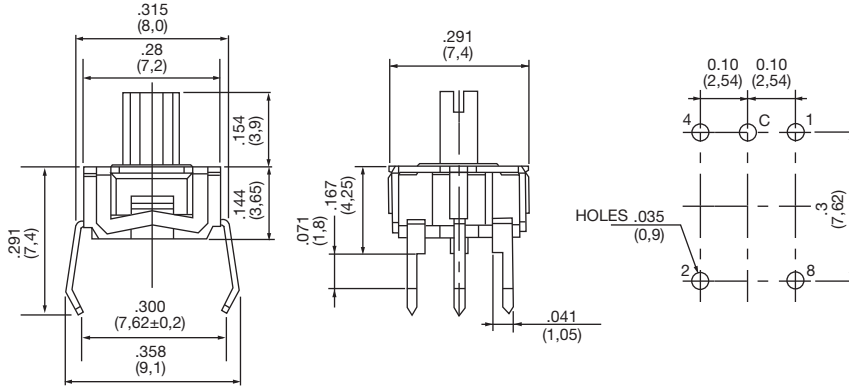


Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

RTE Series Low Profile Rotary DIP Switches

TERMINATIONS

M OPTION



H
DIP

SWITCH FUNCTION

0 SINGLE POLE

POS.	1	2	3	4
C	●	●	●	●
1	●			
2		●		
3			●	
4				●

1 BCD CODE

POS.	0	1	2	3	4	5	6	7	8	9
C	●	●	●	●	●	●	●	●	●	●
1		●				●				
2			●					●		
4				●	●	●				
8									●	●

2 BCD COMPLEMENT CODE

POS.	0	1	2	3	4	5	6	7	8	9
C	●	●	●	●	●	●	●	●	●	●
1	●				●				●	
2	●	●				●				●
4	●	●	●							●
8	●	●	●	●	●	●	●			

Other codes available by request.

3 GREY CODE (for RTE10 only)

POS.	0	1	2	3	4	5	6	7	8	9
C	●	●	●	●	●	●	●	●	●	●
1		●	●			●				●
2			●	●	●					
4				●	●	●	●	●	●	●
8									●	●

4 HEXADECIMAL CODE

POS.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
C	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
1		●		●		●		●		●		●		●		●
2			●	●			●				●		●			●
4				●	●	●	●				●	●	●	●		●
8									●	●	●	●	●	●	●	●

7 GREY CODE (for RTE04 only)

POS.	1	2	3	4
C	●	●	●	●
1	●			
2		●		
4			●	
8				●

(for RTE16 only)

POS.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
C	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
1		●				●				●				●		●
2			●	●			●				●		●			●
4				●	●	●	●				●	●	●	●		●
8									●	●	●	●	●	●	●	●

CONTACT MATERIAL

OPTION CODE	RoHS COMPLIANT	RoHS COMPATIBLE	CONTACT MATERIAL	TERMINAL PLATING
4	YES	YES	GOLD	LEAD FREE TIN



Third Angle Projection



Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

RTE Series Low Profile Rotary DIP Switches

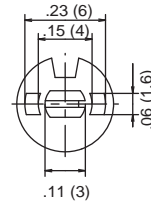
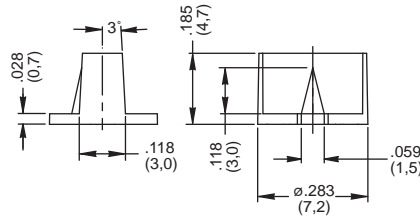
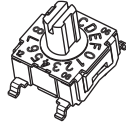


DIP H

BUTTONS AVAILABLE

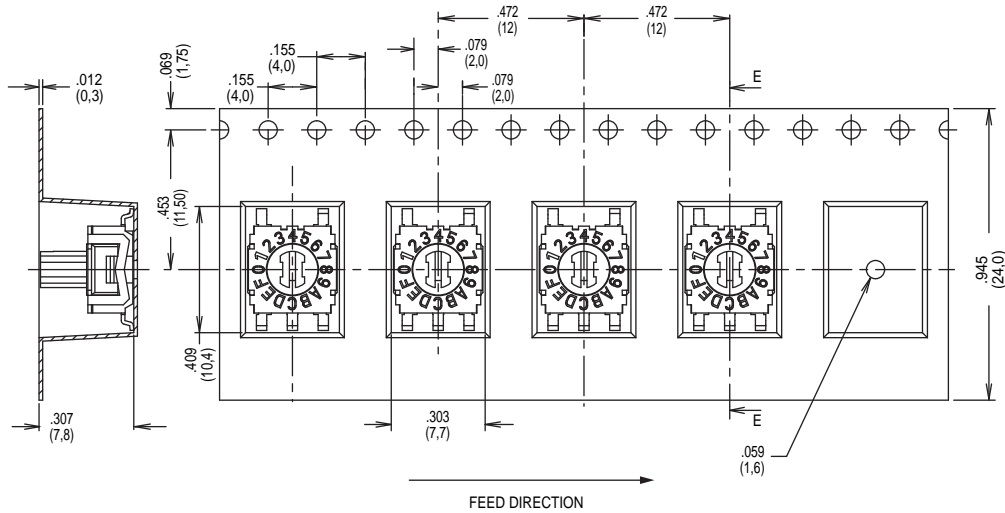
Buttons are ordered separately, shipped in bulk.

Part Number	Color
BTN RTE 40	Red
BTN RTE 50	Green
BTN RTE 90	Black

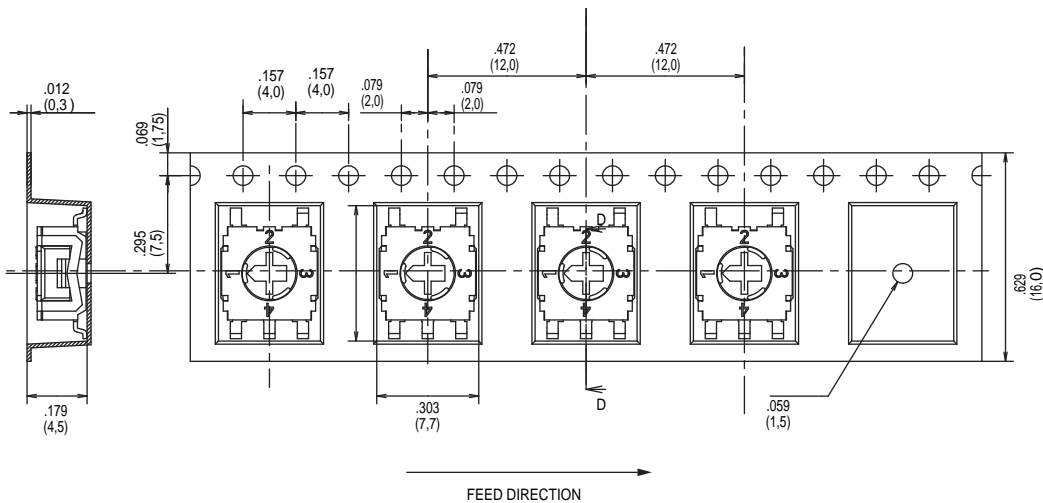


TAPE AND REEL

Tape and reel for RTExx02Gxx
750 pieces per reel.



Tape and reel for RTExx00Gxx
1,250 pieces per reel.



Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change



CD Series 8mm DIP Coded Rotary Switches



Features/Benefits

- **Process sealed – withstands soldering and cleaning**
- **Thru-hole and surface mount models**
- **Compact size saves space – 36% smaller than traditional 10mm DIP**
- **Crisp, positive detent ensures actuation**
- **RoHS compliant**

Typical Applications

- **Address switching applications**
- **Data storage devices**
- **Computer and peripherals**
- **Instrumentation**



Specifications

CONTACT RATING: 0.4 VA max. @ 20 V AC or V DC max.
 MECHANICAL AND ELECTRICAL LIFE:
 CD10 & CD16: 20,000 actuations.
 CD08: 12,000 actuations.
 CONTACT RESISTANCE: 50 milliohms max. initial.
 INSULATION RESISTANCE: 100 megohms min.
 @ 250 V AC min.
 DIELECTRIC STRENGTH: 250 V RMS min. @ sea level.
 OPERATING TEMPERATURE: -25°C to 85°C.
 STORAGE TEMPERATURE: -40°C to 85°C.
 SOLDERABILITY: Per MIL-STD-202F method 208D or EIA RS-186E, method 9 (1 hour steam aging).
 PACKAGING: Switches supplied in rigid tubes in full-tube quantities only: this may affect order quantity. Tube quantity is 60 pieces per tube. Surface mount switches available in tape & reel packaging per EIA 481A, 800 per reel, surface mount with “M0” actuator only.

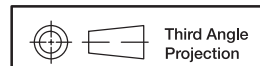
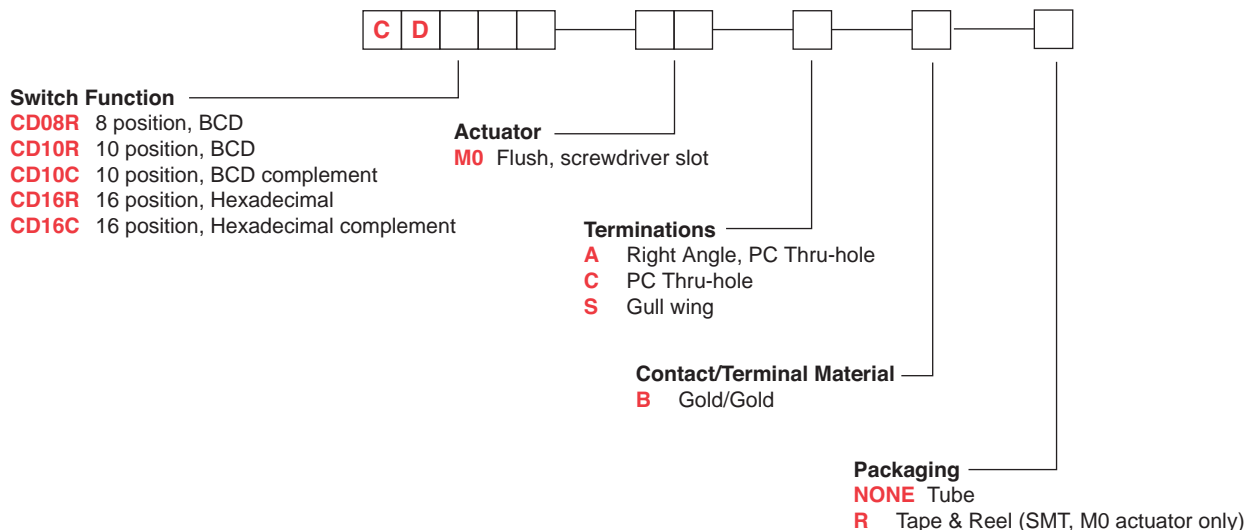
Materials

COVER: PPS (UL94V-0), Color; Black.
 BASE: PPS (UL94V-0), Color; Black
 ACTUATOR: LCP (UL 94V-0), Color White (CDXXR)
 Color Black (CDXXC)
 Note: internal o-ring seal standard with all actuators.
 MOVABLE CONTACTS: Copper alloy with gold plate over nickel plate.
 STATIONARY CONTACTS: Copper alloy with gold plate over nickel plate.
 TERMINALS: Copper alloy with gold plate over nickel plate.

Note: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

How To Order

The Build-A Switch concept allows you to mix and match options to create the switch you need. Below is a complete listing of options shown in catalog. To order, simply select desired option from each category and place in the appropriate box.



Dimensions are shown: Inch (mm)
 Specifications and dimensions subject to change



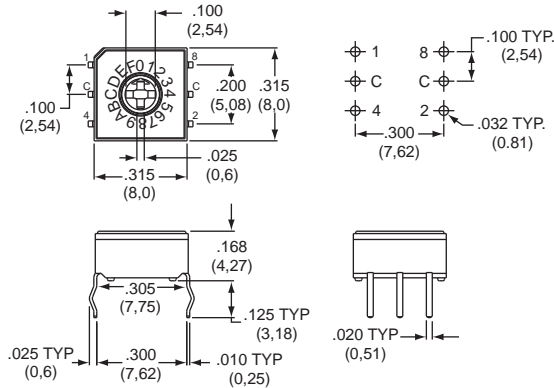
CD Series 8mm DIP Coded Rotary Switches

SWITCHES WITH STANDARD OPTIONS

PC Mount



CD16RM0CB

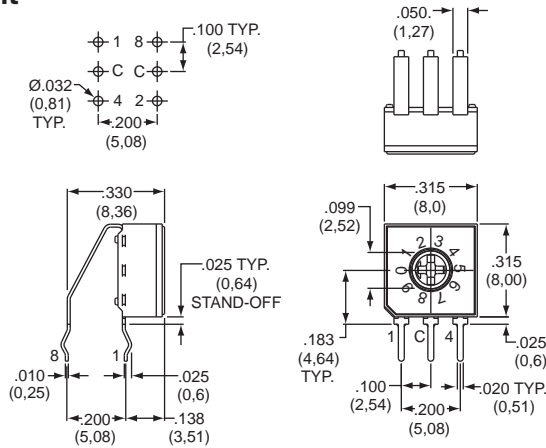


PART NUMBER	NO. POS.	QUANTITY PER TUBE
CD08RM0CB	8	60
CD10RM0CB	10	60
CD10CM0CB	10	60
CD16RM0CB	16	60
CD16CM0CB	16	60

Right Angle Mount



CD10RM0AB

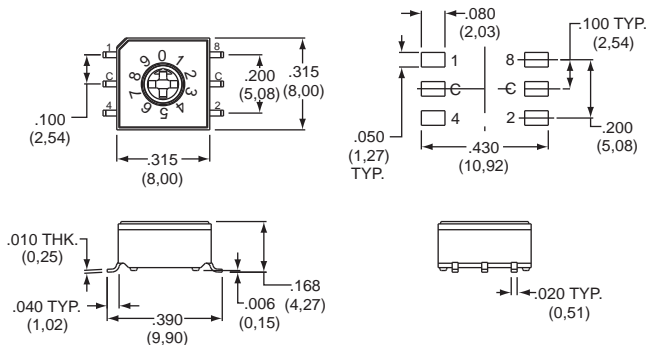


PART NUMBER	NO. POS.	QUANTITY PER TUBE
CD08RM0AB	8	60
CD10RM0AB	10	60
CD10CM0AB	10	60
CD16RM0AB	16	60
CD16CM0AB	16	60

Surface Mount



CD10RM0SB



PART NUMBER	NO. POS.	QUANTITY PER TUBE
CD08RM0SB	8	60
CD10RM0SB	10	60
CD10CM0SB	10	60
CD16RM0SB	16	60
CD16CM0SB	16	60

Note: For tape and reel packaging, add 'R' to end of part number.



Third Angle Projection

Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

CD Series 8mm DIP Coded Rotary Switches

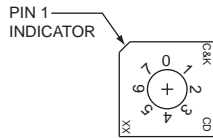


H
DIP

SWITCH FUNCTION

CD08R 8 POSITION, BCD
ACTUATOR COLOR: WHITE

POS.	0	1	2	3	4	5	6	7
C	●	●	●	●	●	●	●	●
1		●		●		●		●
2			●		●		●	
4				●	●	●	●	
8								



Switches ship and to be solder processed in position "0"

CD10R 10 POSITION, BCD
ACTUATOR COLOR: WHITE

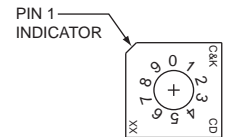
POS.	0	1	2	3	4	5	6	7	8	9
C	●	●	●	●	●	●	●	●	●	●
1		●		●		●		●		●
2			●		●		●		●	
4				●	●	●	●			
8									●	●

Switches ship and to be solder processed in position "0"

CD10C 10 POSITION, BCD COMPLEMENT
ACTUATOR COLOR: BLACK

POS.	0	1	2	3	4	5	6	7	8	9
C	●	●	●	●	●	●	●	●	●	●
1	●		●		●		●		●	
2	●			●		●		●		●
4	●	●	●	●					●	●
8	●	●	●	●	●	●	●	●	●	●

Switches ship and to be solder processed in position "7"



CD16R 16 POSITION, HEXADECIMAL
ACTUATOR COLOR: WHITE

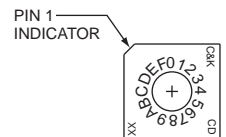
POS.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
C	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
1		●		●		●		●		●		●		●		●	
2			●		●		●		●		●		●		●		
4				●	●	●	●					●	●	●	●		
8										●	●	●	●	●	●	●	

Switches ship and to be solder processed in position "0"

CD16C 16 POSITION, HEXADECIMAL COMPLEMENT
ACTUATOR COLOR: BLACK

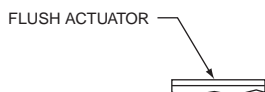
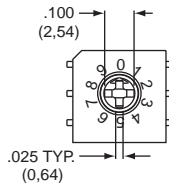
POS.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
C	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
1	●		●		●		●		●		●		●		●		
2	●			●		●		●		●		●		●		●	
4	●	●	●	●							●	●	●	●			
8	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	

Switches ship and to be solder processed in position "F"



ACTUATOR

M0 (STD.) FLUSH WITH SCREWDRIVER SLOT



NOTE: Designed for #0 Phillips screwdriver.



Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change



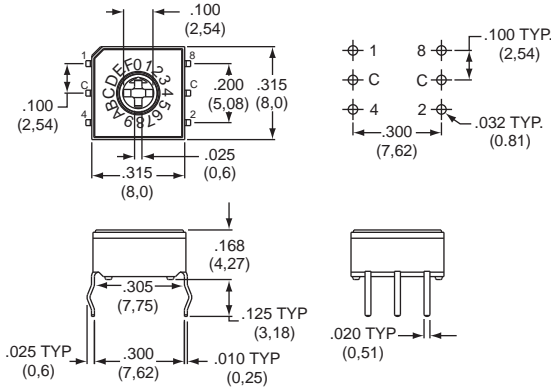
CD Series 8mm DIP Coded Rotary Switches

TERMINATIONS

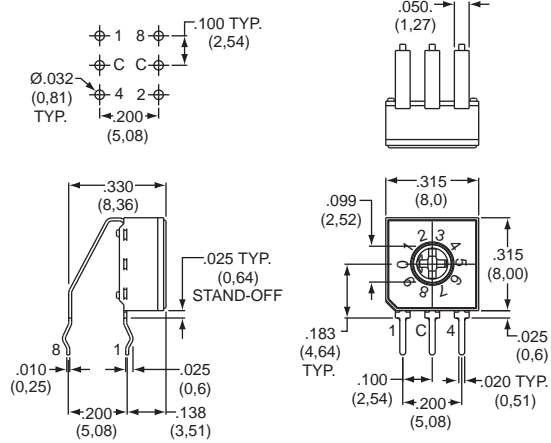
DIP

H

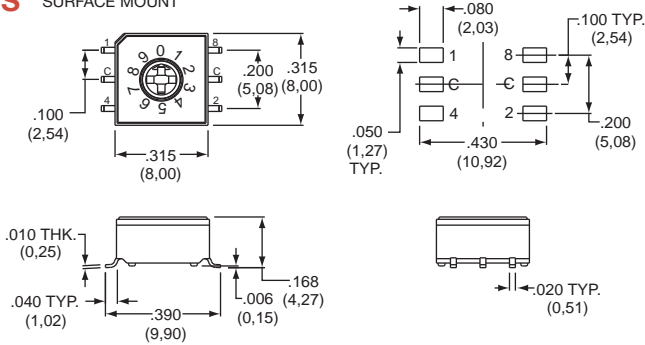
C PC, THRU-HOLE



A RIGHT ANGLE, PC THRU-HOLE



S SURFACE MOUNT



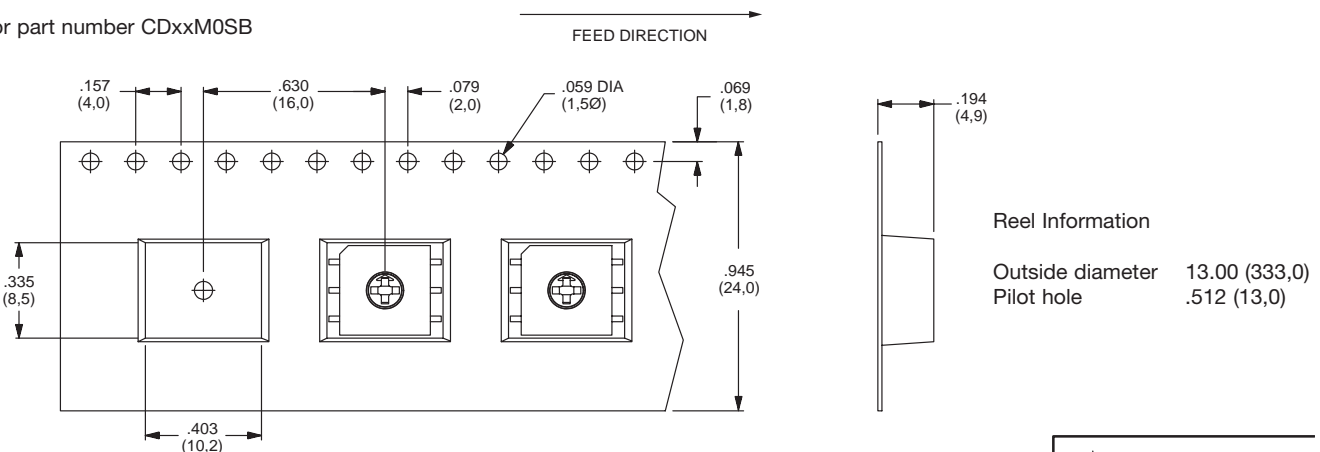
CONTACT MATERIAL

OPTION CODE	RoHS COMPLIANT*	RoHS COMPATIBLE*	CONTACT MATERIAL	TERMINAL PLATING	RATING	
B	YES	YES	GOLD	GOLD	LOW LEVEL/DRY CIRCUIT	0.4 VC MAX. @ 20 V AC or DC MAX.

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

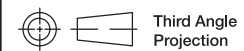
TAPE & REEL

For part number CDxxM0SB



Reel Information

Outside diameter 13.00 (333.0)
Pilot hole .512 (13.0)



Third Angle Projection

Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change



CRD Series 10mm DIP Coded Rotary Switches



H

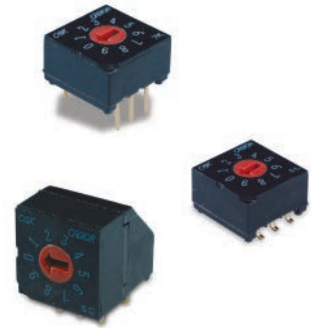
DIP

Features/Benefits

- **Process sealed – withstands soldering and cleaning**
- **Thru-hole and surface mount models**
- **Crisp, positive detent ensures actuation**
- **Computer and peripherals**
- **RoHS compliant**

Typical Applications

- **Address switching applications**
- **Data storage devices**
- **Computer and peripherals**
- **Instrumentation**



Specifications

CONTACT RATING: 0.4 V AC, DC 20 V max.
 ELECTRICAL LIFE: 20,000 steps min. @ 5 V DC 10 mA.
 MECHANICAL LIFE: 30,000 steps min.
 CONTACT RESISTANCE: 100 milliohms max. initial @ 2 V DC 10 mA.
 INSULATION RESISTANCE: 1000 megohms min. @ 100 V DC
 DIELECTRIC STRENGTH: 300 V AC for 1 minute.
 OPERATING TEMPERATURE: -20°C to 85°C.
 STORAGE TEMPERATURE: -40°C to 85°C.
 OPERATING FORCE: 1000 grams max.
 PACKAGING: Switches supplied in anti-static tubes in full quantities only. This may affect order quantity. Surface mount models with MO actuators available in tape and reel, 500 pieces per reel.

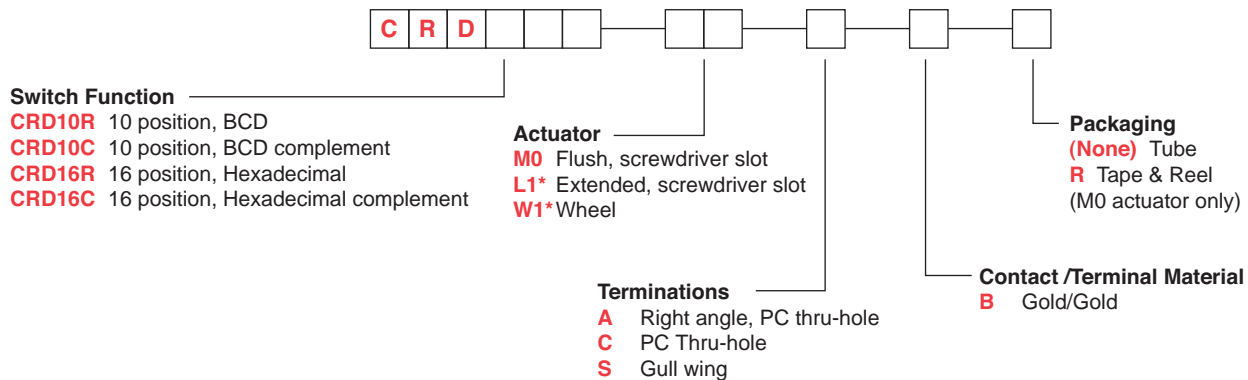
Materials

COVER: PPS (black)
 HOUSING: PPS (black)
 ACTUATOR: PA 6T M0 actuator option; PBT L1 and W1 actuator option.
 CONTACTS: Beryllium Copper with Gold over Nickel plate
 TERMINALS: Brass with Gold Nickel plate.

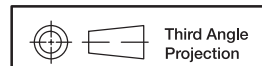
Note: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

How To Order

The Build-A Switch concept allows you to mix and match options to create the switch you need. Below is a complete listing of options shown in catalog. To order, simply select desired option from each category and place in the appropriate box.



* Note - L1 and W1 actuators are not available in termination "S"



Dimensions are shown: Inch (mm)
 Specifications and dimensions subject to change



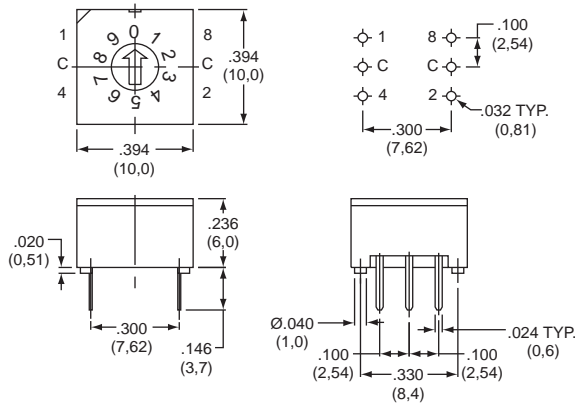
CRD Series 10mm DIP Coded Rotary Switches

SWITCHES WITH STANDARD OPTIONS



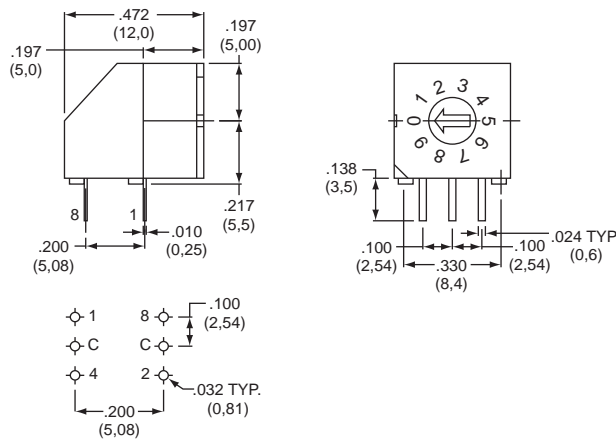
DIP

PC Mount



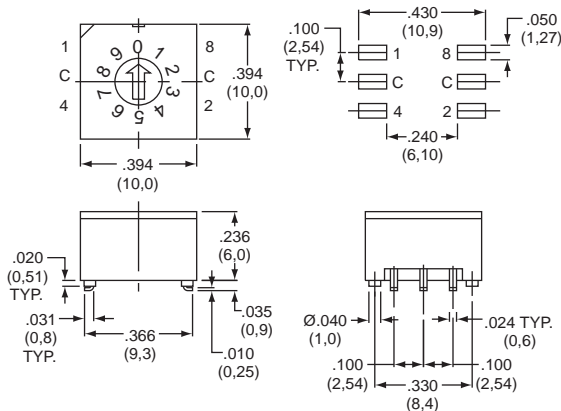
PART NUMBER	NO. POS.	QUANTITY PER TUBE
CRD10RM0CB	10	45
CRD16RM0CB	16	45

Right Angle Mount



PART NUMBER	NO. POS.	QUANTITY PER TUBE
CRD10RM0AB	10	45
CRD16RM0AB	16	45

Surface Mount



PART NUMBER	NO. POS.	QUANTITY PER TUBE
CRD10RM0SB	10	45
CRD16RM0SB	16	45



Third Angle Projection

Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change



CRD Series 10mm DIP Coded Rotary Switches



H

DIP

SWITCH FUNCTION

CRD10R

10 POSITION, BCD
ACTUATOR COLOR: RED

POS.	0	1	2	3	4	5	6	7	8	9
C	●	●	●	●	●	●	●	●	●	●
1		●		●		●		●		●
2			●		●		●		●	
4				●		●		●		●
8					●		●		●	●

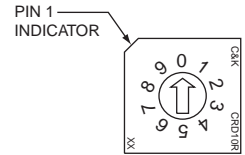
Switches ship and to be solder processed in position "0"

CRD10C

10 POSITION, BCD COMPLEMENT
ACTUATOR COLOR: ORANGE

POS.	0	1	2	3	4	5	6	7	8	9
C	●	●	●	●	●	●	●	●	●	●
1	●									
2	●	●								
4	●	●	●							
8	●	●	●	●						

Switches ship and to be solder processed in position "7"



CRD16R

16 POSITION, HEXADECIMAL
ACTUATOR COLOR: BLACK

POS.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
C	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
1		●														
2			●													
4				●												
8					●											

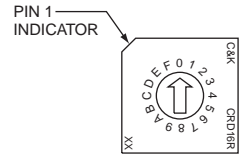
Switches ship and to be solder processed in position "0"

CRD16C

16 POSITION, HEXADECIMAL COMPLEMENT
ACTUATOR COLOR: WHITE

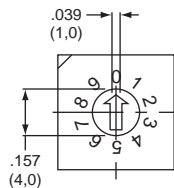
POS.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
C	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
1	●															
2	●	●														
4	●	●	●													
8	●	●	●	●												

Switches ship and to be solder processed in position "F"



ACTUATOR

(STD.) FLUSH WITH SCREWDRIVER SLOT

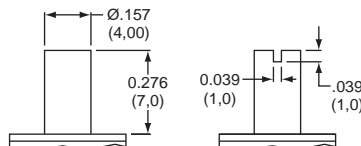
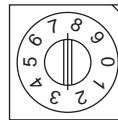


FLUSH ACTUATOR



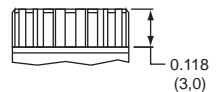
L1*

EXTENDED WITH SCREWDRIVER SLOT



W1*

WHEEL



NOTE: Designed for #0 Phillips screwdriver.

* L1 and W1 actuators are not available in termination "S"



Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

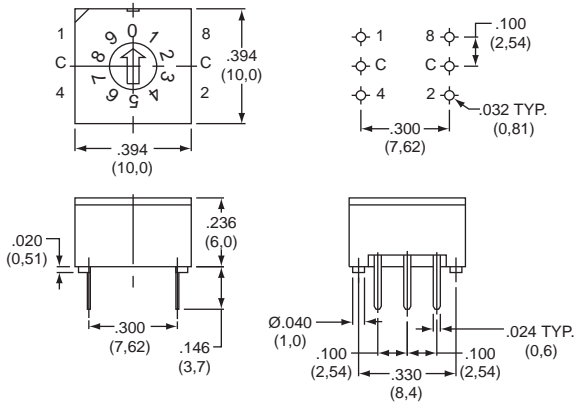


CRD Series 10mm DIP Coded Rotary Switches

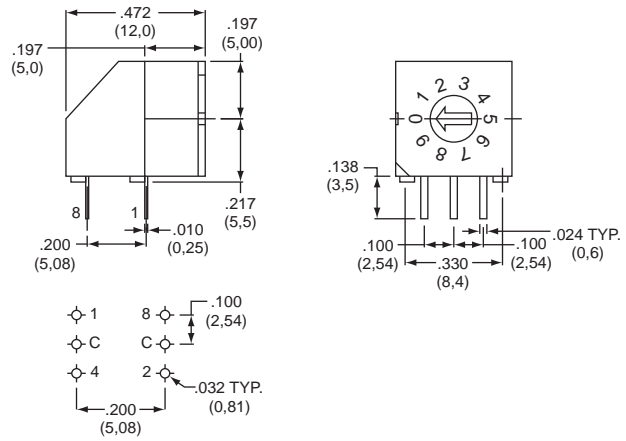
TERMINATIONS



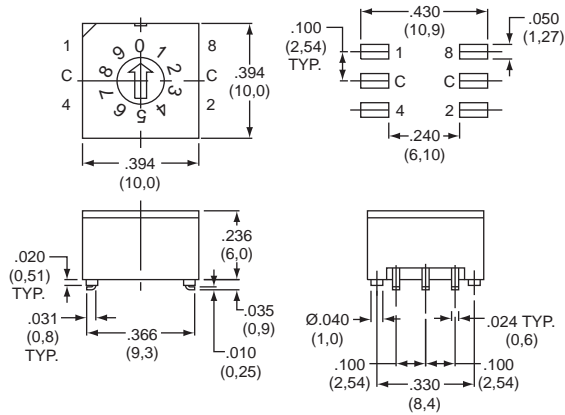
C PC, THRU-HOLE



A RIGHT ANGLE, PC THRU-HOLE



S SURFACE MOUNT



M0

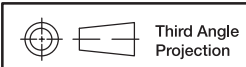
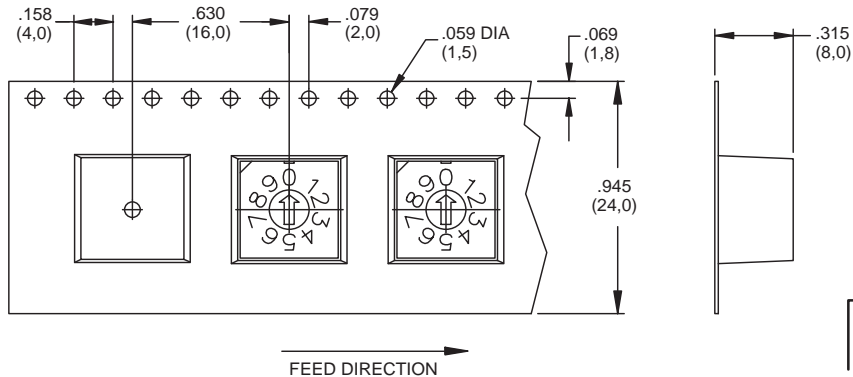
CONTACT MATERIAL



OPTION CODE	RoHS COMPLIANT*	RoHS COMPATIBLE*	CONTACT MATERIAL	TERMINAL PLATING	RATING	
B	YES	YES	GOLD	GOLD	LOW LEVEL/DRY CIRCUIT	0.4 VC MAX. @ 20 V AC or DC MAX.

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

TAPE & REEL



Third Angle Projection

Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

Snap-acting Product Selection Guide

Snap-acting





Snap-acting							
Series	TF	TFS	TF2	TM	LC	LCA	LCS
Switch Type	Miniature	Sealed Miniature	Sealed Miniature	Miniature	Subminiature Precision	Subminiature	Sealed Subminiature
Poles/Throws	SPST, SPDT	SPDT	SPDT	SPST, SPDT	SPST, SPDT	SPDT	SPST
Maximum Current	21 Amps	10 Amps	10 Amps	15 Amps	10.1 Amps	10 Amps	6 Amps
Terminations							
Solder	•		•	•	•	•	•
Turret							
Quick Connect	•	•	•	•	•	•	•
Screw			•	•			
Wire Leads		•			•		•
PC					•	•	•
Formed PC					•	•	
Extended Operations	•	•		•	•	•	
Sealed		•					•
Page No.	J-6	J-12 / J-16	J-20	J-26	J-32	J-36	J-40

Snap-acting								
Series	MM	ZM	ZMA	ZMB	ZMS	ZMSM	MDS	HB
Switch Type	Subminiature Precision	Subminiature	Subminiature	Subminiature	Sealed Subminiature	Sealed Subminiature	Subminiature	Standard Precision
Poles/Throws	SPDT	SPDT	SPDT	SPDT	SPDT	SPDT	SPDT	SPST, SPDT
Maximum Current	7 Amps	3 Amps	3 Amps	0.1 Amps	3 Amps	3 Amps	300 m Amps	20 Amps
Terminations								
Solder			•	•	•	•	•	•
Quick Connect								•
Wire Leads					•	•		
Screw								•
PCB Thru-hole	•	•	•	•	•	•	•	
Flat & Step Base								•
Bushing								15/32-32
Sealed					•	•		
Page No.	J-44	J-47	J-50	J-54	J-57	J-61	J-65	J-71



Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

Snap-acting Product Selection Guide

Snap-acting				
Series	A	TL	DS	LCB
Switch Type	General Purpose	Door Interlock	Door Interlock	Subminiature
Poles/Throws	SPST, SPDT, DP	SPDT	SPDT, DPDT	SPST, SPDT
Maximum Current	30.1 Amps	15 Amps	0.1, 10, 16A	5A
Terminations				
Solder				•
Quick Connect	•	•	•	•
Wire Leads				
Screw		•		
PCB Thru-hole				•
Flat & Step Base				
Bushing	3/8-23			
Page No.	J-77	J-82	J-85	J-88



Snap-acting






Snap-acting Technical Data

HOW TO CHOOSE PRECISION SNAP-ACTING SWITCHES AND ACTUATORS

This catalog describes electric switches that satisfy the following definition: "A precision snap-acting switch is a mechanically operated electric switch having predetermined and accurately controlled characteristics and having contacts other than blade-and-jaw, or mercury-type, where the maximum separation between any butting contacts is 1/8 inch."

In choosing a switch, the first thing to consider is its electrical rating. As a basic part of an electric control system, the switch must be able to carry the full load current in the system, to interrupt this current, and to handle any surge of current that may occur when the switch contacts close or any transients that occur when contacts open.

The method of applying mechanical force to operate the switch influences the choice of actuator. Basic switches are provided with leaf spring, levers, or other linkages between the switch plunger and the actuating device, which are typically used to provide additional overtravel and reduce the operating force. The differential travel measured at the free end of the leaf or lever is considerably greater than that measured at the switch plunger and max. operating force is adequately smaller. Table 1 relates types of actuators to means of applying operating force.

MOTION OF APPLIED OPERATING FORCES	ACTUATOR								
	Pin	Overtravel Plunger	Roller Plunger	Leaf	Roller Leaf	Hinged Lever	Hinged Roller Lever	Reverse-Acting Hinged Lever	Reverse-Acting Hinged Roller Lever
	Basic	D, Q, J	R	L	W	T	A	Y	F
 CAM Rotary			√	√	√	√	√	√ ¹	√ ¹
 LEVER Angular	√	√ ²	√ ²	√	√	√	√	√	√
 SLIDE Wedge			√		√		√		√
 PLUNGER In-Line	√ ³	√		√		√		√	
 BI-METAL or BELLOWS Slow In-Line	√	√							

√ Suitable for this actuating method.

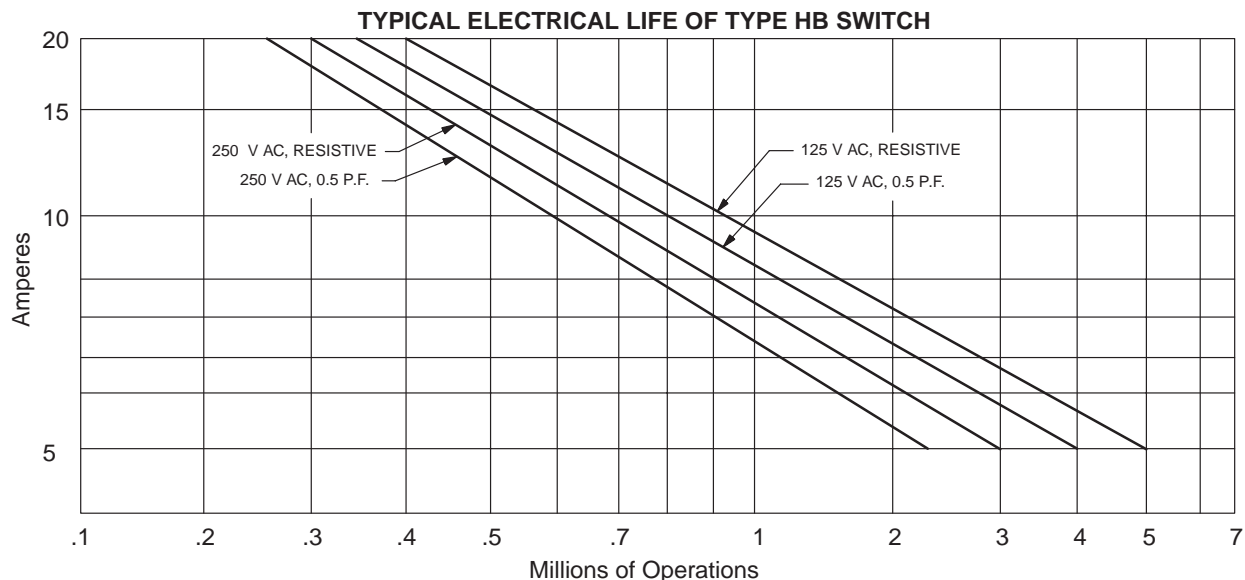
¹ Where large overtravel is required.

² Do not use when there is side thrust.

³ Use only where the actuating device contains provisions for absorbing excess over travel.

ELECTRICAL LIFE CHARACTERISTICS FOR SNAP-ACTING SWITCHES

The primary limitation to electrical life of a switch is wear of the contacts. In general, contacts wear out more quickly as current or voltage is increased and as power-factor is decreased. This is indicated by the graph below, which shows electrical life of switches tested under ordinary atmospheric conditions, operated 60 times a minute, with AC power handled on both the normally open and the normally closed contacts. The high inrush current encountered in lamp loads and in motor or other inductive loads is responsible for decreased contact life under such loading.



MECHANICAL LIFE CHARACTERISTICS FOR SNAP-ACTING SWITCHES

Fatigue of the internal spring blade is the limiting factor in the mechanical life of a switch. This fatigue can often be reduced and the life thereby extended, by reducing overtravel. One method is to use a leaf or lever actuator or a plunger containing an overtravel-absorbing spring. Tests on switches of the types covered in this catalog indicate that the mechanical life of a lever actuated switch is more than double that of a switch having the operating force applied directly on the pin.

Mechanical life is also affected by the combination of total travel and operating force. Thus a high-sensitivity switch which has small travel and light force, has about twice the life expectancy of a high current type switch, in which the travel/ force combination is relatively high. Experience indicates that million of operations is a reasonable mechanical life expectancy for a basic snap switch.

For the best mechanical life, the applied overtravel force should not exceed three times the operating force.

AC RATINGS FOR SNAP-ACTING SWITCHES

Switches used to control alternating current loads, up to the ratings shown in this catalog, will maintain repeatability of characteristics and provide long electrical life (refer to graph on page K-3). In special circumstances, higher currents or voltages may be controlled, but changes in performance must be anticipated.

Switches used to control "dry circuits" can be furnished, but factory recommendations should be secured.

DC RATINGS FOR SNAP-ACTING SWITCHES

To use the table below, determine the contact separation of the switch and select the ratings from the appropriate line. The maximum current rating must be limited to the current value listed for that switch type in the body of the catalog.

CONTACT SEPARATION	DIRECT CURRENT VOLTAGE	ACTUATOR				INDUCTIVE			
		Heater Load		Lamp Load (tungsten)		Motor, Relay, or Solenoid Load			
		Normally Open Contact	Normally Closed Contact	Normally Open Contact	Normally Closed Contact	Sea Level		50,000 Feet	
						Normally Open Contact	Normally Closed Contact	Normally Open Contact	Normally Closed Contact
Inches	Volts	Amperes	Amperes	Amperes	Amperes	Amperes	Amperes	Amperes	Amperes
.010	6-8	15.0	20.0	1.5	3.0	8.0	8.0	7.0	7.0
	12-14	15.0	20.0	1.5	3.0	5.0	5.0	5.0	5.0
	24-30	2.0	2.0	1.5	2.0	1.0	1.0	1.0	1.0
	110-115	0.4	0.4	0.4	0.4	0.03	0.03	0.02	0.02
	220-230	0.2	0.2	0.2	0.2	0.02	0.02	0.01	0.01
.020	6-8	15.0	20.0	1.5	3.0	15.0	20.0	15.0	15.0
	12-14	15.0	20.0	1.5	3.0	10.0	10.0	8.0	8.0
	24-30	6.0	6.0	1.5	2.0	5.0	5.0	2.0	2.0
	110-115	0.4	0.4	0.4	0.4	0.05	0.05	0.03	0.03
	220-230	0.2	0.2	0.2	0.2	0.03	0.03	0.02	0.02
.040	6-8	15.0	20.0	1.5	3.0	15.0	20.0	15.0	15.0
	12-14	15.0	20.0	1.5	3.0	15.0	20.0	15.0	15.0
	24-30	10.0	10.0	1.5	2.0	10.0	10.0	5.0	5.0
	110-115	0.6	0.6	0.6	0.6	0.1	0.1	0.05	0.05
	220-230	0.3	0.3	0.3	0.3	0.05	0.05	0.03	0.03
.070	6-8	15.0	20.0	1.5	3.0	15.0	20.0	15.0	15.0
	12-14	15.0	20.0	1.5	3.0	15.0	20.0	15.0	15.0
	24-30	15.0	20.0	1.5	2.0	10.0	10.0	7.5	7.5
	110-115	0.75	0.75	0.75	0.75	0.4	0.4	0.2	0.2
	220-230	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.1



Snap-acting

TF Series Miniature Snap-acting Switches



Features/Benefits

- Broad range of operating forces
- Ratings up to 21 AMPS
- Wide variety of actuator styles
- Quick connect terminations

Typical Applications

- Motor controls
- Thermostatics
- Portable tools



Specifications

CONTACT RATING: From low level* to 21 AMPS @ 277 V AC.

ELECTRICAL LIFE: 300,000 cycles at 10 AMPS @ 250 V AC, consult Customer Service Center for typical life of higher rated switches.

INSULATION RESISTANCE: 1,000 M ohm min.

DIELECTRIC STRENGTH: 1,500 Vrms min. @ sea level.

OPERATING TEMPERATURE: -40°F to 185°F (-40°C to 85°C).

OPERATING FORCE: From 15 to 400 grams at actuator button available.

MOUNTING: Torque screws 2-5 in/lbs.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max. Standard electrical life per UL 1054, rated for 6,000 operations.

Materials

SWITCH HOUSING: Thermoplastic (UL 94V-0).

ACTUATOR BUTTON: Thermoplastic (UL 94V-0).

SPRING: Copper alloy.

PIVOT: Brass alloy.

MOVABLE CONTACTS: Gold alloy for ratings 1 AMP or less.

Fine silver for ratings greater than 1 AMP up to 15 AMPS.

Precious metal alloy for ratings greater than 15 AMPS.

STATIONARY CONTACTS: Gold alloy for ratings 1 AMP or less.

Fine silver for ratings greater than 1 AMP.

TERMINALS: Brass alloy for ratings up to 10 AMPS.

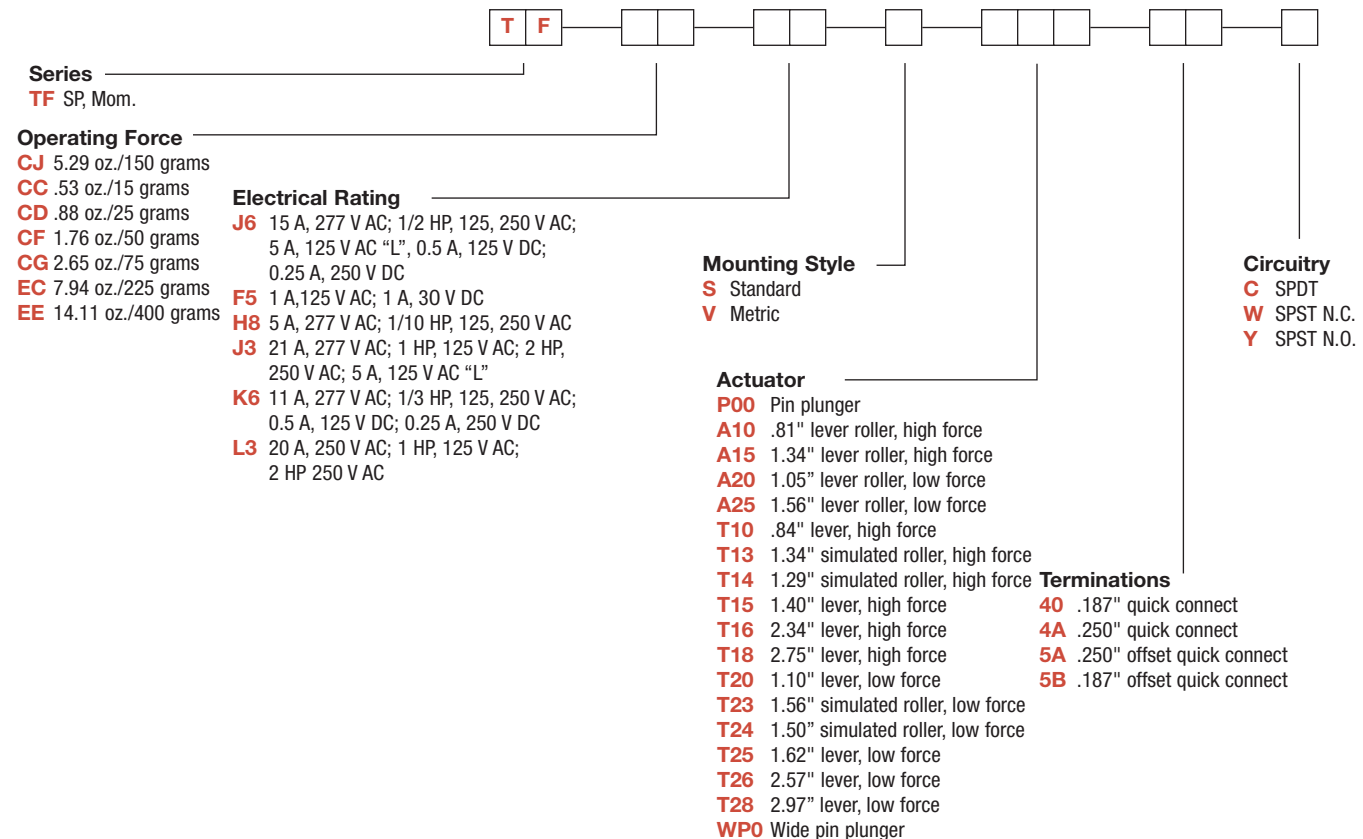
Copper alloy for ratings greater than 10 AMPS.

NOTE: Specifications and materials listed above are switches with standard options. For information on specific and custom switches, consult Customer Service Center.



Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-6 through J-11. For additional options not shown in catalog, consult Customer Service Center.

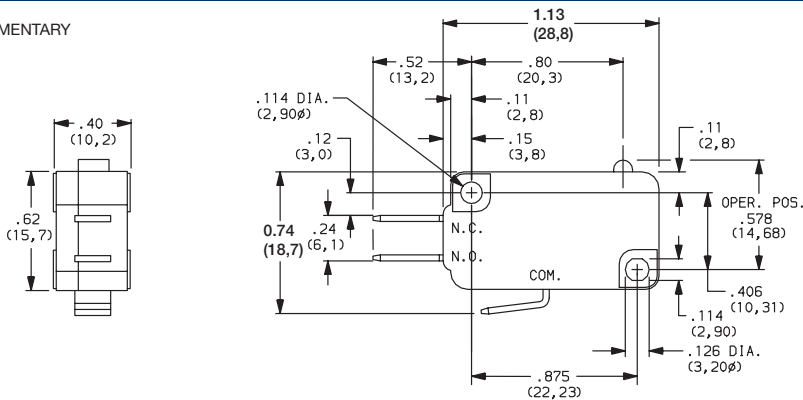


Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

TF Series Miniature Snap-acting Switches

SERIES

TF MINIATURE SNAP-ACTING SWITCHES – SP MOMENTARY

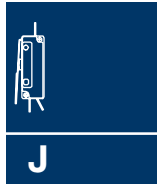


OPERATING FORCE

OPTION CODE	BASIC SWITCH OPERATING FORCE (OZ./GRAMS)
CC	.53 15
CD	.88 25
CF	1.76 50
CG	2.65 75
CJ	5.29 150
EC	7.94 225
EE*	14.11 400

*Minimums may apply, consult Customer Service Center.

Operating Force option 'CC' not available with 'T18 & T26' Actuator options.
Operating force varies with actuator option, see ACTUATOR option section.



Snap-acting

ELECTRICAL RATING

OPTION CODE	RoHS COMPLIANT *	RoHS COMPATIBLE *	CONTACT MATERIAL		ELECTRICAL RATING
			MOVABLE CONTACT	STATIONARY CONTACT	
F5	Yes	Yes	Gold alloy	Gold alloy	From low level* to 1 AMP @ 125 V AC, 1 AMP @ 30 V DC.
H8	Yes	Yes	Fine Silver	Fine Silver	5 AMPS @ 277 V AC; 1/10 HP @ 125 & 250 V AC.
J3	Yes	Yes			21 AMPS @ 277 V AC; 1 HP @ 125 V AC; 2 HP @ 250 V AC; 5 AMPS @ 125 V AC "L".
J6	Yes	Yes			15 AMPS @ 277 V AC; 1/2 HP @ 125 & 250 V AC; 5 AMPS @ 125 V AC "L". 0.5 AMP @ 125 V DC; 0.25 AMP @ 250 V DC.
K6	Yes	Yes			11 AMPS @ 277 V AC; 1/3 HP @ 125 & 250 V AC; 0.5 AMP @ 125 V DC; 0.25 AMP @ 250 V DC.
L3	Yes	Yes	Silver alloy		20 AMPS @ 250 V AC; 1 HP @ 125 V AC; 2 HP @ 250 V AC

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

All models

Consult Customer Service center for availability and delivery of nonstandard ratings.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.



Third Angle Projection

Dimensions are shown: Inches (mm)

Specifications and dimensions subject to change



TF Series Miniature Snap-acting Switches

ELECTRICAL RATING

ELECTRICAL RATING	AMPS (REF.)	OPERATING FORCE						
		CC (15)	CD (25)	CF (50)	CG (75)	CJ (150)	EC (225)	EE (400)
F5	1	•	•	•	•	•	•	
H8	5	•	•	•	•	•	•	•
J3	21	X	X	X	X	•	•	•
J6	15	X	X	X	X	•	•	•
K6	11	X	•	•	•	•	•	•
L3	20	X	X	X	X	•	•	•

- AVAILABLE
- X NOT AVAILABLE
- ** Available with 4A & 5A terminations only, see page J-10.

All models 

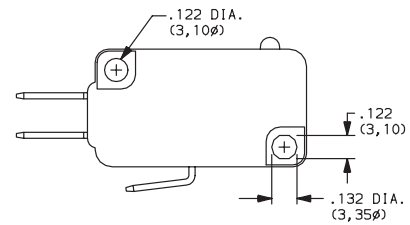
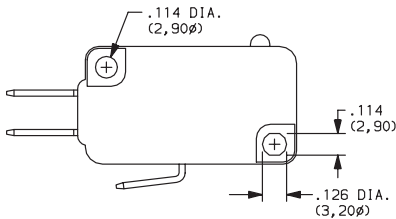
Consult Customer Service center for availability and delivery of nonstandard ratings.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

MOUNTING STYLE

S STANDARD
For 4-40 screw size

V Metric
For 3 mm screw size



Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

TF Series Miniature Snap-acting Switches

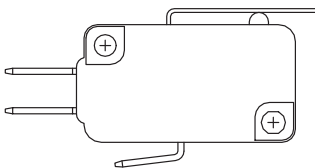
ACTUATOR 

SWITCH CHARACTERISTICS

OPTION CODE	MAXIMUM OPERATING FORCE (OZ./GRAMS)							MINIMUM RELEASE FORCE (OZ./GRAMS)							MAXIMUM DIFFERENTIAL TRAVEL	MAXIMUM PRETRAVEL	MINIMUM OVERTRAVEL
	CC (15)	CD (25)	CF (50)	CG (75)	CJ (150)	EC (225)	EE (400)	CC (15)	CD (25)	CF (50)	CG (75)	CJ (150)	EC (225)	EE (400)	ALL FORCES	ALL FORCES	ALL FORCES
A10	.63 18	1.06 30	2.29 65	3.17 90	6.35 180	7.94 225	14.11 400	.21 6	.35 10	.35 10	.53 15	.71 20	1.98 56	3.88 110	.015 (0,38)	.060 (1,52)	.030 (0,76)
A15	.28 8	.42 12	1.06 30	1.59 45	3 85	4.59 130	7.94 225	.07 2	.14 4	.14 4	.18 5	.35 10	.71 20	2.82 80	.030 (0,76)	.100 (2,54)	.065 (1,65)
A20	0.53 15	0.71 20	1.41 40	2.12 60	4.23 120	6 170	9.7 275	0.07 2	0.11 3	0.11 3	0.18 5	0.42 12	0.71 20	1.41 40	0.025 (0,64)	0.12 (3,05)	0.055 (1,40)
A25	.18 5	.28 8	.56 16	.85 24	1.69 48	2.65 75	4.41 125	.04 1	.07 2	.07 2	.07 2	.21 6	.35 10	.71 20	.050 (1,27)	.250 (6,35)	.120 (3,05)
P00	.53 15	.88 25	1.76 50	2.65 75	5.29 150	7.94 225	14.11 400	.21 6	.35 10	.35 10	.53 15	1.23 35	1.98 56	3.88 110	.010 (0,25)	.047 (1,19)	.050 (1,27)
T10	.63 18	1.06 30	2.29 65	3.17 90	6.35 180	7.94 225	14.11 400	.21 6	.35 10	.35 10	.53 15	.71 20	1.98 56	3.88 110	.015 (0,38)	.060 (1,52)	.030 (0,76)
T13	.28 8	.42 12	1.06 30	1.59 45	3 85	4.59 130	7.94 225	.07 2	.14 4	.14 4	.18 5	.35 10	.71 20	2.82 80	.030 (0,76)	.100 (2,54)	.065 (1,65)
T14	.28 8	.42 12	1.23 35	1.76 50	3.17 90	4.76 135	7.94 225	.07 2	.14 4	.14 4	.18 5	.35 10	.71 20	2.82 80	.030 (0,76)	.100 (2,54)	.060 (1,52)
T15	.25 7	.42 12	1.06 30	1.41 40	2.82 80	4.41 125	7.94 225	.07 2	.14 4	.14 4	.18 5	.28 8	.63 18	2.82 80	.030 (0,76)	.110 (2,79)	.065 (1,65)
T16	.18 5	.28 8	.53 15	.78 22	1.59 45	2.47 70	4.23 120	.04 1	.07 2	.07 2	.07 2	.28 8	.35 10	.71 20	.045 (1,14)	.250 (6,35)	.125 (3,18)
T18	N/A	.21 6	.42 12	.71 20	1.41 40	2.12 60	3.53 100	N/A	.04 1	.04 1	.07 2	.18 5	.28 8	.56 16	.062 (1,57)	.300 (7,62)	.155 (3,94)
T20	.53 15	.71 20	1.41 40	2.12 60	4.23 120	6 170	9.70 275	.21 6	.35 10	.35 10	.53 15	.71 20	1.98 56	3.88 110	.030 (0,76)	.140 (3,56)	.060 (1,52)
T23	.18 5	.28 8	.56 16	.85 24	1.69 48	2.65 75	4.41 125	.04 1	.07 2	.07 2	.07 2	.21 6	.35 10	.71 20	.050 (1,27)	.250 (6,35)	.120 (3,05)
T24	0.18 5	0.28 8	0.56 16	0.88 25	1.76 50	2.65 75	4.76 135	0.04 1	0.07 2	0.07 2	0.11 3	0.21 6	0.35 10	0.71 20	.005 (1,27)	0.23 (5,84)	0.11 (2,79)
T25	.18 5	.28 8	.53 15	.88 25	1.59 45	2.47 70	4.23 120	.04 1	.07 2	.07 2	.07 2	.21 6	.35 10	.99 28	.055 (1,40)	.250 (6,35)	.125 (3,18)
T26	N/A	.14 4	.28 8	.42 12	.85 24	1.27 36	2.26 64	N/A	.04 1	.04 1	.05 1.5	.12 3.5	.21 6	.39 11	.100 (2,54)	.500 (12,70)	.235 (5,97)
T28	N/A	N/A	N/A	0.42 12	0.71 20	1.06 30	1.94 55	N/A	N/A	N/A	0.04 1	0.11 3	0.18 5	0.32 9	0.12 (3,05)	.0560 (14,22)	0.285 (7,24)
WP0	.53 15	.88 25	1.76 50	2.65 75	5.29 150	7.94 225	14.11 400	.21 6	.35 10	.35 10	.53 15	1.23 35	1.97 56	3.88 110	.010 (0,25)	.047 (1,19)	.030 (0,51)

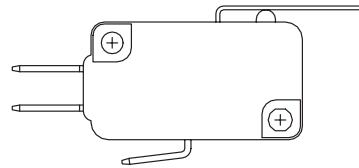
NOTE: For basic switch operating forces, see page J-6.

HIGH FORCE, LOW MOTION PIVOT POSITION



Available with actuators A10, A15, T10, T13, T14, T15, T16 and T18.

LOW FORCE, HIGH MOTION PIVOT POSITION



Available with actuators A20, A25, T20, T23, T24, T25, T26, and T28.

NOTE: Lever actuator options are available in either of two pivot positions. Levers located in the forward pivot position have lower forces and higher motions. Levers located in the rear pivot position have higher forces and lower motions.



Third Angle Projection

Dimensions are shown: Inch (mm)

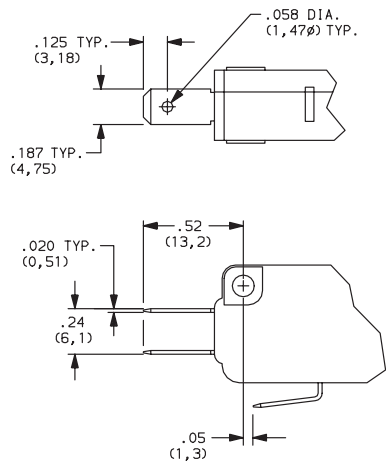
Specifications and dimensions subject to change



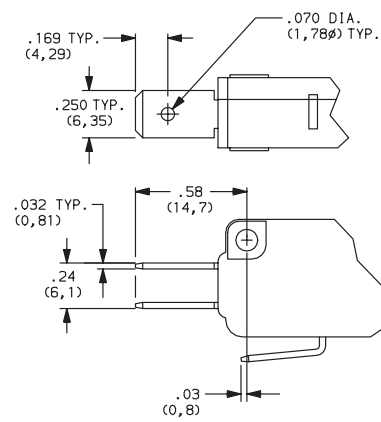
TF Series Miniature Snap-acting Switches

TERMINATIONS

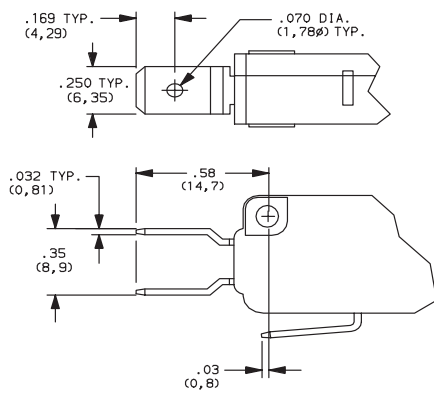
40 .187" QUICK CONNECT



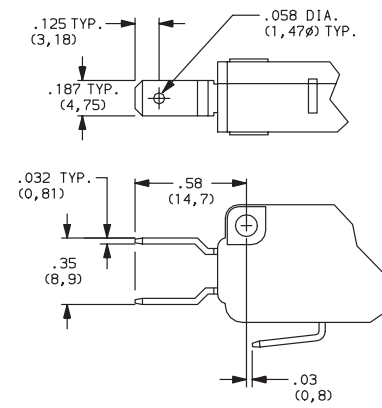
4A .250" QUICK CONNECT



5A OFFSET .250" QUICK CONNECT

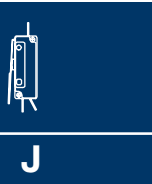


5B OFFSET .187" QUICK CONNECT

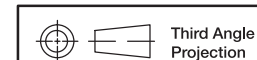


CIRCUITRY

- C** SPDT (Single Pole, Double Throw)
- W** SPST N.C. (Single Pole, Single Throw, Normally Closed)
- Y** SPST N.O. (Single Pole, Single Throw, Normally Open)



Snap-acting



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

TFS Series Splash Proof Miniature Snap-acting Switches



Features/Benefits

- **Reliable snap action mechanism**
- **Low cost - high performance**
- **RoHS compatible**

Typical Applications

- **Alarm devices / Home security**
- **Air conditioner**
- **Food processor**
- **Water heaters**
- **Industrial**
- **Forklifts**

UL61058-1  

Specifications

CONTACT RATING / ELECTRICAL LIFE:

- 0.1A @ 125/250 V AC / 10,000 operations
- 3A @ 125/250 VAC / 10,000 operations
- 6A @ 125/250 VAC / 10,000 operations
- 10A @ 125/250 VAC / 10,000 operations

ELECTRICAL OPERATING FREQUENCY: 10-30 operations per min.

MECHANICAL LIFE: 1,000,000 operations

MECHANICAL OPERATING FREQUENCY: 120 operations per min.

INSULATION RESISTANCE: (at 500 VDC/minute) 100 M ohm min.

DIELECTRIC STRENGTH: 1500 VAC (50 -60 Hz)

OPERATING TEMPERATURE: -40°C to 85°C (with no icing)

OPERATING FORCE: 200 grams.

Materials

CASE: Nylon

COVER: PBT

ACTUATOR: PBT

MOVABLE CONTACTS: Silver alloy

TERMINALS: Brass

LEVER: Stainless steel

WIRE: PVC+CU

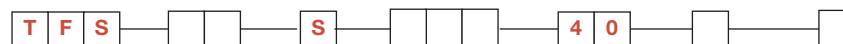
NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.



Snap-acting

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-12 thru J-15. For additional options not shown in catalog, consult Customer Service Center.



Electrical Rating

ELECTRICAL RATING	AMPS (GRAMS)	OPERATING FORCE				
		S (200)	D (50)	J (100)	L (150)	H (300)
01	0.1	•	•	•	•	•
03	3	•	•	•	•	•
06	6	•	•	•	•	•
10	10	•	X	X	X	•

- Available
- X Not available

Operating Force

- S** 200 grams
- D** 50 grams
- J** 100 grams
- L** 150 grams
- H** 300 grams

Actuator Lever Fixed

- P00** Button
- T10** Lever - high force
- T20** Lever - low force
- A05** Lever roller - High force, short lever
- A10** Lever roller - high force
- A20** Lever roller - low force
- A25** Lever roller - Low force, short lever

Circuit Arrangement

- C** SPDT
- Y** SPST N.O.
- W** SPST N.C.

Mounting Hole Size

- NONE** 3.1 mm (3 mm screw clearance hole)
- S** 2.9 mm (4-40 screw clearance hole)

Terminal Type

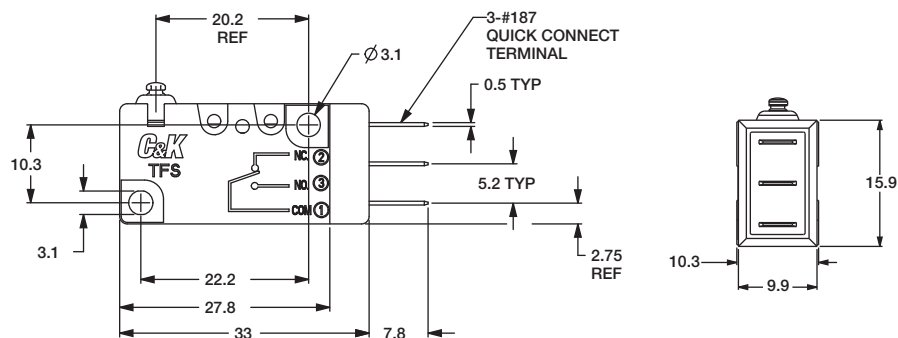
- 40** .187" quick connect



TFS Series Splash Proof Miniature Snap-acting Switches

SERIES

TFS SUB-MINIATURE SNAP-ACTING SWITCHES



ELECTRICAL RATING

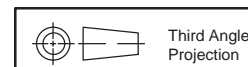
OPTION CODE	RoHS COMPLIANT	RoHS COMPATIBLE	ELECTRICAL RATING
10	Yes	Yes	10A @ 125/250 V AC / 10,000 operations
06	Yes	Yes	6A @ 125/250 VAC / 10,000 operations
03	Yes	Yes	3A @ 125/250 VAC / 10,000 operations
01	Yes	Yes	0.1A @ 125/250 VAC / 10,000 operations



Snap-acting

OPERATING FORCE

OPTION CODE	BASIC SWITCH OPERATING FORCE
S	200 GRAMS
D	50 grams
J	100 grams
L	150 grams
H	300 grams

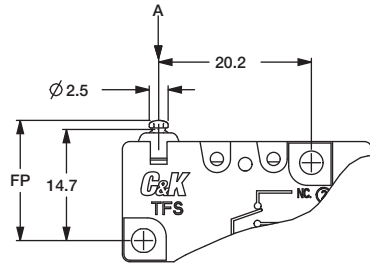


Dimensions are shown: mm
Specifications and dimensions subject to change

TFS Series Splash Proof Miniature Snap-acting Switches

ACTUATOR

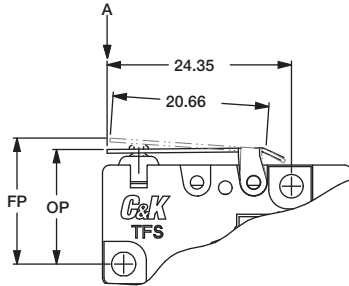
P00 BUTTON



Measure at Point "A"

Max. operating force	200 grams
Min. release force	30 grams
Operating position OP	14.7 ± 0.4 mm
Max. movement differential	0.4 mm
Min. over travel OT	1.0 mm
Max. pre-travel PT	1.2 mm

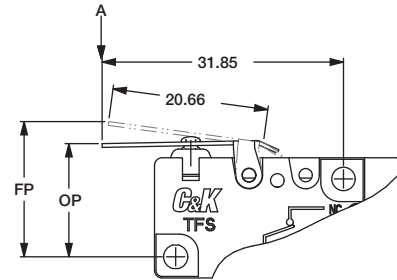
T10 LEVER, HIGH FORCE



Measure at Point "A"

Max. operating force	160 grams
Min. release force	25 grams
Operating position OP	15.1 ± 0.6 mm
Max. movement differential	0.6 mm
Min. over travel OT	1.1 mm
Max. pre-travel PT	2.6 mm

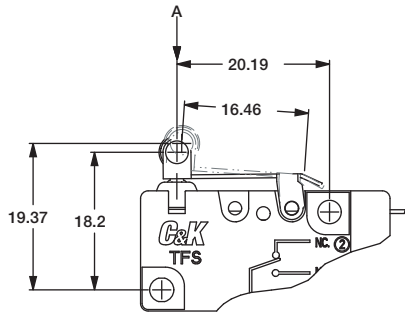
T20 LEVER, LOW FORCE



Measure at Point "A"

Max. operating force	90 grams
Min. release force	10 grams
Operating position OP	15 ± 1.1 mm
Max. movement differential	1.1 mm
Min. over travel OT	1.2 mm
Max. pre-travel PT	5.1 mm

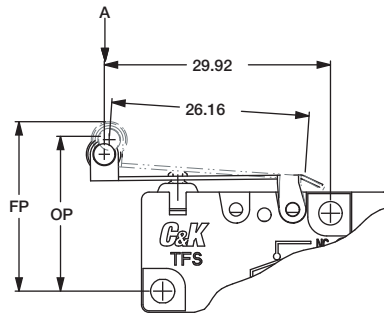
A05 LEVER ROLLER
HIGH FORCE, SHORT LEVER



Measure at Point "A"

Max. operating force	200 grams
Min. release force	30 grams
Operating position OP	20.6 ± 0.5 mm
Max. movement differential	0.5 mm
Min. over travel OT	1.0 mm
Max. pre-travel PT	2.1 mm

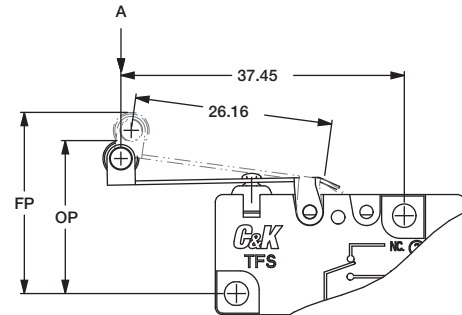
A10 LEVER ROLLER
HIGH FORCE



Measure at Point "A"

Max. operating force	130 grams
Min. release force	20 grams
Operating position OP	20.4 ± 0.7 mm
Max. movement differential	0.7 mm
Min. over travel OT	1.3 mm
Max. pre-travel PT	3.3 mm

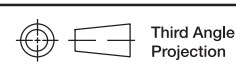
A20 LEVER ROLLER
LOW FORCE



Measure at Point "A"

Max. operating force	70 grams
Min. release force	10 grams
Operating position OP	20.2 ± 1.2 mm
Max. movement differential	1.4 mm
Min. over travel OT	1.5 mm
Max. pre-travel PT	6.5 mm

Snap-acting



Third Angle
Projection

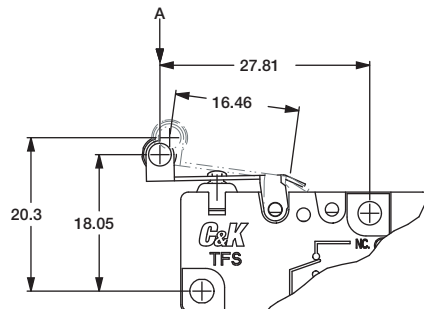
Dimensions are shown: mm
Specifications and dimensions subject to change



TFS Series Splash Proof Miniature Snap-acting Switches

ACTUATOR

A25 LEVER ROLLER
LOW FORCE, SHORT LEVER

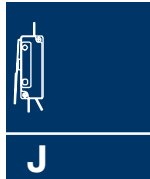
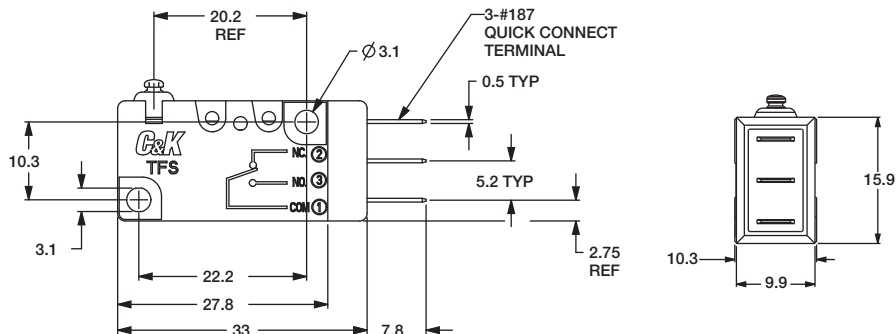


Measure at Point "A"

Max. operating force	150 grams
Min. release force	15 grams
Operating position OP	20.4 ± 0.9 mm
Max. movement differential	0.9 mm
Min. over travel OT	1.2 mm
Max. pre-travel PT	4.2 mm

TERMINAL TYPE

40 .187" QUICK CONNECT



Snap-acting

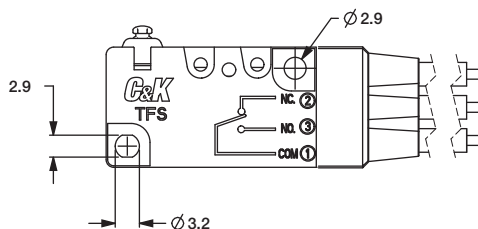
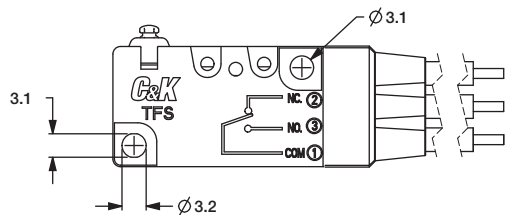
CIRCUITRY

- C** SPDT (Single Pole, Double Throw)
- Y** SPST N.O. (Single Pole, Single Throw, Normally Open)
- W** SPST N.C. (Single Pole, Single Throw, Normally Closed)

MOUNTING HOLE SIZE

NONE 3.1 mm (3mm SCREW CLEARANCE HOLE)

S 2.9 mm (4-40 SCREW CLEARANCE HOLE)



Third Angle
Projection
Dimensions are shown: mm
Specifications and dimensions subject to change

C&K

TFS Series Sealed Miniature Snap-acting Switches (Water Proof)



Features/Benefits

- IP67
- Reliable snap action mechanism
- Low cost - high performance
- RoHS compatible

Typical Applications

- Alarm devices / Home security
- Air conditioner
- Food processor
- Water heaters
- Industrial
- Forklifts

UL61058-1



Specifications

CONTACT RATING / ELECTRICAL LIFE:

- 0.1A @ 125/250 V AC / 10,000 operations
- 3A @ 125/250 VAC / 10,000 operations
- 6A @ 125/250 VAC / 10,000 operations
- 10A @ 125/250 VAC / 10,000 operations

ELECTRICAL OPERATING FREQUENCY: 10-30 operations per min.

MECHANICAL LIFE: 1,000,000 operations

MECHANICAL OPERATING FREQUENCY: 120 operations per min.

INSULATION RESISTANCE: (at 500 VDC/minute) 100 M ohm min.

DIELECTRIC STRENGTH: 1500 VAC (50 -60 Hz)

OPERATING TEMPERATURE: see wire type

OPERATING FORCE: 200 grams.

Materials

CASE: Nylon

COVER: PBT

ACTUATOR: PBT

MOVABLE CONTACTS: Silver alloy.

TERMINALS: Brass.

LEVER: Stainless steel

WIRE: PVC+CU

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Snap-acting

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-17 thru J-19. For additional options not shown in catalog, consult Customer Service Center.

Build-A-Switch diagram showing options for:

- Electrical Rating:** T, F, S (see chart below)
- Operating Force:** S (200 grams), D (50 grams), J (100 grams), L (150 grams), H (300 grams)
- Actuator Lever Fixed:** P00 (Button), T10 (Lever - high force), T20 (Lever - low force), A05 (Lever roller - High force, short lever), A10 (Lever roller - high force), A20 (Lever roller - low force), A25 (Lever roller - Low force, short lever)
- Terminal Type:** W (Wire)
- Circuit Arrangement:** C (SPDT), Y (SPST N.O.), W (SPST N.C.)
- Wire UL #:** B (UL1015 (T55))
- Wire Type:** C (16 AWG), D (18 AWG), E (20 AWG), F (22 AWG), G (24 AWG), H (26 AWG)
- Mounting Hole Size:** NONE (3.1 mm (3 mm screw clearance hole)), S (2.9 mm (4-40 screw clearance hole))
- OPERATING TEMPERATURE:** -40°C to + 85°C (with UL1015 wire)

ELECTRICAL RATING	AMPS	WIRE TYPE				
		C 16AWG	D 18AWG	E 20AWG	F 22AWG	G 24AWG H 26AWG
01	0.1	•	•	•	•	•
03	3	•	•	•	X	X
06	6	•	•	X	X	X
10	10	•	X	X	X	X

• Available
X Not available

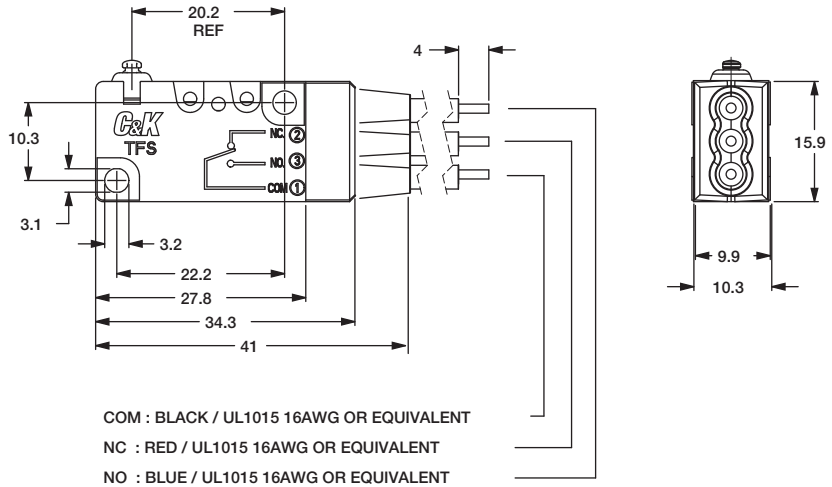


Dimensions are shown: mm
Specifications and dimensions subject to change

TFS Series Sealed Miniature Snap-acting Switches (Water Proof)

SERIES

TFS SUB-MINIATURE SNAP-ACTING SWITCHES – WATERPROOF

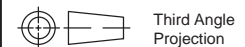


ELECTRICAL RATING

OPTION CODE	RoHS COMPLIANT	RoHS COMPATIBLE	ELECTRICAL RATING
10	Yes	Yes	10A @ 125/250 V AC / 10,000 operations
06	Yes	Yes	6A @ 125/250 VAC / 10,000 operations
03	Yes	Yes	3A @ 125/250 VAC / 10,000 operations
01	Yes	Yes	0.1A @ 125/250 VAC / 10,000 operations

OPERATING FORCE

OPTION CODE	BASIC SWITCH OPERATING FORCE
S	200 GRAMS
D	50 grams
J	100 grams
L	150 grams
H	300 grams



Third Angle
Projection

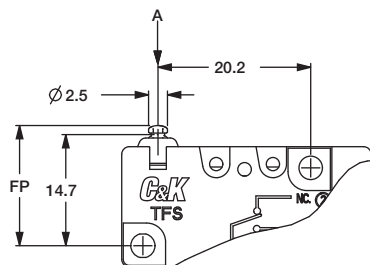
Dimensions are shown: mm
Specifications and dimensions subject to change



TFS Series Sealed Miniature Snap-acting Switches (Water Proof)

ACTUATOR

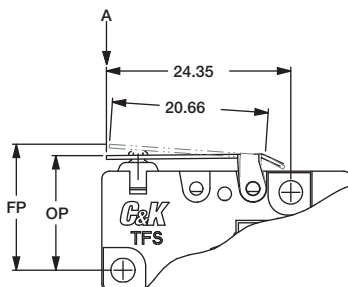
P00 BUTTON



Measure at Point "A"

Max. operating force	200 grams
Min. release force	30 grams
Operating position OP	14.7 ± 0.4 mm
Max. movement differential	0.4 mm
Min. over travel OT	1.0 mm
Max. pre-travel PT	1.2 mm

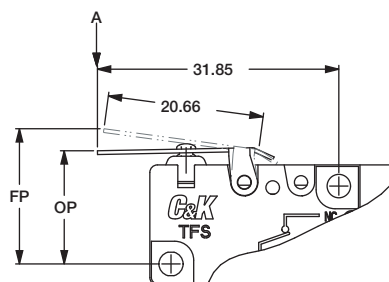
T10 LEVER, HIGH FORCE



Measure at Point "A"

Max. operating force	160 grams
Min. release force	25 grams
Operating position OP	15.1 ± 0.6 mm
Max. movement differential	0.6 mm
Min. over travel OT	1.1 mm
Max. pre-travel PT	2.6 mm

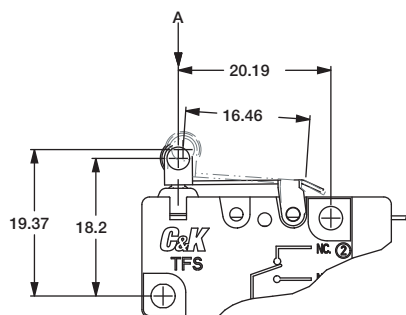
T20 LEVER, LOW FORCE



Measure at Point "A"

Max. operating force	90 grams
Min. release force	10 grams
Operating position OP	15 ± 1.1 mm
Max. movement differential	1.1 mm
Min. over travel OT	1.2 mm
Max. pre-travel PT	5.1 mm

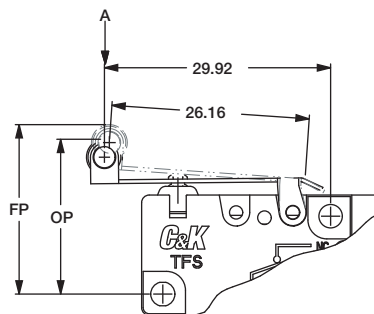
A05 LEVER ROLLER
HIGH FORCE, SHORT LEVER



Measure at Point "A"

Max. operating force	200 grams
Min. release force	30 grams
Operating position OP	20.6 ± 0.5 mm
Max. movement differential	0.5 mm
Min. over travel OT	1.0 mm
Max. pre-travel PT	2.1 mm

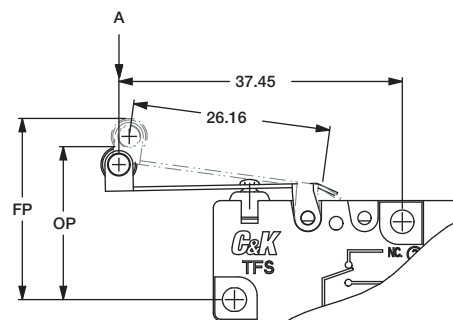
A10 LEVER ROLLER
HIGH FORCE



Measure at Point "A"

Max. operating force	130 grams
Min. release force	20 grams
Operating position OP	20.4 ± 0.7 mm
Max. movement differential	0.7 mm
Min. over travel OT	1.3 mm
Max. pre-travel PT	3.3 mm

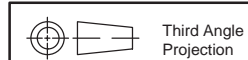
A20 LEVER ROLLER
LOW FORCE



Measure at Point "A"

Max. operating force	70 grams
Min. release force	10 grams
Operating position OP	20.2 ± 1.2 mm
Max. movement differential	1.4 mm
Min. over travel OT	1.5 mm
Max. pre-travel PT	6.5 mm

Snap-acting



Third Angle
Projection

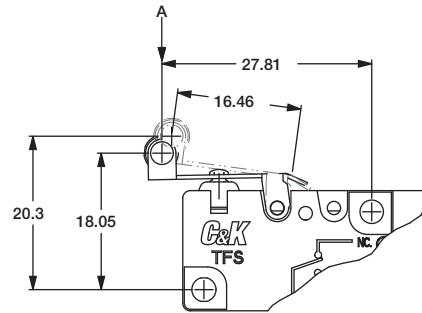
Dimensions are shown: (mm)
Specifications and dimensions subject to change

C&K

TFS Series Sealed Miniature Snap-acting Switches (Water Proof)

ACTUATOR

A25 LEVER ROLLER
LOW FORCE, SHORT LEVER

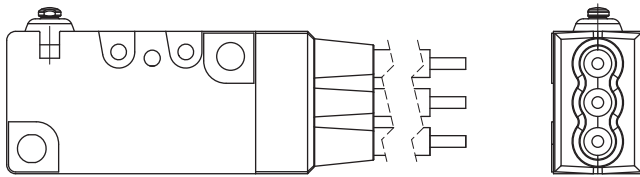


Measure at Point "A"

Max. operating force	150 grams
Min. release force	15 grams
Operating position OP	20.4 ± 0.9 mm
Max. movement differential	0.9 mm
Min. over travel OT	1.2 mm
Max. pre-travel PT	4.2 mm

TERMINAL TYPE

W WIRE UL1015



CIRCUITRY

- C** SPDT (Single Pole, Double Throw)
- Y** SPST N.O. (Single Pole, Single Throw, Normally Open)
- W** SPST N.C. (Single Pole, Single Throw, Normally Closed)

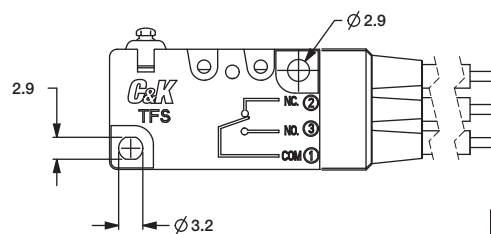
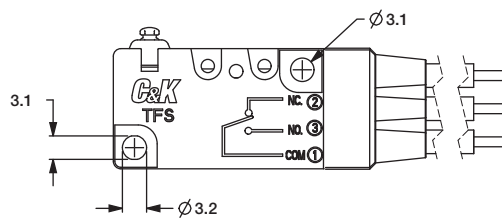
WIRE TYPE

- C** 16 AWG
- D** 18 AWG
- E** 20 AWG
- F** 22 AWG
- G** 24 AWG
- H** 26 AWG

MOUNTING HOLE SIZE

NONE 3.1 mm (3mm SCREW CLEARANCE HOLE)

S 2.9 mm (4-40 SCREW CLEARANCE HOLE)



Dimensions are shown: (mm)
Specifications and dimensions subject to change

C&K

TF2 Series Miniature Snap-acting Switches



Features/Benefits

- Broad range of operating forces
- Ratings up to 10 AMPS
- Wide variety of actuator styles
- Quick connect terminations

Typical Applications

- Motor controls
- Thermostatics
- Portable tools
- Air Conditioner



Specifications

CONTACT RATING: From low level* to 10 AMPS @125/250 V AC.
 ELECTRICAL LIFE: 10,000 cycles
 MECHANICAL LIFE: 1,000,000 cycles at 0.1A and 6A
 400,000 cycles at 10A
 INSULATION RESISTANCE: 1,000 M ohm min.
 DIELECTRIC STRENGTH: 1,500 Vrms min. @ sea level.
 OPERATING TEMPERATURE: -40°C to 125°C (-40°C to 85°C).
 OPERATING FORCE: From 18 to 330 grams at actuator button available.
 MOUNTING: Torque screws 2-5 in/lbs.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max. Standard electrical life per UL 1054, rated for 6,000 operations.

Materials

SWITCH HOUSING: Nylon 6/6
 ACTUATOR BUTTON: Nylon 6/6
 SPRING: Stainless Steel
 PIVOT: Brass Alloy
 MOVABLE CONTACTS: See electric rating page J-21
 MOVABLE BLADE: BeCu
 STATIONARY CONTACTS: See electric rating page J-21
 TERMINALS: Brass Alloy

NOTE: Specifications and materials listed above are switches with standard options. For information on specific and custom switches, consult Customer Service Center.



Snap-acting

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-21 through J-25. For additional options not shown in catalog, consult Customer Service Center.

Series **TF2** SP, Mom.

Operating Force
CC 18 grams
CF 45 grams
CG 75 grams
CH 110 grams
CJ 170 grams
EC 230 grams
EE 330 grams

Electrical Rating Chart

OPTION CODE	UL US 61058-1	ENEC 15
F5	0.1A 125/250 V AC (T85) Min. 10,000 operations	0.1A 125/250 V AC μT125, 1E4
H8	6A 125/250 V AC (T85) Min. 10,000 operations	6A 125/250 V AC μT125, 1E4
K6	10A 125/250 V AC (T85) Min. 10,000 operations	10(4)A 125/250 V AC μT125, 1E4

Mounting Style
S Standard
V Metric

Actuator
P00 Pin plunger
A10 Lever roller 12.5 mm
A15 Lever roller 25.9 mm
A20 Lever roller 12.5 mm
A25 Lever roller 25.9 mm
T10 Lever 14 mm
T14 Simulated roller 24.5 mm
T15 Lever 27.5 mm
T16 Lever 31.7 mm
T17 Lever 35 mm
T20 Lever 14 mm
T24 Simulated lever 24.5 mm
T25 Lever 27.5 mm
T26 Lever 31.7 mm
T27 Lever 35 mm

Circuitry
C SPDT
W SPST N.C.
Y SPST N.O.

* Note: No UL & ENEC 15 safety for Termination option "60"

Terminations
40 .187" quick connect
4A .250" quick connect
5A .250" off set quick connect
5B .187" off set quick connect
60 Screw style *
10 Solder

see chart on following pages for detailed information

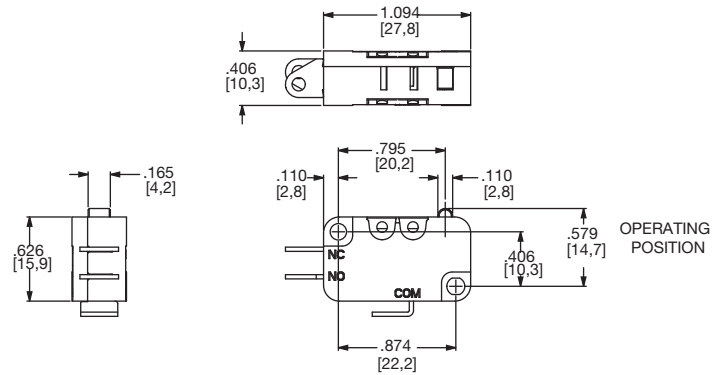


Dimensions are shown: mm
 Specifications and dimensions subject to change

TF2 Series Miniature Snap-acting Switches

SERIES

TF2 MINIATURE SNAP-ACTING SWITCHES



OPERATING FORCE

OPTION CODE	BASIC SWITCH OPERATING FORCE (grams)
CC	18
CF	45
CG	75
CH	110
CJ	170
EC	230
EE*	330

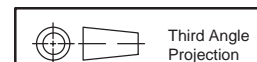
*Minimums may apply, consult Customer Service Center.

ELECTRICAL RATING

OPTION CODE	CONTACT MATERIAL		MOVABLE CONTACT	STATIONARY CONTACT
	RoHS COMPLIANT *	RoHS COMPATIBLE *		
F5	Yes	Yes	Silver alloy	Silver alloy
H8	Yes	Yes		
K6	Yes	Yes		

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

All models  



Dimensions are shown: inches (mm)
Specifications and dimensions subject to change

www.ck-components.com



TF2 Series Miniature Snap-acting Switches

ELECTRICAL RATING

INTERNATIONAL RATING SYMBOLS	
μ	Microgap construction (less than 3 mm).
~	Alternating current.
T__	Maximum rated use temperature.
50E3	Cycles over 50,000 at rated current.
10E3	Cycles over 10,000 at rated current.
10(3)	Current Rating: First number represents resistive rating; second number represents inductive (motor) rating.

ELECTRICAL RATING	AMPS (REF.)	OPERATING FORCE						
		CC (18)	CF (45)	CG (75)	CH (110)	CJ (170)	EC (230)	EE (330)
F5	0.1	•	•	•	•	•	•	X
H8	6	X	•	•	•	•	•	•
K6	10	X	X	X	•	•	•	•

• AVAILABLE
X NOT AVAILABLE



Snap-acting

All models

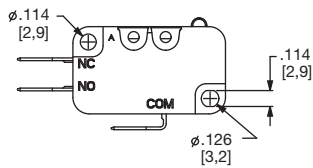
Consult Customer Service center for availability and delivery of nonstandard ratings.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

MOUNTING STYLE

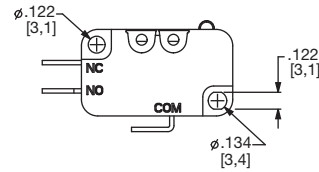
S STANDARD
For 4-40 screw size

V Metric
For 3 mm screw size



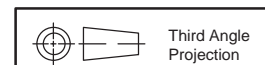
TF2 SWITCH WITH TYPE 40 (.187 QC) TERMINALS AND P00 ACTUATOR SHOWN

NOTE: TORQUE MOUNTING SCREWS 2-5 IN/LBS.



TF2 SWITCH WITH TYPE 10 (SOLDER) TERMINALS AND P00 ACTUATOR SHOWN

NOTE: TORQUE MOUNTING SCREWS 2-5 IN/LBS.



Dimensions are shown: inches (mm)
Specifications and dimensions subject to change

TF2 Series Miniature Snap-acting Switches

ACTUATOR

OPTION CODE	FIG	DIM. A	DIM. B	DIM. C	DIM. D	DIM. E
P00	2	.795 (20,2)	-	.578 ± .019 (14,70 ± 0,05)	0.068 (1,72)	-
A10	1	.822 (20,9)	.33 (8,4)	.816 ± .050 (20,73 ± 1,27)	.106 (2,70)	∅.19 (∅ 4,8)
A15	1	1.35 (34,3)	.33 (8,4)	.816 ± .059 (20,73 ± 1,5)	.165 (4,20)	∅.19 (∅ 4,8)
A20	1	1.05 (26,8)	.56 (14,3)	.816 ± .050 (20,73 ± 1,27)	.183 (4,65)	∅.19 (∅ 4,8)
A25	1	1.58 (40,2)	.56 (14,3)	.816 ± .086 (20,73 ± 2,2)	.366 (9,30)	∅.19 (∅ 4,8)
T10	3	.882 (22,39)	.33 (8,4)	.602 ± .020 (15,3 ± 0,50)	.110 (2,80)	-
T14	4	1.295 (32,9)	.33 (8,4)	.737 ± .059 (18,72 ± 1,5)	.216 (5,50)	∅.275 (∅ 7,0)
T15	3	1.405 (35,69)	.33 (8,4)	.600 ± .059 (15,24 ± 1,5)	.232 (5,90)	-
T16	3	1.58 (40,01)	.33 (8,4)	.604 ± .068 (15,35 ± 1,75)	.196 (5,0)	-
T17	3	1.708 (43,39)	.33 (8,4)	.603 ± .062 (15,33 ± 1,57)	.216 (5,50)	-
T20	3	1.11 (28,3)	.56 (14,3)	.604 ± .045 (15,34 ± 1,14)	.204 (5,20)	-
T24	4	1.527 (38,8)	.56 (14,3)	.742 ± .090 (18,84 ± 2,29)	.342 (8,70)	∅.275 (∅ 7,0)
T25	3	1.631 (41,43)	.56 (14,3)	.609 ± .090 (15,47 ± 2,3)	.381 (9,70)	-
T26	3	1.811 (46,00)	.56 (14,3)	.616 ± .125 (15,65 ± 3,18)	.389 (9,90)	-
T27	3	1.94 (49,3)	.56 (14,3)	.598 ± .150 (15,2 ± 3,8)	.433 (11,0)	-

NOTE: Switch characteristics chart on following page.

Lever Roller

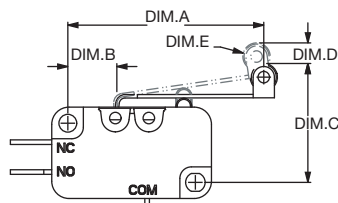


FIG. 1
LEVER ROLLER
TF2XXXXMA1510C

Pin Roller

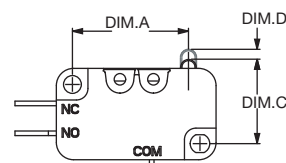


FIG. 2
PIN ROLLER
TF2XXXXMP0010C

Lever

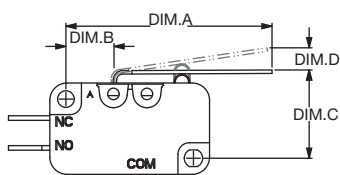


FIG. 3
LEVER
TF2XXXXST1510C SHOWN

Simulated Roller

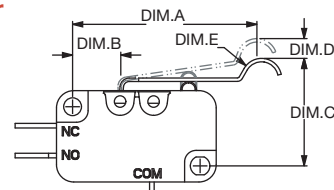


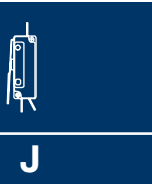
FIG. 4
SIMULATED ROLLER
TF2XXXXST1410C



Third Angle
Projection

Dimensions are shown: inches (mm)
Specifications and dimensions subject to change

C&K

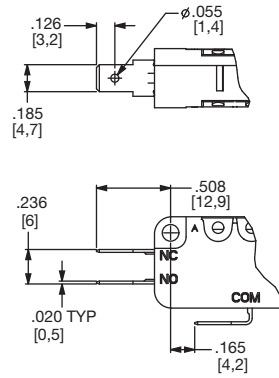


Snap-acting

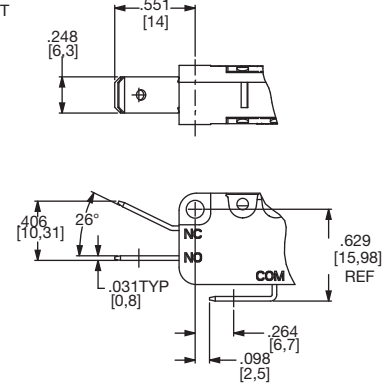
TF2 Series Miniature Snap-acting Switches

TERMINATIONS

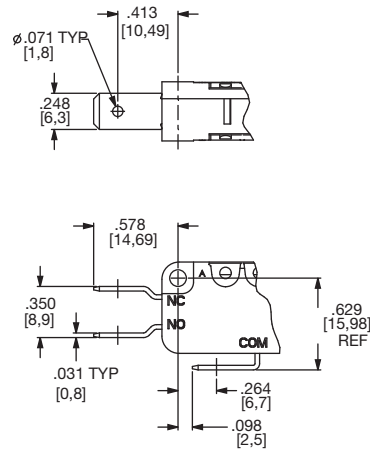
40 .187" QUICK CONNECT



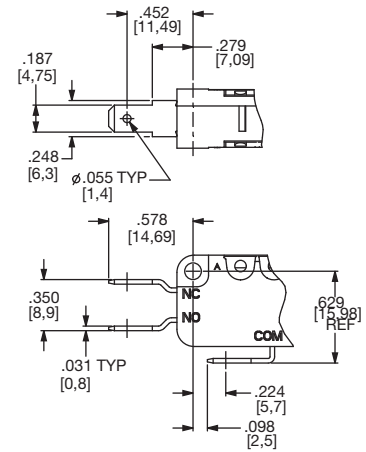
4A .250" QUICK CONNECT



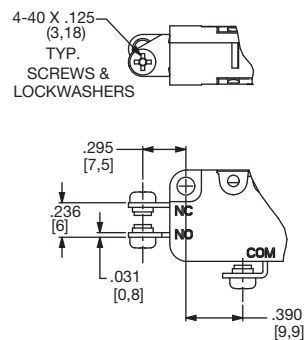
5A .250" OFF SET QUICK CONNECT



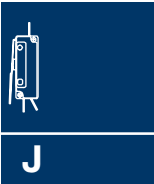
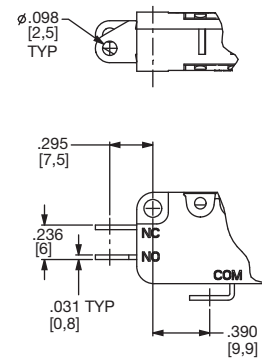
5B .187" OFF SET QUICK CONNECT



60 SCREW STYLE



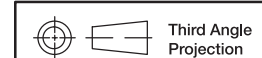
10 SOLDER



Snap-acting

CIRCUITRY

- C** SPDT (Single Pole, Double Throw)
- W** SPST N.C. (Single Pole, Single Throw, Normally Closed)
- Y** SPST N.O. (Single Pole, Single Throw, Normally Open)



Third Angle
Projection
Dimensions are shown: inches (mm)
Specifications and dimensions subject to change

C&K

TM Series Miniature Snap-acting Switches



Features/Benefits

- Broad range of operating forces available
- Wide variety of actuator and terminal styles
- Cost-effective solution

Typical Applications

- Pumps and motors
- White goods
- Consumer appliances



Specifications

CONTACT RATING: From low level* to 15 AMPS @ 250 V AC.
 ELECTRICAL LIFE: 150,000 cycles at 15 AMPS @ 250 V AC, models with 150 grams operating force. 350,000 cycles at 10 AMPS @ 250 V AC, models with 75 grams operating force.
 INSULATION RESISTANCE: 1,000 M ohms min.
 DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.
 OPERATING TEMPERATURE: -67°F to 302°F (-55°C to 150°C).
 OPERATING FORCE: 50, 75 and 150 grams at actuator available; refer to chart for lever style forces.
 MOUNTING: Torque screws 2-5 in/lbs.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

Materials

SWITCH HOUSING: Thermoplastic or general purpose phenolic (UL 94V-0).
 ACTUATOR BUTTON: Thermoplastic (UL 94V-0).
 SPRING: Copper alloy.
 PIVOT: Brass alloy.
 MOVABLE CONTACTS: Gold alloy for ratings 1 AMP @ 125 V AC or less. Fine silver for ratings greater than 1 AMP @ 125 V AC.
 STATIONARY CONTACTS: Gold alloy for ratings 1 AMP or less. Fine silver for ratings greater than 1 AMP.
 TERMINALS: Brass alloy for ratings up to 10 AMPS @ 250 V AC. Copper alloy for 15 AMPS @ 250 V AC ratings.

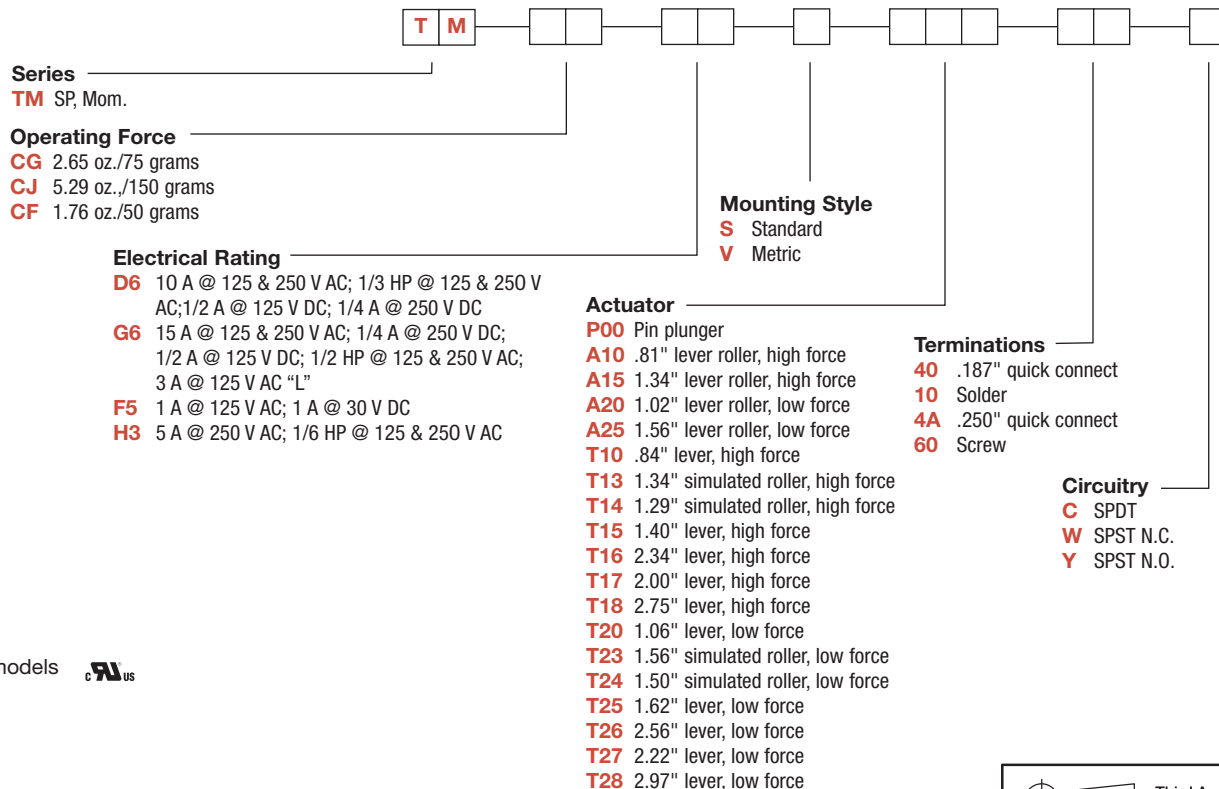
NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.



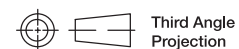
Snap-acting

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-26 through J-31. For additional options not shown in catalog, consult Customer Service Center. Available extended electrical life per UL 1054, rated for 100,000 operations, consult factory.



* All models

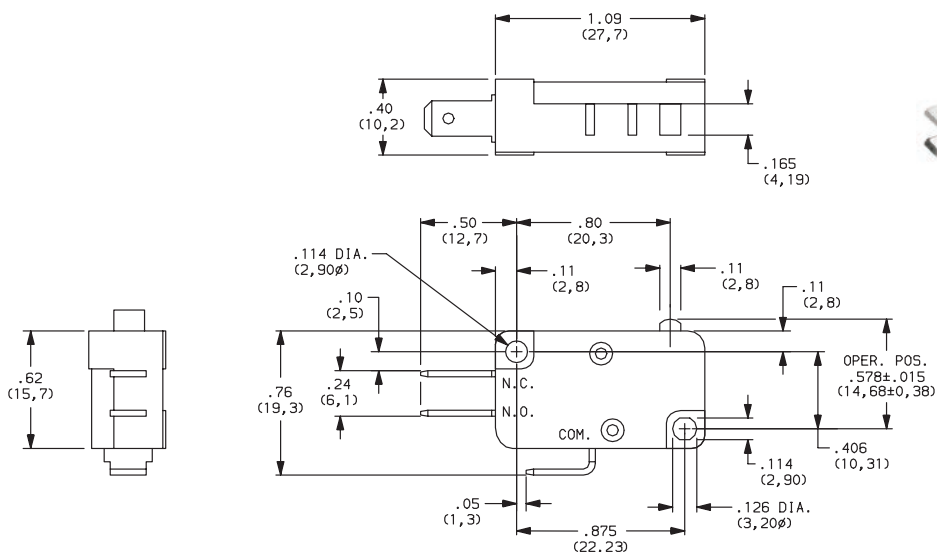


Dimensions are shown: Inch (mm)
 Specifications and dimensions subject to change

TM Series Miniature Snap-acting Switches

SERIES

TM MINIATURE SNAP-ACTING SWITCHES – SP MOMENTARY



OPERATING FORCE

OPTION CODE	BASIC SWITCH OPERATING FORCE (OZ./GRAMS)
CG	2.65 75
CJ	5.29 150
CF	1.76 50

Operating Force option 'CF' not available with 'T18, T27 and T28' actuator options. Operating force varies with actuator option, see ACTUATOR option section.

ELECTRICAL RATING

OPTION CODE	RoHS COMPLIANT*	RoHS COMPATIBLE*	CONTACT MATERIAL		ELECTRICAL RATING
			MOVABLE CONTACT	STATIONARY CONTACT	
D6	Yes	Yes	Fine Silver	Fine Silver	10 AMPS @ 125 & 250 V AC; 1/3 HP @ 125 & 250 V AC; 1/2 AMP @ 125 V DC; 1/4 AMP @ 250 V DC.
F5	Yes	Yes	Gold alloy	Gold alloy	From low level* to 1 AMP @ 125 V AC, 1 AMP @ 30 V DC.
G6	Yes	Yes	Fine Silver	Fine Silver	15 AMPS @ 125 & 250 V AC; 0.25 AMP @ 250 V DC; 0.5 AMP @ 125 V DC; 1/2 HP @ 125 & 250 V AC; 3 AMPS @ 125 V AC "L".
H3	Yes	Yes			5 AMPS @ 250 V AC; 1/6 HP @ 125 & 250 V AC.

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

* All models US

Contact Customer Service Center for availability and delivery of nonstandard ratings.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.



Third Angle Projection

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



Snap-acting

TM Series Miniature Snap-acting Switches

ELECTRICAL RATING

AVAILABLE COMBINATIONS

ELECTRICAL RATING	MAXIMUM OPERATING FORCE (OZ./GRAMS)		
	1.76/50 CF	2.65/75 CG	5.29/150 CJ
D6	•	•	•
F5	•	•	•
G6	X	X	•
H3	•	•	•

• AVAILABLE
X NOT AVAILABLE



* All models US

Contact Customer Service Center for availability and delivery of nonstandard ratings.

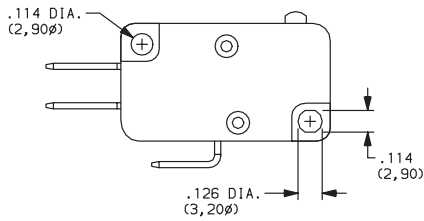
* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

MOUNTING STYLE

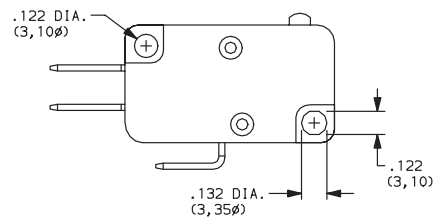
Snap-acting

S Standard

V Metric



Recommended maximum screw size: 4-40.



Recommended maximum screw size: 3 mm.

NOTE: Torque mounting screws 2-5 in/lbs.



Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

TM Series Miniature Snap-acting Switches

ACTUATOR

OPTION CODE	FIG.	DIM. A	DIM. B	DIM. C	DIM. D
P00	2	.80 (20,3)	—	.578 ± .015 (14,68 ± 0,38)	—
A10	1	.81 (20,6)	.36 (9,1)	.810 ± .020 (20,57 ± 0,51)	.19 dia. (4,80)
A15	1	1.34 (34,0)	.36 (9,1)	.810 ± .040 (20,57 ± 1,02)	.19 dia. (4,80)
A20	1	1.03 (26,2)	.58 (14,7)	.810 ± .050 (20,57 ± 1,27)	.19 dia. (4,80)
A25	1	1.56 (39,6)	.58 (14,7)	.810 ± .080 (20,57 ± 2,03)	.19 dia. (4,80)
T10	3	.84 (21,3)	.36 (9,1)	.600 ± .020 (15,24 ± 0,51)	—
T13	4	1.34 (34,0)	.36 (9,1)	.810 ± .040 (20,57 ± 1,02)	.19 dia. (4,80)
T14	4	1.28 (32,5)	.36 (9,1)	.743 ± .050 (18,9 ± 1,3)	.236 dia. (6,00)
T15	3	1.40 (35,6)	.36 (9,1)	.600 ± .040 (15,24 ± 1,02)	—
T16	3	2.34 (59,4)	.36 (9,1)	.600 ± .062 (15,24 ± 1,57)	—
T17	3	2.00 (50,8)	.36 (9,1)	.600 ± .052 (15,24 ± 1,57)	—
T18	3	2.75 (69,9)	.36 (9,1)	.600 ± .093 (15,24 ± 2,36)	—
T20	3	1.06 (26,9)	.58 (14,7)	.600 ± .045 (15,24 ± 1,14)	—
T23	4	1.56 (39,6)	.58 (14,7)	.810 ± .065 (20,57 ± 1,65)	.19 dia. (4,80)
T24	4	1.50 (38,1)	.58 (14,7)	.743 ± .090 (18,80 ± 2,29)	.236 dia. (6,00)
T25	3	1.62 (41,1)	.58 (14,7)	.600 ± .080 (15,24 ± 2,03)	—
T26	3	2.56 (65,0)	.56 (14,7)	.600 ± .125 (15,24 ± 3,18)	—
T27	3	2.22 (56,4)	.58 (14,7)	.600 ± .125 (15,24 ± 3,18)	—
T28	3	2.97 (75,4)	.58 (14,7)	.600 ± .187 (15,24 ± 4,75)	—

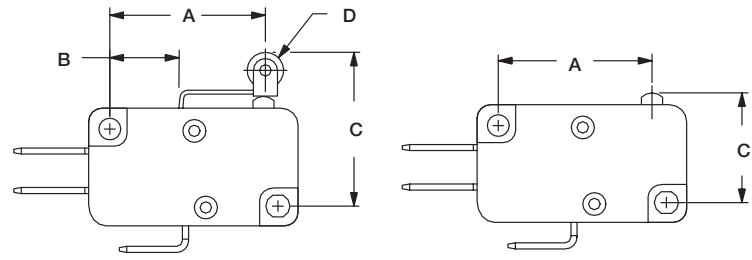


FIG. 1
Lever Roller

FIG. 2
Pin Roller

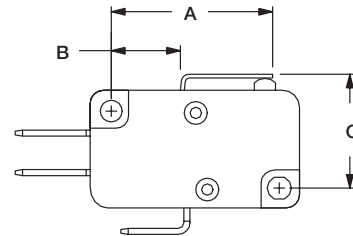


FIG. 3
Lever

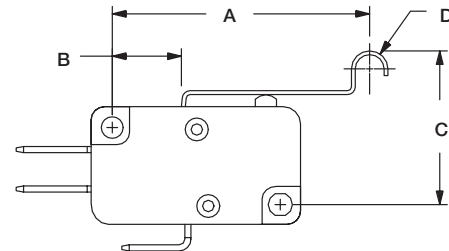
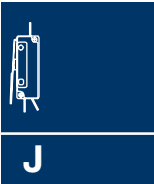
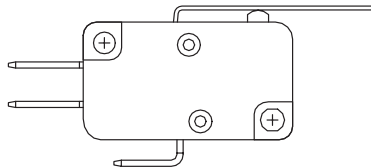


FIG. 4
Simulated Roller



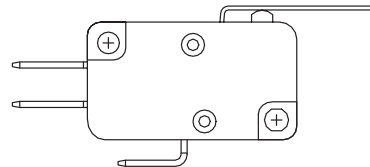
Snap-acting

HIGH FORCE, LOW MOTION PIVOT POSITION



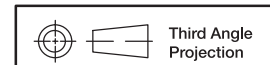
Available with actuators A10, A15, T10, T13, T14, T15, T16, T17 and T18.

LOW FORCE, HIGH MOTION PIVOT POSITION



Available with actuators A20, A25, T20, T23, T24, T25, T26, T27 and T28.

NOTE: Lever actuator options are available in either of two pivot positions.
Levers located in the forward pivot position have lower forces and higher motions.
Levers located in the rear pivot position have higher forces and lower motions.

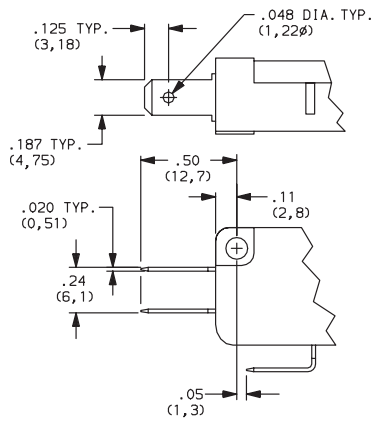


Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

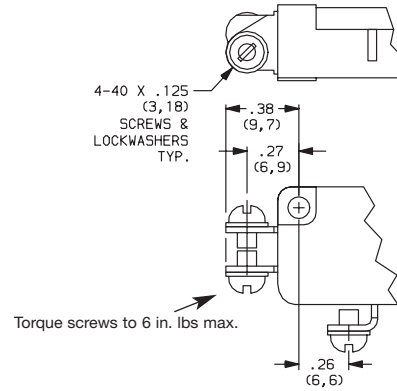
TM Series Miniature Snap-acting Switches

TERMINATIONS

40 .187" QUICK CONNECT

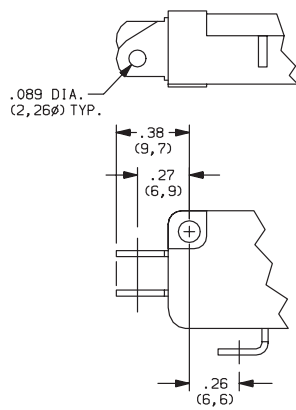


60 SCREW TERMINALS



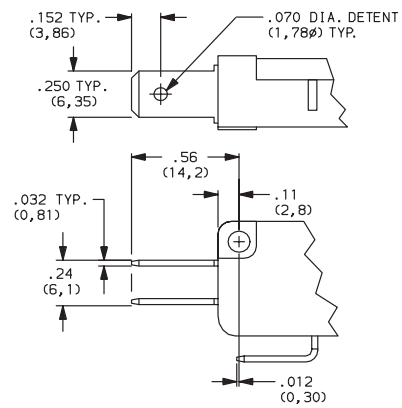
Not available with 'F5' rating option.

10 SOLDER



Not available with 'F5' rating option.

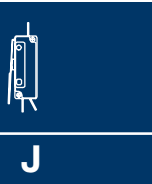
4A .250" QUICK CONNECT



Not available with 'F5' rating option.

CIRCUITRY

- C** SPDT (Single Pole, Double Throw)
- W** SPST N.C. (Single Pole, Single Throw, Normally Closed)
- Y** SPST N.O. (Single Pole, Single Throw, Normally Open)



Snap-acting



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

LC Series Subminiature Precision Snap-acting Switches



Features/Benefits

- Compact design
- Long life and high electrical capacity
- Quick connect, wire lead or PC mounting
- Wide variety of actuator styles

Typical Applications

- Motorized equipment
- Sump pump
- Thermostatic controls

UL61058-1  

Specifications

CONTACT RATING: From low level* to 10.1 AMPS @ 250 V AC.
 ELECTRICAL LIFE: 100,000 cycles
 INSULATION RESISTANCE: 1,000 M Ω min.
 DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.
 OPERATING TEMPERATURE: -17°F to 185°F (-25°C to 85°C).
 OPERATING FORCE: From 142 to 170 grams at actuator button.
 Forces are less at free end of lever actuators; (see OPERATING FORCE and ACTUATOR option sections).
 MOUNTING: 2-56 screws, torque 2.3 in/lbs max.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service center.

Materials

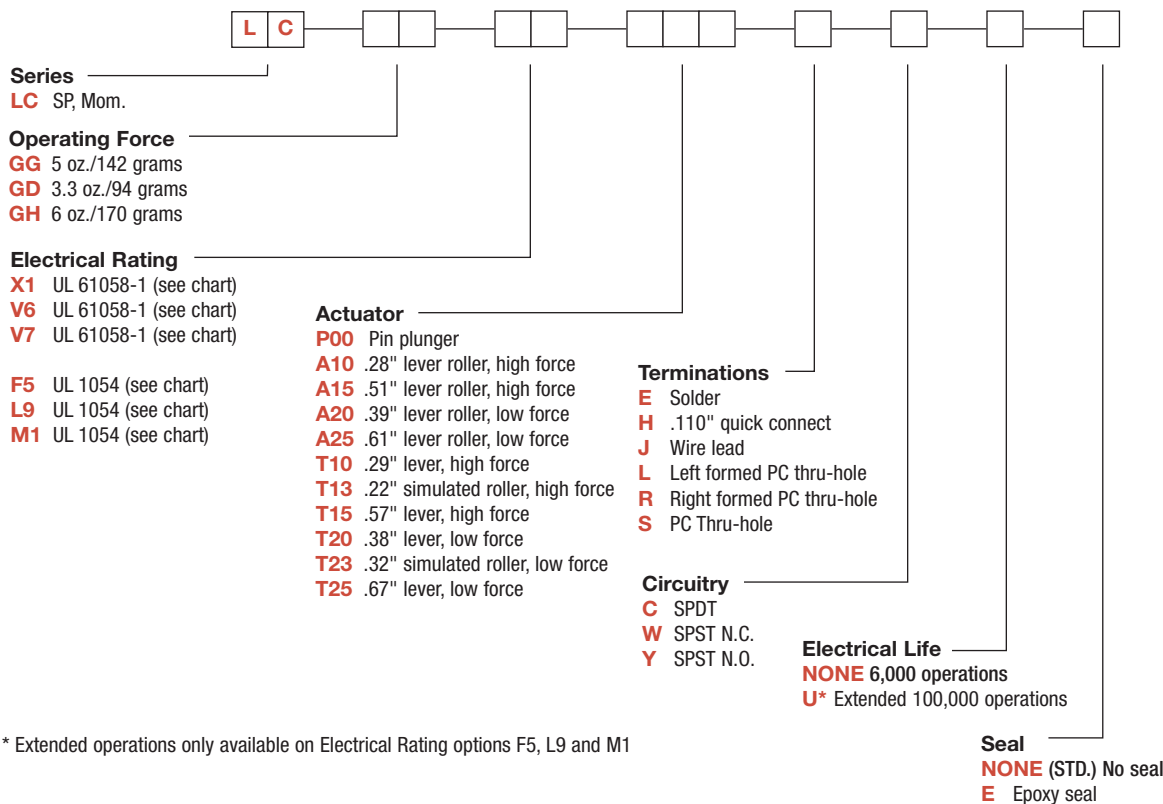
SWITCH HOUSING: Thermoplastic polyester or high temperature thermoplastic (PTS) (UL 94V-0).
 ACTUATOR BUTTON: Thermoplastic polyester (UL 94V-0).
 SPRING: Copper alloy.
 PIVOT: Copper alloy.
 MOVABLE CONTACTS: Fine silver for ratings greater than 1 AMP @ 125 V AC. Fine silver with 24K gold plate for 1 AMP @ 125 V AC or less.
 STATIONARY CONTACTS: Fine silver welded on copper alloy for ratings greater than 1 AMP @ 125 V AC. Gold alloy welded on copper alloy for ratings less than 1 AMP @ 125 V AC.
 TERMINALS: Copper alloy.
 TERMINAL SEAL: Epoxy.



Snap-acting

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-33 through J-35. For additional options not shown in catalog, consult Customer Service Center.



* Extended operations only available on Electrical Rating options F5, L9 and M1

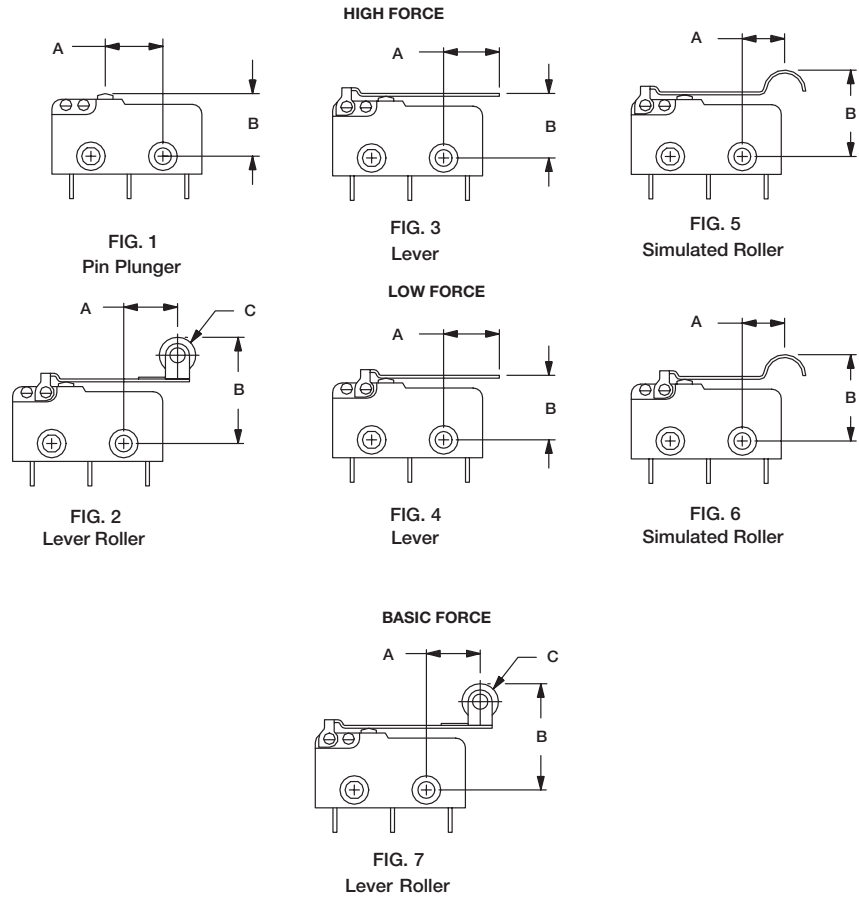


Dimensions are shown: Inch (mm)
 Specifications and dimensions subject to change

LC Series Subminiature Precision Snap-acting Switches

ACTUATOR 

OPTION CODE	FIG.	DIM. A	DIM. B	DIM. C
P00	1	0.297 (7,6)	.330 ± .015 (8,38 ± 0,38)	—
A10	7	0.28 (7,1)	.570 ± .070 (14,48 ± 1,78)	.19 dia. (4,80)
A25	2	0.61 (15,5)	.570 ± .175 (14,22 ± 4,45)	.19 dia. (4,80)
T10	3	0.29 (7,4)	.340 ± .070 (8,64 ± 1,78)	—
T13	5	0.220 (5,3)	.455 ± .065 (11,56 ± 1,65)	—
T20	4	0.39 (9,9)	.340 ± .140 (8,64 ± 3,56)	—
T23	6	0.32 (8,1)	.455 ± .125 (11,56 ± 3,18)	—
T25	4	0.67 (17,0)	.340 ± .091 (8,64 ± 4,70)	—
A15	7	0.51 (13,0)	.560 ± .090 (14,22 ± 2,29)	.19 dia. (4,80)
A20	2	0.38 (9,7)	.560 ± .135 (14,22 ± 2,29)	.19 dia. (4,80)
T15	3	0.57 (14,51)	.340 ± .100 (8,64 ± 2,54)	—



SWITCH CHARACTERISTICS

OPTION CODE	MAXIMUM OPERATING FORCE (OZ./GRAMS)			MINIMUM RELEASE FORCE (OZ./GRAMS)			MAXIMUM DIFFERENTIAL TRAVEL	MAXIMUM PRETRAVEL	MINIMUM OVERTRAVEL
	GG	GD	GH	GG	GD	GH	ALL FORCES	ALL FORCES	ALL FORCES
A10	1.69 48	1 28	2.0 57	.21 6	.11 3	.42 12	.034 (0,86)	.140 (3,56)	.029 (0,74)
A15	1.3 37	.68 19	1.6 44	.16 4.5	.07 2	.32 9	.044 (1,12)	.180 (4,57)	.037 (0,94)
A20	0.9 26	.52 15	1.1 31	.11 3	.05 15	.21 6	.067 (1,70)	.272 (6,91)	.053 (1,53)
A25	.70 20	.42 12	.85 24	.07 2	.04 1	.16 4.5	.086 (2,18)	.351 (8,92)	.068 (1,73)
P00	5 142	3.3 95	6 170	1 28	.05 14	2.0 57	.004 (0,10)	.030 (0,76)	.010 (0,25)
T10	1.7 48	1 28	2.1 60	.21 6	.10 3	.39 11	.035 (0,90)	.140 (3,56)	.029 (0,74)
T13	1.8 52	1.2 34	2.2 62	.21 6	.03 1	.42 12	.032 (0,81)	.130 (3,30)	.026 (0,66)
T20	0.9 26	.52 15	1.1 30	.10 3	.03 1	.21 6	.067 (1,70)	.276 (7,01)	.053 (1,35)
T23	1.0 28	.52 15	1.2 34	.10 3	.03 1	.21 6	.062 (1,57)	.252 (6,40)	.049 (1,24)
T25	0.7 19	.05 14	0.8 24	.07 2	.03 1	.14 4	.090 (2,29)	.372 (9,45)	.072 (1,83)
T15	1.2 35	1.3 39	1.5 42	0.14 4	.21 6	.28 81	.047 (1,19)	.190 (4,83)	.040 (1,02)

NOTE: For basic switch operating forces, see page J-32.



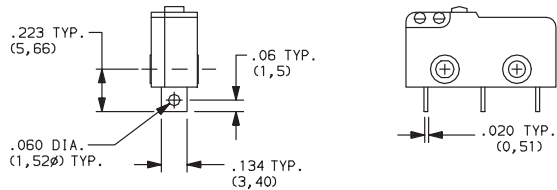
Third Angle Projection
Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

C&K

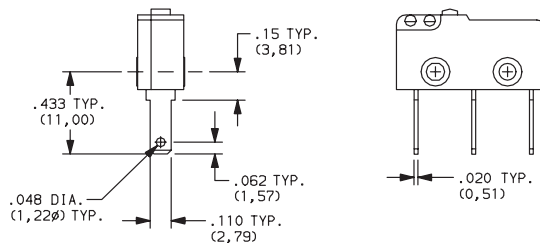
LC Series Subminiature Precision Snap-acting Switches

TERMINATIONS

E SOLDER

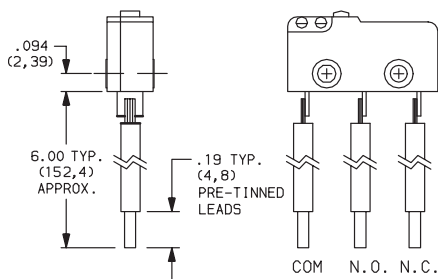


H .110" QUICK CONNECT



NOTE: Use Amp Quick Connect Part No. 640932-1.

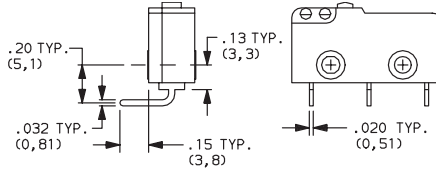
J WIRE LEAD



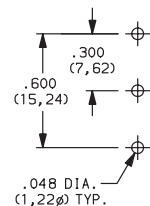
RATING	WIRE SIZE
1 AMP	22 AWG
5 AMPS	20 AWG
10.1 AMPS	18 AWG

TERMINAL	WIRE COLOR
COMMON	BLACK
NORMALLY OPEN	WHITE
NORMALLY CLOSED	RED

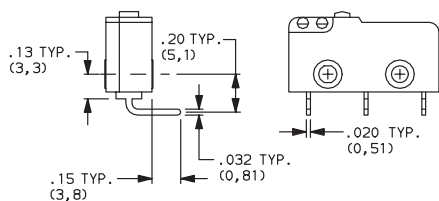
L LEFT FORMED PC THRU-HOLE



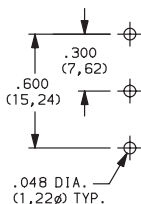
PC MOUNTING



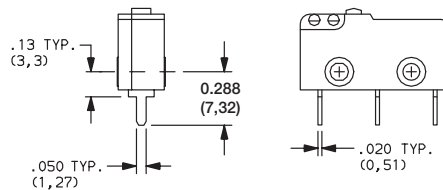
R RIGHT FORMED PC THRU-HOLE



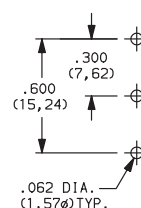
PC MOUNTING



S PC THRU-HOLE



PC MOUNTING



CIRCUITRY

C SPDT (Single Pole, Double Throw)

W SPST N.C. (Single Pole, Single Throw, Normally Closed)

Y SPST N.O. (Single Pole, Single Throw, Normally Open)

ELECTRICAL LIFE

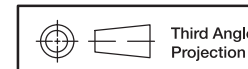
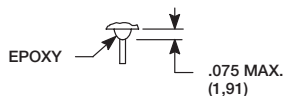
NONE 6,000 OPERATIONS

U EXTENDED 100,000 OPERATIONS

SEAL

NONE NO SEAL

E EPOXY SEAL



Third Angle Projection

Dimensions are shown: mm
Specifications and dimensions subject to change

C&K

LCA Series Subminiature Snap-acting Switches



Features/Benefits

- Compact design
- Long life and high electrical capacity
- Quick connect, solder terminals, PC terminals
- Wide variety of actuator styles
- RoHS compatible

Typical Applications

- Motorized equipment
- Sump pump
- Thermostatic controls

UL61058-1

Specifications

CONTACT RATING: From low level to 10.1 AMPS @ 125/250 V AC
 ELECTRICAL LIFE: see chart below
 MECHANICAL LIFE: 300,000 cycles.
 INSULATION RESISTANCE: 100 M ohm min.
 DIELECTRIC STRENGTH: 1,500 Vrms min. @ sea level.
 OPERATING TEMPERATURE: -40°C to +125°C
 OPERATING FORCE: 150 grams at actuator button MAX.
 Forces are less at free end of lever actuators; (see ACTUATOR'S option sections).
 MOUNTING: 2-56 screws, torque 2.3 in/lbs max.

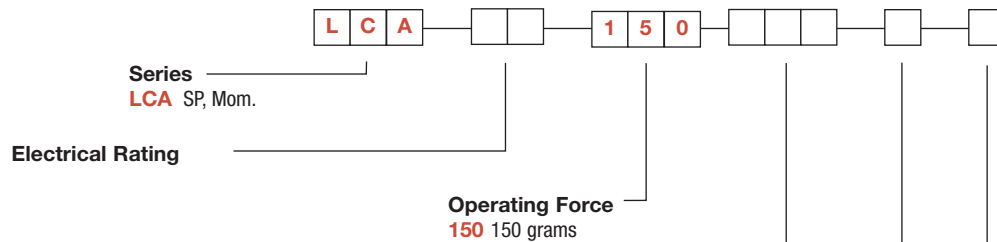
Materials

SWITCH HOUSING: Thermoplastic polyester
 ACTUATOR BUTTON: Thermoplastic polyester.
 SPRING: Copper alloy.
 PIVOT: Copper alloy.
 MOVABLE CONTACTS: Silver alloy
 STATIONARY CONTACTS: Silver alloy
 TERMINALS: Copper alloy.
 ACTUATOR LEVER: Stainless steel.

NOTE: Specifications and materials listed above are for switches with standard options.
 For information on specific and custom switches, consult Customer Service center.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-36 thru J-39. For additional options not shown in catalog, consult Customer Service Center.



Option Code	UL 1054	UL 61058-1	RoHS
01	0.1 A 125/250 V AC 1E4	0.1 A 125/250 V AC 1E4	0.1 A 125/250 V AC 1E4
06	6 A 125/250 V AC 1E4	6 A 125/250 V AC 1E4	6 (2)A 125/250 V AC 1E4
10	10.1 A 125/250 V AC 1E4	10.1 A 125/250 V AC 1E4	10.1 A 125/250 V AC 1E4
S5	NA	5 A 125/250 V AC 1E5	NA

Actuator

- P00 Pin plunger
- T05 4.8 mm short lever
- T06 6.8 mm lever
- T09 8.8 mm lever
- T12 12.9 mm lever
- T16 15.2 mm lever
- T18 18.1 mm lever
- T21 20.1 mm lever
- T23 23.4 mm lever
- T43 43.5 mm lever
- S06 6.0 mm simulated lever
- S09 9.2 mm simulated lever
- A05 5.0 mm lever roller

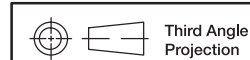
Terminations

- S Solder
- Q .110 Quick Connect
- P PC Thru Hole
- L Left Form PC
- R Right Form PC

Circuitry

- C SPDT
- W SPST N.C.
- Y SPST N.O.

Snap-acting

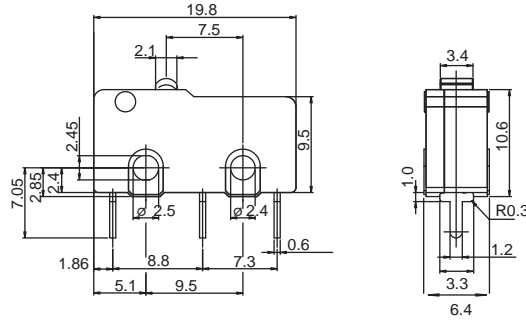


Dimensions are shown: mm
 Specifications and dimensions subject to change

LCA Series Subminiature Snap-acting Switches

SERIES 

LCA



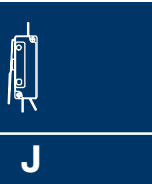
ELECTRICAL RATING 

RoHS COMPLIANT *	RoHS COMPATIBLE *	OPTION CODE	ELECTRICAL RATING
YES	YES	01	0.1A, 125/250 VAC
YES	YES	06	6A, 125/250 VAC
YES	YES	10	10.1A, 125/250 VAC
YES	YES	S5	5A, 125/250 VAC

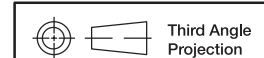
* Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications.

OPERATING FORCE 

OPTION CODE	OPERATING FORCES (grams)
150	150 grams max.



Snap-acting



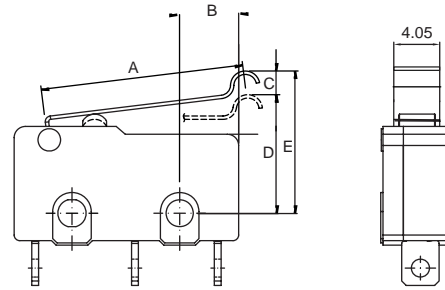
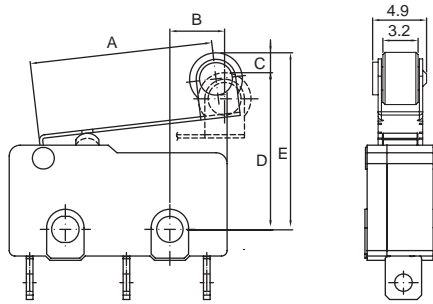
Dimensions are shown: mm
Specifications and dimensions subject to change

LCA Series Subminiature Snap-acting Switches

ACTUATOR

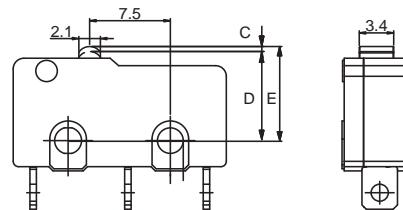
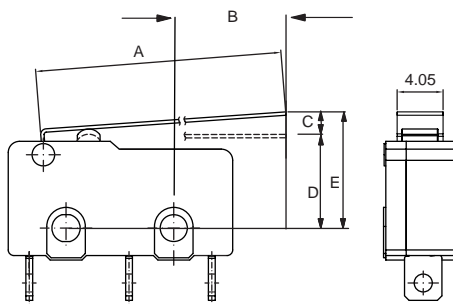
A05 LEVER ROLLER

SXX SIMULATED ROLLER



TXX LEVER

P00



Snap-acting

ACTUATOR OPTION CODE	A mm	B mm	eC mm	D mm	E mm	Diff. Motion mm max	Oper. Force max. grams	Release Force min. grams	Over Travel min.
	LENGTH OF LEVER	Lever length for front mtg. hole to OP	PRE TRAVEL (MAX)	OPERATING POSITION	FREE POSITION (MAX)				
P00	NA	NA	1.10	8.55 ± 0.3	9.35	0.20	150	25	0.4
T05	16.70	4.80	3.60	8.95 ± 0.8	11.75	0.80	50	6	0.6
T06	18.70	6.80	4.03	8.9 ± 0.9	12.09	0.90	45	5	0.67
T09	20.60	9.10	5.64	9.15 ± 1.35	13.45	1.83	33	2	0.75
T12	24.80	12.90	3.35	8.95 ± 1.5	13.10	1.19	34	2	0.89
T16	27.10	15.20	7.20	9.15 ± 1.7	15.15	1.30	40	1	0.70
T18	30.00	18.10	7.70	8.95 ± 1.9	14.65	1.50	32	1	1.2
T21	32.00	20.10	8.00	8.15 ± 1.85	15.55	1.60	35	1	1.0
T23	35.20	23.40	8.60	8.95 ± 2.0	15.55	1.80	25	1	1.5
T43	55.20	43.50	10.45	8.95 ± 3.0	19.25	2.90	15	1	1.0
S06	17.90	6.00	3.86	10.85 ± 0.9	17.81	0.86	47	5	0.64
S09	21.10	9.20	5.7	16.15 ± 1.5	20.35	1.00	42	2	1.0
A05	16.60	5.00	3.8	14.65 ± 0.8	17.65	0.80	50	6	0.6



Third Angle
Projection

Dimensions are shown: mm
Specifications and dimensions subject to change

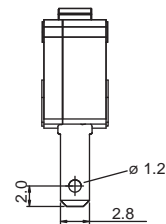
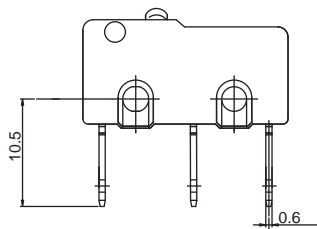
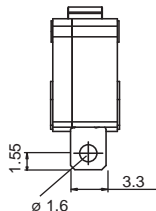
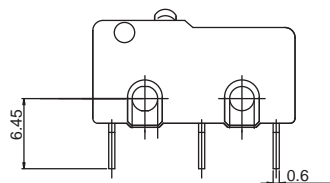
C&K

LCA Series Subminiature Snap-acting Switches

TERMINATIONS

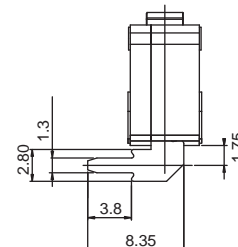
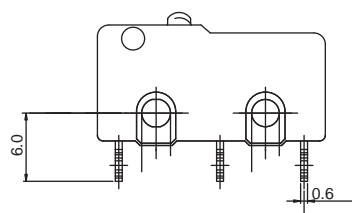
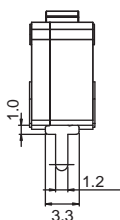
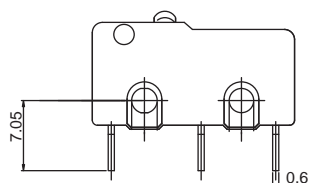
S SOLDER

Q QUICK CONNECT

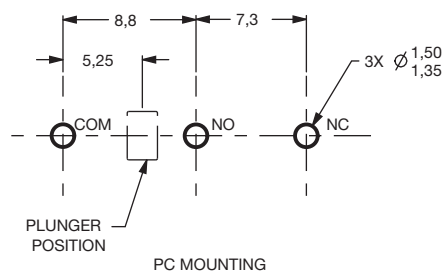
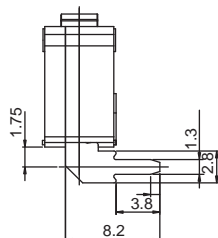
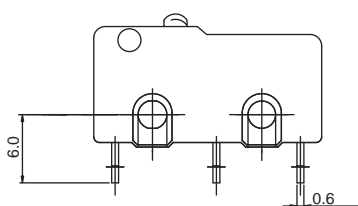


P PC THRU HOLE

L LEFT FORM PC



R RIGHT FORM PC



Snap-acting

CIRCUITRY

C SPDT (Single Pole, Double Throw)

W SPST N.C. (Single Pole, Single Throw, Normally Closed)

Y SPST N.O. (Single Pole, Single Throw, Normally Open)



Third Angle Projection

Dimensions are shown: mm
Specifications and dimensions subject to change



LCS Series Subminiature Sealed Snap-acting Switches



UL61058-1  

Features/Benefits

- Compact design
- Long life and high electrical capacity
- Quick connect, solder terminals, PC terminals, wire leads
- Wide variety of actuator styles
- RoHS compatible, RoHS compliant
- IP67

Typical Applications

- Motorized equipment
- Sump pump
- Thermostatic controls
- Computers
- Air conditioners

Specifications

CONTACT RATING: from low level to 5 Amp
 ELECTRICAL LIFE: 10,000 cycles
 INSULATION RESISTANCE: 100 M ohm min.
 DIELECTRIC STRENGTH: 1,000 VAC
 OPERATING TEMPERATURE:
 -40°C to +120°C (without wire)
 -40°C to +85°C (with UL1007 wire)
 -40°C to +105°C (with UL1015 wire)
 -40°C to +105°C (with UL1430 wire)
 -40°C to +80°C (with UL1061 wire)
 -40°C to +120°C (with UL1330 wire)
 OPERATING FORCE: (see ACTUATOR'S option sections).
 MOUNTING: 2-56 screws, torque 2.3 in/lbs max.

Materials



SWITCH HOUSING: Thermoplastic polyester or high temperature thermoplastic (PTS) (UL 94V-0).
 ACTUATOR BUTTON: Thermoplastic polyester.
 SPRING: Copper alloy.
 PIVOT: Copper alloy.
 MOVABLE CONTACTS: Option "01" Gold plating over silver alloy
 Option "05" Silver alloy
 STATIONARY CONTACTS: Option "01" Gold plating over silver alloy
 Option "05" Silver alloy
 TERMINALS: Copper alloy.
 ACTUATOR LEVEL: Stainless steel.

NOTE: Specifications and materials listed above are for switches with standard options.
 For information on specific and custom switches, consult Customer Service center.

Snap-acting

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-40 thru J-43. For additional options not shown in catalog, consult Customer Service Center.

Series LCS			Operating Force 2 203 grams		Circuitry C SPDT W SPST N.C. Y SPST N.O.	
Electrical Rating			Actuator		Wire Type AWG	
Option Code	 UL 61058-1		P00 Pin plunger	T00 11.9 mm short lever	T05 17.4 mm short lever	20 20 AWG
01	0.1 A 125/250 V AC	NA	T07 19.4 mm short lever	T13 25.5 mm lever	T19 33.3 mm lever	22 22 AWG
05	5 A 125/250 V AC	6 A 250 V AC	T28 40.7 mm lever	T43 55.9 mm lever	S26 18.6 mm simulated lever	24 24 AWG
			A05 17.2 mm lever roller	Terminations		26 26 AWG
			S Solder		Wire UL # (when required)	
			Q 0.110 Quick Connect		A UL1007	
			P PC Thru Hole		B UL1015	
			W Wire leads potted		C UL1430	
			Z Wire leads non-potted		D UL1061	
			Wire Side (when required)			
			A Wire out the bottom			
			B Wire out the right side			
			C Wire out the left side			
			D None			



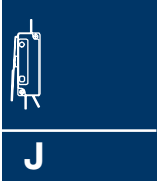
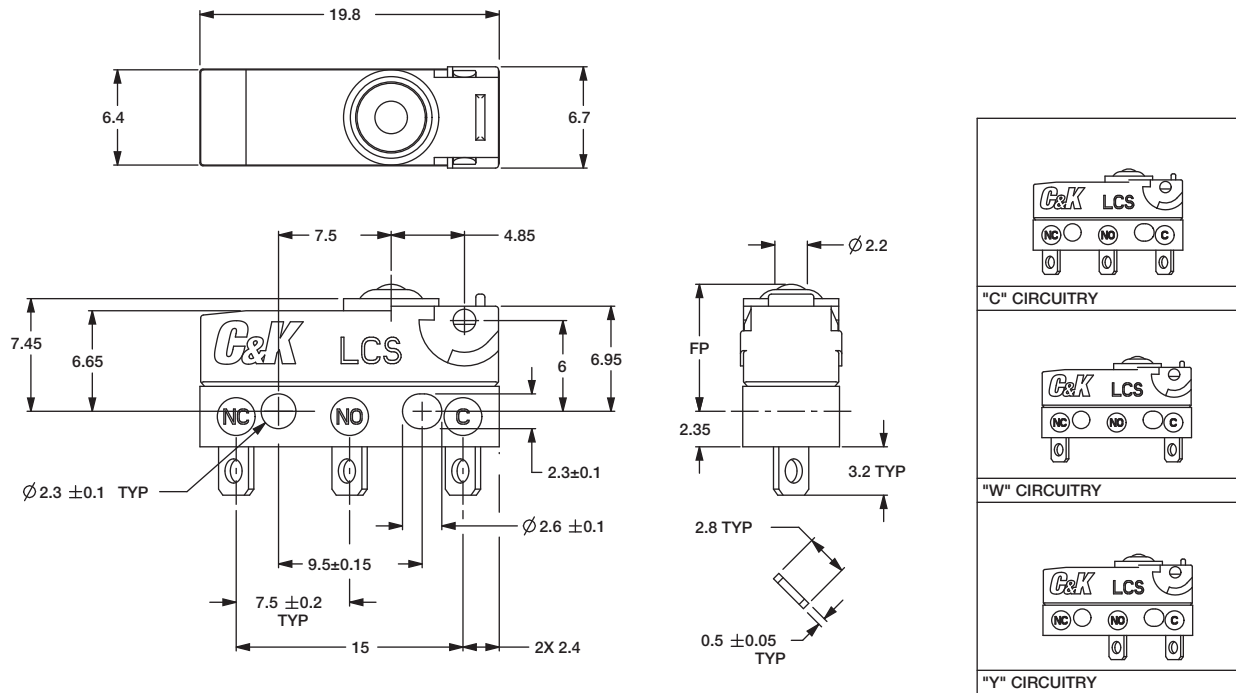
Dimensions are shown: mm
 Specifications and dimensions subject to change

LCS Series

Subminiature Sealed Snap-acting Switches

SERIES

LCS



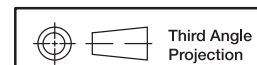
Snap-acting

ELECTRICAL RATING

RoHS COMPLIANT *	RoHS COMPATIBLE *	OPTION CODE	ELECTRICAL RATING
YES	YES	05	5 AMP, 125/250 V AC
YES	YES	01	0.1 AMP, 125/250 V AC

OPERATING FORCE

OPTION CODE	OPERATING FORCES (grams)
2	203 g. max.

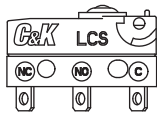


*Dimensions are shown: mm
Specifications and dimensions subject to change*

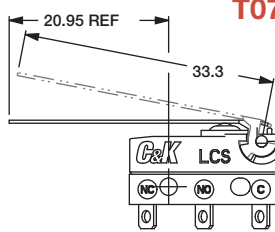
LCS Series Subminiature Sealed Snap-acting Switches

ACTUATOR 

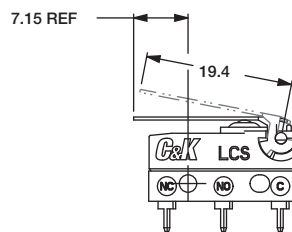
P00



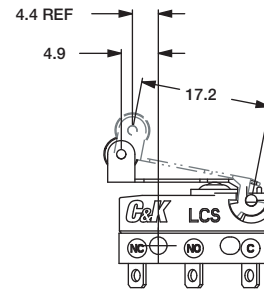
T19



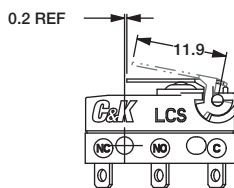
T07



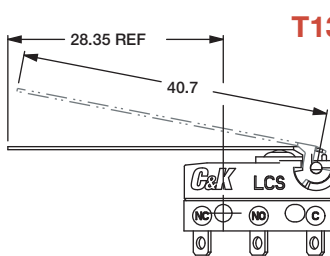
A05



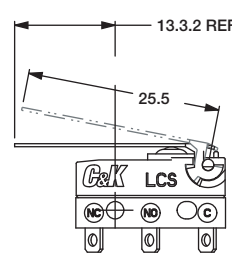
T00



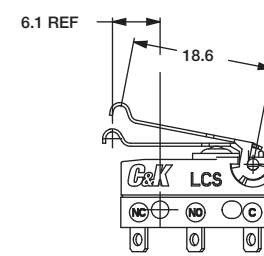
T28



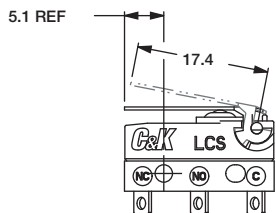
T13



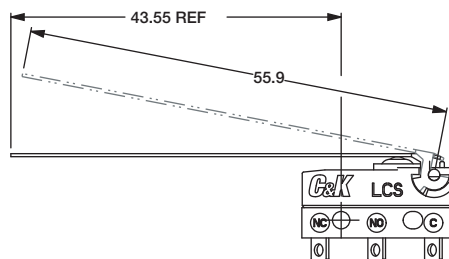
S26



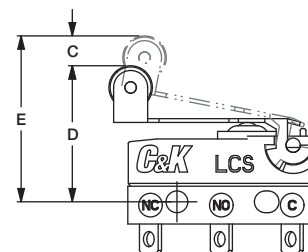
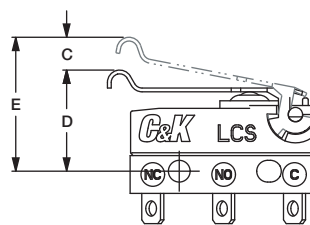
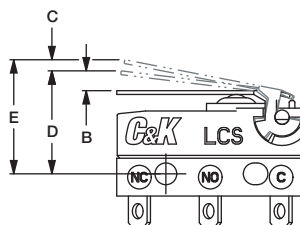
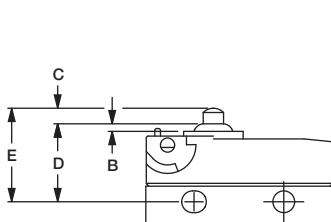
T05



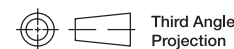
T43



Snap-acting



ACTUATOR OPTION CODE	A	B	C	D	E	DIFFERENTIAL MOTION (MAX)	OPERATING FORCE (MAX)	RELEASE FORCE (MIN)
	LENGTH OF LEVER	OVER TRAVEL (MIN)	PRE TRAVEL (MAX)	OPERATING POSITION	FREE POSITION (MAX)	203	203	203
P00	N/A	0.6	1.2	8.4 ± 0.3	9.9	0.2	203	50
T00	11.9	0.6	3.2	8.8 ± 0.9	11.1	0.5	98	21
T05	17.40	0.9	4.3	8.8 ± 1.1	12	0.6	82	16
T07	19.40	1	4.8	8.8 ± 1.2	12.4	0.7	66	13
T13	25.5	1.6	6.3	8.8 ± 1.6	13.5	0.9	54	11
T19	33.3	1.95	8	8.8 ± 2.0	15	1.75	40	5
T28	40.7	2.1	10.1	8.8 ± 2.6	16.3	2.3	39	8
T43	55.9	2.9	13.8	8.8 ± 3.5	19.1	3.6	33	7
S26	18.6	1	4.6	10.7 ± 1.2	14.1	0.65	68	14
A05	17.20	0.9	4.3	14.5 ± 1.1	17.7	0.6	72	15



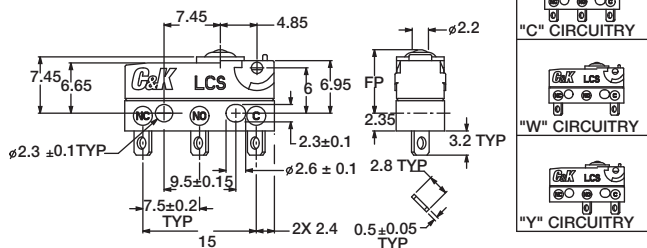
Third Angle
Projection
Dimensions are shown: mm
Specifications and dimensions subject to change



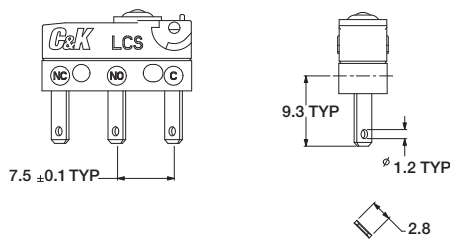
LCS Series Subminiature Sealed Snap-acting Switches

TERMINATIONS

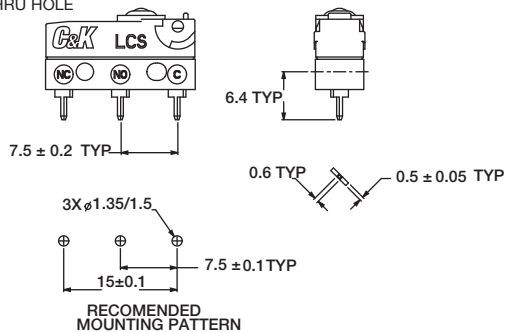
S SOLDER



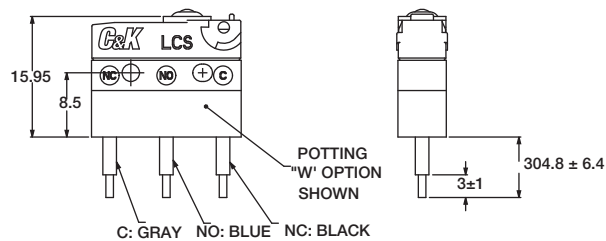
Q QUICK CONNECT 2.8mm / 0.110"



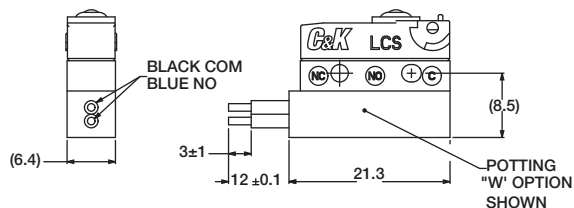
P PC THRU HOLE



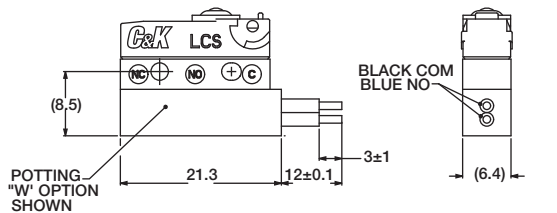
Z or W "A" WIRE ORIENTATION



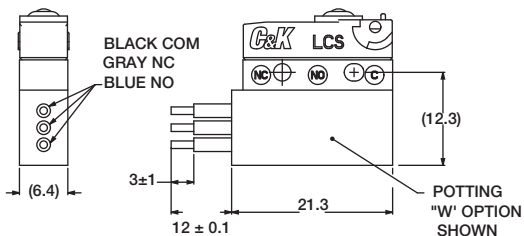
Z or W "B" WIRE ORIENTATION
"Y" OR "W" CIRCUITRY



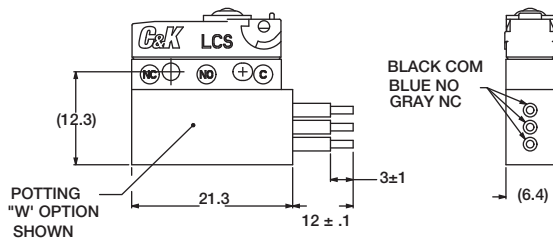
Z or W "C" WIRE ORIENTATION
"Y" OR "W" CIRCUITRY



Z or W "B" WIRE ORIENTATION
"C" CIRCUITRY



Z or W "C" WIRE ORIENTATION
"C" CIRCUITRY



CIRCUITRY

- C** SPDT (Single Pole, Double Throw)
- W** SPST N.C. (Single Pole, Single Throw, Normally Closed)
- Y** SPST N.O. (Single Pole, Single Throw, Normally Open)



Third Angle Projection

Dimensions are shown: mm
Specifications and dimensions subject to change



Snap-acting

MM Series Subminiature Precision Snap-acting Switches



Features/Benefits

- Low level and power switching
- Long electrical and mechanical life
- Increased overtravel
- Reliable snap-acting mechanism

Typical Applications

- Limited space constraints
- Communication devices

Specifications

CONTACT RATING: From low level* to 7 AMPS @ 250 V AC.
 ELECTRICAL LIFE: 100,000 cycles at full rated load.
 INSULATION RESISTANCE: 1,000 ohm min.
 DIELECTRIC STRENGTH: 1,000 V RMS min. @ sea level.
 OPERATING TEMPERATURE: -67 F to 275 F (-55 C to 135 C).
 OPERATING FORCE: 5 oz. (142 grams) max. at actuator button.
 MOUNTING: 2-56 screws, torque 2 in/lbs max.

*Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service center.

Materials

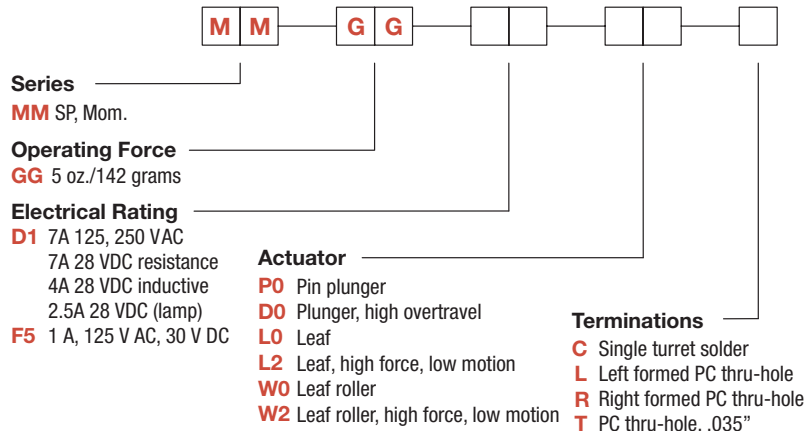
SWITCH HOUSING: Heat resistant phenolic (UL 94V-0).
 ACTUATOR BUTTON: Heat resistant phenolic (UL 94V-0).
 SPRING: Beryllium copper CDA alloy C17200.
 PIVOT: Brass CDA alloy 260.
 MOVABLE CONTACTS: Fine silver for ratings greater than 1 AMP @ 125 V AC. 24K gold for 1 AMP @ 125 V AC or less.
 STATIONARY CONTACTS: Fine silver inlay on copper CDA alloy C10200 for ratings greater than 1 AMP @ 125 V AC. 24K gold on copper CDA alloy C10200 for 1 AMP @ 125 V AC or less.
 TERMINALS: Copper CDA alloy C18700.



Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-44 through J-49. For additional options not shown in catalog, consult Customer Service Center.

Snap-acting



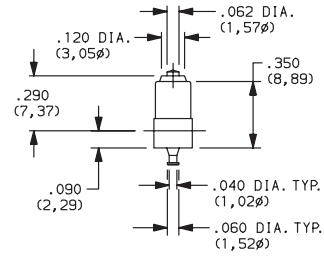
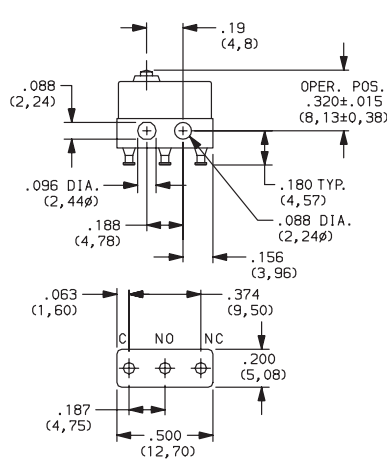
Dimensions are shown: Inch (mm)
 Specifications and dimensions subject to change

MM Series Subminiature Precision Snap-acting Switches

SWITCH WITH STANDARD OPTIONS



MMGGD1P0C



PART NUMBER	BASIC OPERATING FORCE (OZ./GRAMS)	ELECTRICAL RATING
MMGGD1P0C	5 142	7 AMPS @ 250 V AC.

SERIES ■ ■ ■ ■ ■ ■ ■ ■

MM SPDT MOMENTARY

OPERATING FORCE ■ ■ ■ ■ ■ ■ ■ ■

OPTION CODE	BASIC SWITCH OPERATING FORCE
GG	5 oz. (142 grams) maximum for basic switch with pin plunger actuator ('PO' actuator option).

NOTE: Operating force varies with actuator option, see ACTUATOR option section.

ELECTRICAL RATING ■ ■ ■ ■ ■ ■ ■ ■

OPTION CODE	RoHS COMPLIANT*	RoHS COMPATIBLE*	CONTACT MATERIAL		ELECTRICAL RATING
			MOVABLE CONTACT	STATIONARY CONTACT	
D1	Yes	Yes	Fine silver.	Fine silver inlay on copper alloy.	7A 125, 250 VAC; 7A 28 VDC resistance 4A 28 VDC inductive; 2.5A 28 VDC (lamp)
F5	Yes	Yes	24K Gold.	24K Gold on copper alloy.	From low level* to 1 AMP @ 125 V AC, 30 V DC.

Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications.

All models with all options.

Consult Customer Service Center for availability and delivery of nonstandard ratings.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

ACTUATOR ■ ■ ■ ■ ■ ■ ■ ■

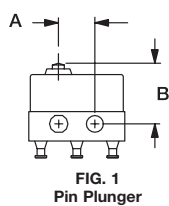


FIG. 1
Pin Plunger

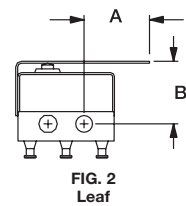


FIG. 2
Leaf

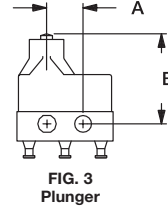


FIG. 3
Plunger

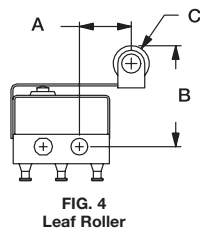


FIG. 4
Leaf Roller

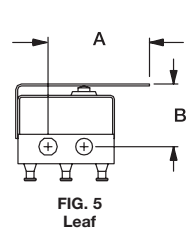


FIG. 5
Leaf

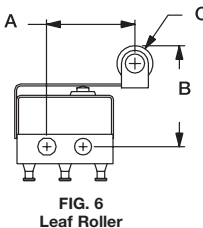


FIG. 6
Leaf Roller

OPTION CODE	FIG.	DIM. A	DIM. B	DIM. C
P0	1	.19 (4,8)	.320 ± .015 (8,13 ± 0,38)	—
D0	3	.19 (4,8)	.475 ± .031 (12,07 ± 0,79)	—
L0	2	.34 (8,6)	.330 ± .015 (8,38 ± 0,38)	—
L2	5	.53 (13,5)	.330 ± .015 (8,38 ± 0,38)	—
W0	4	.27 (6,9)	.532 ± .025 (13,51 ± 0,64)	.188 dia. (4,780)
W2	6	.46 (11,7)	.532 ± .025 (13,51 ± 0,64)	.188 dia. (4,780)



Third Angle Projection

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



MM Series Subminiature Precision Snap-acting Switches

ACTUATOR ■■■■■■

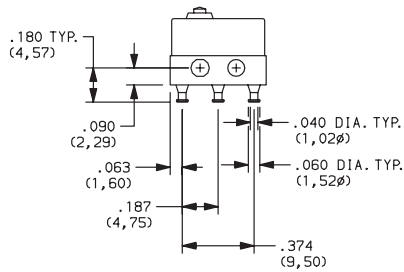
SWITCH CHARACTERISTICS

OPTION CODE	MAXIMUM OPERATING FORCE (OZ./GRAMS)	MINIMUM RELEASE FORCE (OZ./GRAMS)	MAXIMUM DIFFERENTIAL TRAVEL	MAXIMUM PRETRAVEL	MINIMUM OVERTRAVEL
D0	5 142	.7 20	.004 (0,10)	.030 (0,76)	.040 (1,02)
L0	4 115	.7 20	.025 (0,64)	.090 (2,29)	.045 (1,14)
L2	6 170	.7 20	.012 (0,30)	.075 (1,90)	.015 (0,38)
P0	5 142	1 28	.002 (0,05)	.020 (0,51)	.004 (0,10)
W0	4 115	.7 20	.025 (0,64)	.090 (2,29)	.045 (1,14)
W2	6 170	.7 20	.012 (0,30)	.075 (1,90)	.015 (0,38)

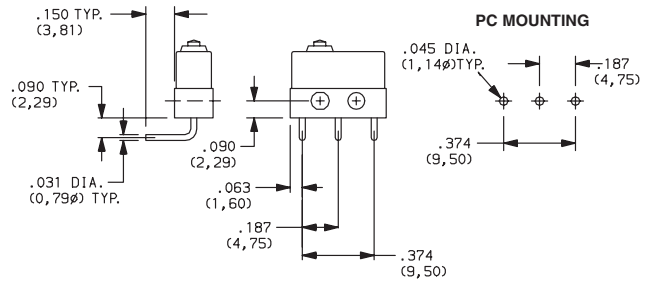
NOTE: For basic switch operating forces, see page J-44

TERMINATIONS ■■■■■■

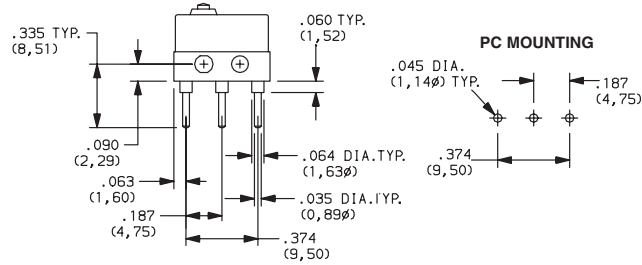
C SINGLE TURRET SOLDER



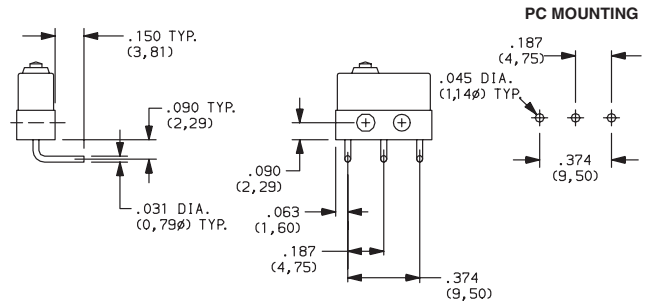
L LEFT FORMED PC THRU-HOLE



T PC THRU-HOLE, .035"



R RIGHT FORMED PC THRU-HOLE



Snap-acting



Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

ZM Series Subminiature Snap-acting Switches

Features/Benefits

- **Reliable snap-acting mechanism**
- **Long electrical and mechanical life**
- **Compact size—Ideal when space is limited**
- **Various PCB terminals and actuators**
- **RoHS compliant / compatible**

Typical Applications

- **PCB detection switch**
- **Communication devices**
- **Testing equipment**
- **Security/Alarm systems**
- **Consumer electronics**



UL61058-1



Specifications

CONTACT RATING: F7: 3A @ 125 VAC
M9: 0.2A @ 60 VDC.
ELECTRICAL LIFE: 10,000 Cycles. @ 3A
INSULATION RESISTANCE: 100 M ohm min.
DIELECTRIC STRENGTH: 1000 Vrms.
OPERATING TEMPERATURE: -30°C to 85°C.
OPERATING FORCE: CJ: 150 grams, CH: 90 grams.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

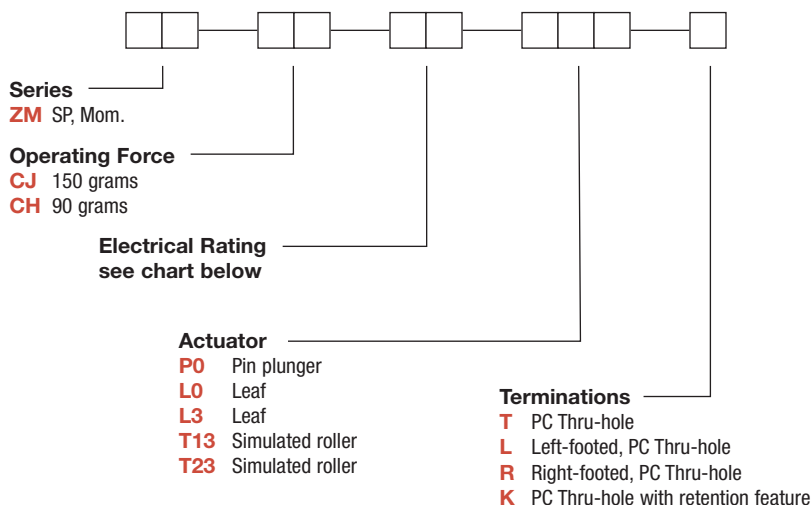
Materials

COVER: Nylon 6/6
ACTUATOR BUTTON: Nylon 6/6
CASE: Nylon 6/6
SPRING: SUS
MOVABLE BLADE: BeCu
MOVABLE CONTACT: Silver alloy (M9 option gold plated)
FIXED CONTACTS: Silver alloy (M9 option gold plated)
FIXED TERMINALS: Brass - Ag plated.
ACTUATOR (Leaf / Roller options): SUS

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-48 and J-49. For additional options not shown in catalog, consult Customer Service Center.



Option Code	UL 1054	UL 61058-1	RoHS
F7	3 A 125 V AC	3 A 125 V AC 3 A 30 V DC	3 A 125 V AC
M9	0.1 A 48 V DC 0.2 A 60 V DC 0.1 A 125 V AC	0.1 A 48 V DC 0.2 A 60 V DC 0.1 A 125 V AC	0.1 A 48 V DC 0.2 A 60 V DC 0.1 A 125 V AC



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

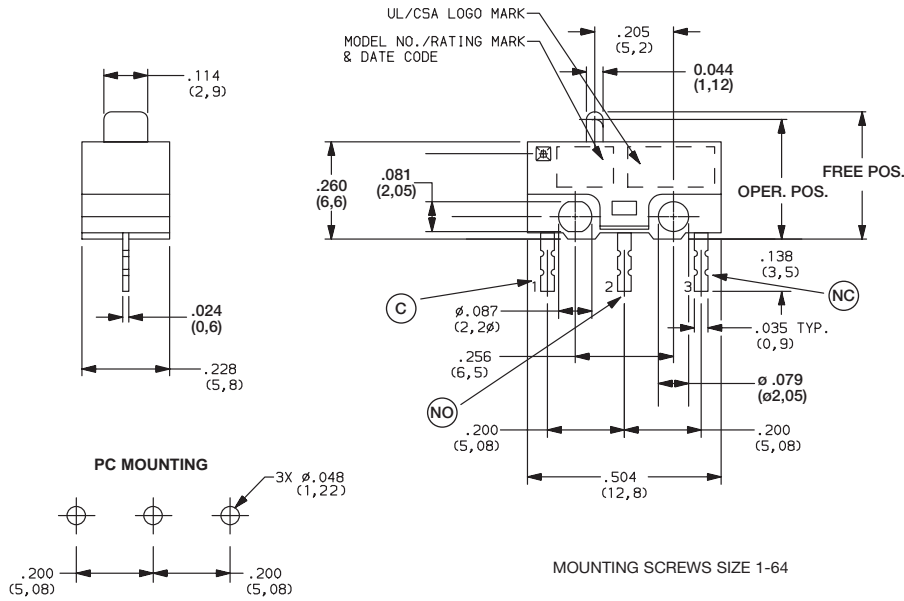


Snap-acting

ZM Series Subminiature Snap-acting Switches

SERIES **ZM** ■ ■ ■ ■ ■ ■ ■ ■

ZM SUBMINIATURE SNAP-ACTING SWITCHES – SP MOMENTARY



ZMCJF7L0T
SPDT

OPERATING FORCE ■ ■ ■ ■ ■ ■ ■ ■

OPTION CODE	BASIC SWITCH OPERATING FORCE (OZ./GRAMS)
CJ	5.29 150
CH	3.15 90

ELECTRICAL RATING ■ ■ ■ ■ ■ ■ ■ ■

OPTION CODE	RoHS COMPLIANT*	RoHS COMPATIBLE*	CONTACT MATERIAL		ELECTRICAL RATING
			MOVABLE CONTACT	STATIONARY CONTACT	
F7	Yes	Yes	Silver alloy		see chart
M9	Yes	Yes	Gold plating or silver alloy		see chart

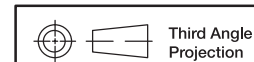
* Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications.

All models **c** **us** with all options.

Consult Customer Service center for availability and delivery of nonstandard ratings.

Option Code	us 1054	us 61058-1	
F7	3 A 125 V AC	3 A 125 V AC 3 A 30 V DC	3 A 125 V AC
M9	0.1 A 48 V DC 0.2 A 60 V DC 0.1 A 125 V AC	0.1 A 48 V DC 0.2 A 60 V DC 0.1 A 125 V AC	0.1 A 48 V DC 0.2 A 60 V DC 0.1 A 125 V AC

Snap-acting

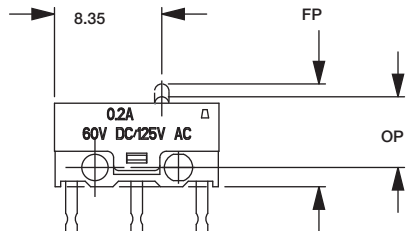


Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

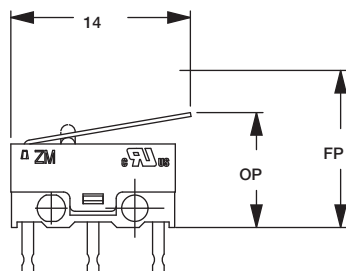
ZM Series Subminiature Snap-acting Switches

ACTUATOR

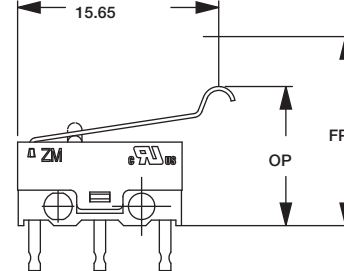
P0 PIN PLUNGER



L0 LEAF, 50 GRAMS (CJ ONLY)
L3 LEAF, 30 GRAMS (CH ONLY)



T13 SIMULATED ROLLER, 40 GRAMS (CJ ONLY)
T23 SIMULATED ROLLER, 25 GRAMS (CH ONLY)



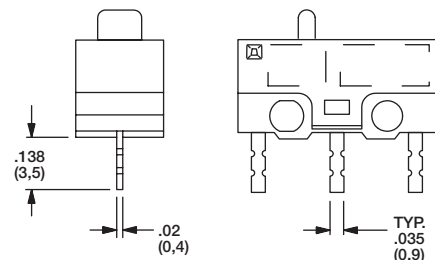
ACTUATOR OPTION CODE	A (mm)	B Ref (mm)	C (mm)	D (mm)	E (mm)	DIFF. MOTION mm MAX	OPER. FORCE grams MAX		RELEASED FORCE Grams MAX	OVER TRAVEL MIN
	LENGTH OF LEVER	LEVER LENGTH MTG. HOLE TO OP	PRE- TRAVEL MAX	OPERATING POSITION	FREE POSITION MAX		CJ	CH		
P0 PIN PLUNGER	NA	NA	1.3	7.0 ±0.3	8.0	0.3	150	90	15-20	0.2
L0 LEAF	13.0	4.03	3.4	8.4 ±0.8	11.0	1.3	50	-	8	0.6
L3 LEAF	13.0	4.03	3.4	8.4 ±0.8	11.0	1.3	-	30	5	0.6
T13 SIMULATED ROLLER	15.0	5.36	3.8	10.5 ±0.8	13.0	1.5	40	-	7	0.6
T23 SIMULATED ROLLER	15.0	5.36	3.8	10.5 ±0.8	13.0	1.5	-	25	4	0.6



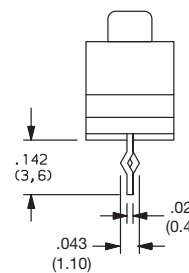
Snap-acting

TERMINATIONS

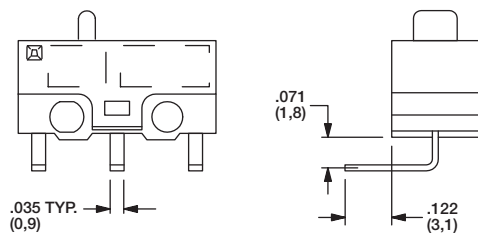
T (STD.) PC THRU-HOLE



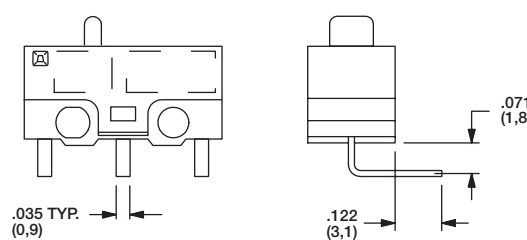
K PC THRU-HOLE WITH RETENTION FEATURE



L LEFT FOOTED, PC THRU-HOLE



R RIGHT FOOTED, PC THRU-HOLE

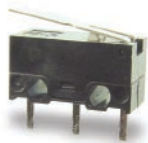


Third Angle
Projection

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

C&K

ZMA Series Subminiature Snap-acting Switches



Features/Benefits

- **Reliable snap-acting mechanism**
- **Long electrical and mechanical life**
- **Compact size—Ideal when space is limited**
- **Various PCB terminals and actuators**
- **RoHS compatible & compliant**

Typical Applications

- **PCB detection switch**
- **Communication devices**
- **Testing equipment**
- **Security/Alarm systems**
- **Consumer electronics**

UL61058-1



Specifications

CONTACT RATING: 3A @ 125 V AC 24 V DC
 1 A @125 / 250 V AC 24 V DC
 0.1A @ 125 V AC 60 V DC

ELECTRICAL LIFE: 300,000 cycles @ 0.1A / 10,000 cycles @ 3A.
 MECHANICAL LIFE: 1,000,000 cycles.
 INSULATION RESISTANCE: 100 M ohm min.
 DIELECTRIC STRENGTH: 500 Vrms.
 OPERATING TEMPERATURE: -40°C to 85°C
 OPERATING FORCE: 80 or 150 grams.

Materials

CASE/COVER: PBT
 ACTUATOR: Button nylon 6/6
 MOVABLE CONTACTS: Silver alloy or gold plated
 STATIONARY CONTACTS: Silver alloy or gold plated
 TERMINALS: Brass, silver plated.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

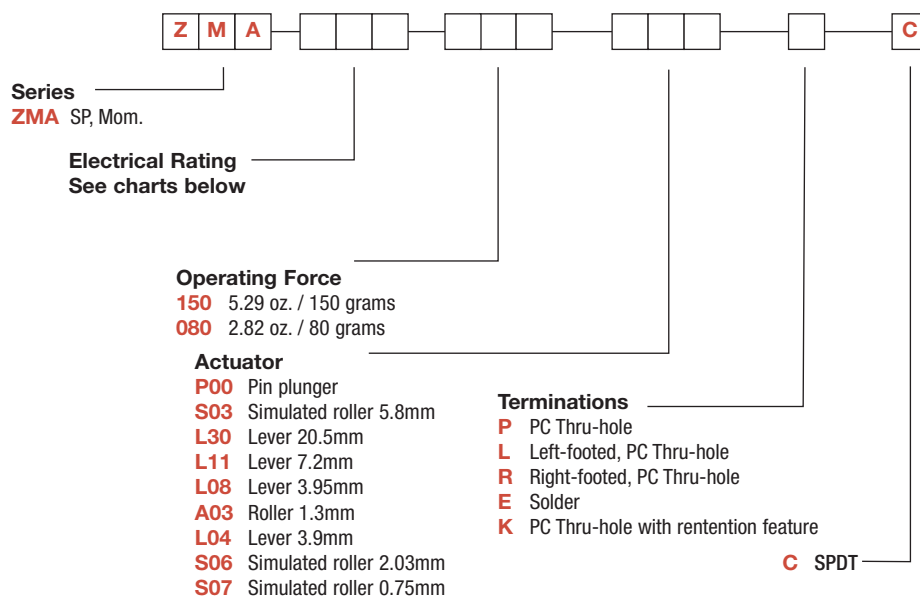
* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max.
 @ 20 V AC or DC max.



Snap-acting

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-51 and J-53. For additional options not shown in catalog, consult Customer Service Center.



Silver Contacts

Option Code	UL 1054	UL 61058-1	EIA 14	EIA 15
00A	0.1A 60 V DC 0.1A 125 V AC	0.1A 60 V DC 0.1A 125 V AC	0.1A 125 V AC	
03A	3 A 125 V AC	3 A 125 V AC 3 A 24 V DC	3A 125 V AC	
01A		1 A 24 V DC 1 A 125 / 250 V AC		1 A 24 V DC 1 A 125 / 250 V AC

Gold Plated Contacts

Option Code	UL 1054	UL 61058-1	EIA 14	EIA 15
G00	0.1A 60 V DC 0.1A 125 V AC	0.1A 60 V DC 0.1A 125 V AC	0.1A 125 V AC	
G03	3 A 125 V AC	3 A 125 V AC 3 A 24 V DC	3A 125 V AC	
G01		1 A 24 V DC 1 A 125 / 250 V AC		1 A 24 V DC 1 A 125 / 250 V AC

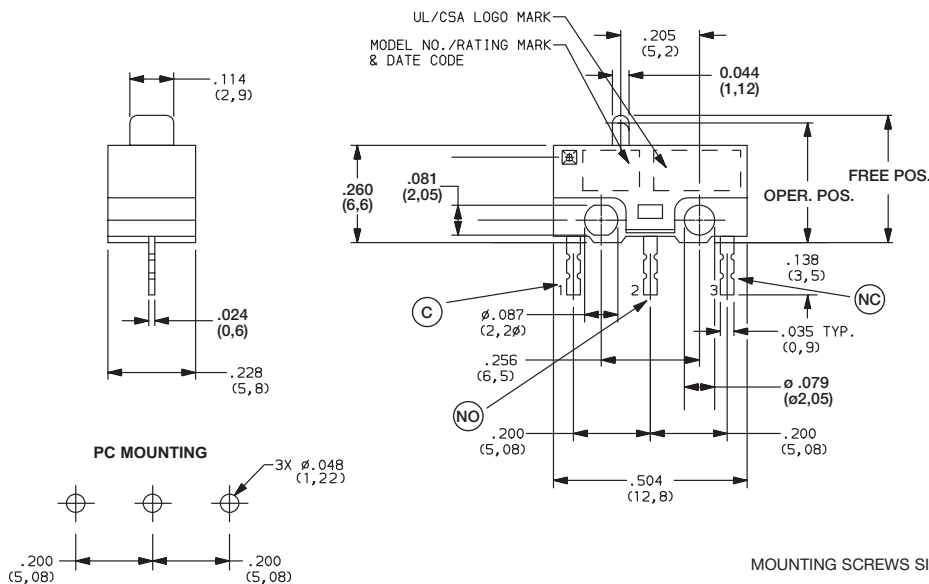


Dimensions are shown: Inch (mm)
 Specifications and dimensions subject to change

ZMA Series Subminiature Snap-acting Switches

SERIES **Z M** ■ ■ ■ ■ ■ ■ ■ ■

ZMA SUBMINIATURE SNAP-ACTING SWITCHES – SP MOMENTARY



ZMA03A150L04PC
SPDT

MOUNTING SCREWS SIZE 1-64

ELECTRICAL RATING ■ ■ ■ ■ ■ ■ ■ ■



Snap-acting

Silver Contacts

Gold Plated Contacts

Option Code	UL cUL US 1054	UL cUL US 61058-1	14	15	Option Code	UL cUL US 1054	UL cUL US 61058-1	14	15
00A	0.1A 60 V DC 0.1A 125 V AC	0.1A 60 V DC 0.1A 125 V AC	0.1A 125 V AC		G00	0.1A 60 V DC 0.1A 125 V AC	0.1A 60 V DC 0.1A 125 V AC	0.1A 125 V AC	
03A	3 A 125 V AC	3 A 125 V AC 3 A 24 V DC	3A 125 V AC		G03	3 A 125 V AC	3 A 125 V AC 3 A 24 V DC	3A 125 V AC	
01A		1 A 24 V DC 1 A 125 / 250 V AC		1 A 24 V DC 1 A 125 / 250 V AC	G01		1 A 24 V DC 1 A 125 / 250 V AC		1 A 24 V DC 1 A 125 / 250 V AC

* Note: See Technical Data in section N of this catalog for RoHS compliant and compatible definition and specifications.

All models **cUL US** with all options.

Consult Customer Service center for availability and delivery of nonstandard ratings.

OPERATING FORCE ■ ■ ■ ■ ■ ■ ■ ■

OPTION CODE	BASIC SWITCH OPERATING FORCE (OZ./GRAMS)
150	5.29 150
080	2.82 80



Third Angle Projection

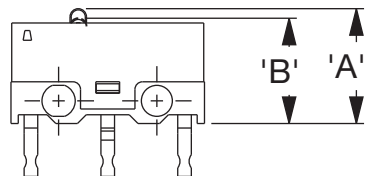
Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



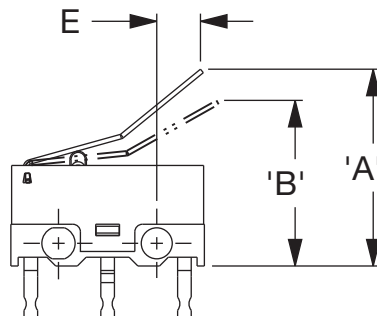
ZMA Series Subminiature Snap-acting Switches

ACTUATOR

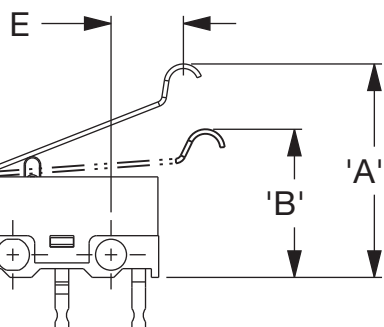
P00 PIN PLUNGER



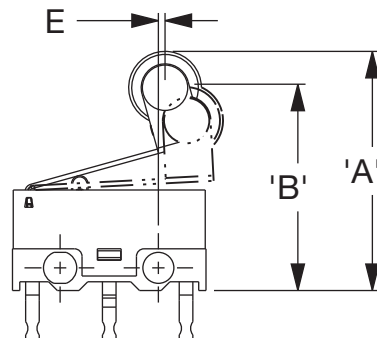
L08 LEVER
3.95MM



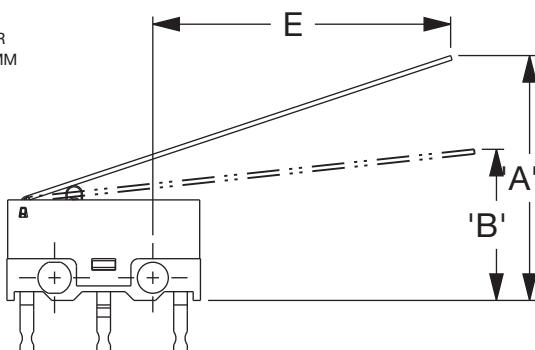
S03 SIMULATED ROLLER
5.8MM



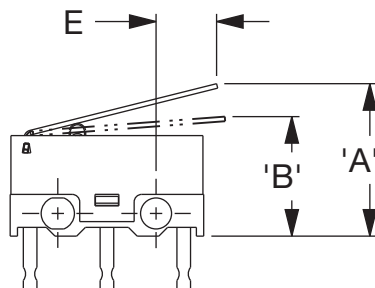
A03 ROLLER
1.3MM



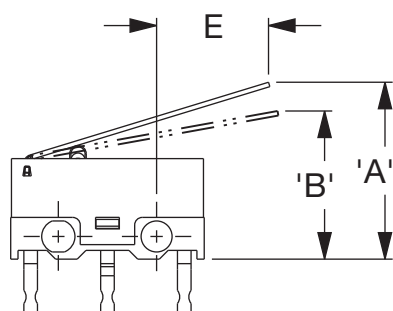
L30 LEVER
20.5MM



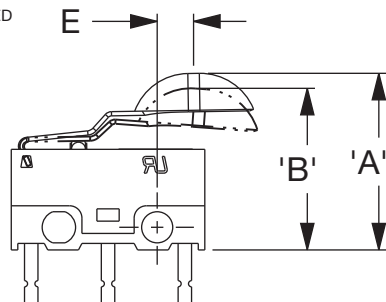
L04 LEVER
3.49MM



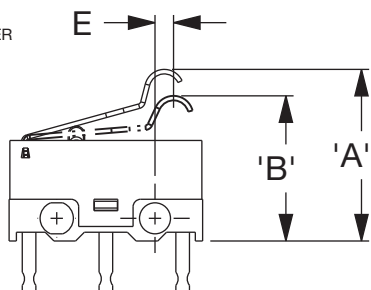
L11 LEVER
7.2MM



S06 SIMULATED ROLLER
2.03MM



S07 SIMULATED ROLLER
0.75MM



Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

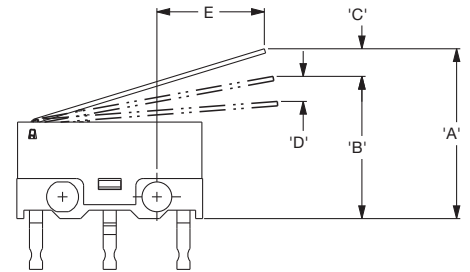


Snap-acting

ZMA Series Subminiature Snap-acting Switches

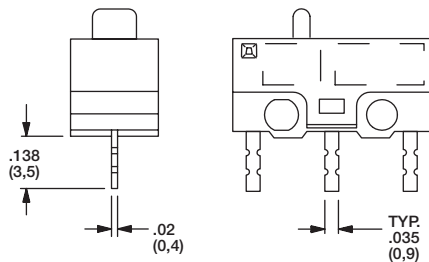
SWITCH CHARACTERISTICS

CODE	OPER. FORCE MAX. (GRAMS)		REL. FORCE MIN. (GRAMS)		'A' FP MAX. (MM)	'B' OP MAX. (MM)	'C' PT MAX. (MM)	'D' OT MIN. (MM)	'E' MIN. (MM)
P00	80	150	21	35	7.35	6.9 ±0.3	0.62	0.2	
S03	25	43	5	7	14.2	9.8 ±0.9	3.5	0.7	5.41
L30 (80gf)	13	21	2	3	16.8	9.5 ±1.9	6.9	0.55	20.15
L30 (150 gf)	13	21	2	3	16.8	9.75 ±1.9	6.9	0.55	20.15
L11	25	39	4	6	11.7	8.68 ±1	4.4	0.6	7.33
L08	27	48	3	8	13.5	10.75 ±0.8	3.5	0.3	3.82
A03	34	65	6	10	16.55	13.65 ±1	3.9	0.5	0.56
L04	30	50	5	8	10.1	7.9 ±0.7	3.0	0.5	3.49
S06	33	49	5	11	12.43	10.7 ±0.8	1.43	1.25	1.97
S07	40	65	2	5	13.0	9.7 ±1	4.3	0.5	0.49

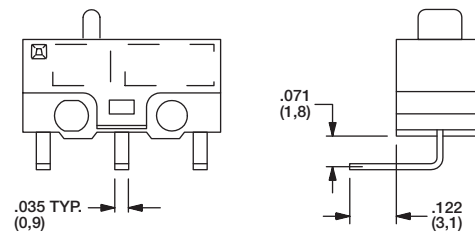


TERMINATIONS

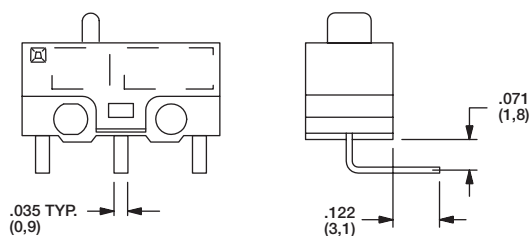
P PC THRU-HOLE



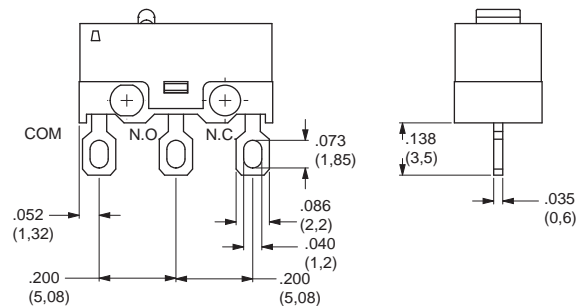
L LEFT FOOTED, PC THRU-HOLE



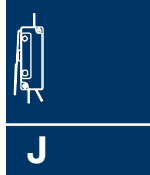
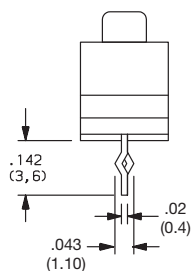
R RIGHT FOOTED, PC THRU-HOLE



E SOLDER



K PC THRU-HOLE WITH RETENTION FEATURE



Snap-acting



Third Angle Projection

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



ZMB Series Subminiature Snap-acting Switches



Features/Benefits

- **Compact design**
- **Various operating forces**
- **Different lever options**
- **PCB or solder terminal options**
- **Detect interlock and movement**

Typical Applications

- **Consumer electronics**
- **Communications**
- **Industrial meters**
- **Security systems**
- **Office equipment**

Specifications

CONTACT ARRANGEMENT: SPDT
 CONTACT RATING: 0.1 A @ 30 V DC
 INITIAL CONTACT RESISTANCE: 50 mΩ max.
 INSULATION RESISTANCE: 100 M Ω min. @ 500 VDC
 DIELECTRIC STRENGTH: 1000 VAC (50-60 Hz)
 MECHANICAL LIFE: 500,000 cycles
 ELECTRICAL LIFE: 50,000 cycles
 PRE-TRAVEL: 0.5 mm max.
 OVER-TRAVEL: 0.5 mm min.
 OPERATING TEMPERATURE: -20°C to + 70°C

Materials

COVER / HOUSING: PBT (black)
 KNOB: PBT (red)
 CONTACT: Copper alloy, silver plated
 TERMINALS: Copper alloy, silver plated
 LEVER: Stainless steel

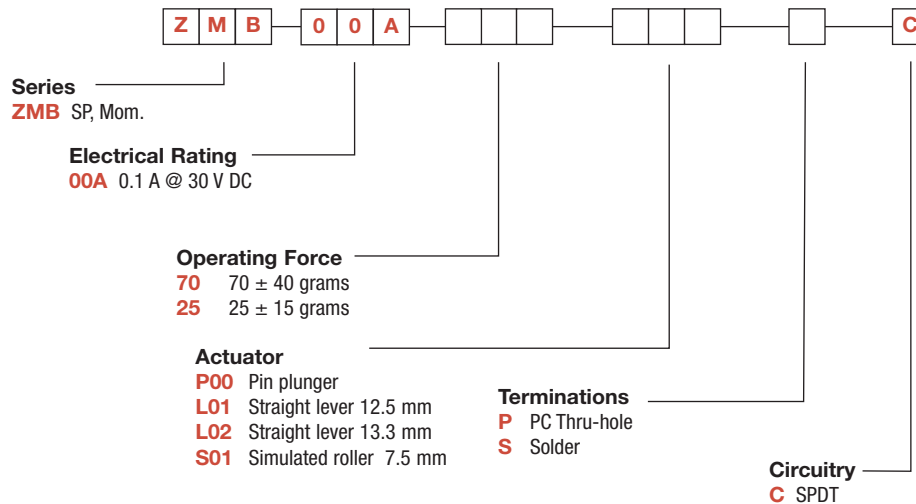
NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.



Snap-acting

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-55 and J-56. For additional options not shown in catalog, consult Customer Service Center.

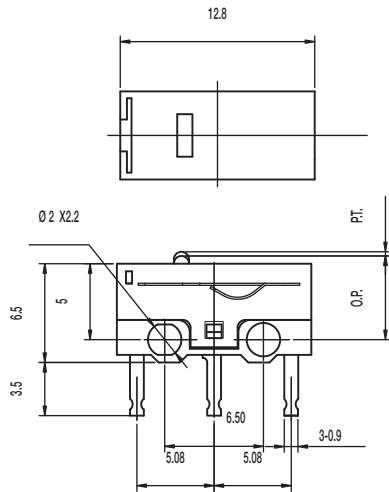


Dimensions are shown: Inch (mm)
 Specifications and dimensions subject to change

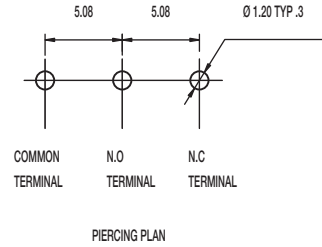
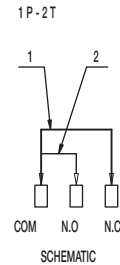
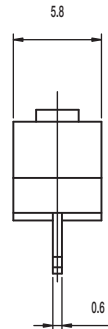
ZMB Series Subminiature Snap-acting Switches

ZMB00A70P00PC

PIN PLUNGER, PC THRU-HOLE

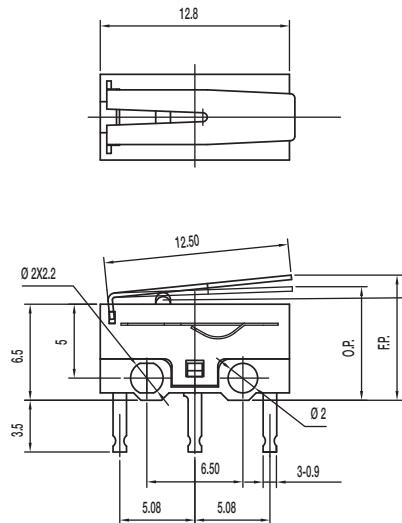


OPERATING FORCE: 70 ± 40 gf
 OPERATING POSITION (OP): 5.5 ± 0.30 mm
 FREE POSITION (FP): N/A

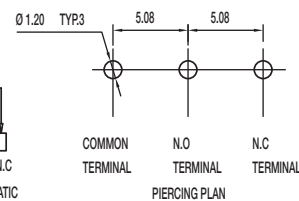
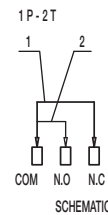
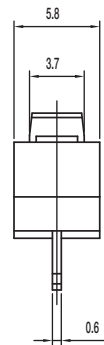


ZMB00A25L01PC

STRAIGHT LEVER 12.5 MM, PC THRU-HOLE

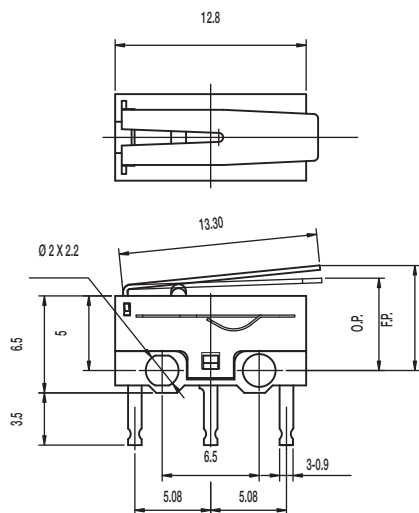


OPERATING FORCE: 25 ± 15 gf
 OPERATING POSITION (OP): 7.2 ± 0.8 mm
 FREE POSITION (FP): 10 mm max.

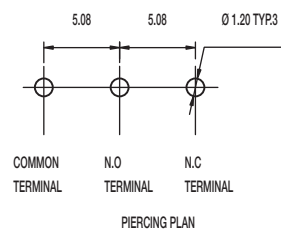
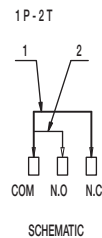
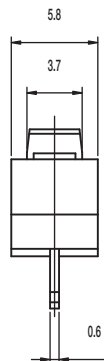


ZMB00A25L02PC

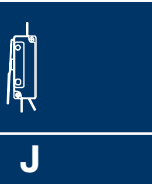
STRAIGHT LEVER 13.3 MM, PC THRU-HOLE



OPERATING FORCE: 25 ± 15 gf
 OPERATING POSITION (OP): 6.0 ± 0.8 mm
 FREE POSITION (FP): 8.5 mm max.



Dimensions are shown: Inches (mm)
 Specifications and dimensions subject to change

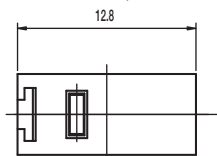


Snap-acting

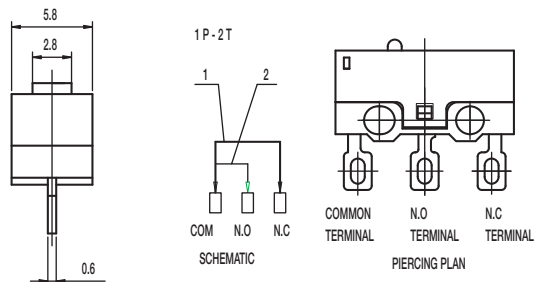
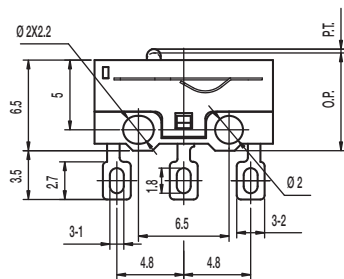
ZMB Series Subminiature Snap-acting Switches

ZMB00A70P00SC

PIN PLUNGER, SOLDER

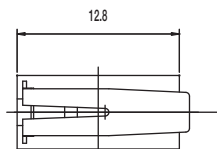


OPERATING FORCE: 70 ± 40 gf
 OPERATING POSITION (OP): 7.0 ± 0.30 mm
 FREE POSITION (FP): N/A

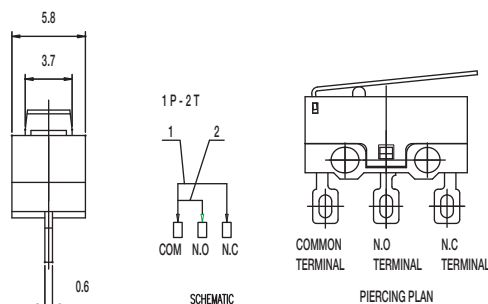
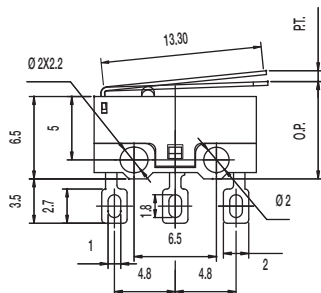


ZMB00A25L02SC

STRAIGHT LEVER 13.3 MM, SOLDER

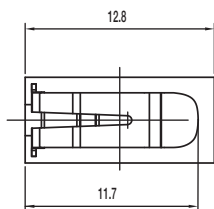


OPERATING FORCE: 25 ± 15 gf
 OPERATING POSITION (OP): 7.5 ± 0.8 mm
 FREE POSITION (FP): 10 mm max.

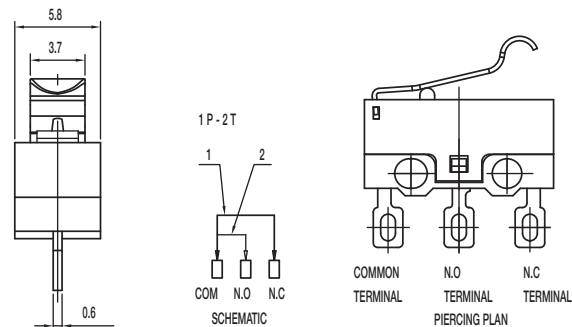
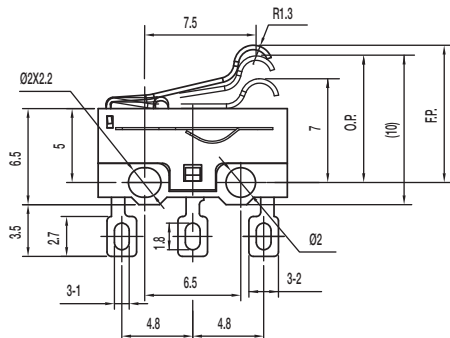


ZMB00A25S01SC

SIMULATED ROLLER 7.5 MM, SOLDER



OPERATING FORCE: 25 ± 15 gf
 OPERATING POSITION (OP): 8.5 ± 0.8 mm
 FREE POSITION (FP): 9.5 mm max.



Snap-acting

ZMS Series Subminiature Snap-acting Switches (IP65)

Features/Benefits

- **Reliable snap-acting mechanism**
- **Long electrical and mechanical life**
- **Compact size—Ideal when space is limited**
- **Various PCB terminals and actuators**
- **RoHS compatible**
- **IP67 with potted wires only**

Typical Applications

- **PCB detection switch**
- **Communication devices**
- **Testing equipment**
- **Security/Alarm systems**
- **Consumer electronics**



UL61058-1
UL1054



Specifications

CONTACT RATING: 3A@ 125 V AC/ 3A@ 12 V DC, 0.01A @ 12 V DC
ELECTRICAL LIFE: 100,000 cycles @ 0.01A 12V DC
100,000 cycles @ 3A 12 V DC
6,000 cycles @ 3A 125 V AC
MECHANICAL LIFE: 500,000 cycles
INSULATION RESISTANCE: 100 M ohm min.
DIELECTRIC STRENGTH: 500 Vrms.
OPERATING TEMPERATURE: -40°C + 85°C.
OPERATING FORCE: 130 grams.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max.
@ 20 V AC or DC max.

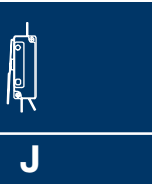
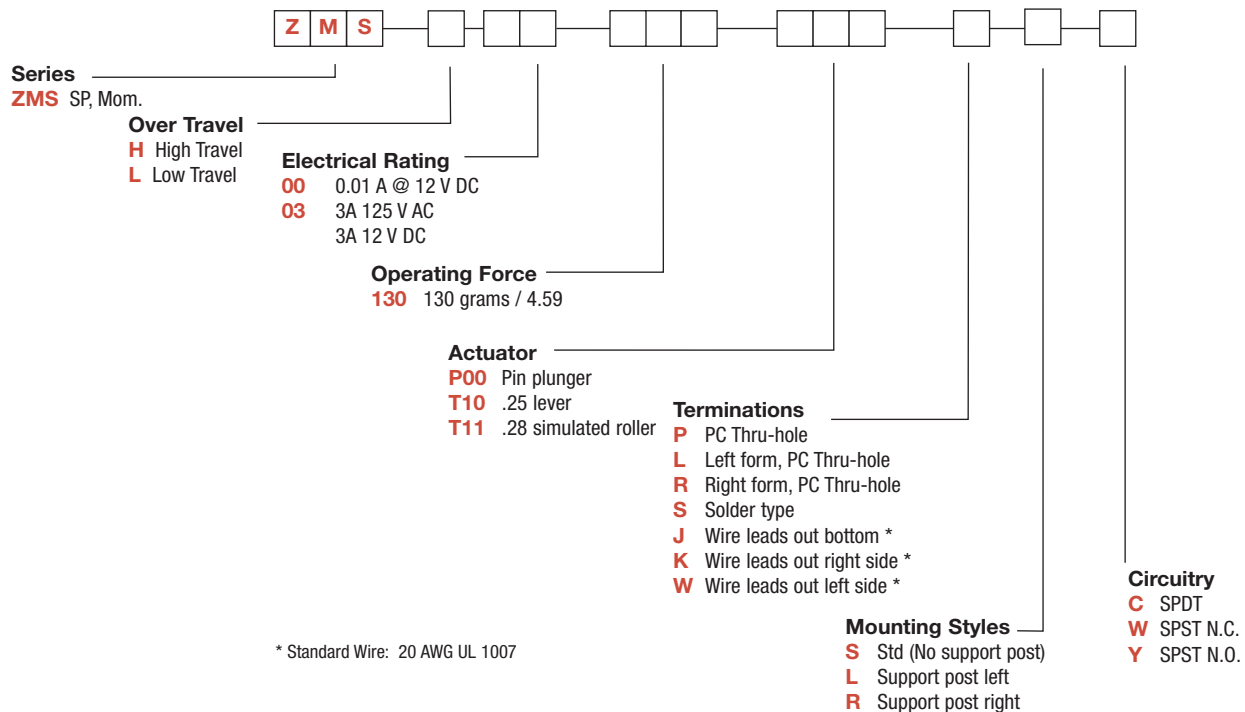
Materials

CASE: Nylon
COVER/ACTUATOR: PBT
MOVABLE CONTACTS: 3 Amp silver alloy, 0.01A gold plating over silver alloy
STATIONARY CONTACTS: 3 Amp silver alloy, 0.01 A gold plating over silver alloy
TERMINALS: Brass, silver plated
LEVER: Stainless steel

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-58 through J-60. For additional options not shown in catalog, consult Customer Service Center.



Snap-acting

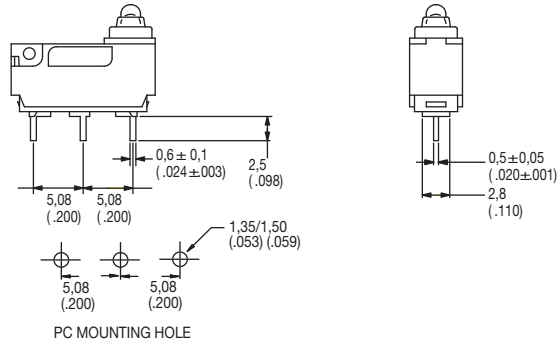


Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

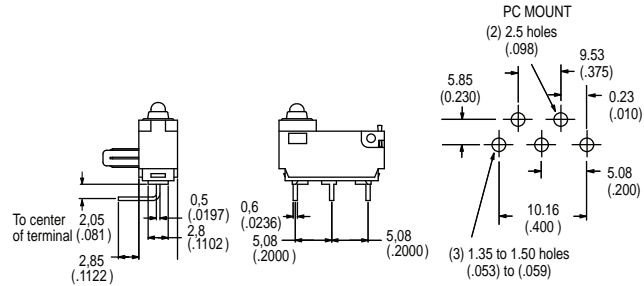
ZMS Series Subminiature Snap-acting Switches (IP65)

TERMINATIONS

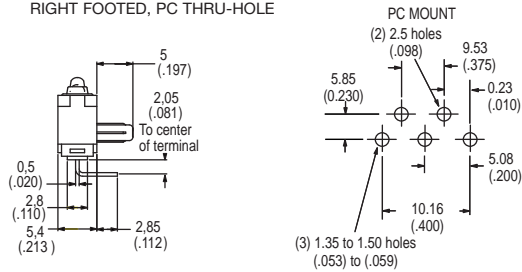
P PC THRU-HOLE



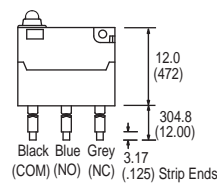
L LEFT FOOTED, PC THRU-HOLE



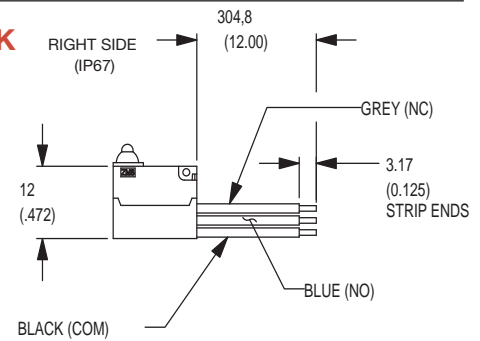
R RIGHT FOOTED, PC THRU-HOLE



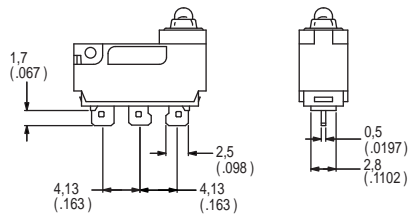
J WIRE LEADS BOTTOM (IP67)



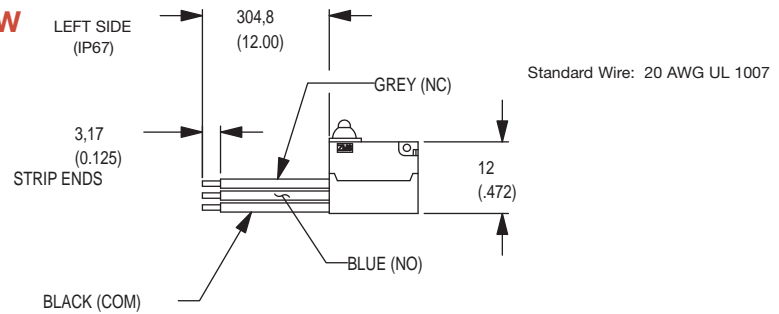
K RIGHT SIDE (IP67)



S SOLDER TYPE

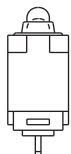


W LEFT SIDE (IP67)

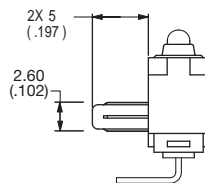


MOUNTING STYLES

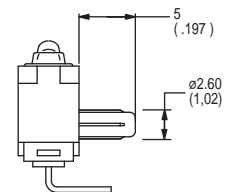
S STD (NO SUPPORT POST)



L SUPPORT POST LEFT



R SUPPORT POST RIGHT

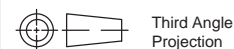


CIRCUITRY

C SPDT (Single Pole, Double Throw)

W SPST, NC (Single Pole, Single Throw, Normally Closed)

Y SPST, NO (Single Pole, Single Throw, Normally Open)



Third Angle
Projection

Dimensions are shown: mm (inch)
Specifications and dimensions subject to change



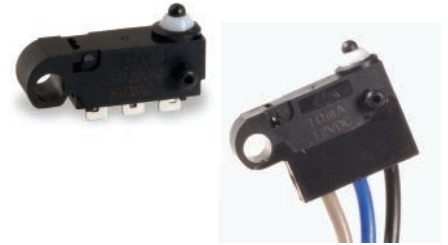
ZMSM Series with Mounting Hole Subminiature Snap-acting Switches (IP65)

Features/Benefits

- Reliable snap-acting mechanism
- Long electrical and mechanical life
- Various PCB terminals and actuators
- RoHS compatible
- IP67 with potted wires only

Typical Applications

- Communication devices
- Testing equipment
- Security/Alarm systems



UL61058-1  us

Specifications

CONTACT RATING: 3A@ 125 V AC/ 3A@ 12 V DC, 0.01 A@ 12 V DC.

ELECTRICAL LIFE: 100,000 cycles @ 0.01 A, 12 V DC / 100,000 cycles @ 3A, 12 V DC, 6,000 cycles @ 3A, 125 VAC

INSULATION RESISTANCE: 100 M ohm min.

DIELECTRIC STRENGTH: 500 Vrms.

OPERATING TEMPERATURE: see chart below.

OPERATING FORCE: 130 grams.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

Materials

CASE: Nylon

COVER/ACTUATOR: PBT

MOVABLE CONTACTS: 3 Amp silver, 0.01A gold

STATIONARY CONTACTS: 3 Amp silver, 0.01A gold

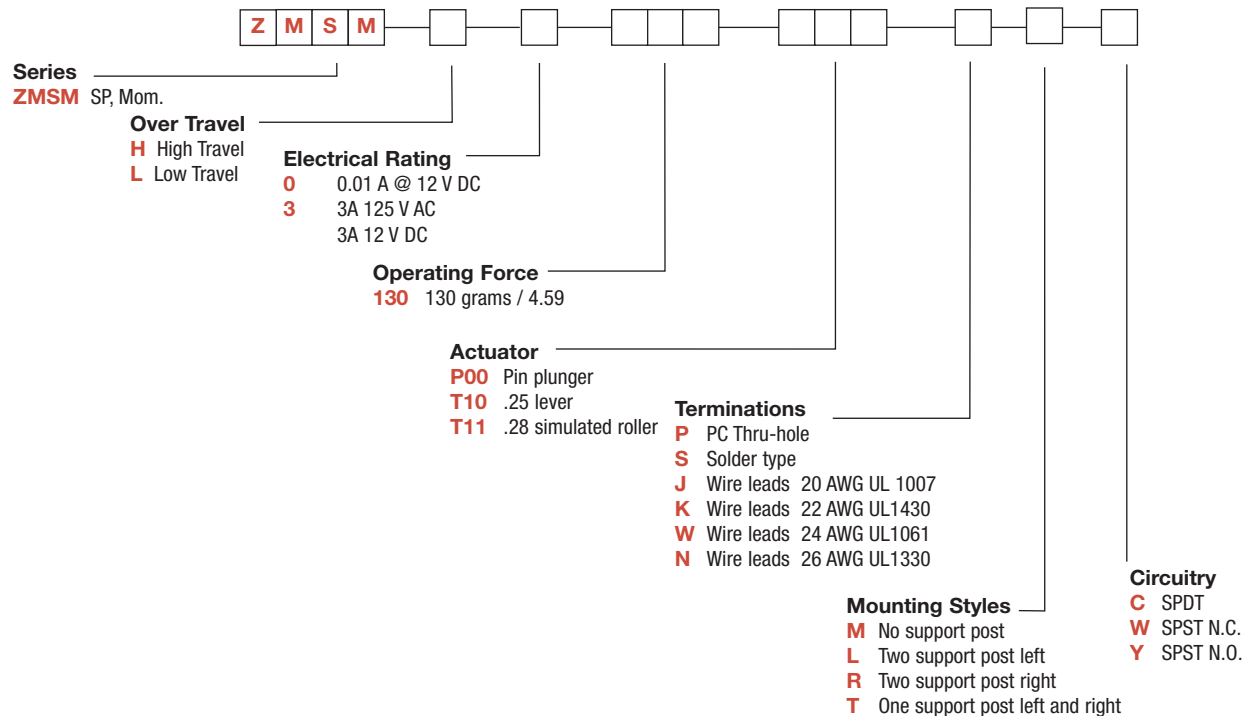
TERMINALS: Brass, Pre-plated with silver

LEVER: Stainless steel

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-62 through J-64. For additional options not shown in catalog, consult Customer Service Center.



Dimensions are shown: mm
Specifications and dimensions subject to change

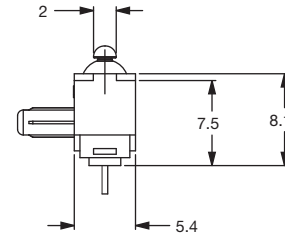
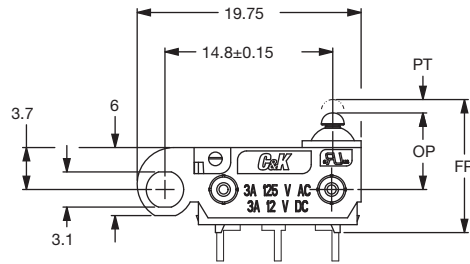
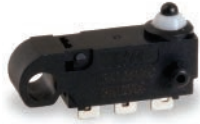


Snap-acting

ZMSM Series with Mounting Hole Subminiature Snap-acting Switches (IP65)

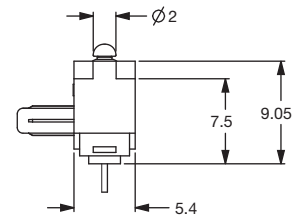
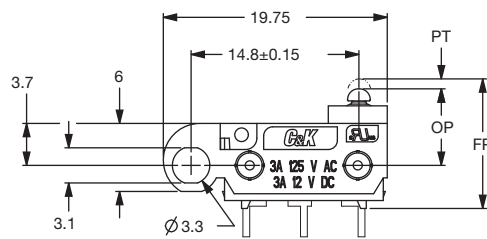
SERIES

ZMSMH HIGH OVER TRAVEL



ZMSML LOW OVER TRAVEL

MODEL SHOWN: ZMSMHXXXXP00PLC



MODEL SHOWN: ZMSMLXXXXP00PLC



Snap-acting

ELECTRICAL RATING

OPTION CODE	RoHS COMPLIANT*	RoHS COMPATIBLE*	CONTACT MATERIAL		ELECTRICAL RATING
			MOVABLE CONTACT	STATIONARY CONTACT	
0	Yes	Yes	Gold alloy		0.01 A @ 12 V DC
3	Yes	Yes	Silver alloy		3 AMPS @ 125 V AC 3 AMPS @ 12 V DC

Model **C&K** with option "S" (solder type) only.
Consult Customer Service center for availability and delivery of nonstandard ratings.

OPERATING FORCE

OPTION CODE	BASIC SWITCH OPERATING FORCE (OZ./GRAMS)
130	130 4.59



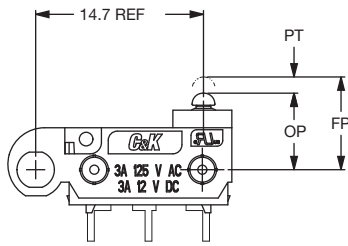
Dimensions are shown: mm
Specifications and dimensions subject to change



ZMSM Series with Mounting Hole Subminiature Snap-acting Switches (IP65)

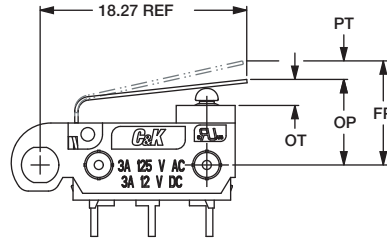
ACTUATOR

P00 PIN PLUNGER (IP65)



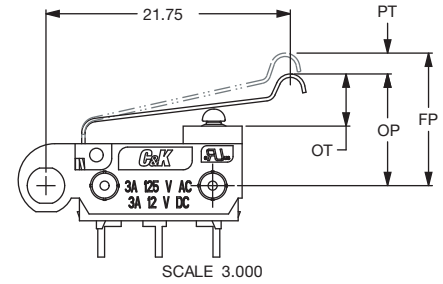
MODEL SHOWN: ZMSMLXXXP00PLC

T10 .25 LEVER (IP65)



MODEL SHOWN: ZMSMLXXXT10PLC

T11 LEVER (IP65)



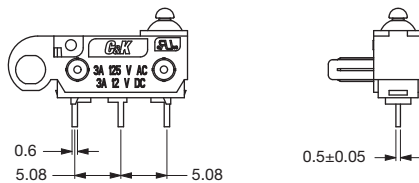
MODEL SHOWN: ZMSMLXXXT11PLC

SWITCH CHARACTERISTICS

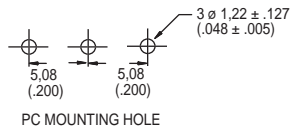
Actuator code	Maximum Operate Force (grams/oz.)	Minimum Release Force (grams/oz.)	Free Position Max (mm)	Maximum Pre-travel (mm)	Operate Position (mm)	Maximum Differential (mm)	Low Overtravel min. (mm)	High Overtravel min. (mm)
P00	130 4.59	13 0.45	7.35	0.8	6.75 ± 0.3	0.3	0.8	1.75
T10	195 6.88	55 1.93	10.70	3.85	7.40 ± 0.8	0.5	1.35	2.3
T11	160 5.64	45 1.58	13.80	4.8	9.90 ± 0.8	0.7	1.65	2.6

TERMINATIONS

P PC THRU-HOLE (IP65)

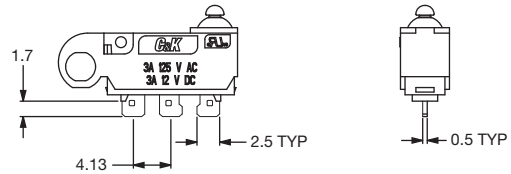


MODEL SHOWN: ZMSMHXXXP00PLC



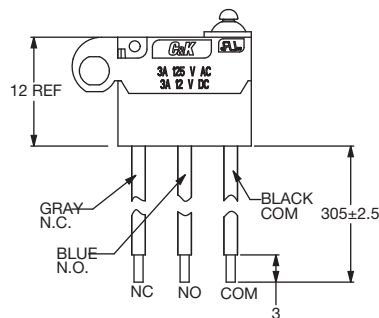
PC MOUNTING HOLE

S SOLDER TYPE (IP65)



MODEL SHOWN: ZMSMHXXXP00SMC

J WIRE LEADS BOTTOM (IP67)



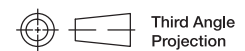
Standard Wire: 20 AWG UL 1007

Available options - must specify

22AWG UL1430

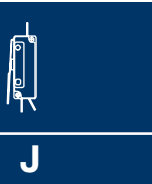
24AWG UL1061

26AWG UL1330



Third Angle Projection

Dimensions are shown: mm
Specifications and dimensions subject to change

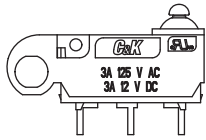


Snap-acting

ZMSM Series with Mounting Hole Subminiature Snap-acting Switches (IP65)

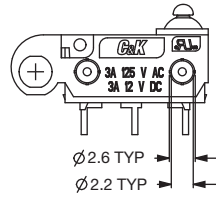
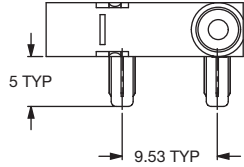
MOUNTING STYLES

M NO SUPPORT POSTS



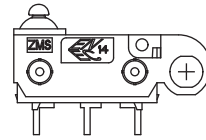
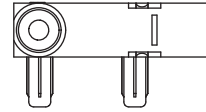
MODEL SHOWN:
ZMSMHXXXXP00PMC

L TWO SUPPORT POSTS LEFT



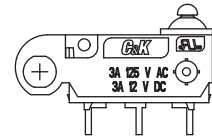
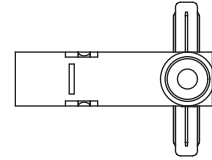
POSTS LEFT
MODEL SHOWN:
ZMSMHXXXXP00PLC

R TWO SUPPORT POSTS RIGHT



POSTS RIGHT
MODEL SHOWN:
ZMSMHXXXXP00PRC

T ONE SUPPORT POST LEFT & RIGHT



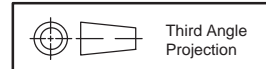
LEFT & RIGHT
MODEL SHOWN:
ZMSMHXXXXP00PTC



Snap-acting

CIRCUITRY

- C** SPDT (Single Pole, Double Throw)
- W** SPST, NC (Single Pole, Single Throw, Normally Closed)
- Y** SPST, NO (Single Pole, Single Throw, Normally Open)



Dimensions are shown: mm
Specifications and dimensions subject to change



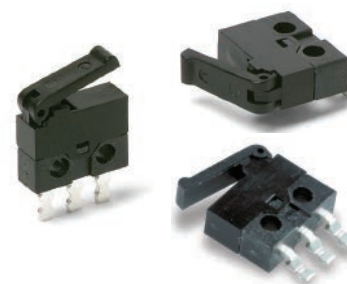
MDS Series Micro Snap-acting Detect Switches

Features/Benefits

- Snap-acting tactile feel
- Small package size
- Available in vertical or right angle PCB mount
- RoHS compliant and compatible

Typical Applications

- Detect the presence of a mechanical device
- Medical devices
- Consumer electronic devices
- ATCA applications



Specifications

CONTACT RATING: 300mA @ 30 VDC.
 MECHANICAL & ELECTRICAL LIFE: 30,000 operations.
 CONTACT RESISTANCE: 100 m Ω max. initial
 OPERATING TEMPERATURE: -25°C to +70°C.
 SOLDERABILITY: According to lead free solder profiles.
 PACKAGING: Available in bulk or tape and reel.
 OPERATING FORCE: 50g Max.
 RELEASE FORCE: 3g Min.

Materials

BASE: PA9T
 COVER & ACTUATOR: PA9T
 MOVABLE CONTACT: Copper alloy, silver plated.
 STATIONARY CONTACTS: Copper alloy, silver plated.
 TERMINALS: Copper alloy, silver plated.

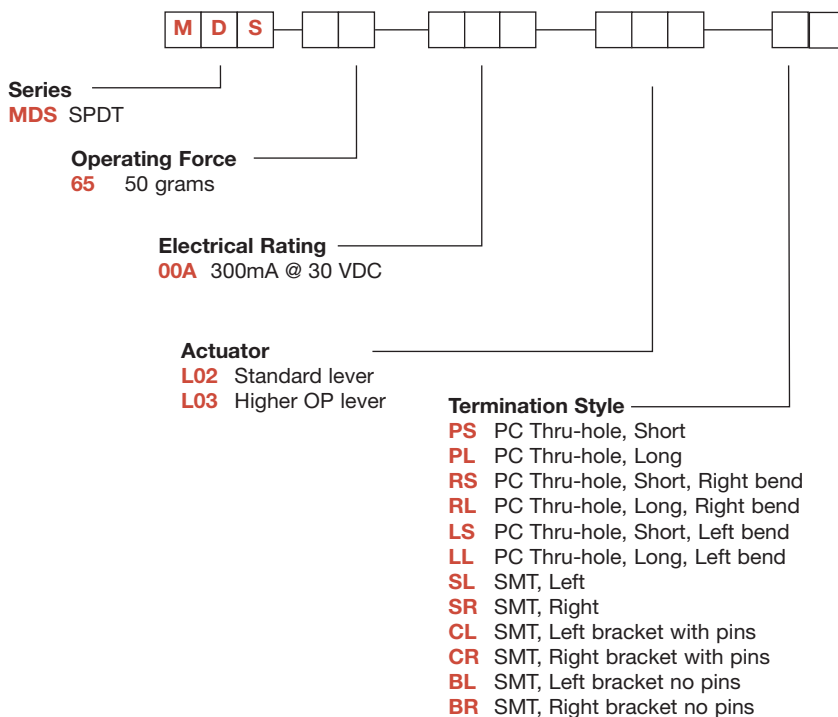
NOTE: MDS series is RoHS compliant, and compatible. See technical data section of this catalog for RoHS compliant and compatible definitions and specifications.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.



Build-A-Switch

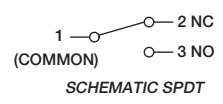
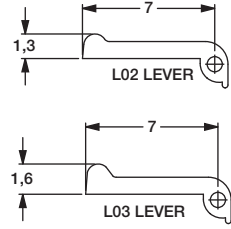
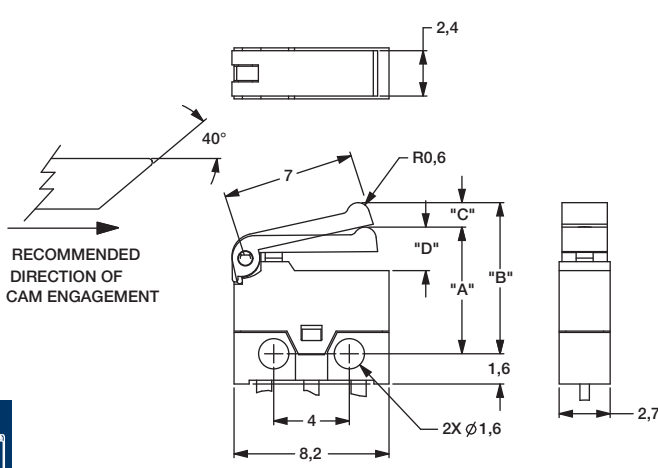
To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-66 through J-70. For additional options not shown in catalog, consult Customer Service Center.



Snap-acting

MDS Series Micro Snap-acting Detect Switches

SERIES **MDS** ■■■■■■■■



OPERATING CHARACTERISTICS			
		LEVER L02	LEVER L03
OPERATING POSITION	DIM 'A'	6.7±0.5	7.0 +/-0.5
FREE POSITION	DIM 'B'	8 MAX	8.5 MAX
PRETRAVEL	DIM 'C'	1.8 MAX	1.8 MAX
OVER TRAVEL	DIM 'D'	0.3 MIN	0.3 MIN
CONTACT RATING		0.3A @ 30 VDC	0.3A @ 30VDC
OPERATING FORCE		50 GRAMS F. MAX	50 GRAMS F. MAX

Snap-acting

OPERATING FORCE ■■■■■■■■

OPTION CODE	OPERATING FORCE
65	50 grams max.

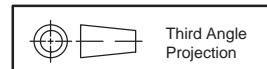
ELECTRICAL RATING ■■■■■■■■

OPTION CODE	ELECTRICAL RATING
00A	300mA @ 30 V DC

ACTUATOR ■■■■■■■■

L02 STANDARD LEVER

L03 HIGHER OP LEVER

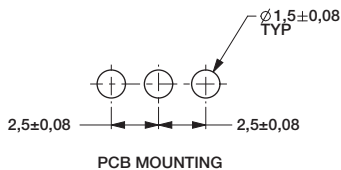


Dimensions are shown: mm
Specifications and dimensions subject to change

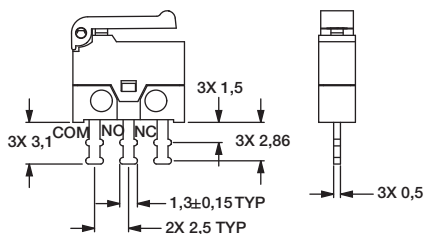
MDS Series Micro Snap-acting Detect Switches

TERMINATIONS

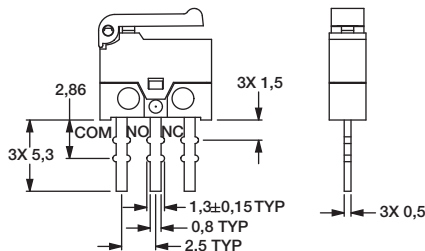
PCB Mounting Pattern



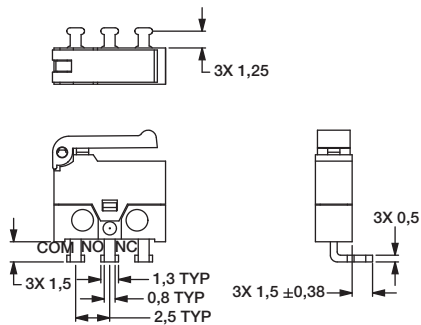
PS PC THRU-HOLE, SHORT STRAIGHT



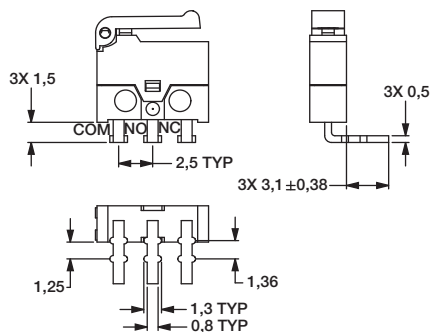
PL PC THRU-HOLE, LONG STRAIGHT



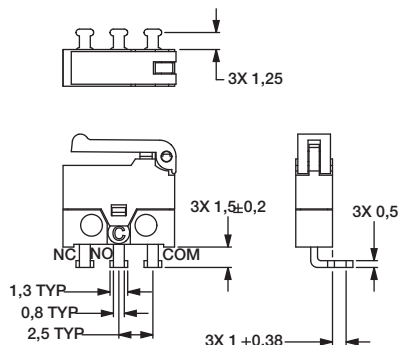
RS PC THRU-HOLE, SHORT RIGHT BEND



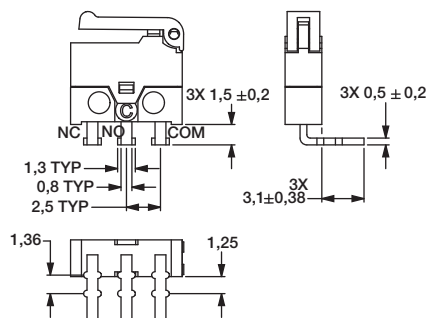
RL PC THRU-HOLE, LONG SHORT BEND



LS PC THRU-HOLE, SHORT LEFT BEND



LL PC THRU-HOLE, LONG LEFT BEND

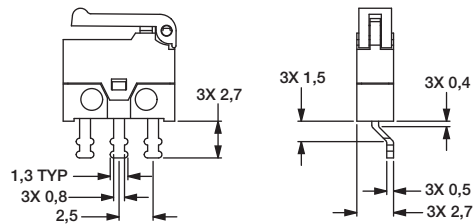


Snap-acting

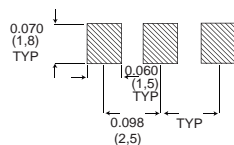
MDS Series Micro Snap-acting Detect Switches

TERMINATIONS

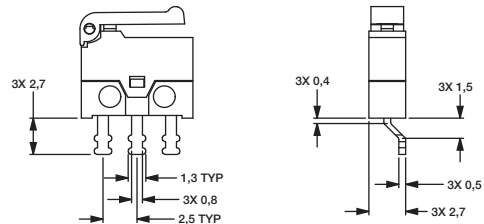
SL SMT, LEFT MOUNT



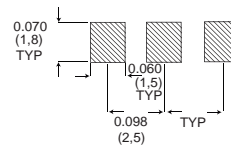
SMT Mounting Pattern



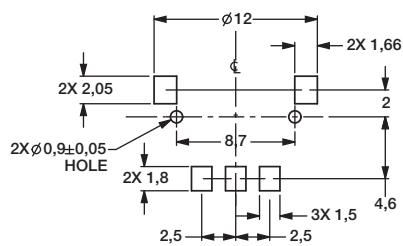
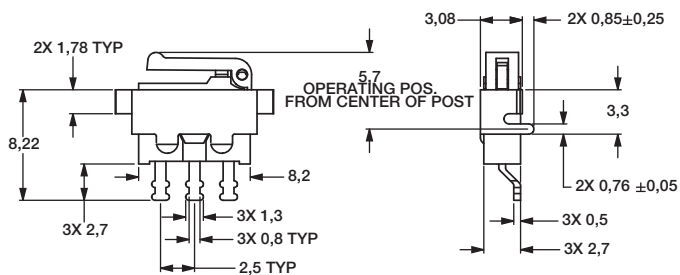
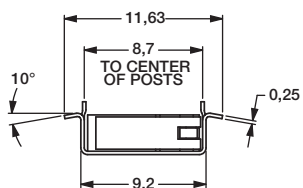
SR SMT, RIGHT MOUNT



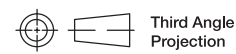
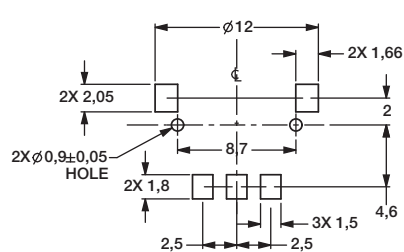
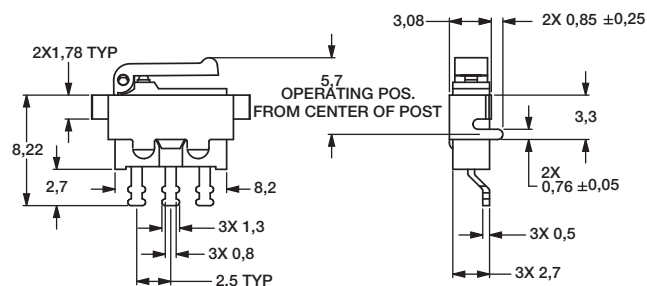
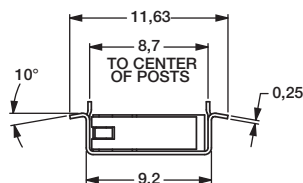
SMT Mounting Pattern



CL SMT, LEFT BRACKET WITH PINS



CR SMT, RIGHT BRACKET WITH PINS

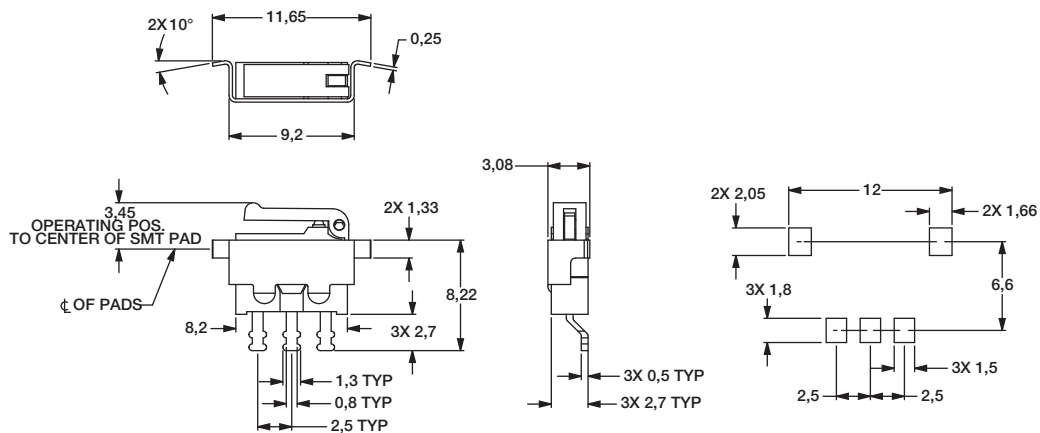


Third Angle
Projection
Dimensions are shown: mm
Specifications and dimensions subject to change

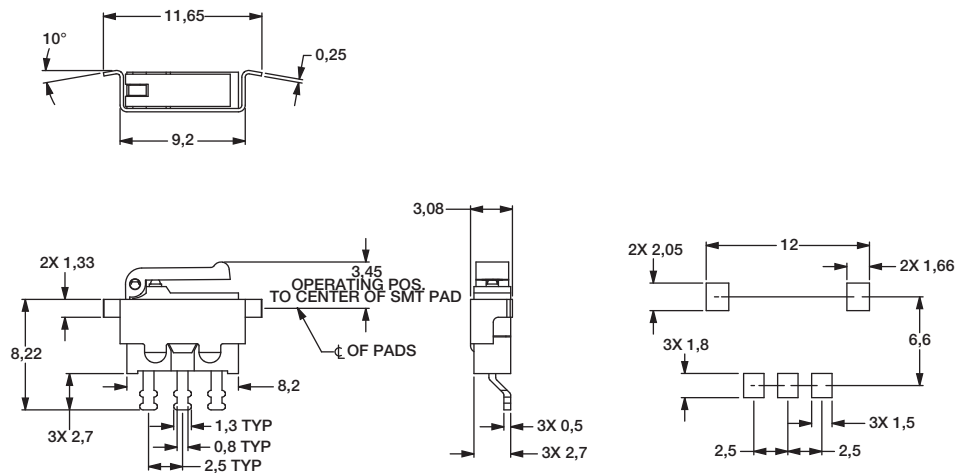
MDS Series Micro Snap-acting Detect Switches

TERMINATIONS

BL SMT, LEFT BRACKET NO PINS



BR SMT, RIGHT BRACKET NO PINS



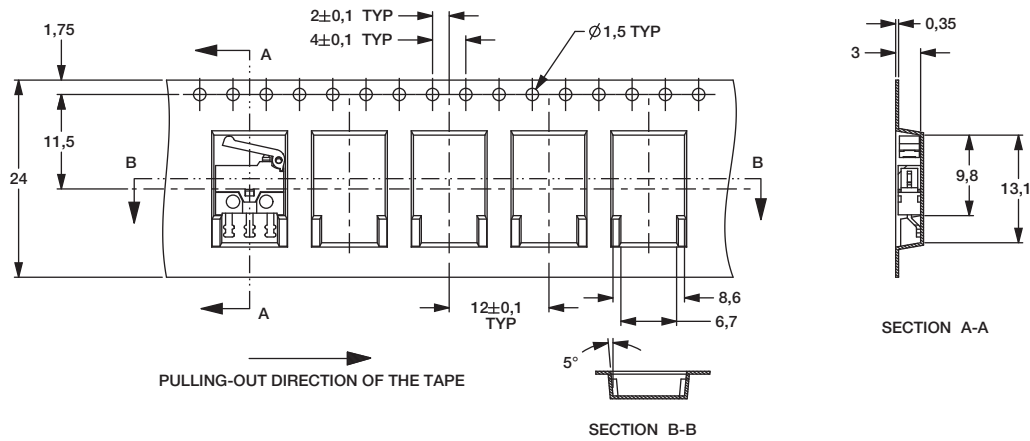
Snap-acting

MDS Series Micro Snap-acting Detect Switches

TAPE AND REEL

SL SMT, LEFT MOUNT

SR SMT, RIGHT MOUNT



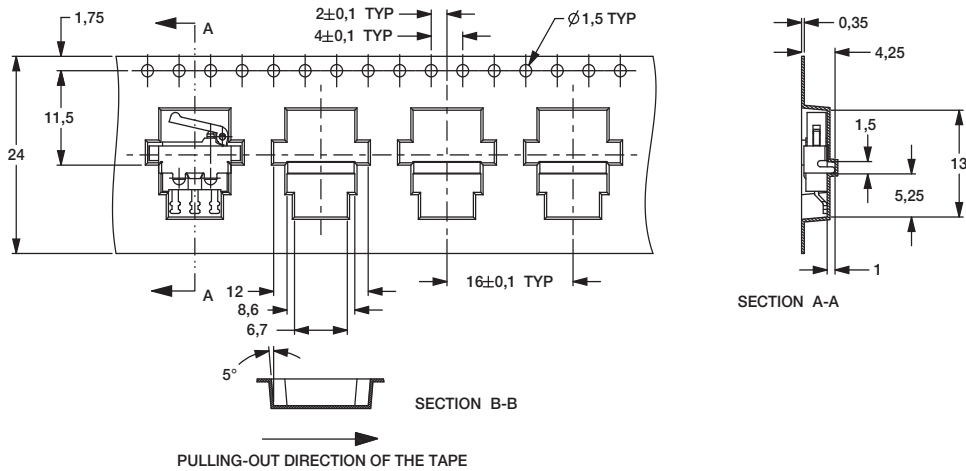
Snap-acting

CL SMT, LEFT MOUNT

CR SMT, RIGHT MOUNT

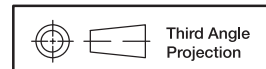
BL SMT, LEFT MOUNT

BR SMT, RIGHT MOUNT



Supplied in carrier tape meeting the EIA-481-2 standard for 24mm tape.

Packaging quantity: SL and SR; 1,600 pieces per reel
CL, CR, BL and BR; 1,000 pieces per reel



Dimensions are shown: mm
Specifications and dimensions subject to change

HB Series Single Pole Standard Precision Snap-acting Switches

Features/Benefits

- Low differential travel, high repeatability
- Long life—150,000 cycles typical
- Single and double pole circuitry
- Sealed actuator and case

Typical Applications

- Thermostats
- Motors
- Industrial controls



Specifications

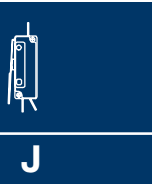
CONTACT RATING: From low level* to 20 AMPS @ 480 V AC; see ELECTRICAL RATING option section for complete listings.
 ELECTRICAL LIFE: 150,000 cycles at 20 AMPS @ 250 V AC. consult Customer Service Center for typical life at other ratings.
 INSULATION RESISTANCE: 1,000 M ohm min.
 DIELECTRIC STRENGTH: 1,500 Vrms min. @ sea level.
 OPERATING TEMPERATURE: -67°F to 302°F (-55°C to 150°C).
 OPERATING FORCE: From 4 oz. to 26 oz. max. at actuator button available.
 MOUNTING SCREWS: Torque 3 in/lbs max.
 (Note: Exceeding 3 in/lbs torque may change operating characteristics and increase the possibility of cracking switch case).
 TERMINAL SCREWS: Torque 4 in/lbs max.
 PANEL MOUNTING BUSHING: Torque 4-6 in/lbs max.
 DEGREE OF PROTECTION: IP65; Dust-proof, water splash and dew condensation.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

Materials

SWITCH HOUSING: Heat resistant/electrical grade phenolic.
 INSERTS: Brass alloy.
 ACTUATOR BUTTON: Moisture resistant phenolic.
 SPRING: Copper alloy.
 PIVOT: Brass alloy.
 MOVABLE CONTACTS: Gold alloy for ratings 1 AMP or less. Fine silver for ratings greater than 1 AMP and motor load ratings less than 1/2 HP @ 125 V AC. Silver alloy for motor load ratings 1/2 HP @ 125 V AC or greater.
 STATIONARY CONTACTS: Gold alloy for ratings 1 AMP or less. Fine silver welded to copper base for ratings greater than 1 AMP and motor load ratings less than 1/2 HP @ 125 V AC. Silver alloy on copper base for motor load ratings 1/2 HP @ 125 V AC or greater.
 TERMINALS: Brass alloy, bright tin plated.

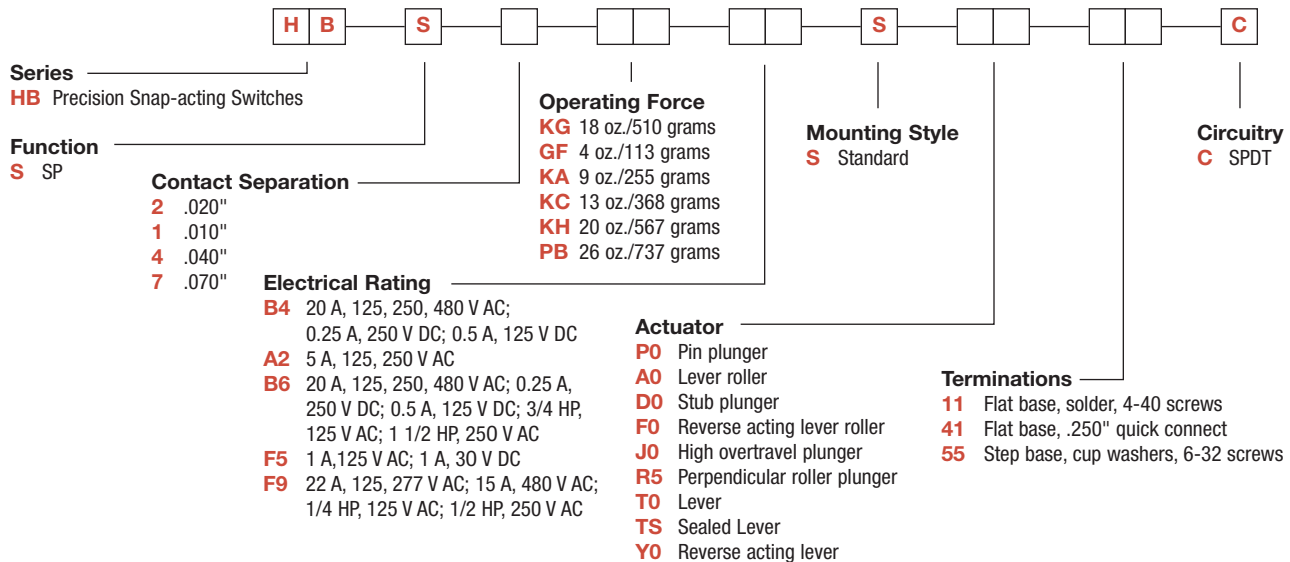
NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.



Snap-acting

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-72 through J-76. For additional options not shown in catalog, consult Customer Service Center.



Dimensions are shown: mm
 Specifications and dimensions subject to change

HB Series Single Pole Standard Precision Snap-acting Switches

Sealed Actuator and Case

To provide reliable service under environmental conditions that might damage standard precision switches, various HB Series switch models are sealed against the entrance of airborne contaminants and/or splashing liquids. The clearance between the operating plunger and the cover is sealed with a silicone boot and the base cover joint is sealed with an epoxy adhesive. These models are designed to meet requirements of IP65 (dust proof, water splash and dew condensation). For additional information on sealed switches, consult our Customer Service Center.

SERIES

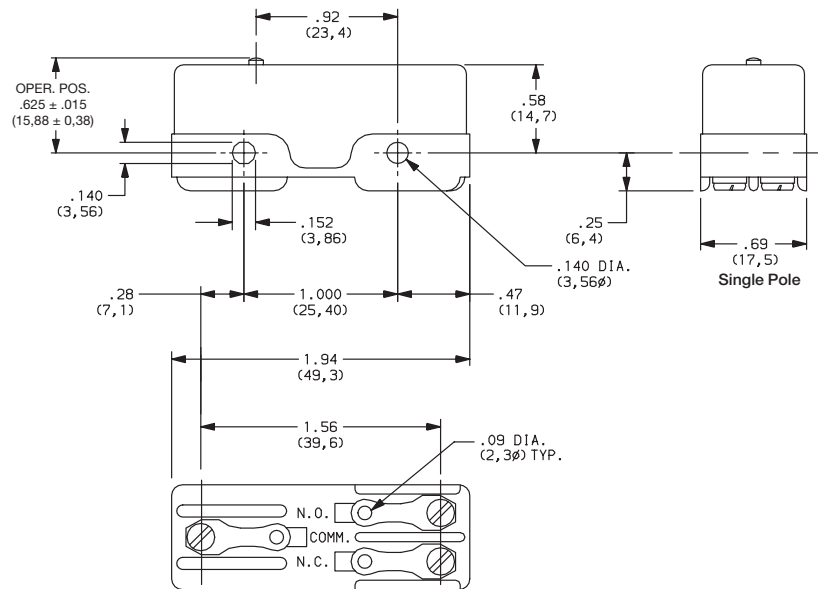
HB PRECISION SNAP-ACTING SWITCHES

FUNCTION

S SINGLE POLE SWITCH



Snap-acting

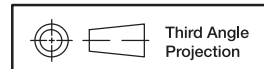
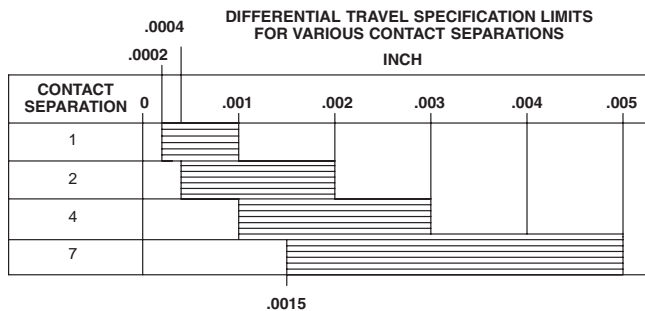


NOTE: To select switching function, see CIRCUITRY section, page J-52.

CONTACT SEPARATION

OPTION CODE	NOMINAL CONTACT SEPARATION (in./mm)
2	.020 (0,51)
1	.010 (0,25)
4	.040 (1,02)
7	.070 (1,78)

Switches with 1 AMP rating (option code 'F5') are available only with .020 contact separation (option '2').
Switches with 1/2 HP, 125 V AC rating or greater (option codes 'B5 and B6') are not available with .010 contact separation (option code '1').



Dimensions are shown in (mm)

Specifications and dimensions subject to change

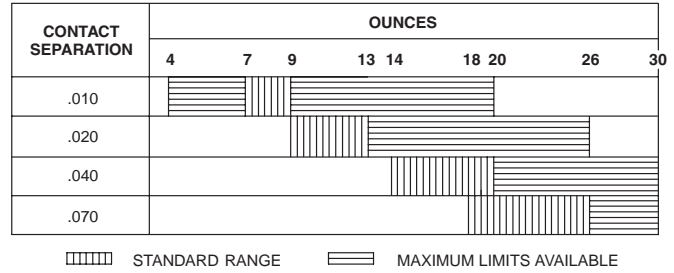


HB Series Single Pole Standard Precision Snap-acting Switches

OPERATING FORCE

OPTION CODE	MAXIMUM OPERATING FORCE (OZ./GRAMS)	STANDARD CONTACT SEPARATION (inch)
KG	18 510	.020
GF	4 115	.010
KA	9 255	.010
KC	13 370	.020
KH	20 570	.040
PB	26 740	.070

OPERATING FORCE SPECIFICATION LIMITS FOR VARIOUS CONTACT SEPARATIONS



NOTE: All listed differential travel characteristics are based on standard operating force and contact separation. For any other force or contact separation, consult Customer Service Center. Operating force varies with actuator option, see ACTUATOR option section.

ELECTRICAL RATING

OPTION CODE	MOVABLE CONTACT	STATIONARY CONTACT	ELECTRICAL RATING
B4	Fine silver.	Fine silver welded to copper base.	20 AMPS @ 125, 250 & 480 V AC; 0.25 AMPS @ 250 V DC; 0.5 AMPS @ 125 V DC (UL).
A2			5 AMPS @ 125 & 250 V AC (UL).
B6	Precious metal alloy.	Precious metal alloy.	20 AMPS @ 125, 250 & 480 V AC; 0.25 AMP @ 250 V DC; 0.5 AMP @ 125 V DC; 3/4 HP @ 125 V AC; 1 1/2 HP @ 250 V AC (UL).
F5	Gold alloy.	Gold alloy.	Low level* to 1 AMP @ 125 V AC; 1 AMP @ 30 V DC (UL).
F9	Fine silver.	Fine silver welded to copper base.	22 AMPS @ 125 & 277 V AC; 15 AMPS @ 480 V AC; 1/4 HP @ 125 V AC; 1/2 HP @ 250 V AC; 277 V AC (UL).

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications.

AVAILABLE COMBINATIONS

ELECTRICAL RATING	OPERATING FORCE (oz.)					
	4 GF	9 KA	13 KC	18 KG	20 KH	26 PB
A2	•	•	•	•	•	•
B4	x	•	•	•	•	•
B6	x	x	x	•	•	•
F5	x	x	•	•	•	•
F9	x	x	x	•	•	•

• AVAILABLE
x NOT AVAILABLE

All models with all options

Consult Customer Service center for availability and delivery of nonstandard ratings.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.



Dimensions are shown: Inch (mm)

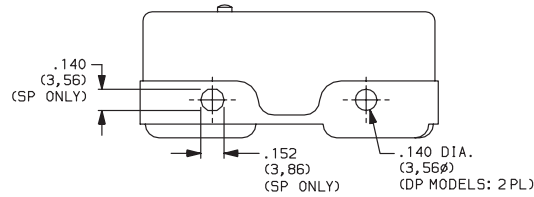
Specifications and dimensions subject to change



HB Series Single Pole Standard Precision Snap-acting Switches

MOUNTING STYLE

S Standard



NOTE: Mounting holes will accept pins or screws of .139 dia. (3,53) max. on 1.000 ± .002 (25,4 ± 0,05) centers.

NOTE: Torque mounting screws 3 inlbs max.

ACTUATOR

OPTION CODE	NO. POLES	FIG.	DIM. A	DIM. B	DIM. C	DIM. D
A0	SP	1	.86 (21,8)	1.120 ± .060 (28,45 ± 1,52)	.38 dia. (9,70)	1.03 (26,2)
D0	SP	3	.92 (23,4)	.844 ± .020 (21,44 ± 0,51)	—	—
F0	SP	2	.09 (2,3)	1.120 ± .050 (28,45 ± 1,27)	.38 dia. (9,70)	.74 (18,8)
J0	SP	4	.86 (21,8)	.860 ± .030 (21,84 ± 0,76)	—	—
P0	SP	5	.92 (23,4)	.625 ± .010 (15,88 ± 0,25)	—	—
R5	SP	6	.92 (23,4)	.62 (15,7)	.50 dia. (12,70)	0.61 (15,5)
T0	SP	7	1.310 (33,27)	.720 ± .060 (18,28 ± 1,52)	1.03 dia. (26,20)	—
TS*	SP	7	1.47 (37,3)	.720 ± .060 (18,28 ± 1,52)	1.03 dia. (26,20)	—
Y0	SP	8	.05 (1,3)	.720 ± .030 (18,29 ± 0,76)	.74 dia. (18,80)	2.65 (6,73)

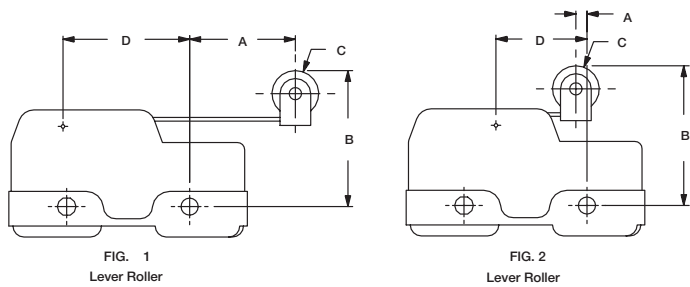


FIG. 1
Lever Roller

FIG. 2
Lever Roller

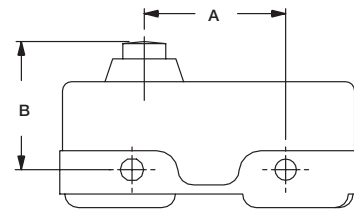


FIG. 3
Stub Plunger

Snap-acting

* Actuators sealed against the entrance of airborne contaminants and/or splashing liquids.

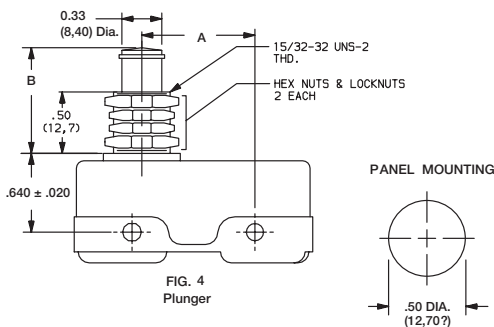


FIG. 4
Plunger

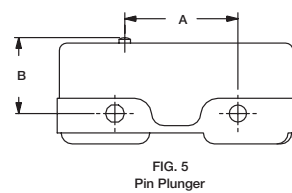


FIG. 5
Pin Plunger

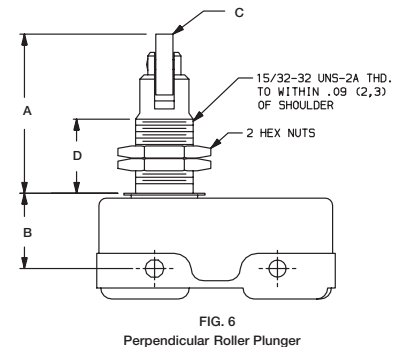


FIG. 6
Perpendicular Roller Plunger

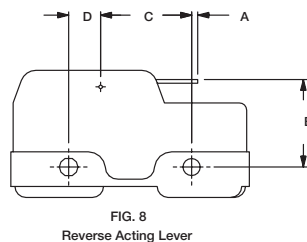


FIG. 8
Reverse Acting Lever

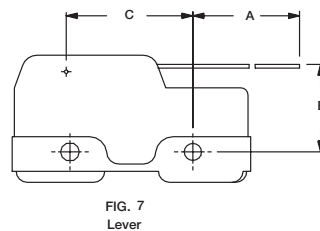


FIG. 7
Lever



Third Angle Projection

Dimensions are shown: Inches (mm)

Specifications and dimensions subject to change



HB Series

Single Pole Standard Precision Snap-acting Switches

ACTUATOR

	OPTION CODE	ACTUATOR								* SEALED ACTUATOR
		A0	D0	F0	J0	P0	R5	T0	Y0	TS
MAXIMUM OPERATING FORCE (OZ./GRAMS)	GF	—	—	—	—	4 115	—	—	—	—
	KA	3 85	9.5 269	10 284	10 284	9 255	10 284	2 60	10 284	2 56
	KC	—	13 370	10 284	13 370	13 370	13 370	—	10 284	—
	KG	3.5 100	—	—	—	18 510	—	2.5 71	—	2.5 71
	KH	4 115	20 570	20 570	20 570	20 570	20 570	3 85	20 570	3 85
	PB	4.5 130	26 740	20 570	26 740	26 740	26 740	3.5 100	20 570	3.5 100
MINIMUM RELEASE FORCE (OZ./GRAMS)	GF	—	—	—	—	1 28	—	—	—	—
	KA	.75 21	4 110	3 85	4 110	4 110	4 110	.5 14	3 85	.5 14
	KC	1.7 48	4 110	3 85	4 110	4 110	4 110	—	3 85	—
	KG	.75 21	—	—	—	4 110	—	.5 14	—	.5 14
	KH	.75 21	4 110	3 85	4 110	4 110	4 110	.5 14	3 85	.5 14
	PB	.75 21	4 110	3 85	4 110	4 110	4 110	.5 14	3 85	.5 14

NOTE: For basic switch operating forces, see page J-71. * Actuators sealed against the entrance of airborne contaminants and/or splashing liquids.

	OPTION CODE	ACTUATOR								* SEALED ACTUATOR
		A0	D0	F0	J0	P0	R5	T0	Y0	TS
MAXIMUM DIFFERENTIAL TRAVEL (IN/MM)	GF	—	—	—	—	.0005 (0,013)	—	—	—	—
	KA	.020 (0,51)	.0005 (0,013)	.005 (0,13)	—	.0005 (0,013)	—	.047 (1,19)	.005 (0,13)	.047 (1,19)
	KC	—	.002 (0,05)	.008 (0,20)	—	.002 (0,05)	—	—	.009 (0,23)	—
	KG	.062 (1,57)	—	—	—	.003 (0,08)	—	.078 (1,98)	—	.078 (1,98)
	KH	.080 (2,03)	.003 (0,76)	.020 (0,51)	—	.003 (0,08)	—	.093 (2,36)	.020 (0,51)	.093 (2,36)
	PB	.125 (3,18)	.007 (0,18)	.030 (0,76)	—	.005 (0,13)	—	.156 (3,96)	.031 (0,79)	.156 (3,96)
MAXIMUM PRETRAVEL (IN/MM)	GF	—	—	—	—	.020 (0,51)	—	—	—	—
	KA	.312 (7,92)	.020 (0,51)	0.8 (2,0)	.015 (0,38)	.015 (0,38)	.015 (0,38)	.38 (9,7)	.09 (2,3)	.38 (9,7)
	KC	—	.020 (0,51)	0.8 (2,0)	.020 (0,51)	.020 (0,51)	.020 (0,51)	—	.09 (2,3)	—
	KG	.312 (7,92)	—	—	—	.025 (0,64)	—	.38 (9,7)	—	.38 (9,7)
	KH	.38 (9,7)	.025 (0,64)	0.9 (2,3)	.025 (0,64)	.025 (0,64)	.025 (0,64)	.38 (9,7)	0.9 (2,3)	.38 (9,7)
	PB	.38 (9,7)	.030 (0,76)	0.9 (2,3)	.030 (0,76)	.030 (0,76)	.030 (0,76)	.38 (9,7)	0.9 (2,3)	.38 (9,7)
MINIMUM OVERTRAVEL (IN/MM)	GF	—	—	—	—	.005 (0,13)	—	—	—	—
	KA	.156 (3,96)	.055 (1,40)	.06 (1,5)	.22 (5,6)	.005 (0,13)	.141 (3,58)	.19 (4,8)	.06 (1,5)	.19 (4,8)
	KC	—	.055 (1,40)	0.9 (2,3)	.22 (5,6)	.005 (0,13)	.141 (3,58)	—	0.9 (2,3)	—
	KG	.156 (3,96)	—	—	—	.005 (0,13)	—	.19 (4,8)	—	.19 (4,8)
	KH	.156 (3,96)	.055 (1,40)	0.9 (2,3)	.22 (5,6)	.005 (0,13)	.141 (3,58)	.19 (4,8)	0.9 (2,3)	.19 (4,8)
	PB	.156 (3,96)	.055 (1,40)	0.9 (2,3)	.22 (5,6)	.005 (0,13)	.141 (3,58)	.19 (4,8)	0.9 (2,3)	.19 (4,8)



*Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change*

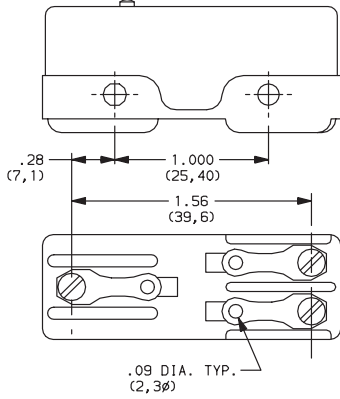


Snap-acting

HB Series Single Pole Standard Precision Snap-acting Switches

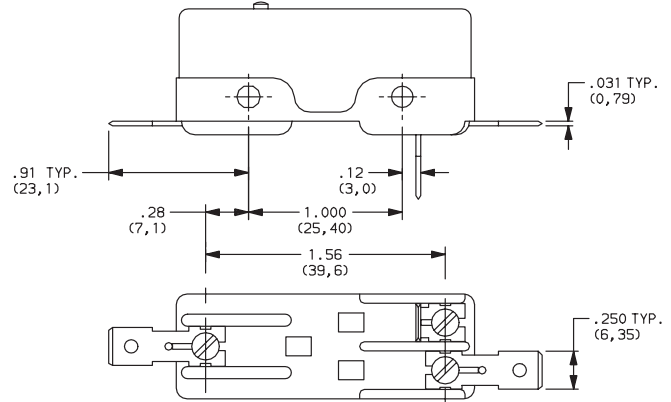
TERMINATIONS

11 FLAT BASE, SOLDER TERMINALS AND 4-40 SCREWS



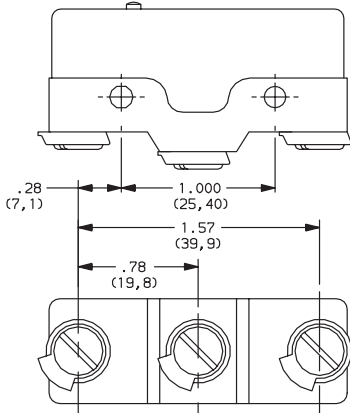
NOTE: Switches with flat base option have molded ribs that provide increased creep distance.

41 FLAT BASE, .250" QUICK CONNECT TERMINALS



Snap-acting

55 STEP BASE, 6-32 SCREWS AND CUP WASHERS



NOTE: Switches with step base option provide wide electrical clearance for screw terminal options.

CIRCUITRY

C DT (Double Throw, Normally Closed & Normally Open)



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

A Series General Purpose Snap-acting Switches

Features/Benefits

- Low cost—high performance
- Long electrical life
- Single and double pole
- Sealed actuator option available

Typical Applications

- Enclosure equipment
- Garage door openers
- Vending machines



Specifications

CONTACT RATING: From low level* to 30 AMPS @ 277 V AC.
 ELECTRICAL LIFE: 75,000 cycles at 25 AMPS @ 250 V AC,
 200,000 cycles at 15 AMPS @ 250 V AC.
 INSULATION RESISTANCE: 1,000 M ohm min.
 DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.
 OPERATING TEMPERATURE: -67°F to 185°F (-55°C to 85°C).
 OPERATING FORCE: 20 oz. (567 grams) max. SP models.
 40 oz. (1134 grams) max. DP models at actuator button.
 MOUNTING: Torque screws 3 in/lbs max.
 MOUNTING NUT: 20 in/lbs max. torque

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

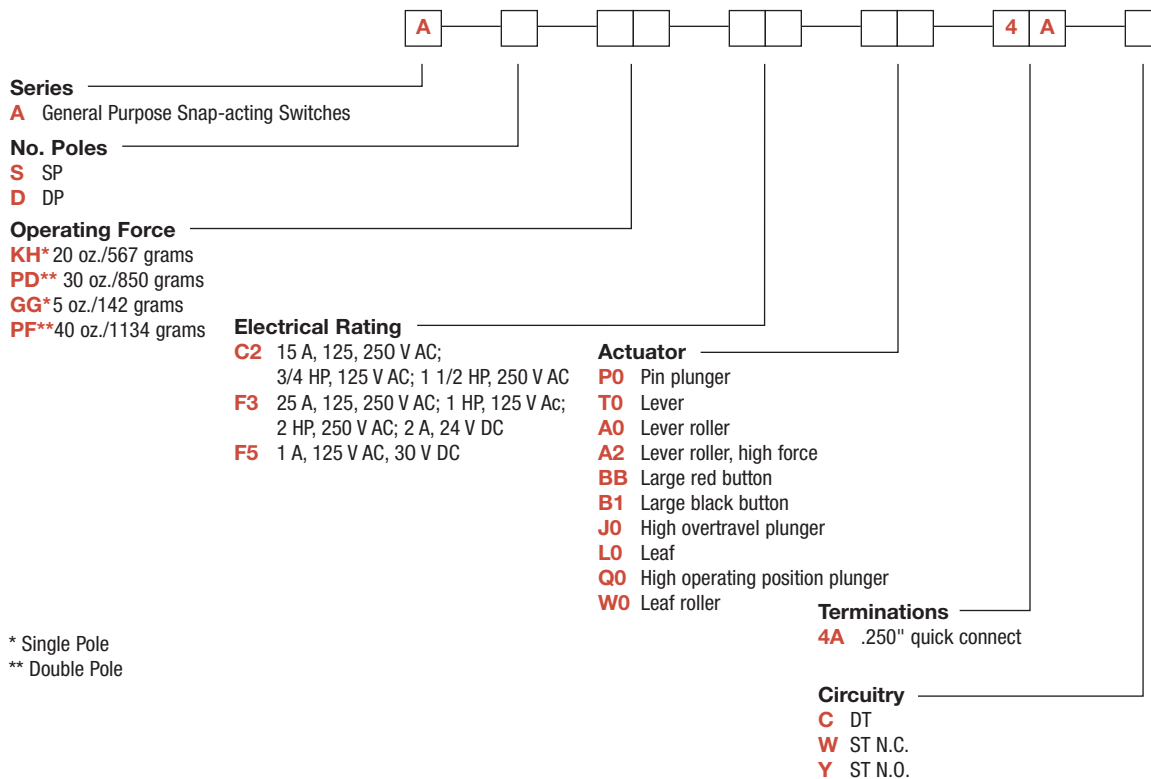
NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Materials

SWITCH HOUSING: Heat resistant phenolic (UL 94V-0).
 ACTUATOR BUTTON: Heat resistant phenolic (UL 94V-0).
 SPRING: Copper alloy.
 PIVOT: Brass alloy for models up to 15 AMPS.
 Copper for 25 AMP models.
 MOVABLE CONTACTS: Gold alloy for ratings 1 AMP or less.
 Fine silver for ratings up to 15 AMPS. Silver alloy for ratings of 30.1 AMPS.
 STATIONARY CONTACTS: Gold alloy on brass base alloy for ratings 1 AMP or less. Fine silver welded on brass base alloy for ratings greater than 1 AMP up to 15 AMPS. Fine silver welded on copper alloy for ratings 30.1 AMPS.
 TERMINALS: Brass alloy for 1 AMP up to 15 AMPS.
 Copper alloy for 30.1 AMPS.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-78 through J-81. For additional options not shown in catalog, consult Customer Service Center.



Snap-acting



Dimensions are shown: Inch (mm)
 Specifications and dimensions subject to change

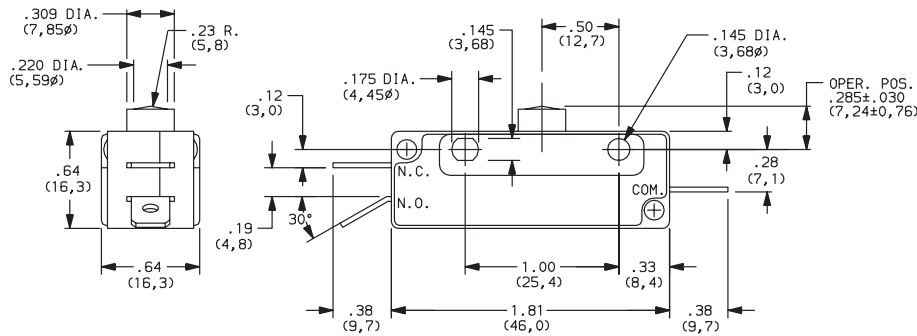
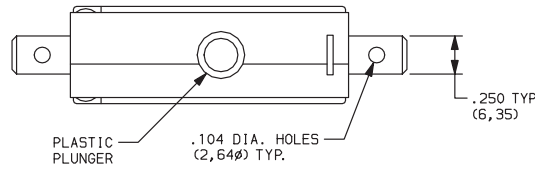
A Series General Purpose Snap-acting Switches

SERIES ■ ■ ■ ■ ■ ■ ■ ■ ■ ■

A GENERAL PURPOSE SNAP-ACTING SWITCHES

NO. POLES ■ ■ ■ ■ ■ ■ ■ ■ ■ ■

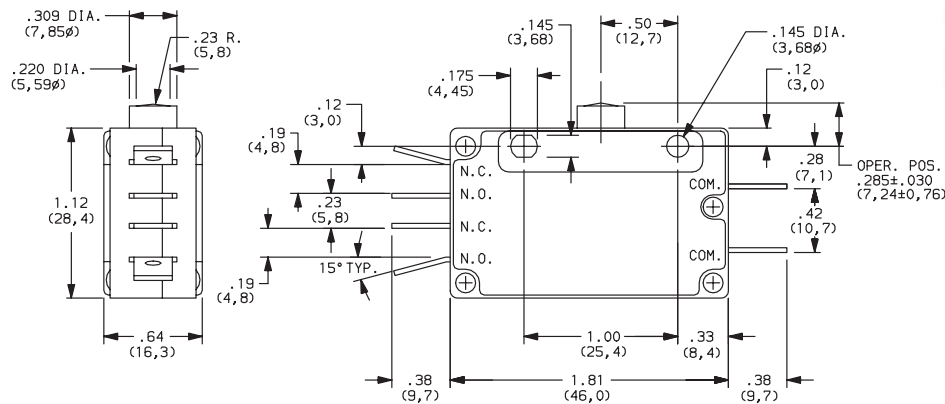
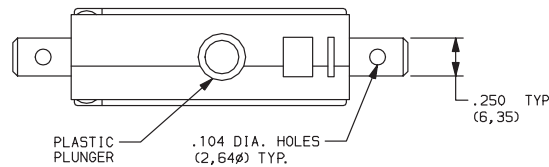
S SINGLE POLE SWITCH



Mounting holes will accept pins or screws of .139 dia. (3,53) max., on 1.000 (25,40) centers.

Snap-acting

D DOUBLE POLE SWITCH



Mounting holes will accept pins or screws of .139 dia. (3,53) max., on 1.000 (25,40) centers.

NOTE: To select switching function, see CIRCUITRY section, page J-81.



Third Angle Projection

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



A Series General Purpose Snap-acting Switches

OPERATING FORCE

OPTION CODE	NO. POLES	BASIC SWITCH OPERATING FORCE (OZ./GRAMS)
KH	SP	20 567
PD	DP	30 850
GG	SP	5 142
PF	DP	40 1134

NOTE: Operating force varies with actuator, see ACTUATOR option section.

ELECTRICAL RATING

OPTION CODE	CONTACT MATERIAL		ELECTRICAL RATING
	MOVABLE CONTACT	STATIONARY CONTACT	
C2	Fine silver.	Fine silver welded on brass base alloy.	15 AMPS @ 125 & 250 V AC; 3/4 HP @ 125 V AC; 1-1/2 HP @ 250 V AC.
F3	Silver alloy.	Silver welded on copper base alloy.	25 AMPS @ 125 & 250 V AC; 1 HP @ 125 V AC; 2 HP @ 250 V AC; 2 AMPS @ 24 V DC.
F5	Gold alloy.	Gold alloy on brass base alloy.	From low level* to 1 AMP @ 125 V AC, 30 V DC.

All models  with all options.

Contact Customer Service Center for availability and delivery of nonstandard ratings.

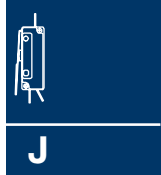
* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications.

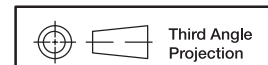
AVAILABLE COMBINATIONS

ELECTRICAL RATING	OPERATING FORCE (OZ./GRAMS)			
	GG 5 142	KH 20 567	PD 30 850	PF 40 1134
C2	•	•	•	•
F3	X	•	•	•
F5	•	•	•	•

• AVAILABLE
X NOT AVAILABLE



Snap-acting



Third Angle Projection

Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

A Series General Purpose Snap-acting Switches

ACTUATOR

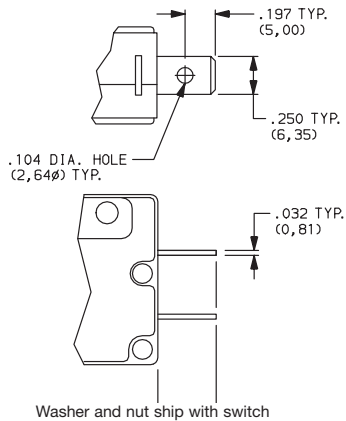
SWITCH CHARACTERISTICS

OPTION CODE	MAXIMUM OPERATING FORCE (OZ./GRAMS)				MINIMUM RELEASE FORCE (OZ./GRAMS)				MAXIMUM PRETRAVEL				MINIMUM OVERTRAVEL				OPERATING POSITION			
	GG S.P.	KH S.P.	PD D.P.	PF D.P.	GG S.P.	KH S.P.	PD D.P.	PF D.P.	GG S.P.	KH S.P.	PD D.P.	PF D.P.	GG S.P.	KH S.P.	PD D.P.	PF D.P.	GG S.P.	KH S.P.	PD D.P.	PF D.P.
A0	1.5 42.5	4 113	6 170	10 283	0.3 8.5	0.5 14	1 28		.312 (7,92)				312 (7,92)	.187 (4,75)			.718 (18,24)			
A2	1.5 42.5	4 113	6 170	10 283	0.4 11	0.5 14	1 28		.25 (6,4)				.14 (5,6)				.718 (18,24)			
B1	8 227	20 567	30 850	40 1134	1 28	3 85	6 170		.050 (1,27)				.050 (1,27)				—			
BB	8 227	20 567	30 850	40 1134	1 28	3 85	6 170		.050 (1,27)				.050 (1,27)				—			
J0	5 142	20 567	30 850	40 1134	1 28	3 85	6 170		.050 (1,27)				.187 (4,75)				—			
L0	3 85	12 340	18 510	22 624	0.5 14	1 28	2 56.7		.281 (7,14)				.062 (1,57)				.312 (7,92)			
P0	8 227	20 567	30 850	40 1134	1 28	3 85	6 170		.050 (1,27)				.050 (1,27)				—			
Q0	5 142	20 567	30 850	40 1134	1 28	3 85	6 170		.050 (1,27)				.050 (1,27)				—			
T0	1.5 42.5	4 113	6 170	10 283	0.3 8.5	0.5 14	1 28		.312 (7,92)				.187 (4,75)				312 (7,92)			
W0	3 85	12 340	18 510	22 624	0.5 14	1 28	2 56.7		.281 (7,14)				.062 (1,57)				.718 (18,24)			

NOTE: For basic switch operating forces, see page J-77.

TERMINATIONS

4A .250" QUICK CONNECT



NOTE: Terminals can be supplied at various angles. Other terminal styles can be supplied for special applications. Consult Customer Service Center for special requirements.

CIRCUITRY

- C** DT (Double Throw, Normally Open & Normally Closed)
- W** ST N.C. (Single Throw, Normally Closed)
- Y** ST N.O. (Single Throw, Normally Open)

NOTE: To select number of poles, see NO. POLES section, page J-56



Third Angle
Projection

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

C&K



Snap-acting

TL Series Door Interlock Switches



Features/Benefits

- Push/pull motion
- Multiple mounting configurations
- Wide variety of termination options
- Ratings up to 15 AMPS

Typical Applications

- Computer enclosures
- Panel builders
- Industrial enclosures

Specifications

CONTACT RATING: 15 AMPS @ 125 & 250 V AC; 0.25 AMP @ 250 V DC; 0.5 AMP @ 125 V DC; 1/2 HP @ 125 & 250 V AC; 3 AMPS @ 125 V AC "L".

ELECTRICAL LIFE: 150,000 cycles at 15 AMPS @ 250 V AC.

INSULATION RESISTANCE: 1,000 M ohm min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -67°F to 302°F (-55°C to 150°C).

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Materials

SWITCH HOUSING: Thermoplastic or general purpose phenolic (UL 94V-0).

MOUNTING BRACKET: Stainless steel.

PLUNGER: Stainless steel.

ACTUATOR BUTTON: Thermoplastic (UL 94V-0).

SPRING: Copper alloy.

PIVOT: Brass alloy.

MOVABLE CONTACT: Fine silver.

STATIONARY CONTACTS: Fine silver.

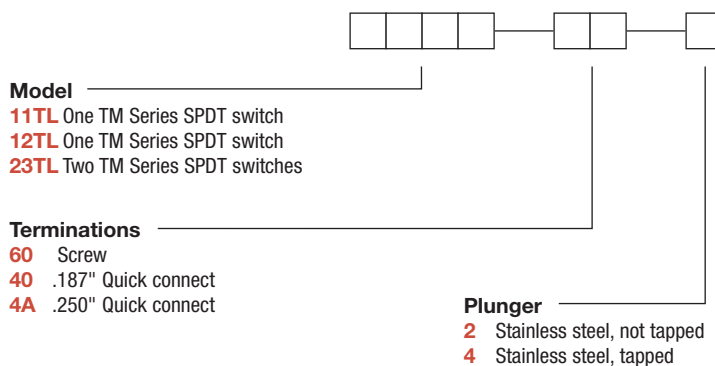
TERMINALS: Copper alloy.



Snap-acting

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-83 and J-84. For additional options not shown in catalog, consult Customer Service Center.



DS Series Interlock Pushbutton Switches

Features/Benefits

- Snap-in mounting
- Reliable snap action mechanism
- Latch or momentary
- RoHS compliant
- Halogen free material

Typical Applications

- Interlock switch
- Detection switch
- Circuit interrupt



Specifications

FUNCTION: Single pole double throw / Double pole double throw
MOUNTING TYPE: Snap in style

Electrical

ELECTRICAL LIFE: see ratings chart below
DIELECTRIC STRENGTH: 1500 V (50-60 Hz @ sea level)
INSULATION RESISTANCE: 100 M Ω min.
INITIAL CONTACT RESISTANCE: 30 milli-ohms

Materials

HOUSING, COVER, ACTUATOR, KNOB: PA 66/6 halogen free, UL94V-0
NO & NC FIXED TERMINALS: Copper alloy
COMMON TERMINALS: Copper alloy, silver plate
CONTACTS: Silver alloy / F5 rating gold plated over silver alloy
RETURN SPRINGS: Stainless steel

Operating Environment

OPERATING TEMPERATURE: -40°C to +85°C

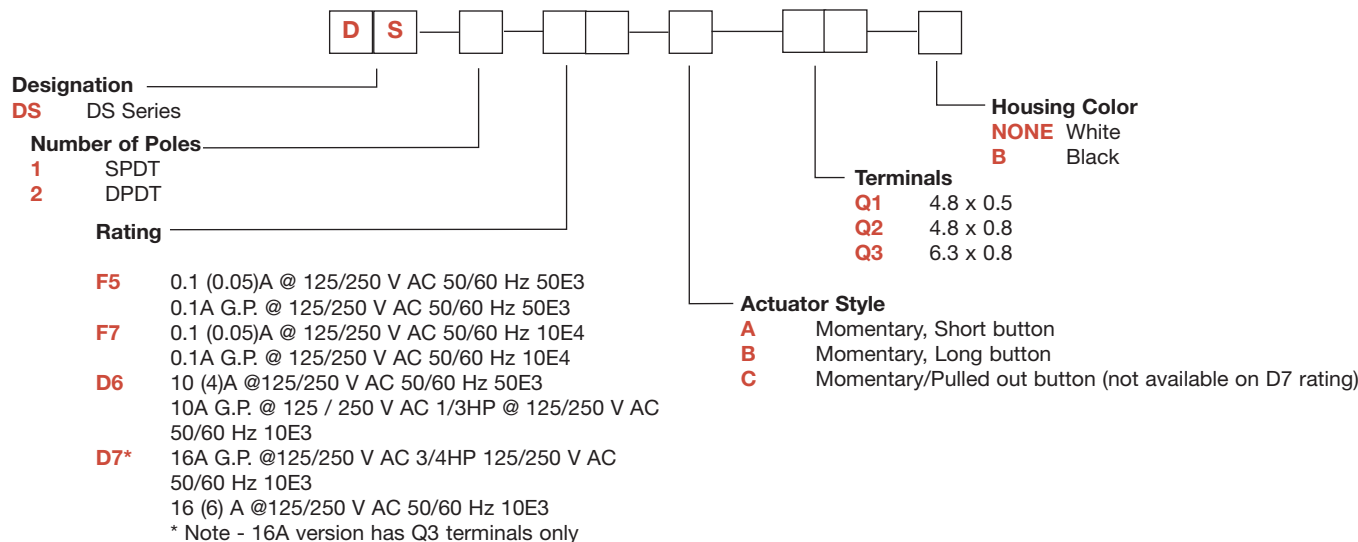
NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.



Snap-acting

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box.



International Rating Symbols

10E3	Cycles 10,000
10E4	Cycles 100,000
50E3	Cycles 50,000
10(4)	Current rating: First number represents resistive rating. Second number represents inductive (motor) rating
GP	General purpose rating UL1054

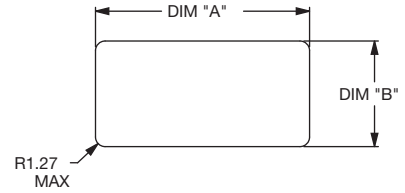
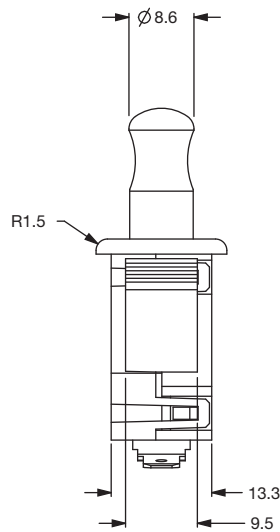
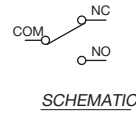
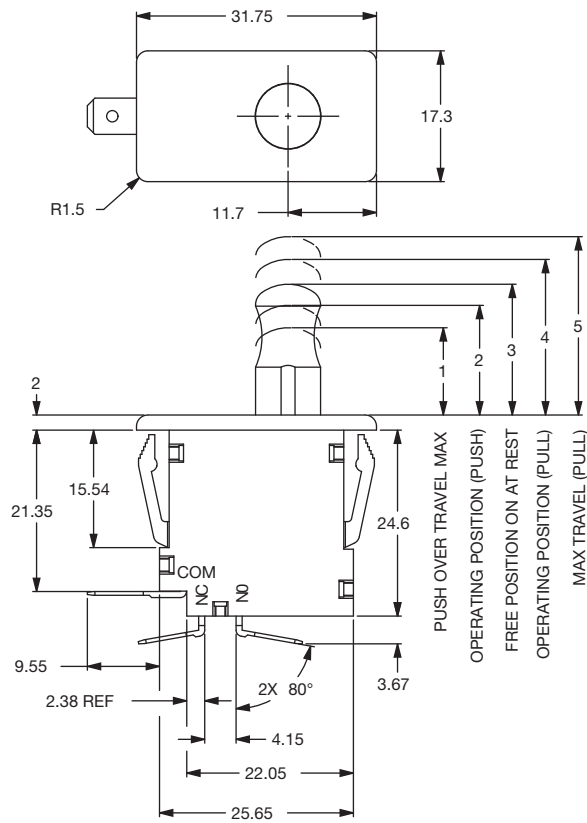


Dimensions are shown: mm
Specifications and dimensions subject to change

DS Series Interlock Pushbutton Switches

NUMBER OF POLES

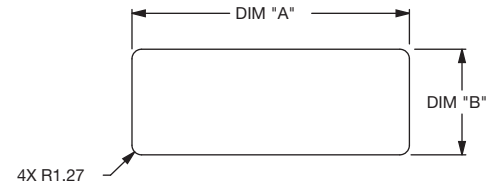
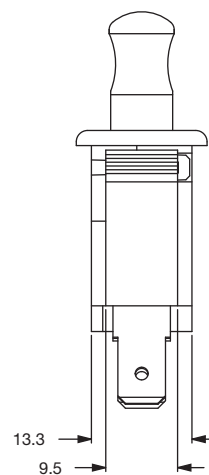
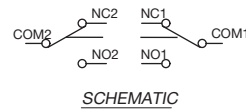
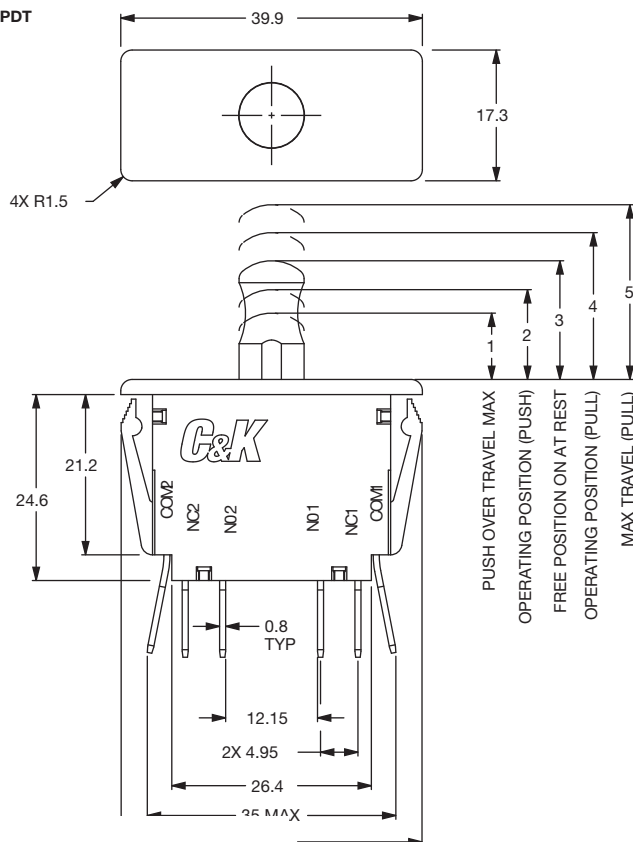
1 SPDT



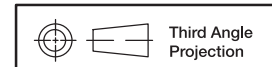
PANEL MOUNTING		
PANEL THICKNESS	DIM "A" mm	DIM "B" mm
1.14	28.32	13.97
2.54	28.58	13.97

Snap-acting

2 DPDT



PANEL MOUNTING		
PANEL THICKNESS	DIM "A" mm	DIM "B" mm
1.14	36.70	13.97
2.54	36.96	13.97

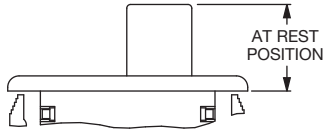


Dimensions are shown: mm
Specifications and dimensions subject to change

DS Series Interlock Pushbutton Switches

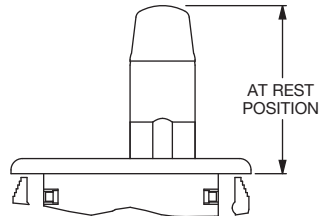
ACTUATOR STYLE / SPECIFICATIONS

A SHORT BUTTON



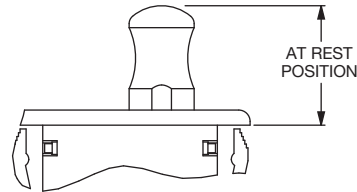
SHORT BUTTON

B LONG BUTTON

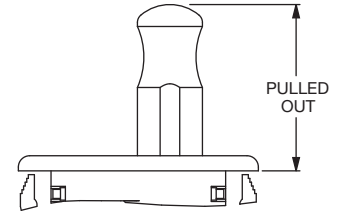


LONG BUTTON

C MOMENTARY/PULLED OUT



FREE POSITION



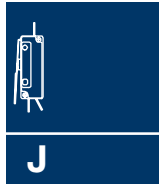
PULLED OUT POSITION

SPDT Specification

BUTTON STYLE	OVER TRAVEL POSITION PUSH MAX	OVER TRAVEL POSITION PULL MAX	OPERATING POSITION PUSH	OPERATING POSITION PULL	FREE POSITION AT REST	OPERATING FORCE	
A	3.20	NA	8.90 ± 1.25	NA	11.45 ± 0.75	425 gf	
B	10.15	NA	19.55 ± 1.25	NA	22.25 ± 0.75	425 gf	
C	13.20	24.90	16.75 ± 1.25	21.60 ± 1.25	19.30 ± 0.75	PUSH 385gf	PULL 475gf

DPDT Specification

BUTTON STYLE	OVER TRAVEL POSITION PUSH MAX	OVER TRAVEL POSITION PULL MAX	OPERATING POSITION PUSH	OPERATING POSITION PULL	FREE POSITION AT REST	OPERATING FORCE	
A	3.20	NA	8.90 ± 1.25	NA	11.45 ± 0.75	680 gf	
B	10.15	NA	19.55 ± 1.25	NA	22.25 ± 0.75	680gf	
C	13.20	24.90	16.75 ± 1.25	21.60 ± 1.25	19.30 ± 0.75	PUSH 560gf	PULL 750gf

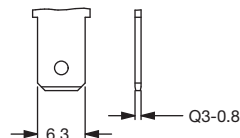
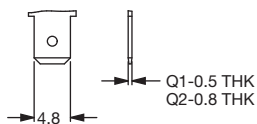


Snap-acting

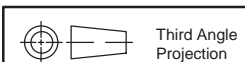
TERMINALS

Q1 4.8 x 0.5
Q2 4.8 x 0.8

Q3 6.3 x 0.8



C&K



Third Angle
Projection

Dimensions are shown: mm
Specifications and dimensions subject to change