



# Relay Products Shortform Catalog



Index

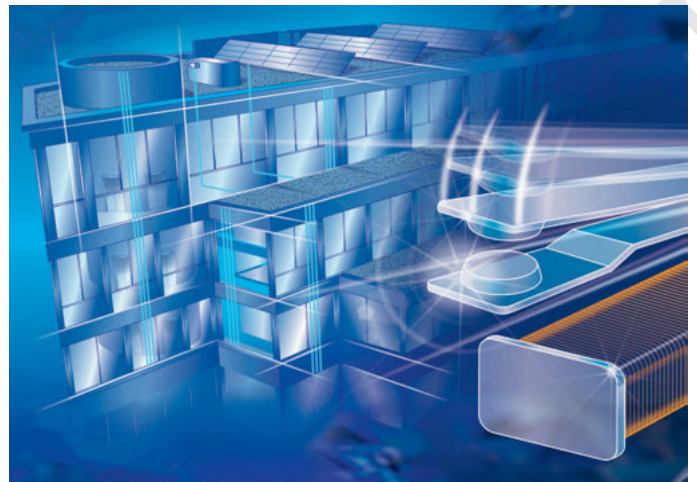
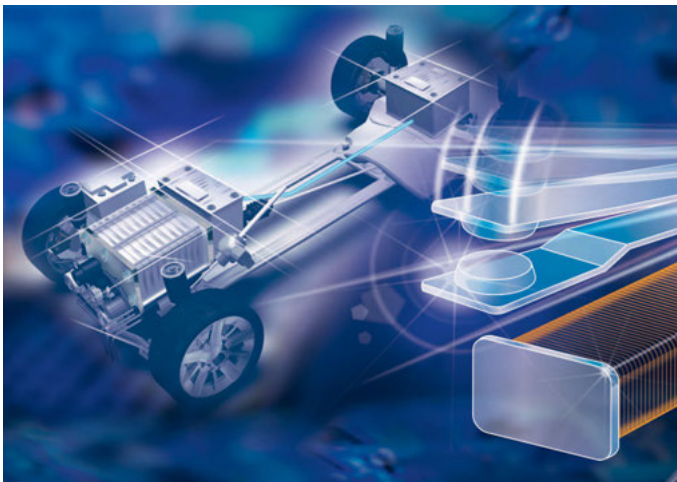


**Alternative Energy**

<b>General Purpose</b>	Page
■ Low Power PCB Relays .....	10
■ Panel/Plug-In Relays .....	19
■ Power Relays .....	25
■ High Power PCB Relays .....	26
■ Solar Relays .....	26
■ Circuit Breakers .....	34

**Automotive**

<b>Automotive</b>	Page	<b>Signal</b>	Page
■ PCB Relays .....	4	■ Signal Relays .....	28
■ Plug-In Relays .....	5	■ High Frequency Relays/Switches .....	32
■ High Current Solutions .....	7		
■ Latching Solutions .....	8		



**Alternative Power Vehicle/Charging**

<b>Alternative Power</b>	Page	<b>General Purpose</b>	Page
■ Automotive Relays .....	4	■ Low Power PCB Relays .....	10
■ High Voltage Precharge Relays .....	9	■ High Power PCB Relays .....	26

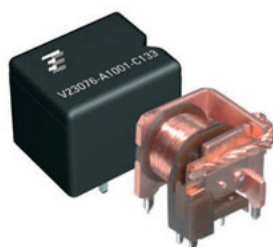
**Building Equipment**

<b>General Purpose</b>	Page	<b>Signal</b>	Page
■ Low Power PCB Relays .....	10	■ Signal Relays .....	28
■ Force Guided Relays .....	18		
■ Panel/Plug-In Relays .....	19		
■ High Power PCB Relays .....	26		
■ Metering Relays .....	26		
■ Solar Relays .....	26		
■ Circuit Breakers .....	34		

**PCB Relays**

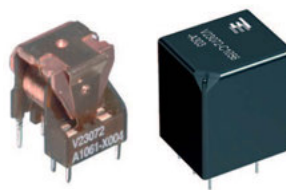
**Power K  
(V23133/V23076)**

- Limiting continuous current 45A (V23076/133)
- High current/open version Power K-S (V23071): 70/50A at 23°/85°C, very low voltage drop<sup>1)</sup>
- Wide voltage range
- 24VDC versions available



**Mini K  
(V23072-A/C)**

- Limiting continuous current 20A
- 24VDC versions with special contact gap
- Various contact arrangements and materials



**DMR  
(V23084)**

- Limiting continuous current 30A



**Contact Data**

Contact arrangement	1 form A/C, 1 NO/CO	1 form A, 1 NO	1 form C, 1 CO	1 form U, 2 NO	2 form C, 2 CO
Rated voltage	12, (24)VDC <sup>6)</sup>	12, (24)VDC <sup>6)</sup>			12VDC
Limiting continuous current at 23/85°C	NO/NC 45/30A / 30/25A	15/10A	(NO/NC) 15/10A / 10/5A	2x10/2x6A	20/15A both systems
Limiting making current	100/30A	60A	60/12A	2x40A	35A
Limiting breaking current	60/30A	20A	20/10A	2x20A	35A
Limiting short-time current, overload current, ISO 8820-3: rated current:					
1.35x rated current, t					
2.00x rated current, t					
3.50x rated current, t					
6.00x rated current, t					
Operate/release time max. (typ.)	5/3ms	3/1.5ms			3/1.3ms

**Coil Data**

Rated coil voltage	12, 24VDC	12, 24VDC			12VDC
Rated coil power	1.6W	1.1W			0.56/0.81W

**Other Data**

Ambient temperature	-40 to +85°C	-40 to +85°C			-40 to +85°C
Category of environmental protection	Open or sealed	Open or sealed			Sealed
Terminal type	PCB	PCB			PCB
Mounting					
Dimensions lwh	Open: 24x19.25x18.5mm Sealed: 26.5x21.5x21.5mm	Open: 16x13.2x18mm Sealed: 17.2x15x19.5mm			17.6x17x13.4mm

**Accessories**

1) Please contact TE Connectivity application engineering support for more details (data below not applicable). 2) Please contact TE Connectivity application engineering support for higher current (LCC). 3) QC=quick connect. 4) For products V23086-C1021-A502 / V23086-C1001-A602 lamp load/flasher. 5) Current and time are compatible with circuit protection by a typical automotive fuse. Relay will make, carry and break the specified current. 6) Given data only valid for 12VDC systems; for 24VDC versions please refer to datasheets.

## Plug-in Relays

### Micro ISO

- High current version with limiting cont. current 30A at 85°C
- ISO plug-in terminals, pin assignment according to ISO 7588 part 3
- Customized versions on request: 24VDC versions with special contact gap, integrated components, customer marking, special covers



### Micro Low Noise (V23145)

- Noise level below 50dBA
- Pin assignment according to ISO 7588 part 3
- Plug-in terminals
- Customized versions on request: special marking, special covers (e.g. notches, release features)



### Mini/Maxi Shrouded Relays

- Protection class IP67 to IEC 529 (EN 60 529) if used with special connector
- Plug-in terminals
- Pin assignment according to ISO 7588 part 1
- Bracket
- Customized versions on request: integrated components (e.g. diode), customized marking



#### Contact Data

	1 form A, 1 NO	1 form C, 1 CO	High Current 1 form A, 1 NO	1 form A, 1 NO	1 form C, 1 CO	1 form A, 1 NO (Mini)	1 form C, 1 CO (Mini)	1 form A, 1 NO (Maxi)
Contact arrangement								
Rated voltage	12, (24)VDC <sup>6)</sup>			12VDC		12VDC		
Limiting continuous current at 23/85°C	30/25A	NO/NC 30/20A / 25/15A	35A/30A	20/15A	NO/NC 20/15A / 15/10A	60A/40A	NO/NC 60/45A / 40/30A	70/50A
Limiting making current	120A	120/40A	120A	100A	40A	120A	120/45A	240A
Limiting breaking current	30A	30/15A	30A	30A	30A	60A	60/40A	70A
Limiting short-time current, overload current, ISO 8820-3: rated current:								
1.35x rated current, t	25A	30A		20A		40A	50A	
2.00x rated current, t	34A, 1800s	40A, 1800s		27A, 1800s		54A, 1800s	67A, 1800s	
3.50x rated current, t	50A, 5s	60A, 5s		40A, 5s		80A, 5s	100A, 5s	
6.00x rated current, t	87A, 0.5s	105A, 0.5s		70A, 0.5s		140A, 0.5s	175A, 0.5s	
Operate/release time max. (typ.)	150A, 0.1s	180A, 0.1s		120A, 0.1s		240A, 0.1s	300A, 0.1s	
	5/3ms			3/2ms	3/4ms	8.5/4ms		

#### Coil Data

Rated coil voltage	12, 24VDC	12VDC	12VDC	12VDC	12VDC	12VDC	12VDC	12VDC
Rated coil power	1.4W	typ. 1.1W		0.9W	0.6W	1.5W	1.5W	1.8W

#### Other Data

Ambient temperature	-40 to +125°C			-40 to +125°C		-40 to +125°C		
Category of environmental protection	Dustproof			Dustproof		Shrouded: protection class IP67 if used with special connector		
Terminal type	Plug-in, QC <sup>3)</sup>			Plug-in, QC <sup>3)</sup>		Plug-in, QC <sup>3)</sup>		
Mounting	Bracket			Bracket		Bracket		
Dimensions lwh	23x15.5x25.4mm 23x15.5x26.0mm			23x15.5x25.4mm		32.7x35.5x54.2mm 32.0x32.0x39.0mm		

#### Accessories

Connectors for Micro ISO Relays      Connectors for Micro ISO Relays      Connectors for Mini ISO Relays

1) Please contact TE Connectivity application engineering support for more details (data below not applicable). 2) Please contact TE Connectivity application engineering support for higher current (LCC). 3) QC=quick connect. 4) For products V23086-C1021-A502 / V23086-C1001-A602 lamp load/flasher. 5) Current and time are compatible with circuit protection by a typical automotive fuse. Relay will make, carry and break the specified current. 6) Given data only valid for 12VDC systems; for 24VDC versions please refer to datasheets. 7) For 12 VDC only.

**High Current and Latching\*) Solutions**

**BDS-A (V23130)**

- Limiting continuous current 190A at 85°C
- Electrically settable and resettable ON/OFF bistable device
- Suitable for voltage levels up to 42VDC
- High peak current carrying capability up to 1500A

**Mini ISO Latching (V23141-L)**

- Magnetically latched Mini ISO plug-in relay
- 70A (Maxi) version available on request
- Two coils with set and reset function
- Pin assignment similar to ISO 7588 part 1
- Customized versions on request: special marking, special covers (e.g. notches, release features, brackets)

**PK2 Latching THT/THR (V23201-L/T)**

- 50A at 125°C, due to reduced coil power consumption (2 coil system)
- 60% volume reduced Power K at increased performance
- PCB area requirements minimized by 50% to 293mm<sup>2</sup>
- High shock and vibration resistance
- No change of switching state version at breakdown of battery voltage
- For monostable version refer to PK2 THT/THR (V23201-C/R)



**Contact Data**

Contact arrangement	1 form X (NO-DM)	1 form A, 1 NO	1 form A, 1 NO
Rated voltage	12, (24)VDC <sup>6)</sup>	12VDC	12VDC
Limiting continuous current at 23/85°C	260/190A	40/30A	50/40A
Limiting making current	1500A (>5ops.)	200A	200A
Limiting breaking current	1500A (>5ops.)	40A	40A
Operate/release time max. (typ.)	<15/<15ms	1.5/1.5ms	1.5ms

**Coil Data**

Rated coil voltage	12, 24VDC	12VDC	12VDC
Rated coil power	(only impulse needed)	(only impulse needed)	(only impulse needed)

**Other Data**

Ambient temperature	-40 to +120°C	-40 to +125°C	-40 to +125°C
Category of environmental protection	Dustproof/Weatherproof	Dustproof	Sealed/Vented
Terminal type	Plug-in, QC (coil)/ Screw terminals (load)	Plug-in, QC <sup>3)</sup>	PCB
Mounting			
Dimensions lwh	36x33x60mm	30.1x30.1x31.1mm	18.5x16.2x16.1mm

**Accessories**

Connectors for Mini ISO Relays

1) Please contact TE Connectivity application engineering support for more details (data below not applicable). 2) Please contact TE Connectivity application engineering support for higher current (LCC). 3) QC=quick connect. 4) For products V23086-C1021-A502 / V23086-C1001-A602 lamp load/flasher. 5) Current and time are compatible with circuit protection by a typical automotive fuse. Relay will make, carry and break the specified current. 6) Given data only valid for 12VDC systems; for 24VDC versions please refer to datasheets. 7) Max. continuous operation time is limited and depends on operating conditions. Consult TE for details. 8) Min. 10 fault break operations. \*) Further latching solutions on request.

General Purpose

Low Power PCB Relays

PE

- Sensitive coil 200mW
- 4kV coil-contact
- Low height 10.0mm
- Polarized bistable version available



RE/REL

- Sensitive coil 200mW
- 4kV coil-contact (REL)
- PCB area 200mm<sup>2</sup>



EJ

- Slim outline
- Sensitive coil 200mW
- Ambient temperature 85°C
- Coil UL class F (155°C) insulation system



**Contact Data**

Contact arrangement	1 form C, 1 CO	1 form A, 1 NO	1 form A, 1 NO
Rated voltage	250VAC	250VAC	250VAC/30VDC
Rated current	5A	6/5A	3A/5A
Switching power	1250VA	1500/1250VA	1250VA/150W
Contact material	AgNi90/10, AgSnO	AgNi, AgNi0.15, AgCdO	AgNi
Min. recommended contact load			100mA at 5VDC

**Coil Data**

Magnetic system	DC, bistable	DC	DC
Rated coil voltage	3 to 48VDC	5 to 48VDC	3 to 24VDC
Rated coil power	200mW	200/360mW	200mW

**Insulation Data**

Initial dielectric strength			
between open contacts	1000Vrms	1000Vrms	750Vrms
between contact and coil	4000Vrms	4000/3000Vrms	4000Vrms
between adjacent contacts			
Clearance/creepage			
between contact and coil	3.2/4mm	4/4mm	5.5/8mm (WG type)

**Other Data**

Ambient temperature (max.)	+85°C	+85/+70°C	+85°C (standard type) +105°C (WG type)
Category of environmental protection IEC 61810	RTII	RTIII (RE), RTII (REL)	RTII, RTIII
Terminal type	THT	THT	THT
Mounting	PCB	PCB	PCB
Dimensions lwh	20x10x10mm	20x10x10.6mm/20.7x10.7x12mm	20.4x6.9x15mm

**Accessories**

1) Recommended minimum load indication for contact material: Au and gold plated: 1mA at 6VDC; Ag, AgNi0.15 and AgNi90/10: 10mA at 12VDC; AgCdO and AgSnO<sub>2</sub>: 100mA at 12VDC. Please contact technical support for detailed technical data.

**Low Power PCB Relays**

**PCN**

- Only 5mm wide slim type, permitting high density spacing
- Sensitive coil 120mW
- Cadmium free contacts
- Reinforced insulation type available
- UL class F (155°C) available



**SNR**

- Only 5mm wide
- Cadmium-free contacts
- Sensitive coil 170mW
- 4kV coil-contact
- 6/8mm creepage/clearance
- Protection class II



**RYII**

- 5kV/8mm coil-contact
- Reinforced insulation
- Low height 12.3mm
- Pinnings 3.2 and 5mm
- Reflow solderable version



**Contact Data**

Contact arrangement

1 form A, 1 NO

1 form C, 1 CO  
1 form A, 1 NO

1 form C, 1 CO  
1 form A, 1 NO  
1 form B, 1 NC

Rated voltage

250VAC/30VDC

250VAC

250VAC

Rated current

3A/5A

6A

8A

Switching power

750VA/1250VA

1500VA

2000VA

Contact material

AgNi gold plated bifurcated contact

AgNi0.15, AgSn0

Min. recommended contact load

1mA, 5VDC

1)

1)

**Coil Data**

Magnetic system

DC

DC

DC

Rated coil voltage

3 to 24VDC

5 to 48VDC

5 to 60VDC

Rated coil power

120mW

170mW

220mW

**Insulation Data**

Initial dielectric strength

between open contacts

750Vrms

1000Vrms

1000Vrms

between contact and coil

3000Vrms

4000Vrms

5000Vrms

between adjacent contacts

Clearance/creepage

between contact and coil

min. 3.5/3.5mm

6/8mm

8/8mm

**Other Data**

Ambient temperature (max.)

+70°C  
(+85°C under a specific condition)

+85°C

+70°C

Category of environmental protection  
IEC 61810

RTIII

RTIII

RTII, RTIII

Terminal type

THT

THT

THT, THR

Mounting

PCB

PCB or on socket

PCB or on socket

Dimensions lwh

20x5x12.5mm

28x5x15mm

28.5x10.1x12.3mm

**Accessories**

DIN rail sockets

PCB sockets

1) Recommended minimum load indication for contact material: Au and gold plated: 1mA at 6VDC; Ag, AgNi0.15 and AgNi90/10: 10mA at 12VDC; AgCd0 and AgSn0<sub>2</sub>: 100mA at 12VDC. Please contact technical support for detailed technical data.



Low Power PCB Relays

OZ

- UL TV-8 (OZT) available
- Meet 5kV dielectric voltage between coil and contacts
- Meet 10kV surge voltage between coil and contacts



RP3SL

- 4kV/8 mm coil-contact for 120A/20ms inrush peak current
- Bistable version



RP-2pole 1.5mm

- 2 pole 8A
- 1.5mm contact gap per pole
- Creepage distance complies with IEC 60950



Contact Data

Contact arrangement	1 form A, 1 NO 1 form C, 1 CO	1 form A, 1 NO	2 form A, 2 NO
Rated voltage	240VAC/24VDC	250VAC	250VAC
Rated current	16A	16A	8A
Switching power	3840VA/380W	4000VA	2000VA
Contact material	AgSnO	AgSnO	AgSnO
Min. recommended contact load	100mA at 5VDC		

Coil Data

Magnetic system	DC	DC	DC
Rated coil voltage	5 to 48VDC	6 to 110VDC	5 to 110VDC
Rated coil power	540mW/720mW	500mW	780mW

Insulation Data

Initial dielectric strength			
between open contacts	1000Vrms	2000Vrms	1000Vrms
between contact and coil	5000Vrms	4000Vrms	4000Vrms
between adjacent contacts			2500Vrms
Clearance/creepage			
between contact and coil	5.5/8mm	8/8mm	7/8mm

Other Data

Ambient temperature (max.)	+60°C (standard type) +70°C (sensitive type)	+70°C	+40°C
Category of environmental protection IEC 61810	RTII, RTIII	RTII, RTIII	RTII, RTIII
Terminal type	THT	THT	THT
Mounting	PCB	PCB or on socket	PCB or on socket
Dimensions lwh	29.2x12.8x20.6mm	29x12.6x25.5mm	29x12.6x25.5mm

Accessories

PCB and DIN rail sockets      PCB and DIN rail sockets

1) Recommended minimum load indication for contact material: Au and gold plated: 1mA at 6VDC; Ag, AgNi0.15and AgNi90/10: 10mA at 12VDC; AgCd0 and AgSNO<sub>2</sub>: 100mA at 12VDC. Please contact technical support for detailed technical data.

General Purpose

Low Power PCB Relays

**PB/PBH**

- Environmentally-friendly cadmium-free contacts
- Ambient temperatures up to 105°C (PBH)
- Compact and simple design gives high process security



**ORWH**

- Compact relay with 1 form A and 1 form C contact arrangement
- 10A switching capacity
- Flux proof or sealed type available



**430**

- 4kV/8mm coil-contact
- DC or AC coil
- PCB mounting or QC<sup>2)</sup>
- Mounting brackets or snap mounting
- 1 or 2 pole versions



**Contact Data**

Contact arrangement	1 form C, 1 CO 1 form A, 1 NO	1 fom A, 1 NO 1 form C, 1 CO	1 or 2 form C, 2 CO 1 or 2 form A, 2 NO
Rated voltage	250VAC	277VAC/28VDC	250VAC
Rated current	10A	10A	10A
Switching power	2500VA	2770VA/360W	2500/4000VA
Contact material	AgNi90/10, AgSnO	AgZnO, AgCdO, AgNi	
Min. recommended contact load		100mA at 5VDC	1)

**Coil Data**

Magnetic system	DC	DC	DC, AC
Rated coil voltage	5, 6, 12, 24VDC	3 to 48VDC	6 to 110VDC/6 to 240VAC
Rated coil power	360mW/500mW	360mW	1W/1.8VA

**Insulation Data**

Initial dielectric strength			
between open contacts	1000Vrms	750Vrms	1000Vrms
between contact and coil	2500Vrms	1500Vrms	4000Vrms
between adjacent contacts			
Clearance/creepage			
between contact and coil	3/4mm	1.6/3.2mm	8/8mm

**Other Data**

Ambient temperature (max.)	+85°C/+105°C	+70°C/+105°C	+70°C
Category of environmental protection IEC 61810	RTII	RTII, RTIII	RTI
Terminal type	THT	THT	THT, QC <sup>2)</sup> terminals
Mounting	PCB	PCB	PCB, panel mount
Dimensions lwh	15x15x20mm	19.0x15.5x15.8mm	35.5x16.4x30.5mm

**Accessories**

1) Recommended minimum load indication for contact material: Au and gold plated: 1mA at 6VDC; Ag, AgNi0.15 and AgNi90/10: 10mA at 12VDC; AgCdO and AgSnO<sub>2</sub>: 100mA at 12VDC. Please contact technical support for detailed technical data. 2) QC=quick connect.

**Force Guided Relays**

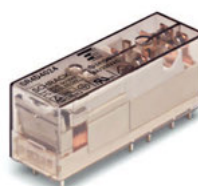
**SR2M**

- 2 pole relay with force guided contacts according to EN 50205
- Reinforced insulation between poles



**SR4 D/M**

- 4 pole relay with force guided contacts according to EN 50205
- Compact design, space efficient



**SR6**

- 4/6 pole relay with force guided contacts according to EN 50205
- Reinforced insulation between all contacts



**Contact Data**

Contact arrangement

1 form A + 1 form B, 1 NO + 1NC  
2 form C, 2 CO

3 form A + 1 form B, 3 NO + 1 NC  
2 form A + 2 form B, 2 NO + 2 NC

3 form A + 1 form B, 3 NO + 1 NC  
2 form A + 2 form B, 2 NO + 2 NC  
3 form A + 3 form B, 3 NO + 3 NC  
4 form A + 2 form B, 4 NO + 2 NC  
5 form A + 1 form B, 5 NO + 1 NC

Rated voltage

250VAC

250VAC

250VAC

Rated current

6A

8A

8A

Switching power

Contact material

AgNi

AgSnO<sub>2</sub>

AgSnO<sub>2</sub>

Min. recommended contact load

5VDC/10mA

5VDC/10mA

5VDC/10mA

**Coil Data**

Magnetic system

DC

DC

DC

Rated coil voltage

5 to 110VDC

5 to 110VDC

5 to 110VDC

Rated coil power

700mW

800mW

1200/800mW

**Insulation Data**

Initial dielectric strength

between open contacts

1500Vrms

1500Vrms

1500Vrms

between contact and coil

4000Vrms

4000Vrms

4000Vrms

between adjacent contacts

3000Vrms

2500Vrms

3000/4000Vrms

Clearance/creepage

between contact and coil

8/8mm

10/10mm

5.5/5.5mm, 15/15mm

**Other Data**

Ambient temperature (max.)

+70°C

+70°C

+70°C

Category of environmental protection

IEC 61810

RTIII

RTIII

RTIII

Terminal type

THT

THT

THT

Mounting

PCB

PCB

PCB

Dimensions lwh

29x12.6x25.5mm

40x13x16.5mm

55x16.5x16.5mm

**Accessories**

Sockets and relay clips

PCB sockets

1) Recommended minimum load indication for contact material: Au and Au plated: 1mA at 6VDC; Ag, AgNi0.15 and AgNi90/10: 10mA at 12VDC; AgCdO and AgSnO<sub>2</sub>: 100mA at 12VDC. Please contact technical support for detailed technical data. 2) QC=quick connect.

Panel / Plug-In Relays

**R10**

- Broad range of coil options provide sensitivity ranging from 25 to 750mW
- Various contacts switch from dry circuit to 7.5A
- Many mounting and termination options



**PT/KH/PTH**

- Sensitive coil
- Low height 29/33mm
- Cadmium-free contacts
- Mechanical indicator
- Manual test tab, optionally lockable
- optional LED, protection diode



**Contact Data**

Contact arrangement	1, 2, 3, 4, 6, 8 form C (CO)
Rated voltage	115VAC, 115VDC
Rated current	0.5/2/3/7.5A
Switching power	862VA max.
Contact material	Ag, AgCdO, Ag w/ Au overlay
Min. recommended contact load	Dry circuit to 12VDC/300mA

**Coil Data**

Magnetic system	DC, AC
Rated coil voltage	3 to 115VDC/6 to 115VAC
Rated coil power	36mW to 1.6W/1.5VA

**Insulation Data**

Initial dielectric strength	
between open contacts	500/1000Vrms
between contact and coil	1000Vrms
between adjacent contacts	
Clearance/creepage	
between contact and coil	

**Other Data**

Ambient temperature (max.)	+75°C
Category of environmental protection IEC 61810	RTI, RTIII
Terminal type	Solder/plug-in and PCB
Mounting	Socket, panel mount and PCB
Dimensions lwh	29.6x18.7x30.2mm

**Accessories**

Solder/PCB sockets, clips, hold down strap, mounting strip

Contact arrangement	2 form C, 2 CO; 3 form C, 3 CO; 4 form C, 4 CO
Rated voltage	240VAC
Rated current	1/2/5/6/10/12A
Switching power	1500/2500/3000VA
Contact material	AgNi90/10, AgNi90/10 Au plated
Min. recommended contact load	<sup>1)</sup> Bifurcated contacts for dry circuit available on KH

Magnetic system	DC, AC
Rated coil voltage	6 to 220VDC/6 to 240VAC
Rated coil power	750 to 900mW/1 to 1.2VA

Initial dielectric strength	
between open contacts	1200Vrms
between contact and coil	2500Vrms
between adjacent contacts	2000/2500Vrms
Clearance/creepage	
between contact and coil	≥4/4mm

Ambient temperature (max.)	+70°C
Category of environmental protection IEC 61810	RTII
Terminal type	THT, plug-in, QC <sup>2)</sup>
Mounting	Socket, PCB
Dimensions lwh	28x22.5x29/30/36mm

DIN rail and PCB sockets, clips, marking tags, modules, jumper bars

<sup>1)</sup> Recommended minimum load indication for contact material: Au and Au plated: 1mA at 6VDC; Ag, AgNi0.15 and AgNi90/10: 10mA at 12VDC; AgCdO and AgSnO<sub>2</sub>: 100mA at 12VDC. Please contact technical support for detailed technical data. <sup>2)</sup> QC=quick connect.

Panel / Plug-In Relays

**RM2/3/7**

- Wide selection of termination and mounting styles
- PC terminals available
- Push to test button and indicator lamps
- Class B coil insulation



**KUP/KUMP/KUIP**

- Wide selection of termination and mounting styles
- Broad range of contact forms
- PC terminals available
- Push to test button and indicator lamps
- Class B coil insulation



**RM8/C/D**

- Power relay with push-on and solder terminals
- Various mounting options
- Class B coil insulation
- Optional push to test button, indicator lamps and mechanical indicator



**Contact Data**

Contact arrangement	2 form C, 2 CO 3 form C, 3 CO	1, 2, 3, 4 form C (CO); 1, 2, 3 form A (NO); 2, 3 form B (NC) 1 form X (NO-DM); 1 form Y (NC-DB); 1 form Z (CO-DM/DB)	1 form C, 1 CO 2 form C, 2 CO
Rated voltage	400VAC	240VAC	400VAC
Rated current	10/16A	10/15A	20/30A
Switching power	3800/6000VA	2400/4155VA	6000/7500VA
Contact material	AgCdO, AgNi90/10 in preparation	Ag, AgCdO, AgSnOInO	AgCdO, AgNi90/10 in preparation
Min. recommended contact load	1)	12VDC/100mA (Ag) 12VDC/300mA (AgCdO, AgSnOInO)	1)

**Coil Data**

Magnetic system	DC, AC	DC, AC	DC, AC
Rated coil voltage	6 to 220VDC/6 to 400VAC	5 to 110VDC/6 to 240VAC	6 to 220VDC/6 to 400VAC
Rated coil power	1.2 to 1.8W/2 to 2.8VA	1.2 to 1.8W/2 to 2.7VA	1.2W/2.7VA

**Insulation Data**

Initial dielectric strength			
between open contacts	1500Vrms	1200Vrms	1500/2000Vrms
between contact and coil	2500Vrms	2200/3750Vrms	2500Vrms
between adjacent contacts	2500Vrms	2200Vrms	4000Vrms
Clearance/creepage			
between contact and coil	≥4/14.9mm		≥4/14.9mm

**Other Data**

Ambient temperature (max.)	+50/+70°C	DC +50/+70/+95°C AC +45/+55/+70°C	DC +60/+65°C AC +40°C
Category of environmental protection IEC 61810	RTI	RTI	RTI
Terminal type	THT, Plug-in, solder, QC <sup>2)</sup>	THT, Plug-in, solder, QC <sup>2)</sup>	Solder, QC <sup>2)</sup>
Mounting	Socket, PCB, bracket, flange mount and DIN-snap-on	Socket, PCB, bracket, flange, stud and tapped core	Bracket, top flange panel mount and DIN-snap-on
Dimensions lwh	38.5x35.5x48.5mm	38.9x35.7x48.4mm	38.5x35.5x48.5mm

**Accessories**

DIN rail and PCB sockets, clips      DIN rail, panel and PCB sockets, clips      No sockets

1) Recommended minimum load indication for contact material: Au and Au plated: 1mA at 6VDC; Ag, AgNi0.15 and AgNi90/10: 10mA at 12VDC; AgCdO and AgSnO<sub>2</sub>: 100mA at 12VDC. Please contact technical support for detailed technical data. 2) QC=quick connect.

Panel / Plug-In Relays

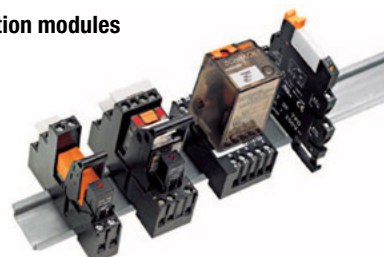
**KUEP**

- 10A relay with various contact arrangements
- Magnetic blowout for 150VDC load switching
- Indicator lamp option



**Accessories**

- DIN rail and PCB sockets
- Screw and screwless fingersafe terminals
- Retaining and ejection clips
- Marking tags, jumper bars, jumper links
- LED and protection modules



**Sets**

- Relay package consisting of relay, DIN rail socket, plastic retaining clip, marking tag and module



**Contact Data**

Contact arrangement

1 form X (NO-DM)  
2 form A, 2 NO  
2 form C, 2 CO

1 form C, 1 CO  
2 form C, 2 CO  
3 form C, 3 CO  
4 form C, 4 CO

1 form C, 1 CO  
2 form C, 2 CO  
3 form C, 3 CO  
4 form C, 4 CO

Rated voltage

150VDC/240VAC

240/250VAC

240/250VAC

Rated current

10A

6 to 16A

6 to 16A

Switching power

1500W/2400VA

1500 to 4000VA

Contact material

AgCdO, AgSnOInO

Min. recommended contact load

12VDC/300mA

1)

**Coil Data**

Magnetic system

DC, AC

DC, AC

Rated coil voltage

5 to 110VDC/6 to 240VAC

6 to 220VDC/6 to 230VAC

Rated coil power

1.2W to 1.8W/2 to 2.7VA

170 to 700mW/0.4 to 1VA

**Insulation Data**

Initial dielectric strength

between open contacts

1200Vrms

between contact and coil

2200Vrms

between adjacent contacts

2200Vrms

Clearance/creepage

between contact and coil

**Other Data**

Ambient temperature (max.)

AC +55/+70°C  
DC +50/+70°C

Category of environmental protection IEC 61810

RTI

IP20

Terminal type

QC<sup>2)</sup>/solder and PCB

Screw, screwless, plate mount, PCB

Screw, screwless

Mounting

Socket, PCB, bracket and top flange mount

Dimensions lwh

38.9x35.7x48.4mm

**Accessories**

DIN rail, track mount, chassis mount, and snap-in sockets, clips

PCB, panel mount and DIN rail

DIN, panel mount

1) Recommended minimum load indication for contact material: Au and Au plated: 1mA at 6VDC; Ag, AgNi0.15 and AgNi90/10: 10mA at 12VDC; AgCdO and AgSnO<sub>2</sub>: 100mA at 12VDC. Please contact technical support for detailed technical data. 2) QC=quick connect.

General Purpose

PCB High Power, Metering and Solar Relays

**T9A/T9E/T90**

- High breaking capacity
- PCB and QC<sup>2)</sup> connections and chassis mount version
- UL-class F as standard
- Ambient temperature 85°C
- Open version available



**T9S**

- Specially designed to meet the requirements for the solar industry
- Contact gap >1.5mm
- 350mW hold power,
- Product in accordance to IEC 60335-1
- EN 61095: AC7 at 85°C



**T92**

- Switching capacity 7500VA
- DC or AC coil
- 4kV/8mm coil-contact
- PCB or QC<sup>2)</sup> connections or chassis mount



**Contact Data**

Contact arrangement	1 form C, 1 CO 1 form A, 1 NO	1 form A, 1 NO	2 form C, 2 CO 2 form A, 2 NO
Rated voltage	250VAC	277VAC	400VAC
Rated current	30A	35A	30A
Switching power	7500VA	8750VA	7500VA
Contact material	AgCdO, AgSnInO	AgNi	AgCdO, AgSnInO
Min. recommended contact load	1A at 5VDC or 12VAC		100mA at 6VAC/VDC

**Coil Data**

Magnetic system	DC	DC	DC, AC
Rated coil voltage	6 to 48VDC	12VDC	6 to 110VDC/12 to 277VAC
Rated coil power	1W/900mW	2.25W/350mW hold power	1.7W/4.0VA

**Insulation Data**

Initial dielectric strength			
between open contacts	1500Vrms	2500Vrms	1500Vrms
between contact and coil	2500Vrms	4000Vrms	4000Vrms
between adjacent contacts			2000Vrms
Clearance/creepage			
between contact and coil	3.1/6.3mm	3/4 mm	8/9.5mm

**Other Data**

Ambient temperature (max.)	+85°C	+85°C	+65°C, +85°C
Category of environmental protection IEC 61810	RTO, RTI, RTII, RTIII	RTII	RTI, RTII, RTIII
Terminal type	THT, QC <sup>2)</sup>	THT	THT, QC <sup>2)</sup>
Mounting	PCB, panel mount	PCB	Panel mount, PCB
Dimensions lwh	32.3x27.4x20.4mm	32.5x27.4x20.4mm	52.3x34.6x30.8mm

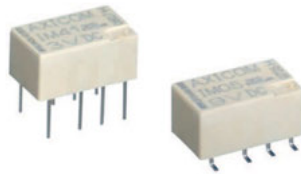
**Accessories**

1) Recommended minimum load indication for contact material: Au and gold plated: 1mA at 6VDC; Ag, AgNi0.15 and AgNi90/10: 10mA at 12VDC; AgCdO and AgSnO<sub>2</sub>: 100mA at 12VDC. Please contact technical support for detailed technical data. 2) QC=quick connect.

Signal Relays

IM

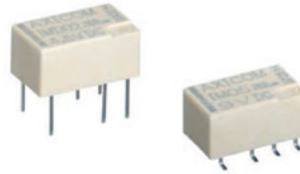
- 4G telecom/signal relay
- Slim line 10x6mm
- Low profile 5.65mm
- High dielectric version
- High current version
- High contact stability version
- 2/5A UL rating
- Meets Telcordia Technologies Inc. requirements



C US IEC 60950

IMD/E

- 4G telecom/signal relay
- 2 pole make or break
- Slim line 10x6mm
- Low profile 5.65mm
- High dielectric version
- 2A UL rating
- Meets Telcordia Technologies Inc. requirements



C US IEC 60950

IMC

- 4G telecom/signal relay
- 1 pole changeover
- Slim line 10x6mm
- Low profile 5.65mm
- High dielectric version
- 3A UL rating
- Meets Telcordia Technologies Inc. requirements



C US IEC 60950

Contact Data

Contact arrangement	2 form C, 2 CO Bifurcated contacts	2 form B, 2 NC 2 form A, 2 NO Bifurcated contacts	1 form C, 1 CO Bifurcated contacts
Rated voltage	250VAC/220VDC	250VAC/220VDC	250VAC/220VDC
Rated current	2/5A	2A	2/3A
Switching power	60W/62.5VA	60W/62.5VA	60W/62.5VA
Min. recommended contact load	100µV/1µA	100µV/1µA	100µV/1µA
Initial contact resistance	<50mΩ	<50mΩ	<100mΩ

Coil Data

Magnetic system	Polarized	Polarized	Polarized
Rated coil voltage	1.5 to 24VDC	1.5 to 24VDC	1.5 to 24VDC
Rated coil power DC coil/bistable 1 coil/2 coils	50 to 200mW/-/-	140mW/-/-	140mW/-/-

Insulation Data

Initial dielectric strength			
between open contacts	1000 to 1500Vrms	1000Vrms	1000Vrms
between contact and coil	1500 to 1800Vrms	1800Vrms	1800Vrms
between adjacent contacts	1000 to 1800Vrms	1000Vrms	
Initial surge withstand voltage			
between open contacts	1500 to 2500Vp	1500Vp	1500Vp
between contact and coil	2500Vp	2500Vp	2500Vp
between adjacent contacts	1500 to 2500Vp	1500Vp	
Isolation 100/900MHz	-37.0/-18.8dB	-37.0/-18.8dB	-37.0/-18.8dB
Insertion loss 100/900MHz	-0.03/-0.33dB	-0.03/-0.33dB	-0.03/-0.33dB
Volt. standing wave ratio 100/900MHz	1.06/1.49	1.6/1.49	1.6/1.49
Capacitance			
between open contacts	max. 1pF	max. 1pF	max. 1pF

Other Data

Ambient temperature	-40 to +85°C (+125°C)	-40 to +85°C	-40 to +85°C
Category of environmental protection	IP67/RTV	IP67/RTV	IP67/RTV
Terminal type	THT, SMT	THT, SMT	THT, SMT
Dimensions lwh	10x6x5.65mm	10x6x5.65mm	10x6x5.65mm



Signal Relays

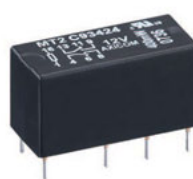
**D2N V23105**

- 2G telecom/signal relay
- 4 coil sensitivities
- 3A UL rating



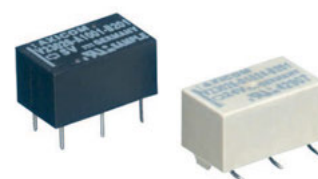
**MT2**

- 2G telecom/signal relay
- 5 coil sensitivities
- 2A UL rating



**P1 V23026**

- Very high sensitive relay
- Low profile
- High vibration and shock resistance
- Version: symmetric pin layout
- Temperature range up to 85°C
- 1500Vrms across opened contacts



**Contact Data**

Contact arrangement	2 form C, 2 CO Single contacts	2 form C, 2 CO Bifurcated contacts	1 form C, 1 CO Bifurcated contacts
Rated voltage	250VAC/220VDC	250VAC/220VDC	150VAC/125VDC
Rated current	3A	2A	1A
Switching power	60W/125VA	60W/62.5VA	30W/60VA
Min. recommended contact load	100µV/10µA	100µV/1µA	100µV/1µA
Initial contact resistance	<100mΩ	<70mΩ	<50mΩ

**Coil Data**

Magnetic system	Non polarized	Non polarized	Polarized
Rated coil voltage	3 to 48VDC	3 to 48VDC	3 to 24VDC
Rated coil power			
DC coil/bistable 1 coil/2 coils	150 to 700mW/-/-	150 to 550mW/-/-	65 to 130mW/30 to 130mW/70 to 200mW

**Insulation Data**

Initial dielectric strength			
between open contacts	750Vrms	750Vrms	500Vrms
between contact and coil	1000Vrms	1000Vrms	1500Vrms
between adjacent contacts	750Vrms	750Vrms	
Initial surge withstand voltage			
between open contacts	1500Vp	1500Vp	
between contact and coil	1500Vp	1500Vp	2500Vp
between adjacent contacts	1500Vp	1500Vp	
Isolation 100/900MHz	-39.0/-20.7dB	-31.8/-14.2dB	-30.0/-18.0dB
Insertion loss 100/900MHz	-0.02/-0.27dB	-0.02/-0.97dB	-0.12/-1.90dB
Volt. standing wave ratio 100/900MHz	1.04/1.40	1.03/1.31	1.06/1.75
Capacitance			
between open contacts	max. 2pF	max. 2pF	max. 5pF

**Other Data**

Ambient temperature	-25 to +85°C	-55 to +85°C	-40 to +85°C
Category of environmental protection	IP67/RTIII	IP67/RTIII	IP67/RTIII
Terminal type	THT	THT	THT, SMT
Dimensions lwh	20.2x10x11.4mm	20.2x10x11mm	13x7.6x6.9mm

**High Frequency Relays/Switches**

**HF3**

- High performance RF relay/switch for up to 3GHz
- Low power consumption ≤70/140 mW
- 50 and 75Ω version
- Very small design



**HF3S**

- High performance RF relay/switch for up to 3GHz
- Low power consumption ≤70/140mW
- 50 and 75Ω version
- RF power 100W at 2GHz
- Very small design



**HF6**

- High performance RF relay/switch for up to 6GHz
- Low power consumption ≤70/ 140mW
- 50Ω version
- Very small design



**Contact Data**

Contact arrangement	1 form C, 1 CO Bridge contacts	1 form C, 1 CO Bridge contacts	1 form C, 1 CO Bridge contacts
Rated voltage	250VAC/220VDC	250VAC/220VDC	250VAC/220VDC
Rated current	2A	2A	2A
Switching power	60W/62.5VA/50W (2.5GHz)	60W/62.5VA/50W (2.5GHz)	60W/62.5VA/50W (2.5GHz)
Min. recommended contact load	100µV/1µA	100µV/1µA	100µV/1µA
Initial contact resistance	<100mΩ	<100mΩ	<100mΩ

**Coil Data**

Magnetic system	Polarized	Polarized	Polarized
Rated coil voltage	3 to 24VDC	3 to 24VDC	3 to 24VDC
Rated coil power DC coil/bistable 1 coil/2 coils	140mW/70mW/140mW	140mW/70mW/140mW	140mW/70mW/140mW

**Insulation Data**

Initial dielectric strength	between open contacts	600Vrms	600Vrms	600Vrms
	between contact and coil	1000Vrms	1000Vrms	1000Vrms
	between adjacent contacts			
Initial surge withstand voltage	between open contacts	1000Vp	1000Vp	1000Vp
	between contact and coil	1500Vp	1500Vp	1500Vp
	between adjacent contacts			
Capacitance between open contacts	max. 1pF	max. 1pF	max. 1pF	

**RF Data**

Isolation	0.1/0.9/3GHz	0.1/0.9/3GHz	0.9/3/6GHz
Insertion loss	-80/-72/-45dB	-95/-80/-55dB	-80/-60/-30dB
Voltage standing wave ratio (VSWR)	-0.03/0.12/-0.35dB	-0.03/-0.12/-0.30dB	-0.05/-0.15/-0.80dB
	1.05/1.15/1.20	1.05/1.10/1.25	1.05 / 1.10 / 1.40

**Other Data**

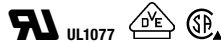
Ambient temperature	-55 to +85°C	-55 to +85°C	-55 to +85°C
Category of environmental protection	IP67/RTIII	IP67/RTIII	IP67/RTIII
Terminal type	SMT	SMT	SMT
Dimensions lwh	14.6x7.2x10mm	15x7.6x10.6mm	15x7.6x10.6mm

## General Purpose

### Circuit Breakers

#### W28

- Replaces slow blow glass cartridge fuse and holder
- Snap-in mounting
- Button provides visible trip indication
- Push-to-reset
- Right angle QC<sup>1)</sup> optional



#### W23/W31

- Toggle and push/pull actuator; can not be reset against overload



#### W33

- Combines optional illuminated on/off switching and circuit protection in a single unit
- Optional auxiliary switch



#### Contact Data

Type	Thermal	Thermal	Thermal
Contact arrangement number of poles	1	1	1-2
Circuit function	Series trip	Series trip	Series trip both poles; series trip 1 pole/ switch only 1 pole; switch only 2 poles
Max. switching voltage (max. operating voltage)	32VDC 250VAC	50VDC 240VAC	50VDC 250VAC
Rated current	0.5A to 20A	0.5A to 50A	2A to 20A
Interrupt capacity	1000A at 250VAC, 50/60Hz, 32VDC	1000A for 0.5 to 50A at 240 VAC/0 to 50A at 50VDC both with 4X max. fuse protection; 2000A for 0.5 to 25A at 50VDC/10 to 20A at 120VAC both without 4X max. fuse protection	1000A at 50VDC, 250VAC/60Hz and 125/250VAC 400Hz; 1500A at 25/250VAC/60Hz
Trip time at 200% of rating	0.25 to 2A models 4.5 to 28s; 3 to 20A models 2.2 to 15s	0.5 to 4A models 11 to 30s; 5 to 50A models 6 to 22s	3 to 33s
<b>Insulation Data</b>			
Initial dielectric strength	1500Vrms	1500Vrms	2000Vrms
<b>Other Data</b>			
Ambient temperature	-20 to +60°C	-20 to +65°C	-20 to +65°C
Terminal type	QC <sup>1)</sup>	Screw	QC <sup>1)</sup>
Mounting	Snap-in	3/8"-24 threaded bushing	Snap-in
Manual operation Actuator	Push-to-reset	Push/pull and toggle	Rocker
Dimensions lwh	39.0x15.9x13.7mm	40.6x17.5x35.2mm	43.8x24.9x48.0mm
<b>Accessories</b>			
	Protective boot, push-on lockwasher	Hex nut, lockwasher, knurl nut	

1) QC=quick connect.

Industry Applications



Product Lines

Technical Features

Alternative Energy

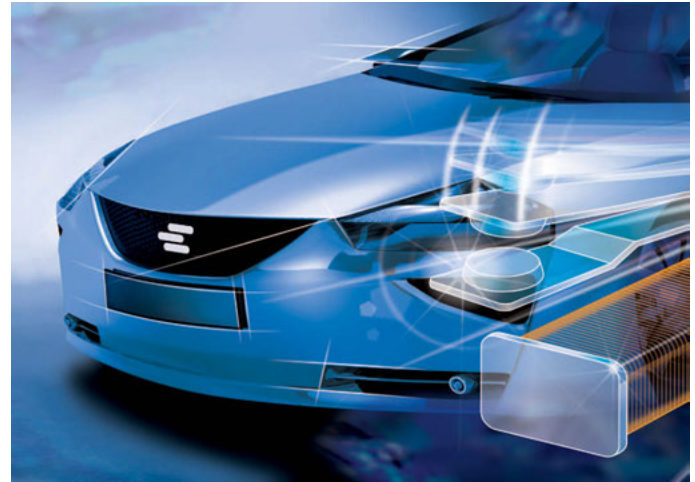
Alternative Power Vehicle / Charging

Appli

	Product Lines	Technical Features	Alternative Energy	Alternative Power Vehicle / Charging	Appli
AUTOMOTIVE	 Low Power PCB Relays	1 and 2 poles 10 to 45A DC and bistable		✓	
	 Low Power Plug-In Relays	20 to 70A up to 125°C		✓	
	 High Power High Current Devices	1 pole, star point up to 255A up to 125°C		✓	
	 High Power High Voltage Relays	900VDC up to 200A DC and bistable	✓	✓	
GENERAL PURPOSE	 Low Power PCB Relays	1 and 2 poles 250VAC 0 to 16A DC, AC, bistable	✓	✓	✓
	 High Power Relays	1 and 2 poles 250 to 400VAC 20 to 30A	✓	✓	✓
	 High Power Latching Relays	250VAC up to 120A DC, bistable			
	 Solar Relays	up to 277VAC up to 35A	✓		
	 Force Guided Relays	2 to 6 poles 250VAC 6 to 8A			
	 Panel / Plug-In Relays	1 to 4 poles up to 400VAC 0.5 to 30A (50A) DC, AC, bistable	✓		
	 Circuit Breakers	1 to 4 poles up to 250VAC (480VAC) 0.2 to 50A			✓
	 Signal Relays	1 to 2 (8) poles up to 250VAC/VDC 0 to 5A		✓	✓
	 High Frequency Relays/Switches	220VAC/250VDC up to 2A 70 to 140mW			

This Line Card provides a further brief overview of key product lines available from TE Relay Products. More complete details on the products described above, as well as specialty relays, contactors, timers, solid state relays and power transformers, can be found in our datasheets at <http://relays.te.com> and at [www.te.com](http://www.te.com).

## Industry Overview

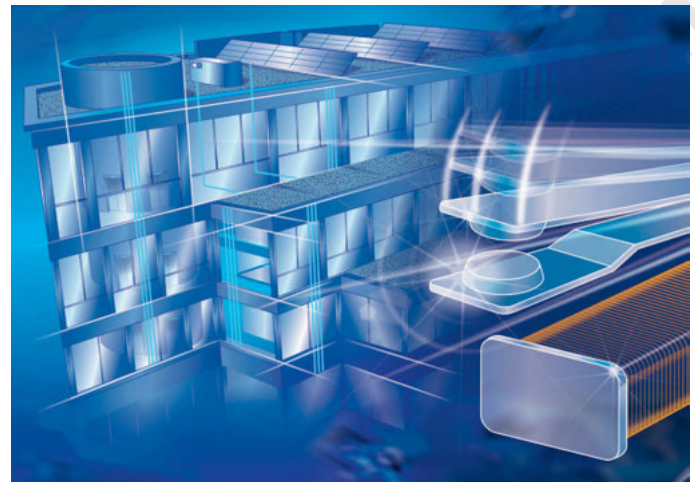
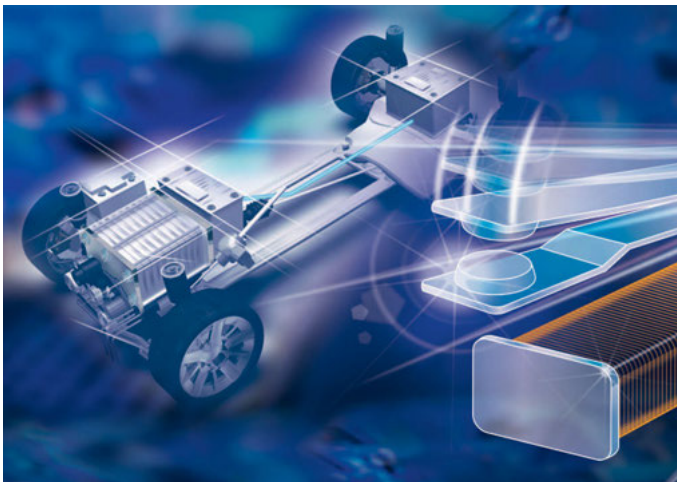


### Alternative Energy

Relays meeting the specific requirements for use in power inverters are among the switching components offered by TE Relay Products for alternative energy applications.

### Automotive

TE Relay Products supplies many different switching products for automotive applications. These range from basic electromechanical relays to special function relays, contactors and hybrid modules.



### Alternative Power Vehicle/Charging

From miniature relays for PCB mounting to large power contactors, TE Relay Products offers an array of switching solutions for alternative power vehicles and the associated infrastructure.

### Building Equipment/Lighting

TE Relay Products provides a broad range of products for use in building equipment such as elevators, HVAC systems, alarms and more.

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