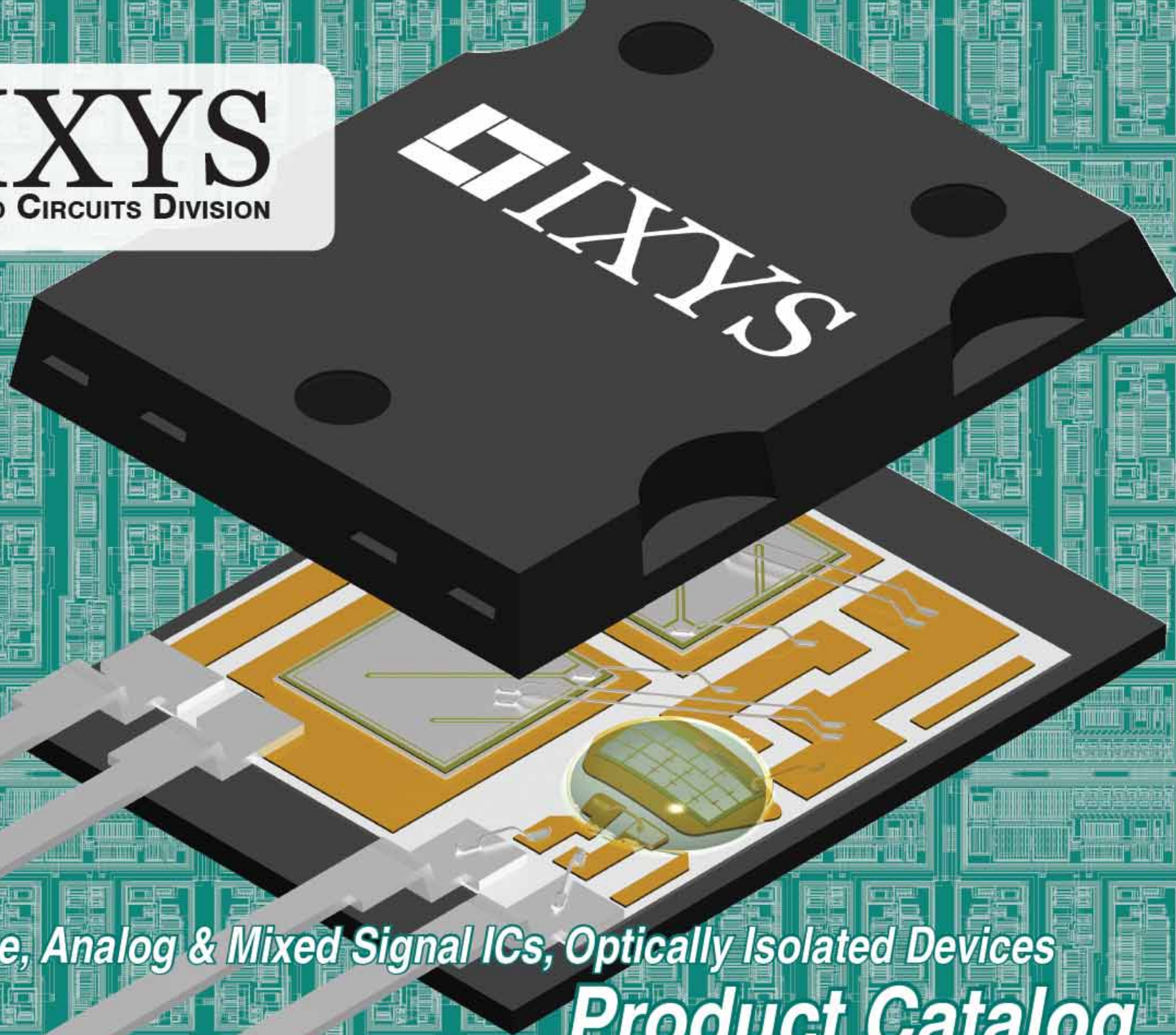




IXYS

INTEGRATED CIRCUITS DIVISION



High Voltage, Analog & Mixed Signal ICs, Optically Isolated Devices

Product Catalog

IXYS Integrated Circuits Division

IXYS Integrated Circuits Division is a wholly owned subsidiary of IXYS Corporation. Located near Boston, Massachusetts, USA, IXYS Integrated Circuits Division designs, manufactures, and markets a wide variety of semiconductor devices, and is a major provider of optically isolated electronic components.

IXYS Integrated Circuits Division's unique mix of high voltage wafer fab, isolation barrier expertise, multi-chip packaging experience, and expertise in analog, power, and mixed signal design, points the way to more functionality in a smaller footprint at lower cost for your designs.



Clare, Inc., founded by Carl P. Clare in 1937 as C. P. Clare & Company, was purchased by IXYS Corporation in 2002, and is now known as IXYS Integrated Circuits Division (as of April, 2012).

Products and Markets

- **IGBT and MOSFET Drivers:** High voltage and low-side IGBT and MOSFET drivers, many of which are AEC-Q100 qualified.
- **High Voltage ICs:** High voltage 8-channel and 16-channel analog switches for the medical and imaging markets, high voltage LED drivers, and others.
- **Solid State Relays (SSR):** One of the industry's broadest lines of optically isolated SSRs, available in a wide selection of configurations, blocking voltages, and load currents.
- **Power Market:** Power solid state relays; SCR-based AC power switches (zero-cross & rapid turn-on); and N-channel, depletion-mode, field effect transistors (FET).
- **Lighting:** High voltage LED drivers.
- **High Speed Digital Optical Isolators:** New high speed isolators that pass DC signals, require no refresh clocking, and provide 3750V_{rms} of galvanic isolation.
- **I²C Optically Isolated Bus Repeaters:** New high speed repeaters that buffer both I²C signals, require no refresh clocking, and provide 3750V_{rms} of galvanic isolation.
- **Portable reader devices:** Drivers for ePaper readers and displays.
- **RFID Devices:** Read-Only and HDX devices for single transponder applications operating in the low frequency (134.2 kHz) range, and supporting ISO 11784/85 standards.
- **Non-volatile Digitally Programmable Capacitor:** Provides capacitive offset trimming for capacitance sensitive circuits.
- **Telecommunications:** a broad range of products:
 - LITELINK® silicon Data Access Arrangement (DAA)
 - Phone-line interface and monitoring devices
 - LCAS: Line Card Access Switch products
 - DC Termination devices for xDSL and ISDN applications
 - Cybergate™ DAA

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LAA108	9	LCA127	8	LDA203	30	PAA110	9	PLA193	8		
LAA110	9	LCA127L	8	LDA210	30	PAA110L	9	PLA194	8		
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LBA120L	11	LCB111	10	LOC210	31	PD1201	16	TS118	18		
LBA127	11	LCB120	10	LOC211	31	PD2401	16	TS120	18		
LBA127L	11	LCB126	10	M-949-11	42	PD2601	16	TS190	18		

SOLID STATE RELAYS

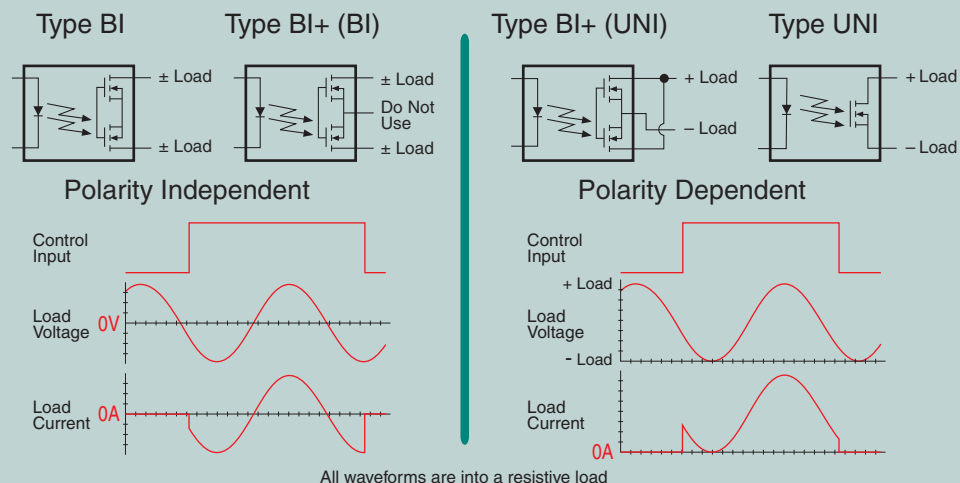
- **Replace electromechanical relays**
- **Replace mechanical switches**
- **Implement computer control of electromechanical circuits**

Features:

- Low drive current
- High reliability
- No EMI/RFI generation
- Arc-free with no snubbing circuits
- AC or DC switching
- Current limiting devices available
- FCC compatible
- Low off-state leakage

Applications:

- Telecommunications/data communications
- Instrumentation
- Multiplexers
- Data acquisition/electronic switching
- Meters (Watt-hour, water, gas)
- Medical equipment (patient/equipment isolation)
- Security
- Aerospace
- Industrial controls



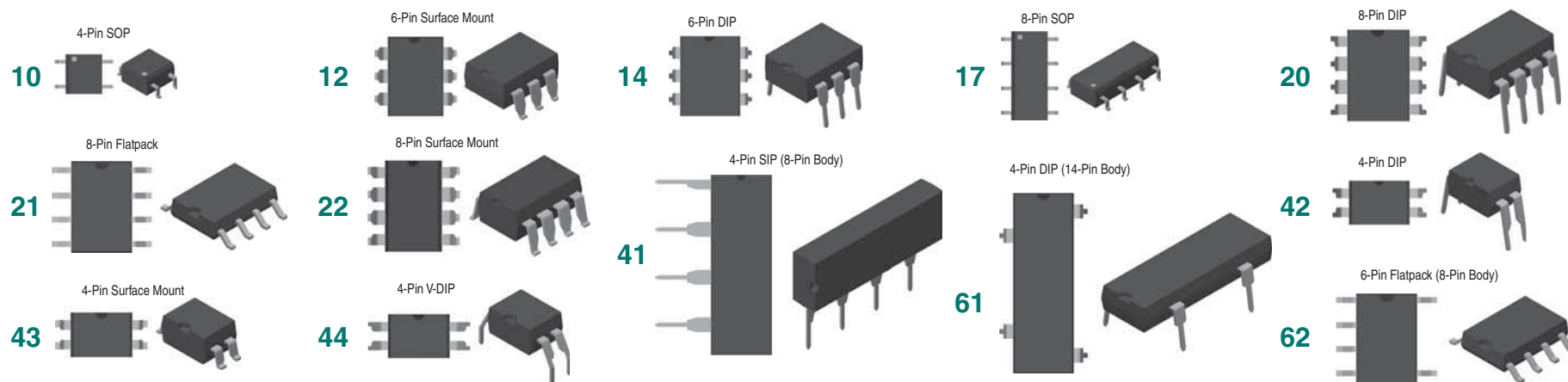
Type BI (Bidirectional) relays conduct load current in both directions.

Type BI+ (BI configuration) relays conduct load current in both directions.

Type BI+ (UNI configuration) relays, with output MOSFETs wired in parallel, enable higher load current from positive terminal to negative terminal only.

Type UNI (Unidirectional) relays conduct load current from the positive terminal to the negative terminal only.

The accompanying SSR tables reference these types (BI, BI+, & UNI) for all devices listed.



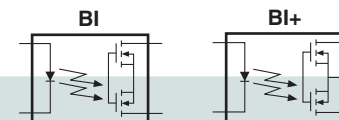
Packages are referenced by number in the accompanying solid state relay selection tables.

For data sheets, go to www.ixysic.com/Products/ProdList.htm

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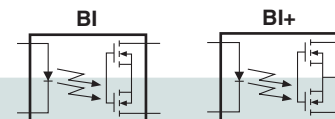
• 1-FORM-A RELAYS (NORMALLY OPEN)

1-Form-A Relays: Single-Pole



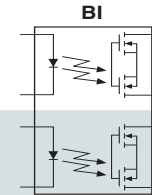
Part Number	Relay Type	Blocking Voltage (V _p)	Load Current (mA)	On Resistance (Ω)	Input Control Current (mA)	Switching Speeds t _{on} / t _{off} (ms)	Isolation Voltage (V _{rms})	Off-State Leakage (μA)	Package Type (Page 6)	Features and Comments
CPC1006N	BI	60	75	10	0.5	10 / 10	1500	1	10	Low I _F , EN 50130-4
CPC1008N	BI	100	150	8	2	2 / 1	1500	1	10	
CPC1009N	BI	100	150	8	2	2 / 0.5	1500	0.02	10	Very low off-state I _{LEAK} ≤ 20nA
CPC1010N	BI	250	170	11.5	2	3 / 3	1500	1	10	
CPC1014N	BI	60	400	2	2	2 / 1	1500	1	10	EN 50130-4
CPC1016N	BI	100	100	16	2	2 / 1	1500	1	10	
CPC1017N	BI	60	100	16	1	10 / 10	1500	1	10	Low I _F , EN 50130-4
CPC1018N	BI	60	600	0.8	1	3 / 2	1500	1	10	Low I _F , EN 50130-4
CPC1019N	BI	60	750	0.6	2	3 / 3	1500	1	10	
CPC1020N	BI	30	1200	0.25	2	3 / 3	1500	1	10	High load current, very low on-resistance
CPC1025N	BI	400	120	30	2	2 / 1	1500	1	10	
CPC1030N	BI	350	120	30	2	2 / 1	1500	1	10	
CPC1035N	BI	350	100	35	2	2 / 1	1500	1	10	
CPC1225N	BI	400	120	30	2	2 / 1	1500	1	10	EN/IEC 60950-1 Supplementary Insulation (0.4mm distance through insulation)
CPC1230N	BI	350	120	30	2	2 / 1	1500	1	10	EN/IEC 60950-1 Supplementary Insulation (0.4mm distance through insulation)
CPC1317	BI	70	150	16	1	2.5 / 2.5	3750	1	21	EN 50130-4 (installation class 3), transient voltage suppression (TVS)
CPC1330	BI	350	120	30	2	2 / 1	5000	1	42, 43	Enhanced isolation voltage
CPC1335	BI	350	100	35	1	10 / 10	3750	1	21	Low I _F , EN 50130-4 (installation class 3), transient voltage suppression (TVS)
CPC1390	BI	400	140	22	2	1 / 1	5000	1	42, 43, 44	Enhanced isolation voltage
CPC1393	BI	600	90	50	2	5 / 5	5000	1	42, 43, 44	Enhanced isolation voltage
CPC1394	BI	600	120	35	2	5 / 3	5000	1	42, 43, 44	Enhanced isolation voltage
CPC1510	BI+	250	200	15	2	2 / 2	3750	1	12, 14	Current limiting with thermal management - see page 13
CPC1511	BI	230	450	4	2.5	4 / 2	3750	1	36	Current limiting with thermal management - see page 13
CPC1540	BI+	350	120	25	2	2 / 2	3750	1	12, 14	Current limiting with thermal management - see page 13
CPC1560	BI+	60	300	5.6	1.1	0.1 / 0.4	3750	1	20, 22	Current limiting with thermal management - see page 13
CPC1563	BI+	600	120	35	2	2 / 2	3750	1	12, 14	Current limiting with thermal management - see page 13
CPC1593	BI+	600	120	35	2	2 / 2	3750	1	12, 14	Current limiting, thermal management, voltage triggered shutdown - see page 13
LCA100	BI+	350	120	25	5	5 / 5	3750	1	12, 14	
LCA100L	BI+	350	120	25	5	5 / 5	3750	1	12, 14	Current limiting
LCA110	BI+	350	120	35	2	3 / 3	3750	1	12, 14	
LCA110L	BI+	350	120	35	2	3 / 3	3750	1	12, 14	Current limiting
LCA120	BI+	250	170	20	5	3 / 3	3750	1	12, 14	
LCA120L	BI+	250	150	20	5	3 / 3	3750	1	12, 14	Current limiting
LCA125	BI+	300	170	16	5	5 / 5	3750	1	12, 14	
LCA125L	BI+	300	170	20	5	5 / 5	3750	1	12, 14	Current limiting

1-Form-A Relays: Single-Pole (continued)



Part Number	Relay Type	Blocking Voltage (V _p)	Load Current (mA)	On Resistance (Ω)	Input Control Current (mA)	Switching Speeds t _{on} / t _{off} (ms)	Isolation Voltage (V _{rms})	Off-State Leakage (μA)	Package Type (Page 6)	Features and Comments
LCA127	BI+	250	200	10	5	5 / 5	3750	1	12, 14	
LCA127L	BI+	250	170	15	5	5 / 5	3750	1	12, 14	Current limiting
LCA129	BI+	250	170	20	2	8 / 8	3750	1	12, 14	
LCA182	BI+	350	120	35	0.25	3 / 3	3750	1	12, 14	Very Low I _F
LCA701	BI+	100	1500	0.3	2	4 / 1	3750	1	12, 14	High Load Current
LCA710	BI+	60	1000	0.5	10	2.5 / 0.25	3750	1	12, 14	High Load Current
LCA712	BI+	60	1000	0.5	10	2.5 / 0.35	3750	0.01	12, 14	High Load Current, Low I _{LEAK}
LCA715	BI+	60	2200	0.15	5	2.5 / 0.25	3750	1	12, 14	High Load Current
LCA717	BI+	30	2000	0.15	2	3 / 3	3750	1	12, 14	High Load Current
OMA160	BI+	250	50	100	10	0.125 / 0.125	3750	0.025	12, 14	Low I _{LEAK} , Fast Switching Times
PLA110	BI+	400	150	22	5	1 / 0.5	3750	1	12, 14	
PLA110L	BI+	400	150	25	5	1 / 0.25	3750	-	12, 14	Current Limiting
PLA132	BI+	60	600	1	2	5 / 2	3750	1	12, 14	
PLA134	BI+	100	350	3	5	5 / 5	3750	1	12, 14	
PLA140	BI+	400	250	8	5	3 / 1	3750	1	12, 14	
PLA140L	BI+	400	200	13	5	5 / 3	3750	1	12, 14	Current Limiting
PLA143	BI+	600	100	50	2	5 / 5	4000	1	12, 14	Enhanced Isolation Voltage
PLA150	BI+	250	250	7	5	2.5 / 0.5	3750	1	12, 14	
PLA160	BI+	300	50	100	10	0.05 / 0.05	3750	0.025	12, 14	Low I _{LEAK} , Fast Switching Times
PLA170	BI+	800	100	50	5	5 / 5	3750	1	12, 14	
PLA171	BI	800	100	50	2	5 / 5	5000	1	62	Enhanced Isolation Voltage, High Blocking Voltage (Output Pins 7mm Separation)
PLA190	BI+	400	150	22	5	1 / 0.5	5000	1	12, 14	Enhanced Isolation Voltage
PLA191	BI+	400	250	8	5	3 / 1	5000	1	12, 14	Enhanced Isolation Voltage
PLA192	BI+	600	150	22	5	5 / 5	5000	1	12, 14	Enhanced Isolation Voltage, PLA192E is DIN EN 60747-5-5 Certified
PLA193	BI+	600	100	50	5	5 / 5	5000	1	12, 14	Enhanced Isolation Voltage, PLA193E is DIN EN 60747-5-5 Certified
PLA194	BI+	600	130	35	2	3 / 2	5000	1	12, 14	Enhanced Isolation Voltage
XCA170	BI+	350	100	50	5	5 / 5	3750	1	12, 14	

1-Form-A Relays: Dual Single-Pole

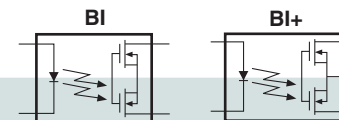


Part Number	Relay Type	Blocking Voltage (V _P)	Load Current (mA)	On Resistance (Ω)	Input Control Current (mA)	Switching Speeds t _{on} / t _{off} (ms)	Isolation Voltage (V _{rms})	Off-State Leakage (μA)	Package Type (Page 6)	Features and Comments
CPC2014N	BI	60	400	2	2	2 / 1	1500	1	17	EN 50130-4
CPC2017N	BI	60	120	16	1	3 / 3	1500	1	17	Low I _F , EN 50130-4
CPC2025N	BI	400	120	30	2	2 / 1	1500	1	17	
CPC2030N	BI	350	120	30	2	2 / 1	1500	1	17	
LAA100	BI	350	120	25	5	5 / 5	3750	1	20, 21, 22	
LAA100L	BI	350	120	25	5	5 / 5	3750	1	20, 21, 22	Current Limiting
LAA108	BI	100	300	8	2	3 / 3	3750	1	20, 21, 22	
LAA110	BI	350	120	35	5	3 / 3	3750	1	20, 21, 22	
LAA110L	BI	350	120	35	5	3 / 3	3750	1	20, 21, 22	Current Limiting
LAA120	BI	250	170	20	5	5 / 5	3750	1	20, 21, 22	
LAA120L	BI	250	150	25	5	5 / 5	3750	1	20, 21, 22	Current Limiting
LAA125	BI	350	170	16	5	5 / 5	3750	1	20, 21, 22	
LAA125L	BI	350	150	18	5	5 / 5	3750	1	20, 21, 22	Current Limiting
LAA127	BI	250	200	10	5	5 / 5	3750	1	20, 21, 22	
LAA127L	BI	250	170	15	5	5 / 5	3750	1	20, 21, 22	Current Limiting
LAA710	BI	60	1000	0.5	10	2.5 / 0.25	3750	1	20, 22	
OAA160	BI	250	50	100	3	0.125 / 0.125	3750	0.025	20, 21, 22	Very Low I _{LEAK} , Fast Switching Times
PAA110	BI	400	150	22	5	1 / 0.25	3750	1	20, 21, 22	
PAA110L	BI	400	150	25	5	1 / 0.5	3750	1	20, 21, 22	Current Limiting
PAA127	BI	280	200	10	3	0.5 / 0.5	3750	0.025	20, 21, 22	Very Low I _{LEAK} , Fast Switching Times
PAA132	BI	60	600	1	2	5 / 2	3750	1	20, 22	
PAA140	BI	400	250	8	5	3 / 1	3750	1	20, 21, 22	
PAA140L	BI	400	200	13	5	5 / 3	3750	1	20, 22	Current Limiting
PAA150	BI	250	250	7	5	2.5 / 0.5	3750	1	20, 21, 22	
PAA190	BI	400	150	22	5	1 / 0.5	5000	1	20, 22	Enhanced Isolation Voltage
PAA191	BI	400	250	8	5	3 / 1	5000	1	20, 22	Enhanced Isolation Voltage
PAA193	BI	600	100	50	5	5 / 5	5000	10	20, 22	Enhanced Isolation Voltage
XAA117	BI	60	150	16	1	5 / 5	3750	1	20, 21, 22	Low I _F
XAA170	BI	350	100	50	5	5 / 5	3750	1	20, 21, 22	

For data sheets, go to www.ixysic.com/Products/ProdList.htm

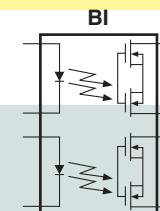
• 1-FORM-B RELAYS (NORMALLY CLOSED)

1-Form-B Relays: Single-Pole



Part Number	Relay Type	Blocking Voltage (V _p)	Load Current (mA)	On Resistance (Ω)	Input Control Current (mA)	Switching Speeds t _{on} / t _{off} (ms)	Isolation Voltage (V _{rms})	Off-State Leakage (μA)	Package Type (Page 6)	Features and Comments
CPC1106N	BI	60	75	10	0.5	10 / 10	1500	1	10	Low I _F , EN 50130-4
CPC1114N	BI	60	400	2	2	2 / 5	1500	1	10	
CPC1117N	BI	60	150	16	1	10 / 10	1500	1	10	Low I _F , EN 50130-4
CPC1125N	BI	400	100	35	2	2 / 2	1500	5	10	
CPC1130N	BI	350	120	30	2	2 / 2	1500	5	10	
CPC1135N	BI	350	120	35	2	2 / 2	1500	5	10	
CPC1150N	BI	350	120	50	2	1 / 2	1500	5	10	
CPC1231N	BI	350	120	30	2	2 / 2	1500	5	10	EN/IEC 60950-1 Supplementary Insulation (0.4mm distance through insulation)
CPC1333	BI	350	130	30	2	2 / 3	5000	1	42, 43	Enhanced Isolation Voltage
LCB110	BI+	350	120	35	5	3 / 3	3750	1	12, 14	
LCB111	BI+	350	120	35	2	5 / 5	3750	1	12, 14	
LCB120	BI+	250	170	20	5	5 / 5	3750	1	12, 14	
LCB126	BI+	250	170	15	5	5 / 5	3750	1	12, 14	
LCB127	BI+	250	200	10	5	5 / 5	3750	1	12, 14	
LCB710	BI+	60	1000	0.6	2	3 / 3	3750	1	12, 14	High Load Current
LCB716	BI+	60	500	2	2	3 / 3	3750	1	12, 14	
LCB717	BI+	30	1500	0.3	2	2 / 5	3750	1	12, 14	High Load Current
PLB150	BI+	250	250	7	5	1 / 2.5	3750	1	12, 14	
PLB171	BI	800	80	55	2	5 / 5	5000	1	62	Enhanced Isolation Voltage, High Blocking Voltage (Output Pins 7mm Separation)
PLB190	BI+	400	130	25	2	1 / 2.5	5000	1	12, 14	Enhanced Isolation Voltage
XCB170	BI+	350	100	50	5	5 / 5	3750	1	12, 14	

1-Form-B Relays: Dual Single-Pole



Part Number	Relay Type	Blocking Voltage (V _p)	Load Current (mA)	On Resistance (Ω)	Input Control Current (mA)	Switching Speeds t _{on} / t _{off} (ms)	Isolation Voltage (V _{rms})	Off-State Leakage (μA)	Package Type (Page 6)	Features and Comments
CPC2125N	BI	400	100	35	2	2 / 2	1500	5	17	
LBB110	BI	350	120	35	5	3 / 3	3750	1	20, 21, 22	
LBB120	BI	250	170	20	5	5 / 5	3750	1	20, 22	
LBB126	BI	250	170	15	5	5 / 5	3750	1	20, 21, 22	
LBB127	BI	250	200	10	5	5 / 5	3750	1	20, 21, 22	
PBB150	BI	250	250	7	5	2.5 / 2.5	3750	1	20, 21, 22	
PBB190	BI	400	130	25	2	1 / 2.5	5000	1	20, 22	
XBB170	BI	350	100	50	5	5 / 5	3750	1	20, 21, 22	

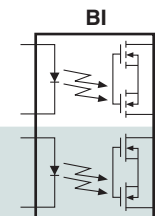
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MISCELLANEOUS RELAYS

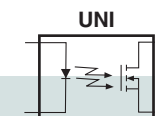
1-Form-A & 1-Form-B Combination Relays

Part Number	Relay Type	Blocking Voltage (V _p)	Load Current (mA)	On Resistance (Ω)	Input Control Current (mA)	Switching Speeds t _{on} / t _{off} (ms)	Isolation Voltage (V _{rms})	Off-State Leakage A/B (μA)	Package Type (Page 6)	Features and Comments
CPC2317N	BI	60	120	16	1	3 / 3	1500	1 / 1	17	Low I _F
CPC2330N	BI	350	120	30	2	3 / 3	1500	1 / 5	17	
LBA110	BI	350	120	35	2	3 / 3	3750	1 / 1	20, 21, 22	
LBA110L	BI	350	120	35	5	3 / 3	3750	1 / 1	20, 21, 22	Current Limiting
LBA120	BI	250	170	20	5	5 / 5	3750	1 / 1	20, 21, 22	
LBA120L	BI	250	150	25	5	5 / 5	3750	1 / 1	20, 22	Current Limiting
LBA127	BI	250	200	10	5	5 / 5	3750	1 / 1	20, 21, 22	
LBA127L	BI	250	150	15	5	5 / 5	3750	1 / 1	20, 22	Current Limiting
LBA710	BI	60	1000	0.6	2	5 / 5	3750	1 / 1	20, 22	High Load Current
LBA716	BI	60	1000	0.4	2	5 / 5	3750	1 / 1	20, 22	High Load Current
PBA150	BI	250	250	7	5	2.5 / 2.5	3750	1 / 1	20, 22	



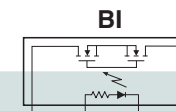
1-Form-A Relays: Single-Pole, Unidirectional (DC-only)

Part Number	Relay Type	Blocking Voltage (V _p)	Load Current (mA)	On Resistance (Ω)	Input Control Current (mA)	Switching Speeds t _{on} / t _{off} (ms)	Isolation Voltage (V _{rms})	Off-State Leakage (μA)	Package Type (Page 6)	Features and Comments
CPC1002N	UNI	60	700	0.55	2	5 / 2	1500	1	10	EN 50130-4
CPC1004N	UNI	100	300	4	2	3 / 1	1500	1	10	Extended Operating Temperature Range: -40°C to +110°C



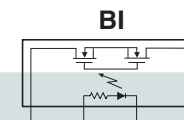
1-Form-A Relays: Single-Pole, Voltage-Controlled

Part Number	Relay Type	Blocking Voltage (V _p)	Load Current (mA)	On Resistance (Ω)	Input Control Voltage (V)	Switching Speeds t _{on} / t _{off} (ms)	Isolation Voltage (V _{rms})	Off-State Leakage (μA)	Package Type (Page 6)	Features and Comments
CPC1215	BI	400	500	6	5 - 12	5 / 3	3750	1	61	Direct drop-in reed relay replacement
CPC1217	BI	60	200	16	5 - 12	5 / 5	2500	1	41	EN 50130-4, direct drop-in reed relay replacement
CPC1218	BI	60	600	1.1	5 - 12	5 / 5	2500	1	41	EN 50130-4, direct drop-in reed relay replacement



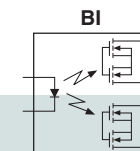
1-Form-B Relays: Single-Pole, Voltage-Controlled

Part Number	Relay Type	Blocking Voltage (V _p)	Load Current (mA)	On Resistance (Ω)	Input Control Voltage (V)	Switching Speeds t _{on} / t _{off} (ms)	Isolation Voltage (V _{rms})	Off-State Leakage (μA)	Package Type (Page 6)	Features and Comments
CPC1219	BI	60	200	16	5 - 12	5 / 5	2500	1	41	EN 50130-4, direct drop-in reed relay replacement



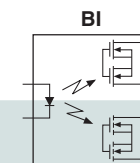
2-Form-A Relays: Double-Pole, Single-Throw

Part Number	Relay Type	Blocking Voltage (V _p)	Load Current (mA)	On Resistance (Ω)	Input Control Current (mA)	Switching Speeds t _{on} / t _{off} (ms)	Isolation Voltage (V _{rms})	Off-State Leakage (μA)	Package Type (Page 6)	Features and Comments
LCA210	BI	350	85	35	8	3 / 3	3750	1	20, 22	
LCA210L	BI	350	85	35	8	4 / 4	3750	1	20, 22	Current limiting
LCA220	BI	250	120	20	10	5 / 5	3750	1	20, 22	



1-Form-C Relays: Common Input, Single-Pole, Double-Throw

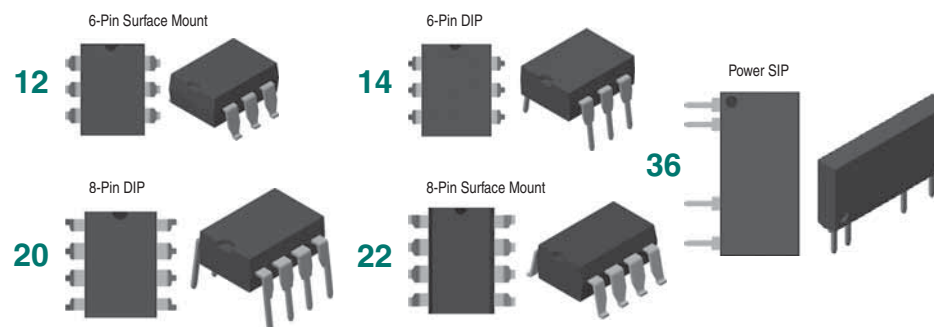
Part Number	Relay Type	Blocking Voltage (V _p)	Load Current (mA)	On Resistance (Ω)	Input Control Current (mA)	Switching Speeds t _{on} / t _{off} (ms)	Isolation Voltage (V _{rms})	Off-State Leakage (μA)	Package Type (Page 6)	Features and Comments
LCC110	BI	350	120	35	8	4 / 4	3750	1	20, 21, 22	
LCC120	BI	250	170	20	10	5 / 5	3750	1	20, 22	



FAULT PROTECTED RELAYS

CURRENT LIMITING SSRs WITH VOLTAGE TRIGGERED SHUTDOWN & THERMAL MANAGEMENT

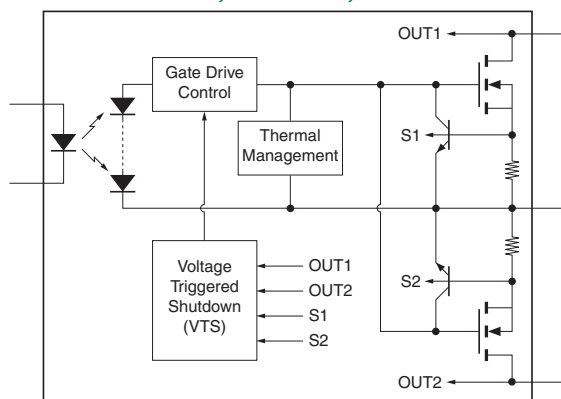
- Active current-limiting circuitry
- Integrated thermal management (ThM)
- Voltage triggered shutdown (VTS)
 - Provide excellent power-cross immunity
 - Ideal for use in electromagnetically noisy environments
 - Resumes normal operation after faults are removed



Part Number	Blocking Voltage (V _p)	Input Control Current (mA)	On-Resistance (Maximum)		Load Current (Maximum)		Current Limit (Maximum)		* VTS Threshold (V _{TH}) (V)	Switching Speed (t _{on} / t _{off}) (ms)	Isolation Voltage (V _{rms})	Package Type	Features & Comments
			DC-Only (Ω)	AC (Ω)	DC-Only (mA)	AC (mA)	DC-Only (mA _p)	AC (mA _p)					
CPC1510	250	2	3.75	15	350	200	920	450	-	2 / 2	3750	12, 14	Industrial applications
CPC1511	230	2.5	-	4	-	450	-	1400	-	4 / 2	3750	36	Industrial applications
CPC1540	350	2	6.75	25	250	120	570	285	100	2 / 2	3750	12, 14	PSTN hook switch applications
CPC1560	60	1.1	1.4	5.6	600	300	1500	900	-	0.1 / 0.4	3750	20, 22	Fast switching speeds
CPC1563	600	2	11.75	35	250	120	570	285	100	2 / 2	3750	12, 14	High blocking voltage
CPC1593	600	2	11.75	35	250	120	570	285	21	2 / 2	3750	12, 14	Power supply start-up

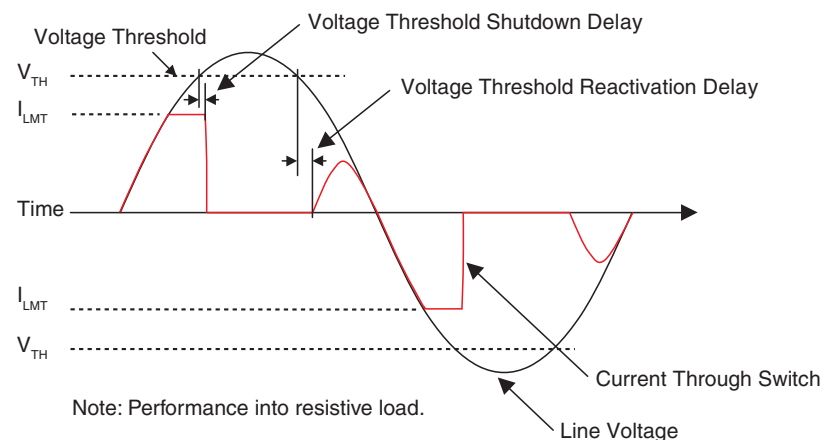
* Deactivates the switch when the load voltage exceeds the V_{TH} threshold while the switch is in current limit.

CPC1540, CPC1563, CPC1593



Applications:

- Telephony hook switch
- VoIP gateways
- I/O subsystems
- Electronic switching
- Medical equipment (Patient/equipment isolation)
- Security
- Aerospace
- Industrial controls



For data sheets, go to www.ixysic.com/Products/ProdList.htm

OPTICALLY ISOLATED POWER RELAYS

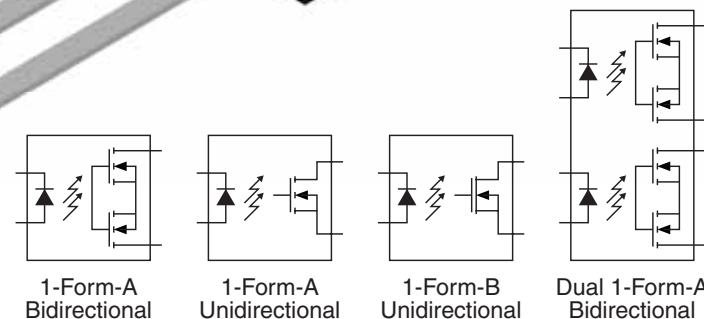
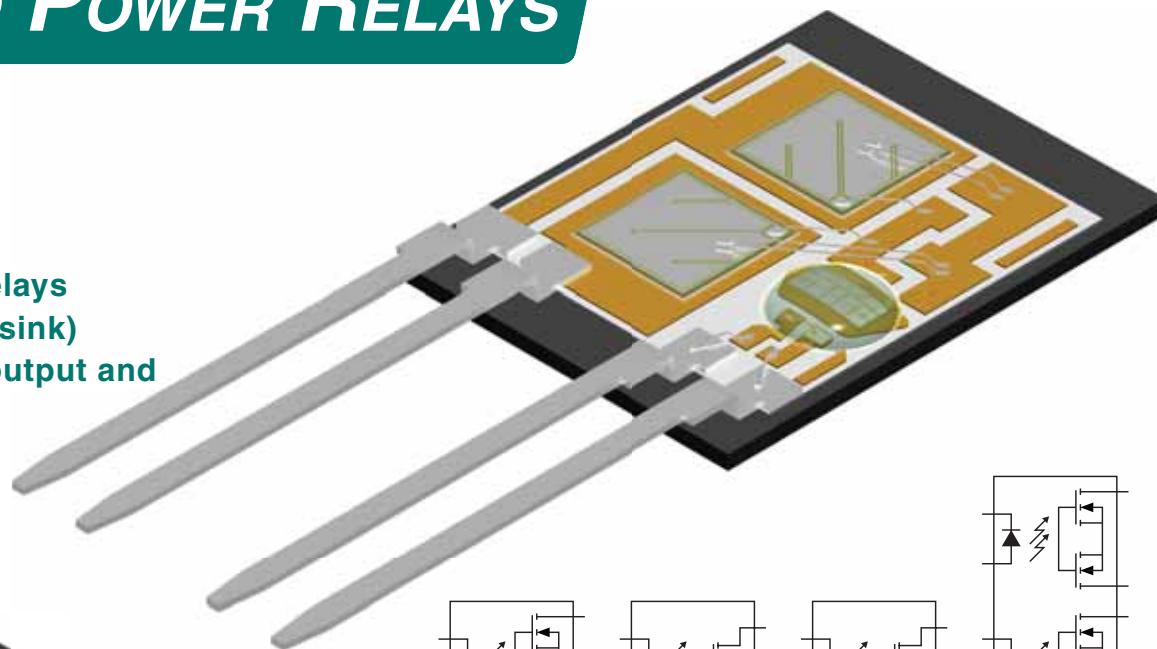
- Blocking voltage up to $1000V_p$
- On-resistance as low as 0.05 Ohms
- On/off times from 1ms to 25ms
- MOSFET-based AC/DC and DC-only power relays
- Load current up to $22.8A_{DC}$ (with $5^{\circ}C/W$ heat sink)
- $2500V_{rms}$ to $5000V_{rms}$ isolation from input to output and to DCB substrate

Features:

- Isolated, low thermal impedance pad for heat sink applications
- Low input control current
- Low thermal impedances, junction to case (θ_{JC}):
 - 0.30 $^{\circ}C/W$ - ISOPLUS-264
 - 0.35 $^{\circ}C/W$ - i4-PAC
 - 1.50 $^{\circ}C/W$ - Power SIP

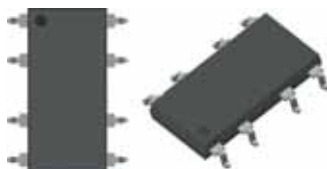
Applications:

- Robotics
- Medical equipment
- Railroad/traffic controls
- Consumer appliances
- Industrial control
- Test and measurement equipment

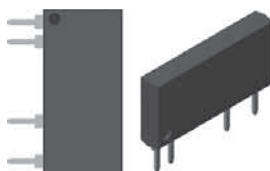


Metallized, external, Direct Copper Bond (DCB) surface for heat sink applications

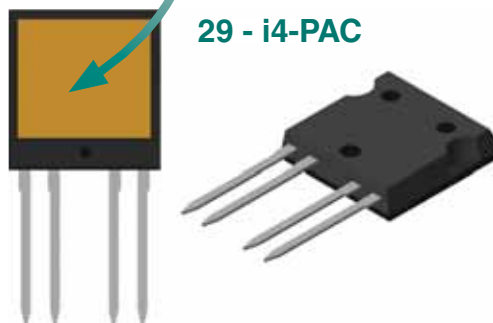
66 - Power SOIC



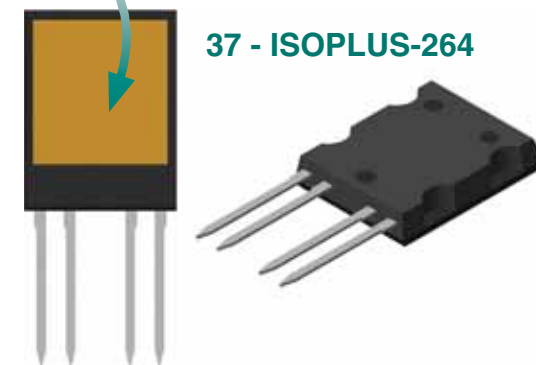
36 - Power SIP



29 - i4-PAC



37 - ISOPLUS-264



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• 1-FORM-A POWER RELAYS: SINGLE-POLE - BIDIRECTIONAL

Part Number	Relay Type	Blocking Voltage (V _P)	Load Current (A _{rms})			On Resistance (Ω)	Input Control Current (mA)	Switching Speeds t _{on} / t _{off} (ms)	Isolation Voltage (V _{rms})	Off-State Leakage (μA)	Package Type (Page 16)	Features & Comments
			Without Heat Sink	5°C/W Heat Sink	T _c =25°C							
CPC1906Y	BI	60	2	-	-	0.3	10	10 / 5	2500	1	36	
CPC1907B	BI	60	6	-	-	0.06	5	5 / 1	5000	1	66	Enhanced isolation voltage
CPC1908J	BI	60	3.5	8.5	15	0.3	10	20 / 5	2500	1	29	
CPC1909J	BI	60	6.5	15	15	0.1	10	25 / 10	2500	1	37	
CPC1916Y	BI	100	2.5	-	-	0.34	10	5 / 3	2500	1	36	
CPC1918J	BI	100	5.25	13	15	0.1	10	25 / 10	2500	1	37	
CPC1926Y	BI	250	0.7	-	-	1.4	10	10 / 10	2500	1	36	
CPC1927J	BI	250	2.7	6.7	15	0.2	10	25 / 10	2500	1	37	
CPC1967J	BI	400	1.35	3.35	13.15	0.85	10	20 / 5	2500	1	29	
CPC1968J	BI	500	2	5	15	0.35	10	20 / 5	2500	1	37	
CPC1973Y	BI	400	0.35	-	-	5	10	5 / 3	2500	1	36	
CPC1977J	BI	600	1.25	3.1	12.25	1	10	20 / 5	2500	1	29	
CPC1978J	BI	800	0.75	1.85	7.25	2.3	10	20 / 5	2500	1	29	
CPC1979J	BI	600	1.4	3.5	14.5	0.75	10	25 / 5	2500	1	37	
CPC1981Y	BI	1000	0.18	-	-	18	10	10 / 5	2500	1	36	
CPC1983B	BI	600	0.5	-	-	6	5	5 / 2	5000	1	66	Enhanced isolation voltage
CPC1983Y	BI	600	0.5	-	-	6	5	5 / 2	2500	1	36	
CPC1983YE	BI	600	0.5	-	-	6	5	5 / 2	4000	1	36	Enhanced isolation voltage
CPC1986J	BI	1000	0.65	1.6	6.5	3	10	20 / 5	2500	1	29	
CPC1988J	BI	1000	0.9	2.25	9.4	2.5	10	20 / 5	2500	1	37	

• DUAL 1-FORM-A POWER RELAY: BIDIRECTIONAL

CPC2907B	BI	60	2	-	-	0.15	5	2.5 / 0.25	4000	1	66	DUAL Power Relay
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• 1-FORM-A POWER RELAYS: SINGLE-POLE - UNIDIRECTIONAL

Part Number	Relay Type	Blocking Voltage (V _P)	Load Current (A)			On Resistance (Ω)	Input Control Current (mA)	Switching Speeds t _{on} / t _{off} (ms)	Isolation Voltage (V _{rms})	Off-State Leakage (μA)	Package Type (Page 16)	Features & Comments
			Without Heat Sink	5°C/W Heat Sink	T _c =25°C							
CPC1706Y	UNI	60	4	-	-	0.09	5	5 / 2	2500	1	36	
CPC1708J	UNI	60	4	11.85	24	0.08	10	20 / 5	2500	1	29	
CPC1709J	UNI	60	9	22.8	32	0.05	10	20 / 5	2500	1	37	
CPC1718J	UNI	100	6.75	17.5	32	0.075	10	20 / 5	2500	1	37	
CPC1726Y	UNI	250	1	-	-	0.75	10	5 / 2	2500	1	36	
CPC1727J	UNI	250	3.4	8.6	20	0.09	10	20 / 5	2500	1	37	
CPC1777J	UNI	600	1.5	4.6	15	0.5	10	20 / 5	2500	1	29	
CPC1779J	UNI	600	1.65	4.12	15	0.4	10	20 / 5	2500	1	37	
CPC1786J	UNI	1000	0.65	1.75	6.9	2	10	20 / 5	2500	1	29	
CPC1788J	UNI	1000	1	2.45	10.3	1.25	10	20 / 5	2500	1	37	

• 1-FORM-B POWER RELAY: SINGLE-POLE - UNIDIRECTIONAL

CPC1705Y	UNI	60	3.25	-	-	0.09	5	2 / 12	2500	1	36	Normally CLOSED Power Relay
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OPTICALLY ISOLATED AC POWER SWITCHES

• OPTICALLY ISOLATED AC POWER SWITCHES: LOAD CURRENT $\leq 1A$

- Blocking voltage from 400V_p to 800V_p
- SCR-based AC power switches
- Maximum load current up to 1A_{rms}

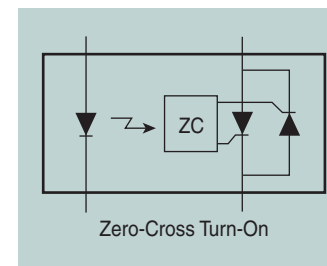
Features:

- Load current up to 1A_{rms}
- Blocking voltage up to 800V_p
- 5mA input sensitivity
- Zero-cross turn on $\leq \frac{1}{2}$ Cycle
- Low EMI and RFI generation
- DC control, AC switching
- Optically isolated
- TTL and CMOS compatible
- High noise immunity
- Machine insertable, wave solderable

Applications:

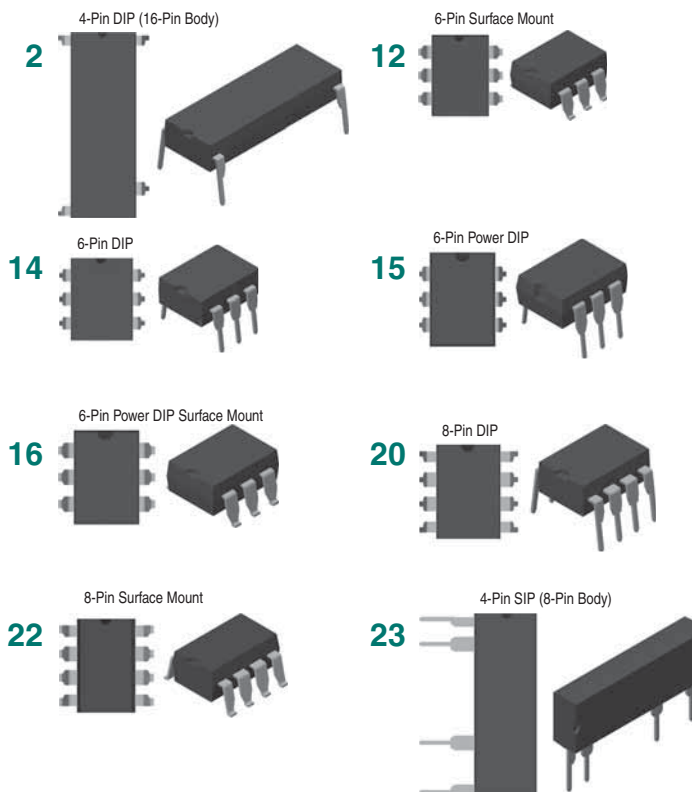
- Programmable controls
- Process control
- Power control panels
- Remote switching
- Gas pump electronics
- Large relay control circuits

- Contactors
- Solenoids
- Motor controls
- Heater controls



Part Number	Blocking Voltage (V _p)	Load Current (A _{rms})	Input Control Current (mA)	Operating Frequency Min / Max (Hz)	Isolation Voltage (V _{rms})	Package Type
CPC1943	400	0.5	5	20 - 500	3750	15, 16
CPC1945G	400	1	5	20 - 400	3750	2
CPC1945Y	400	1	5	20 - 400	3750	23
CPC1961 Dual	600	0.25 ¹	5	20 - 500	3750	20, 22
CPC1963	600	0.5	5	20 - 500	3750	15, 16
CPC1965G	600	1	5	20 - 400	3750	2
CPC1965Y	600	1	5	20 - 400	3750	23
CPC1972	800	0.25	5	20 - 500	3750	12, 14
PD1201	400	1	5	20 - 500	3750	2
PD2401	500	1	5	20 - 500	3750	2
PD2601	600	1	5	20 - 500	3750	2
PM1204	400	0.5	5	20 - 500	3750	15, 16
PM1205	500	0.5	5	20 - 500	3750	15, 16
PM1206	600	0.5	5	20 - 500	3750	15, 16
PS1201	400	1	5	20 - 500	3750	23
PS2401	500	1	5	20 - 500	3750	23
PS2601	600	1	5	20 - 500	3750	23

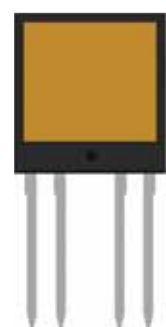
¹ Maximum continuous load current of a single pole or the sum of the load currents with both poles operating simultaneously.



• OPTICALLY ISOLATED AC POWER SWITCHES: LOAD CURRENT >1A

- Blocking voltages of 600V_p and 800V_p
- SCR-based AC power switches
- Zero-cross and Rapid turn-on (non-zero-cross) versions

Metallized, external, Direct Copper Bond (DCB) surface for heat sink applications



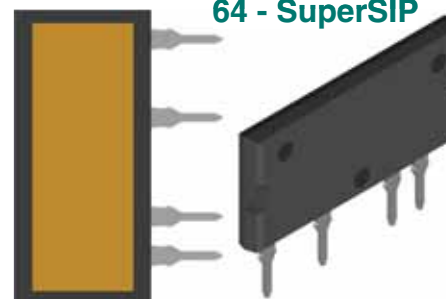
29 - i4-PAC



36 - Power SIP



64 - SuperSIP



66 - Power SOIC



* Rapid turn-on (non-zero-cross)

Rapid turn-on devices turn on when the control input goes true regardless of the phase of the load voltage, and turn off when the load voltage crosses zero.

Part Number	Blocking Voltage (V _p)	Load Current			Input Control Current (mA)	Input Control Voltage (V)	Operating Frequency Min / Max (Hz)	Turn-On: Zero-Cross or Rapid	Switching Speed t _{on} / t _{off} (max)	Isolation Voltage (V _{rms})	Package Type	Features
		No Heat Sink (A _{rms})	5°C/W Heat Sink (A _{rms})	T _c =25°C (A _{rms})								
CPC1964B	800	1.5	-	-	5	-	20 - 500	Zero-Cross	½ Cycle	5000	66	Enhanced isolation voltage, 12.5mm creepage
* CPC1964BX6	600	1.5	-	-	5	-	20 - 500	Rapid	500µs / ½ Cycle	5000	66	Rapid turn-on, enhanced isolation voltage
CPC1966	600	3	-	-	5	-	20 - 500	Zero-Cross	½ Cycle	3750	36	
CPC1966B	800	3	-	-	5	-	20 - 500	Zero-Cross	½ Cycle	5000	66	Enhanced isolation voltage, 12.5mm creepage
* CPC1966BX8	800	2	-	-	5	-	20 - 500	Rapid	**45µs / ½ Cycle	3750	66	Rapid turn-on, 5.7mm creepage
* CPC1966YX6	600	3	-	-	5	-	20 - 500	Rapid	500µs / ½ Cycle	3750	36	Rapid turn-on
* CPC1966YX8	800	1.75	-	-	5	-	20 - 500	Rapid	**45µs / ½ Cycle	3750	36	Rapid turn-on
CPC1976	600	2	-	-	5	-	20 - 500	Zero-Cross	½ Cycle	3750	36	
* CPC1976YX6	600	2	-	-	5	-	20 - 500	Rapid	500µs / ½ Cycle	3750	36	Rapid turn-on
CPC1998J	800	5	20	50	5	-	20 - 500	Zero-Cross	½ Cycle	2500	29	High load current
CPC40055ST	800	5	20	40	5	-	20 - 500	Zero-Cross	½ Cycle	2500	64	High load current, 9.5mm creepage

** Typical turn-on values.

For data sheets, go to www.ixysic.com/Products/ProdList.htm

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MULTIFUNCTION PRODUCTS: SSR/OPTOCOUPLEDERS

• GENERAL PURPOSE MULTIFUNCTION PRODUCTS (TELECOM MULTIFUNCTION PRODUCTS - PAGE 43)

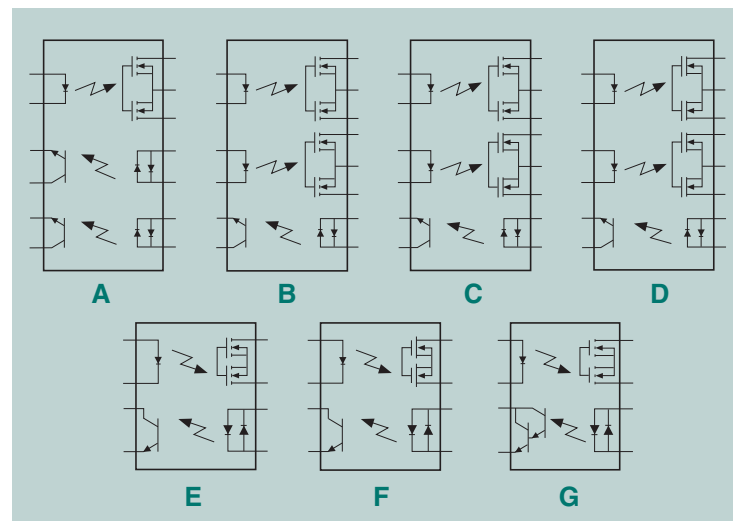
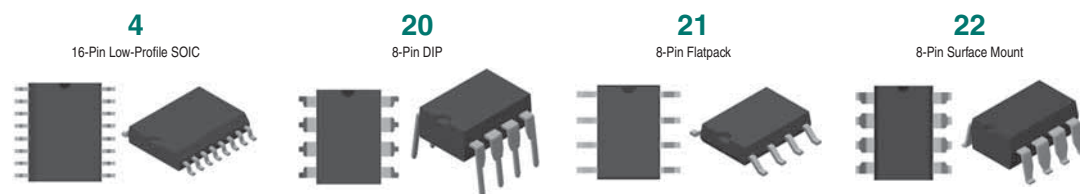
The OptoMOS line of Multifunction Products combines a number of discrete, optically isolated functions into a single package. These products mix and match solid state relays, optocouplers, and Darlington transistors to create highly functional circuits in a single, small package. Multifunction devices allow designers to consolidate circuit functions into a single device, thus freeing up valuable board space and reducing component count.

Features:

- 3750V_{rms} input-to-output isolation
- Multiple functionality in a single package
- Current limiting (part numbers with "L" suffix)
- Machine insertable, wave solderable
- TTL and CMOS compatible

Applications:

- Telecommunication/datacommunication
- Instrumentation
- I/O subsystems/electronic switching
- Medical equipment (patient/equipment isolation)
- Security
- Aerospace
- Industrial controls



Part Number	Style	SSR Characteristics				Optocoupler Characteristics				Isolation Voltage (V _{rms})	Package Type	Features and Comments
		Blocking Voltage (V _p)	Current Handling (mA)	On Resistance (Ω)	Input Control Current (mA)	Breakdown Voltage (V)	Current Transfer Ratio (%)	Saturation Voltage (V)	Input Control Current (mA)			
IAA110	B	350	100	35	5	20	33	0.5	6	3750	4	Two 1-Form-A relays, one optocoupler
IAB110	C	350	100	35	5	20	33	0.5	6	3750	4	One 1-Form-A relay, one 1-Form-B relay, one optocoupler
IAD110	A	350	100	35	5	20	33	0.5	6	3750	4	One 1-Form-A relay, two optocouplers
IBB110	D	350	100	35	5	20	33	0.5	6	3750	4	Two 1-Form-B relays, one optocoupler
TS117	E	350	120	35	2	20	33	0.5	6	3750	20, 21, 22	One 1-Form-A relay, one optocoupler
TS117L	E	350	120	35	2	20	33	0.5	6	3750	20, 21, 22	One current-limiting 1-Form-A relay, one optocoupler
TS118	F	350	120	35	5	20	33	0.5	6	3750	20, 21, 22	One 1-Form-B relay, one optocoupler
TS120	G	350	120	35	5	20	300	0.8	2	3750	20, 21, 22	One 1-Form-A relay, one darlington optocoupler
TS190	E	400	150	22	5	20	33	0.5	6	3750	20, 21, 22	One 1-Form-A relay, one optocoupler
TS190L	E	400	150	25	5	20	33	0.5	6	3750	21	One current-limiting 1-Form-A relay, one optocoupler
XS170	E	350	100	50	2	20	33	0.5	6	3750	20, 22	One 1-Form-A relay, one optocoupler

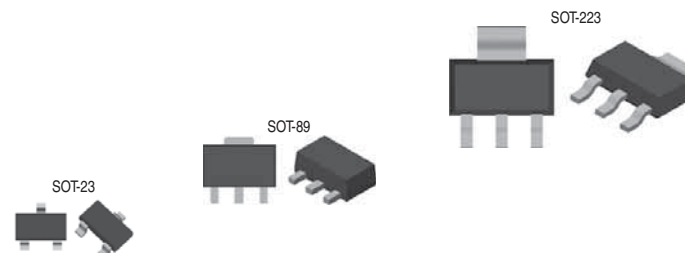
For data sheets, go to www.ixysic.com/Products/ProdList.htm

IXYS Integrated Circuits Division – 78 Cherry Hill Drive – Beverly, MA USA 01915 – www.ixysic.com

FIELD EFFECT TRANSISTORS

• N-CHANNEL DEPLETION MODE FETs

- Normally on MOSFETs present low resistance with no power applied
- Ideal for security applications
- IGBT speed enhancement
- LED drivers



Part Number	$V_{(BR)DSX}$ (V)	I_D Min (mA)	$R_{DS(on)}$ Max (Ω)	$V_{GS(off)}$ Min (V)	$V_{GS(off)}$ Max (V)	Package Type	Features & Comments
CPC3701	60	600	1	-1.4	-3.1	SOT-89	
CPC3703	250	360	4	-1.6	-3.9	SOT-89	
CPC3708	350	130	14	-2	-3.6	SOT-89, SOT-223	
CPC3710	250	220	10	-1.6	-3.9	SOT-89	
CPC3714	350	240	14	-1.6	-3.9	SOT-89	
CPC3720	350	130	22	-1.6	-3.9	SOT-89	
CPC3730	350	140	35	-1.6	-3.9	SOT-89	
CPC3902	250	400	2.5	-1.4	-3.1	SOT-89, SOT-223	
CPC3909	400	300	6	-1.4	-3.1	SOT-89, SOT-223	
CPC3960	600	100	44	-1.4	-3.1	SOT-223	
CPC3980	800	100	45	-1.4	-3.1	SOT-223	
CPC3982	800	20	380	-1.4	-3.1	SOT-23	Very small package
CPC5602	350	130	14	-2	-3.6	SOT-223	Designed for use with LITELINK designs
CPC5603	415	130	14	-2	-3.6	SOT-223	Designed for use with LITELINK designs

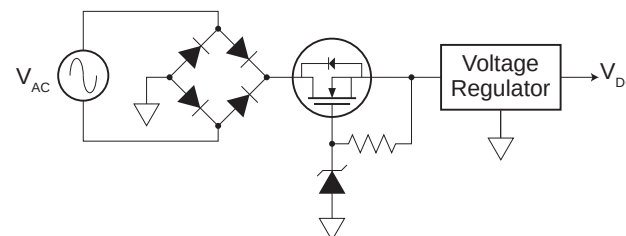
Features:

- Normally on depletion mode devices offer low $R_{DS(on)}$ at cold temperatures
- Low on-resistance
- High input impedance
- Low $V_{GS(off)}$ voltage

Applications:

- Power fail switches
- Discrete normally closed relays
- Constant current, high brightness LED drivers
- High voltage pre-regulators
- Power inverters
- Power supplies

N-Channel Depletion Mode MOSFET as Pre-Regulator



See Application Note AN-500
“Depletion-Mode Power MOSFETs and Applications”

For data sheets, go to www.ixysic.com/Products/ProdList.htm

IGBT & MOSFET GATE DRIVERS

NEW!
IXD_604SI & SIA, IXD_609SI, and IXD_614SI
are AEC-Q100 qualified!

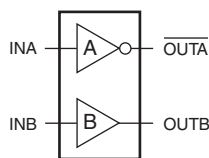
• Low-Side Gate Drivers

NEW!

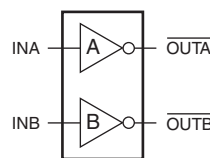
Part Number	Output Type	I_{PEAK} $T_c=25^\circ\text{C}$ (A _p)	Output Resistance (Ω)	Available Logic Configurations	Enable Function	Under-voltage Lockout (V)	Package Type
IX4340	DUAL	5	1.5	D	•	$V_{CC} \leq 3.8$	53, 54
IX4423	DUAL	3	4	I	-	-	54
IX4424	DUAL	3	4	N	-	-	54
IX4424G	DUAL	3	4	N	-	-	20
IX4425	DUAL	3	4	F	-	-	54
IX4426	DUAL	1.5	8	I	-	-	54, 56
IX4427	DUAL	1.5	8	N	-	-	54, 56
IX4428	DUAL	1.5	8	F	-	-	54, 56
IXD_602	DUAL	2	4	F, I, N	-	-	20, 53, 54, 56
IXD_604	DUAL	4	2.5	F, I, N, D	•	-	20, 53, 54, 56
IXD_609	SINGLE	9	1	I, N, D	•	-	20, 53, 54, 56, 57, 58
IXD_614	SINGLE	14	0.8	I, N, D	•	-	20, 53, 57, 58
IXD_630	SINGLE	30	0.4	I, N, D	•	$V_{CC} \leq 12.5$	57, 58
IXD_630M	SINGLE	30	0.4	I, N, D	•	$V_{CC} \leq 9$	57, 58

AEC-Q100 Qualified Low-Side Gate Drivers

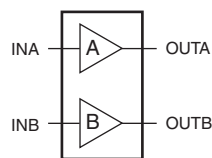
Part Number	Output Type	I_{PEAK} $T_c=25^\circ\text{C}$ (A _p)	Output Resistance (Ω)	Available Logic Configurations	Enable Function	Package Type
IXD_604SI	DUAL	4	2.5	F, I, N, D	•	53
IXD_604SIA	DUAL	4	2.5	F, I, N, D	•	54
IXD_609SI	SINGLE	9	1	I, N, D	•	53
IXD_614SI	SINGLE	14	0.8	I, N, D	•	53



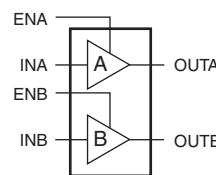
F



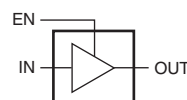
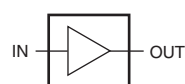
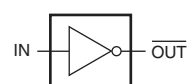
I



N



D

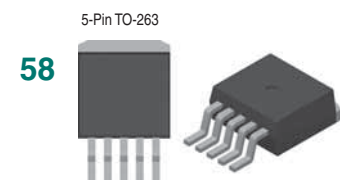
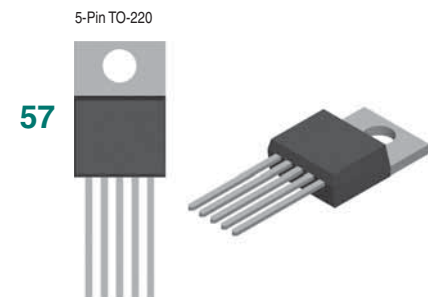
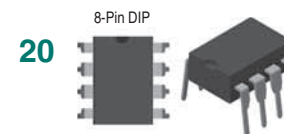


Features:

- 1.5A to 30A peak source/sink drive current
- Wide operating voltage range: 4.5V to 35V
- -40°C to +125°C extended operating temperature range
- Logic input withstands negative swing of up to -5V
- Matched rise and fall times
- Low propagation delay time
- Low 10μA supply current
- Low output impedance

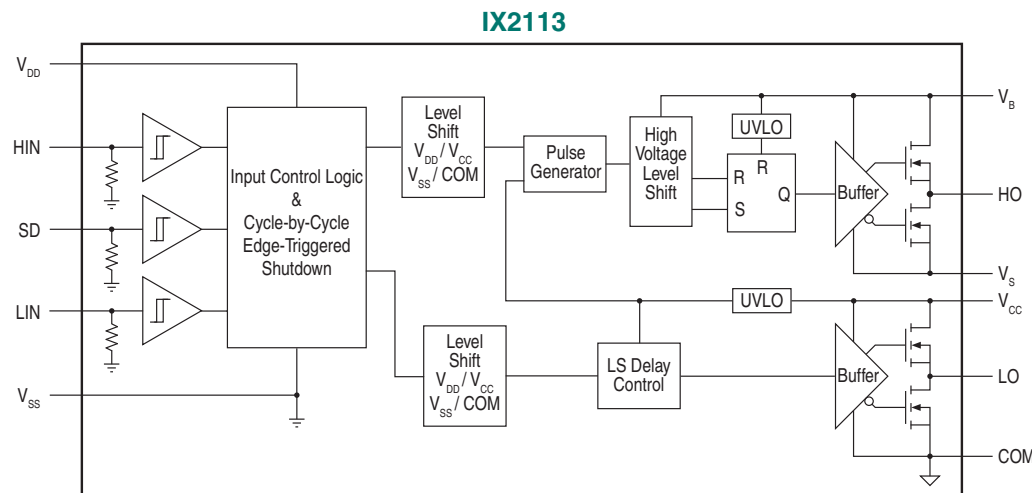
Applications:

- Efficient power MOSFET and IGBT switching
- Switch mode power supplies
- Motor controls
- DC to DC converters
- Class-D switching amplifiers
- Pulse transformer driver



• 600V HIGH-SIDE & LOW-SIDE GATE DRIVER: IX2113

- High-side channel can drive an N-channel power MOSFET or IGBT 600V from the common reference
- Configured with independent high-side and low-side referenced output channels



Features:

- Floating channel for bootstrap operation up to 600V with an absolute maximum rating of 700V
- Outputs capable of sourcing and sinking 2A
- Gate drive supply range from 10V to 20V
- Tolerant to negative voltage transients: dV/dt immune
- 3.3V logic compatible
- Under-voltage lockout for both high-side and low-side outputs
- Matched propagation delays



• HIGH VOLTAGE HALF-BRIDGE GATE DRIVER: IX21844

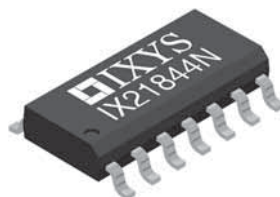
- Programmable dead-time can be set between 400ns and 5ms
- Floating high-side channel can drive an N-channel power MOSFET or IGBT 600V from the common reference

Features:

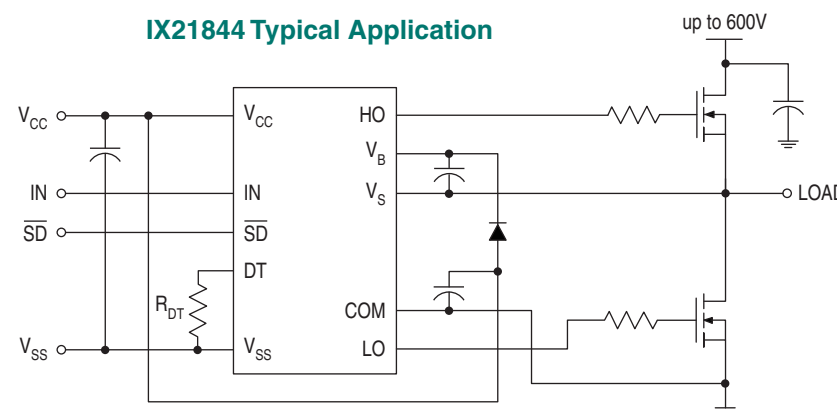
- Floating channel for bootstrap operation to 600V with an absolute maximum rating of 700V
- Outputs can source 1.4A and sink 1.8A
- Gate drive supply range from 10V to 20V
- Tolerant to negative voltage transients: dV/dt immune
- 3.3V and 5V logic compatible
- Under-voltage lockout for both high-side and low-side outputs
- Matched propagation delays

Applications:

- Switch mode power supplies
- Motor driver inverters
- DC/DC converters
- Uninterruptable power supplies (UPS)



IX21844 Typical Application



• 600V HIGH SIDE IGBT & MOSFET GATE DRIVER: IX2127

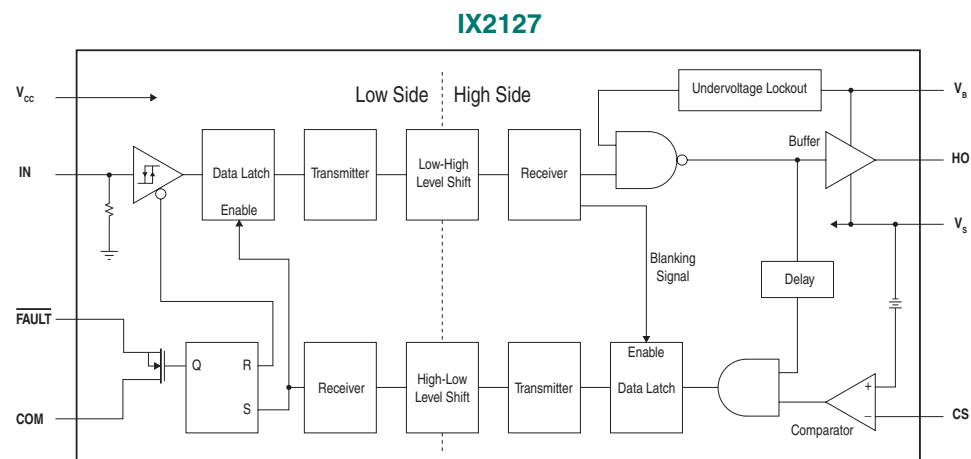
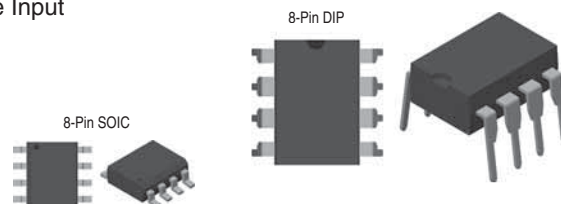
- Stable operation in high dV/dt noise environments
- Outputs typically source 250mA and sink 500mA

Features:

- Floating channel designed for bootstrap operation up to 600V
- Tolerant to negative transient voltages; dV/dt immune
- Under-voltage lockout
- 3.3V, 5V, and 12V input logic compatible
- Open-drain FAULT indicator pin shows over-current shutdown
- Output in Phase with the Input

Applications:

- High speed gate driver
- Motor drive inverter



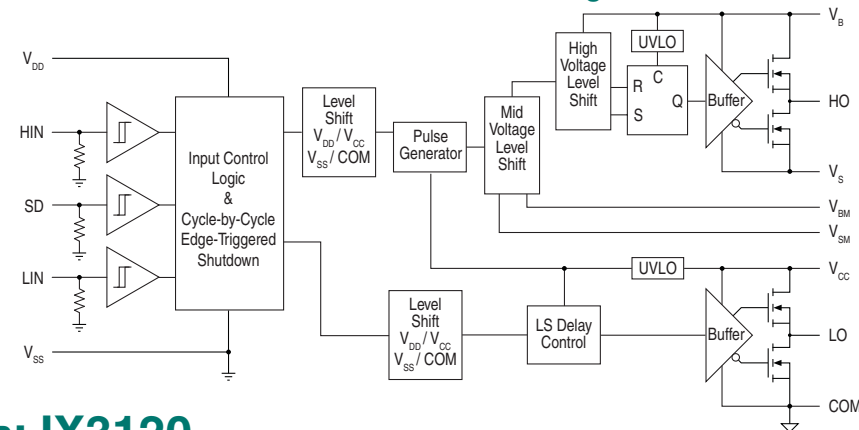
• 1200V HIGH AND LOW SIDE GATE DRIVER: IX2120

- Floating Channel for Bootstrap Operation to +1200V
- Outputs Capable of Sourcing and Sinking 2A

Features:

- Gate Drive Supply Range From 15V to 20V
- Enhanced Robustness due to SOI Process
- Tolerant to Negative Voltage Transients: dV/dt Immune
- 3.3V Logic Compatible
- Undervoltage Lockout for Both High-Side and Low-Side Outputs

IX2120 Functional Block Diagram



• 2.5A OUTPUT OPTICALLY COUPLED GATE DRIVER: IX3120

- 2.5A maximum peak output current
- Wide operating voltage range: 15V to 30V

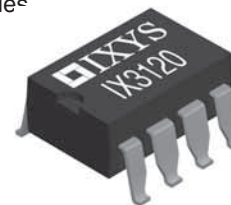
Features:

- 25kV/ μ s minimum common-mode rejection (CMR) at 1500V_{CM}
- Under-voltage lockout with hysteresis
- 3750V_{rms} input-to-output isolation
- Wide temperature range: -40°C to +100°C

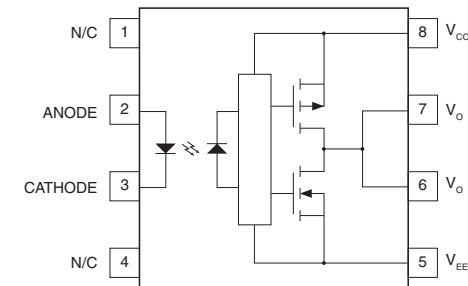
Applications:

- Isolated IGBT/MOSFET gate drive
- Switch mode power supplies
- Industrial inverters
- Motor drivers

Ideally suited for use in motor control and inverter applications due to its low input LED current, high output peak current, and high noise immunity (25kV/ μ s).



IX3120



• 2.5A OUTPUT HI SPEED GATE DRIVER OPTOCOUPLER: IX3180

- 2.5A maximum peak output current
- Wide operating voltage range: 10V to 20V

Features:

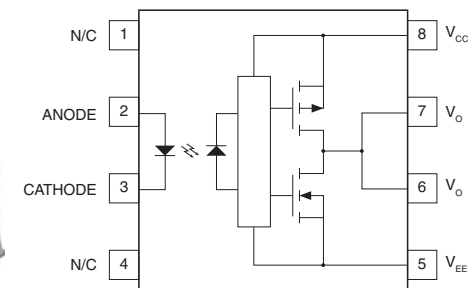
- 200ns maximum propagation delay over temperature range
- 20ns typical pulse width distortion
- 10kV/ μ s minimum common-mode rejection (CMR) at 1500V_{CM}
- Wide operating voltage range: 10V to 20V
- Under-voltage lockout with hysteresis
- 3750V_{rms} input-to-output isolation
- Wide temperature range: -40°C to +100°C

Applications:

- High performance DC/DC converters
- High performance switching power supplies
- Motor control inverter applications
- Motor drivers



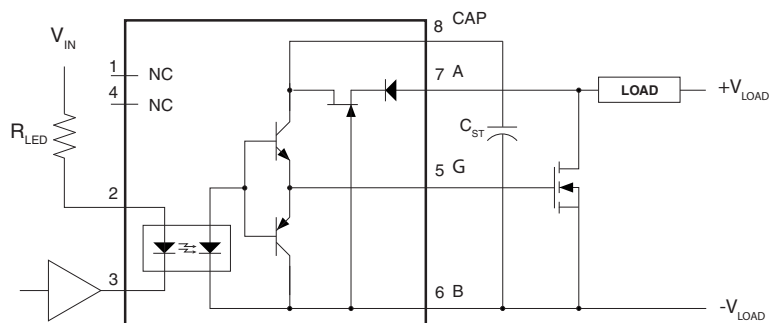
IX3180



• OPTICALLY ISOLATED LOAD-BIASED GATE DRIVERS

- High speed, optically isolated gate driver ICs
- Output driver powered from load voltage; no external power supply required
- On-chip circuitry charges an external capacitor whose charge enables fast turn-on

CPC1590 Application Diagram

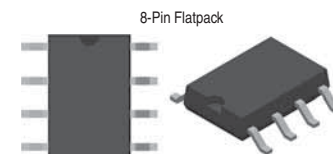


Features:

- No external IC power supply
- Low drive power requirements (TTL/CMOS compatible)
- Load voltages up to 200V
- Fast switching times - 40μsec on, 400μsec off

Applications:

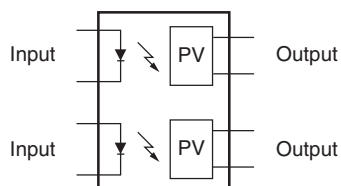
- Instrumentation
- Multiplexers
- I/O subsystems
- Meters (Watt-Hour, water, gas)
- Medical equipment (patient/equipment isolation)
- Security
- Aerospace
- Industrial controls



Part Number	Input Control Current (mA)	Gate Voltage @ $I_F=5\text{mA}$ (V_G)	Blocking Voltage (V_P)	Regulated Capacitor Voltage ($V_{CAP-MAX}$)	Switching Speeds t_{on} / t_{off} (μs)	Isolation Voltage (V_{rms})
CPC1580	2.5	7.5 - 12	65	$V_{DS} - 0.2V$	40 / 400	3750
CPC1590	2.5	7.5 - 12	200	16	40 / 400	3750

• OPTICALLY ISOLATED PHOTOVOLTAIC GATE DRIVERS

- Dual optically isolated photovoltaic devices
- Well suited for use in discrete solid state relay designs

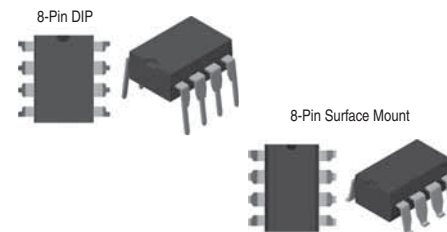


Features:

- Isolated 5.5V to 12V photovoltaic output
- Floating outputs for parallel or series configuration

Applications:

- MOSFET driver
- Isolated floating power source



Part Number	Input Control Current (mA)	Nominal Open-Circuit Voltage V_{OC} (V)	Nominal Short-Circuit Current I_{SC} (μA)	Switching Speeds t_{on} / t_{off} (ms)	Isolation Voltage (V_{rms})	Package Type
FDA215	5	5.5	2.5	5 / 5	3750	8-pin DIP, 8-pin surface mount
FDA217	5	11.75	4.5	2 / 0.5	3750	8-pin DIP, 8-pin surface mount

High Voltage Products

• High Voltage Analog Switch Arrays

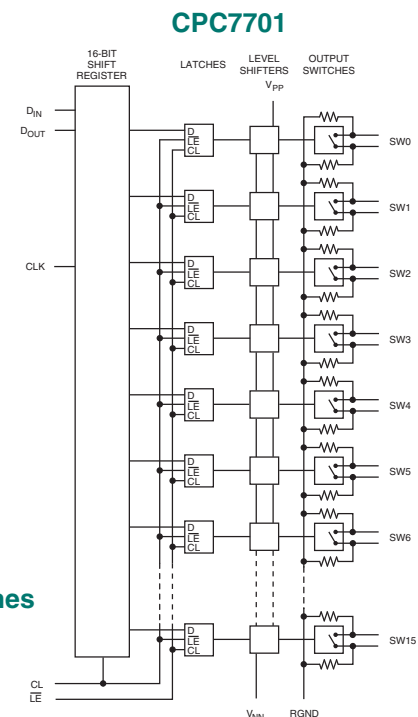
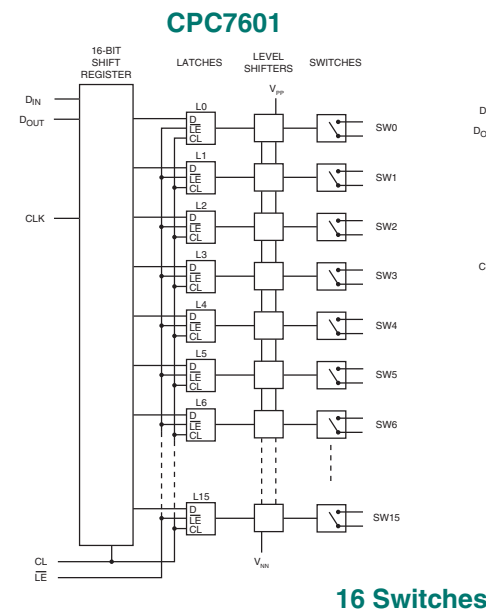
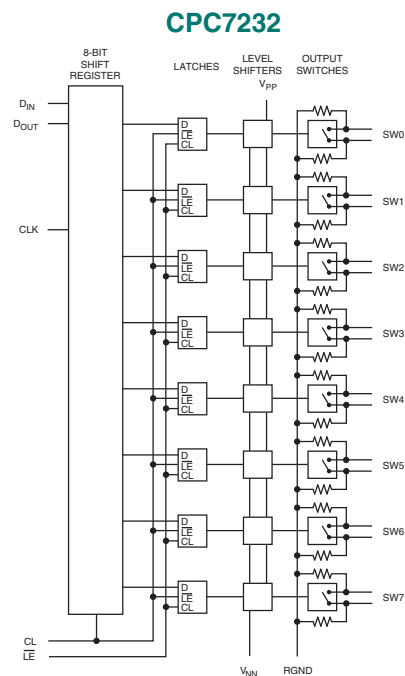
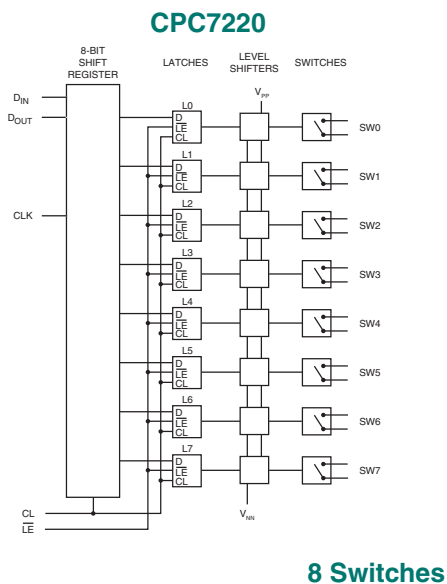
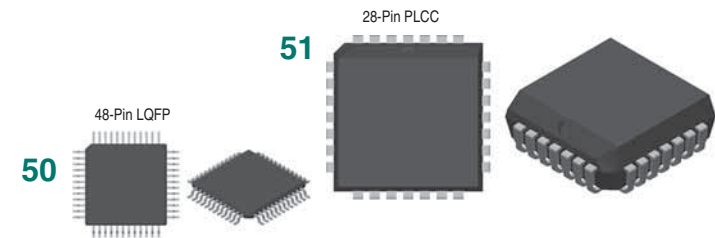
Features:

- Flexible high voltage supplies up to $V_{PP} - V_{NN} = 200V$
- Output switch on-resistance typically 20Ω
- Low charge injection, low capacitance analog switches
- Very low quiescent current: 30nA typical
- -58dB off-isolation at 5MHz
- Internal bleed resistors: CPC7232 & CPC7701

Applications:

- Piezoelectric transducer drivers
- Ultrasound imaging
- Printers
- Industrial controls and measurement

Part Number	Number of Channels	Channel On-Resistance (Ω)	Bleed Resistors ($k\Omega$)	Clock Frequency (MHz)	Turn-On Time (μs)	Turn-Off Time (μs)	Package Type
CPC7220	8	20	-	5	5	5	50, 51
CPC7232	8	21	20 - 50	5	5	5	50, 51
CPC7601	16	25	-	8	5	5	50
CPC7701	16	25	20 - 50	8	5	5	50



For data sheets, go to www.ixysic.com/Products/ProdList.htm

• HIGH VOLTAGE ISOLATED ANALOG SWITCHES

CPC7524: 600V Quad High Voltage Isolated Analog Switch Array

- Provides flexible single-ended or differential access to high voltage networks
- Configured as two sets of matched, paired switches for improved differential performance

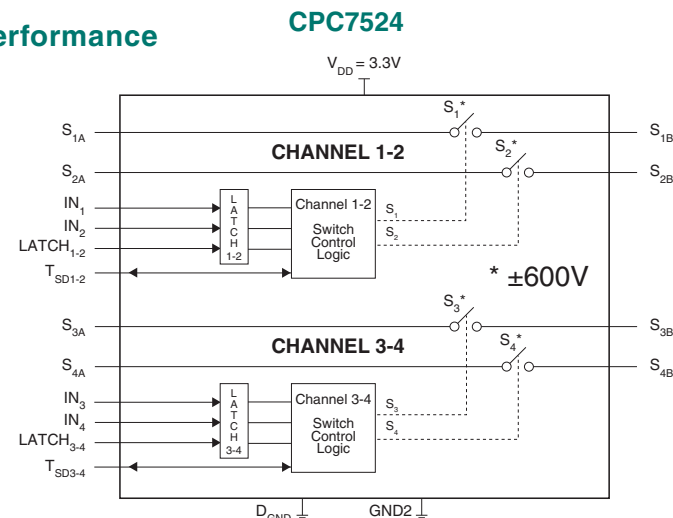
Features:

- Switch voltage up to 600V
- 110dB switch-to-switch isolation at 5kHz
- Flexible switch configurations
- Smart logic for power-up/hot-plug state control
- 3.3V operation with very low power consumption
- Switch current limiting and thermal shutdown protect against fault conditions
- TTL logic-level Inputs
- Input latch
- Matched R_{ON}
- Clean, bounce-free switching
- Monolithic IC reliability
- 28-pin SOIC package

Applications:

- Instrumentation
- Industrial controls and monitoring
- Automatic test equipment (ATE)
- Battery monitoring and charging circuits
- Worldwide AC mains monitor

3.3V Supply!



CPC7514: 320V Quad High Voltage Isolated Analog Switch Array

- Provides single-ended or differential access to high voltage networks
- Self-biasing - no external high-voltage supplies required

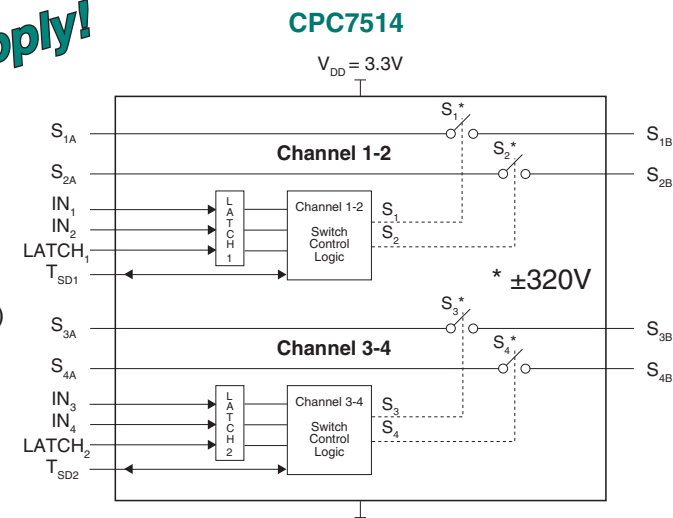
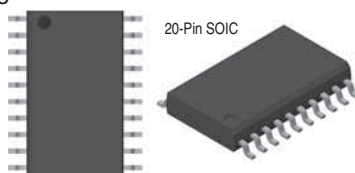
Features:

- Low, matched R_{ON}
- Switch voltage up to $\pm 320V$
- 320V logic-input-to-switch-output isolation
- 110dB switch-to-switch isolation at 5kHz
- Flexible switch configurations
- Smart logic for power-up/hot-plug state control
- 3.3V operation with very low power consumption
- Switch current limiting protects against fault conditions
- Thermal shutdown protects against fault conditions
- Latched TTL logic level inputs
- Clean, bounce-free switching
- Monolithic IC reliability

Applications:

- Instrumentation
- Industrial controls and monitoring
- Automatic test equipment (ATE)
- Battery charging circuits
- Telephony
 - VoIP gateways
 - Central office (CO) and remote terminal (RT)
 - Concentrators
 - PBX systems
 - Optical network terminals (ONT)
 - Optical network units (ONU)
 - Hybrid fiber coax (HFC)

3.3V Supply!



CPC7512: 320V Dual Shunt-Isolated High Voltage High Frequency Analog Switch

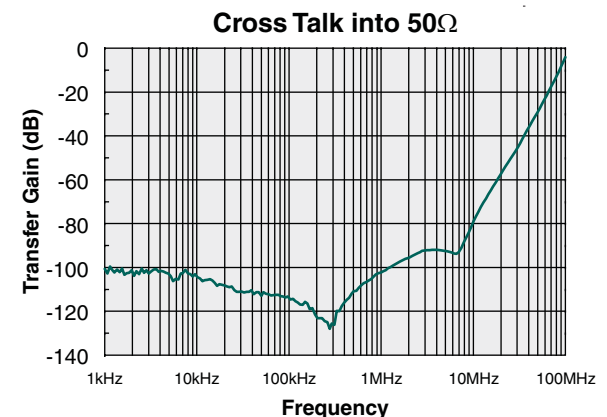
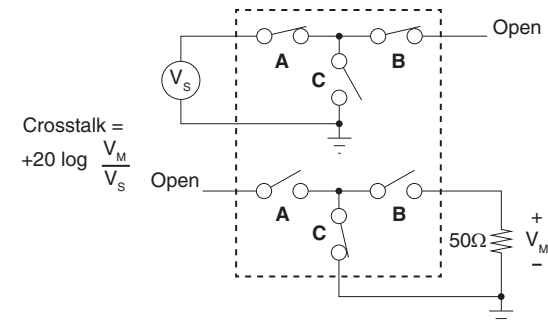
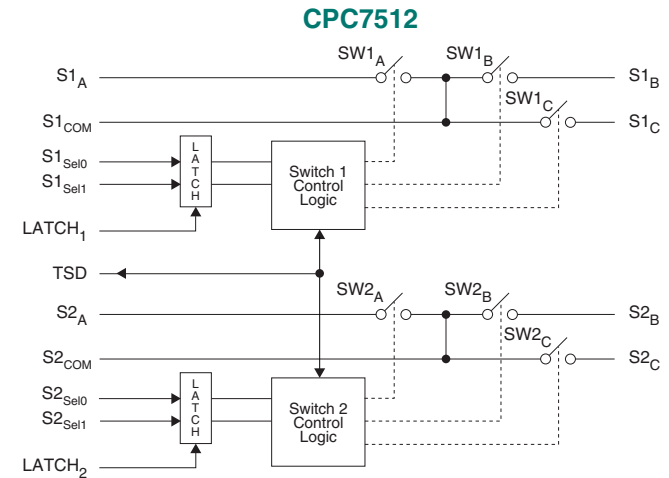
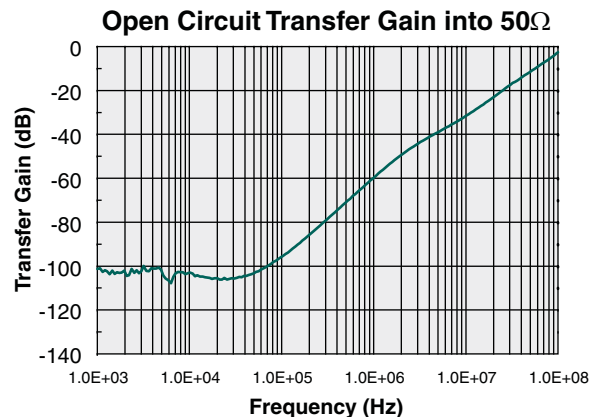
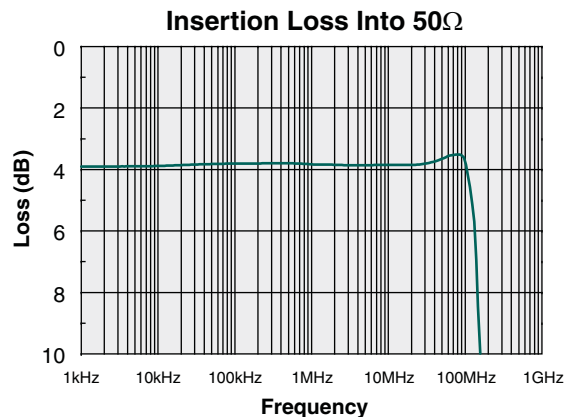
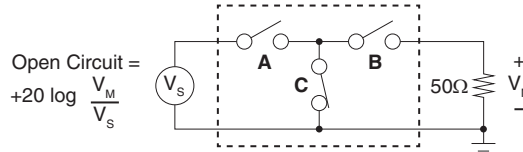
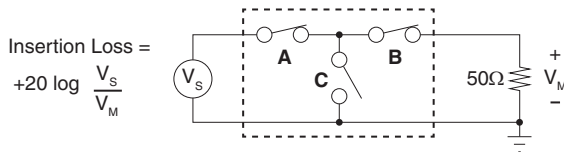
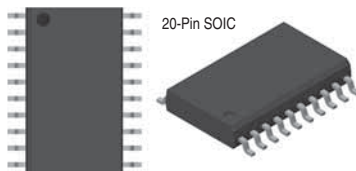
- Provides single-ended or differential access to high voltage networks
- Self-biasing - no external high-voltage supplies required

Features:

- Low, matched R_{ON}
- Guaranteed break-before-make (BBM)
- Switch voltage up to $\pm 320V$
- 60dB off-isolation at 1MHz
- Smart logic for power-up/hot-plug state control
- 5V operation with very low power consumption
- Thermal shutdown protects against fault conditions
- Latched TTL logic level inputs

Applications:

- Instrumentation
- Industrial controls and monitoring
- Multiplexed ultrasonic transducer switching
- Automatic test equipment (ATE)
- Battery monitoring and charging



For data sheets, go to www.ixysic.com/Products/ProdList.htm

HIGH SPEED DIGITAL OPTICAL ISOLATORS

• OPTICALLY ISOLATED I²C BUS REPEATERS: CPC5902 & CPC5903

See Application Note TB-101
"Optically Isolating an I²C Interface"

- CPC5902 bidirectionally buffers clock and data signals
- CPC5903 bidirectionally buffers data signal, unidirectionally buffers clock signal
- Logic level translation for levels as low as 2.7V or as high as 5.5V
- Passes DC signals - no refresh clock needed - no clock noise generated

CPC5902 Features:

- Bidirectionally buffers both I²C signals
- Extends and isolates I²C interfaces
- Supports standard and fast mode I²C (400kbps)
- Side B fast-mode compliant: $V_{DDB} > 4.5V$
- Supports I²C clock stretching
- Operates on 2.7V to 5.5V
- Supports DC logic level buffering without refresh
- Glitch-free operation
- Power down to Hi-Z does not load I²C bus
- Slew-limited drivers reduce EMI

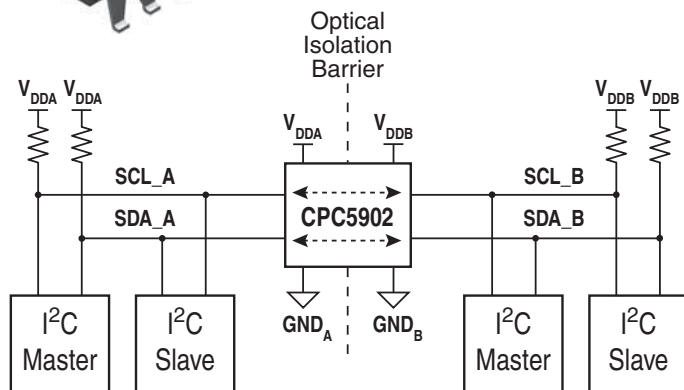
CPC5903 Features:

- Bidirectionally buffers SDA I²C signal
- Side A extends and isolates I²C interfaces
- Standard-mode and fast-mode I²C
- Side B fast-mode compliant: $V_{DDB} > 4.5V$
- Operates on 2.7V to 5.5V
- No internal clock - low EM & RF generation
- Voltage level translation
- Slew-limited drivers reduce EMI
- Power down to Hi-Z does not load I²C bus
- 3750V_{rms} galvanic isolation

Applications:

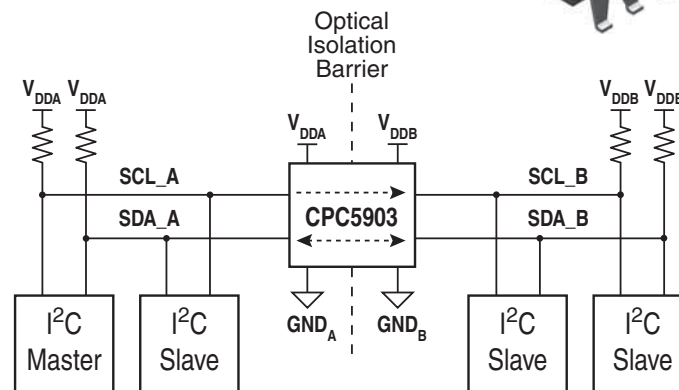
- Power-over-Ethernet (POE)
- I²C bus length extender
- Isolated control and signal monitoring
- Power supply high-side interface
- I²C logic level translation

CPC5902



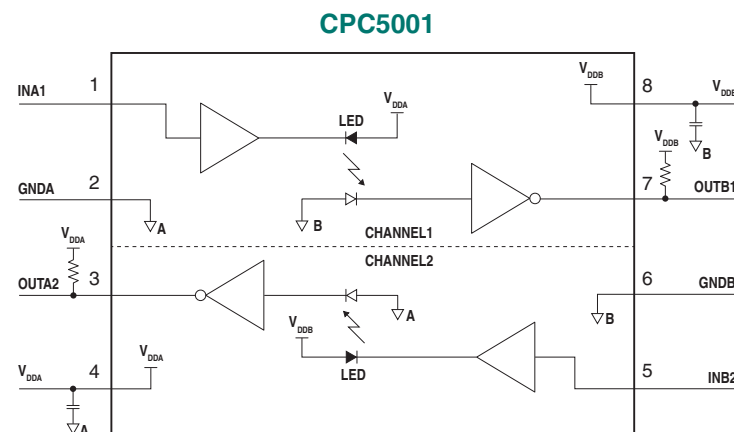
- No internal clock - minimal EM & RF emissions
- Immune to external EMI and RFI
- High voltage isolation

CPC5903



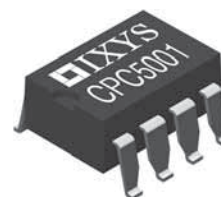
• SINGLE-CHANNEL EACH DIRECTION DIGITAL OPTICAL ISOLATOR: CPC5001

- Logic level translation for levels as low as 2.7V or as high as 5.5V
- Passes DC signals - no refresh clock needed



Features:

- Isolates one signal in each direction
- Operates from 2.7V to 5.5V
- Buffered inputs - no external LED drive required
- Hysteresis at inputs for noise rejection
- Slew-limited drivers reduce EMI
- 3750V_{rms} galvanic isolation from input to output
- Power down to Hi-Z Does Not Load Outputs
- 5Mbaud data rate



Applications:

- Isolated signal monitoring and control
- Power-over-Ethernet, POE
- Power supply high-side interface
- Logic level translation
- Microprocessor system interface
- Inter integrated circuit (I²C) interface
- Serial peripheral interface
- Full duplex communication
- Isolated line receiver
- Isolated data acquisition systems

• DUAL HIGH SPEED DIGITAL OPTICAL ISOLATOR: CPC5002

- 3750V_{rms} galvanic isolation from input to output
- Passes DC signals - no refresh clock needed

Features:

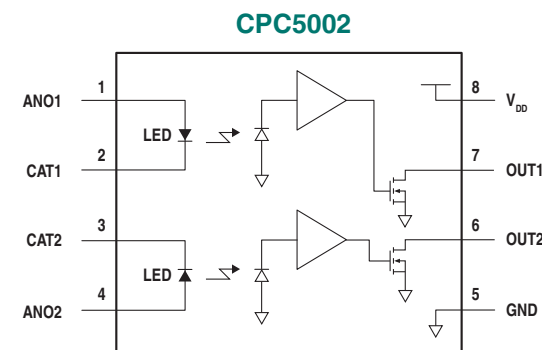
- Dual optics isolate two signals
- Operates over 2.7V < V_{DD} < 5.5V
- Power down to Hi-Z does not load outputs
- Low-power CMOS reduces supply current
- LED drive current only 1.5mA
- High speed: 10Mbaud typical

Applications:

- Isolated line receiver
- Ground loop elimination
- ADC/DAC digital noise isolation
- 4-wire I²C bus isolation



10 Mbaud!



OPTOCOUPLEDERS

• SINGLE & DUAL OPTOCOUPLEDERS

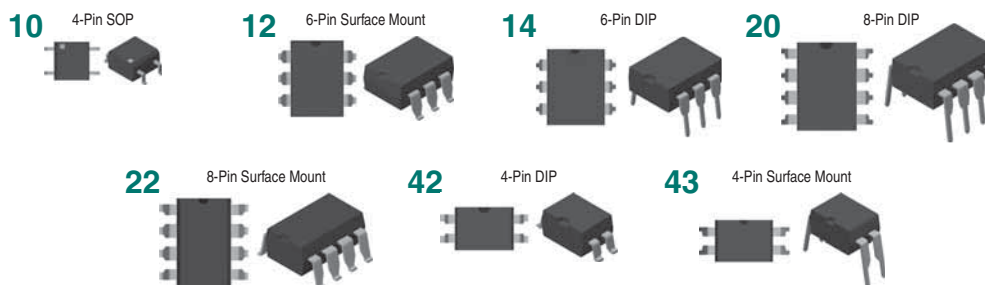
- Single-transistor output or Darlington transistor output for higher current gain
- Single-LED for unidirectional input signal or dual-LED input for bidirectional input signal
- Input-to-output isolation: 1500V_{rms}, 3750V_{rms}, or 5000V_{rms}

Features:

- AC and DC compatible inputs
- Machine insertable, wave solderable

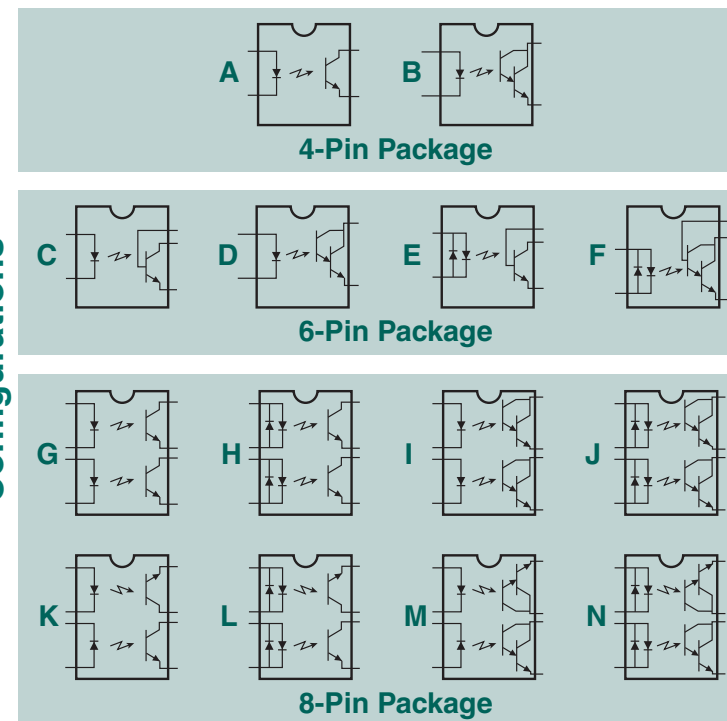
Applications:

- Modem switching (laptops, notebooks, PDAs)
- Voltage detection
- TIP/RING circuits
- Ringing detection
- Loop detection
- Current sensing
- Telecom switching



Part Number	Minimum Breakdown Voltage (BV _{CEO})	Typical Current Transfer Ratio (%)	Maximum Saturation Voltage (V)	Input Control Current (mA)	Minimum Isolation Voltage (V _{rms})	Package Type	Configuration
CPC1001N	30	330	0.3	0.2	1500	10	A
CPC1301	350	5500	1.2	1	5000	42, 43	B
CPC1302	350	5500	1.2	1	3750	20, 22	I
CPC1303	30	1000	0.5	0.2	5000	42, 43	A
LDA100	30	300	0.5	1	3750	12, 14	E
LDA101	30	300	0.5	1	3750	12, 14	C
LDA102	30	350	0.5	1	3750	12, 14	C
LDA110	30	8500	1	1	3750	12, 14	F
LDA111	30	8500	1	1	3750	12, 14	D
LDA200	30	300	0.5	1	3750	20, 22	L
LDA201	30	300	0.5	1	3750	20, 22	K
LDA202	30	300	0.5	1	3750	20, 22	H
LDA203	30	300	0.5	1	3750	20, 22	G
LDA210	30	8500	1	1	3750	20, 22	N
LDA211	30	8500	1	1	3750	20, 22	M
LDA212	30	8500	1	1	3750	20, 22	J
LDA213	30	8500	1	1	3750	20, 22	I

Configurations



• LINEAR OPTOCOUPLEDERS

- Input LED drives two photodiodes: (1) isolated output (2) feedback to correct for the input LED's non-linearity

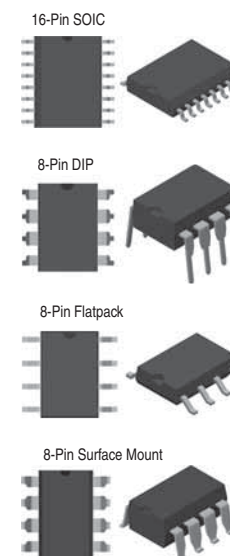
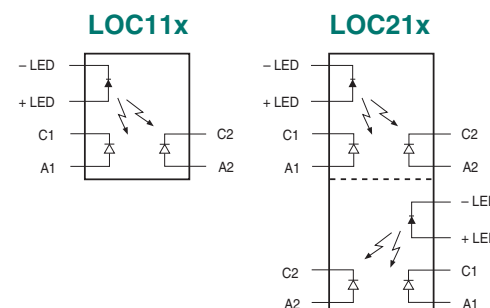
Features:

- Couples analog & digital signals
- 3750V_{rms} input-to-output isolation
- Bandwidth >200kHz in photoconductive mode
- Bandwidth 40kHz in photovoltaic mode
- High gain stability
- Low input-to-output capacitance
- Low power consumption
- 0.01% servo linearity
- THD 87dB typical
- Machine insertable, wave solderable

Applications:

- Power supply feedback voltage/current
- Medical sensor interfacing
- Isolation of process control transducers
- Isolated 4-20mA converters
- Digital telephone isolation

Part Number	Servo Gain $K_1 = I_2/I_F$ (Min - Max)	Forward Gain $K_2 = I_1/I_F$ (Min - Max)	Transfer Gain $K_3 = K_2/K_1$ (Min - Max)	Input Control Current (mA)	Isolation Voltage (V _{rms})	Package Type
LOC110	0.004 - 0.03	0.004 - 0.03	0.668 - 1.179	2 - 10	3750	20, 21, 22
LOC111	0.008 - 0.03	0.006 - 0.03	0.733 - 1.072	2 - 10	3750	20, 21, 22
LOC112	0.004 - 0.03	0.004 - 0.03	0.733 - 1.072	2 - 10	3750	20, 21, 22
LOC117	0.008 - 0.03	0.006 - 0.03	0.887 - 1.072	2 - 10	3750	20, 21, 22
LOC210	0.004 - 0.03	0.004 - 0.03	0.773 - 1.072	2 - 10	3750	4
LOC211	0.008 - 0.03	0.006 - 0.03	0.773 - 1.072	2 - 10	3750	4



Two Fundamental Operating Configurations:

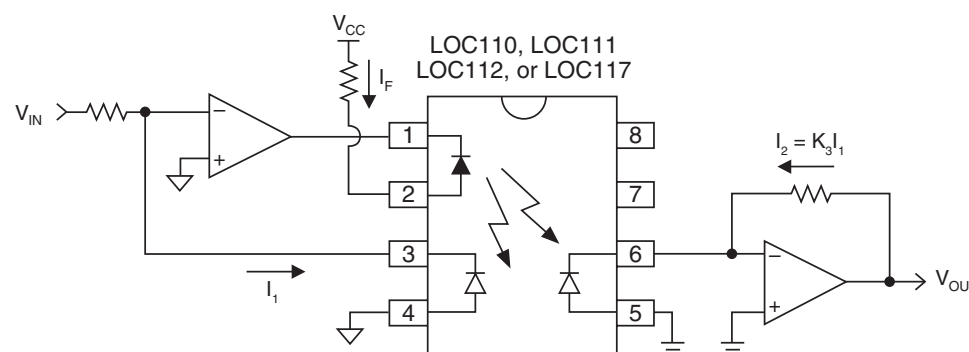
Photoconductive Mode:

- Wide bandwidth (>200kHz)
- 8-bit linearity

Photovoltaic Mode:

- 14-bit linearity
- 40kHz bandwidth

Isolation Amplifier (Photovoltaic Mode)



• OPTICALLY ISOLATED ERROR AMPLIFIERS

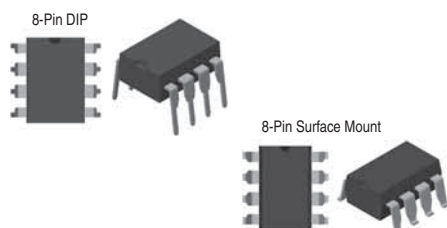
Features:

- Low voltage operation:
1.6V: LIA135 & LIA136
2.7V: LIA120 & LIA130
- Optocoupler, precision reference, and error amplifier in a single package
- LIA120: 70dB linearity typical

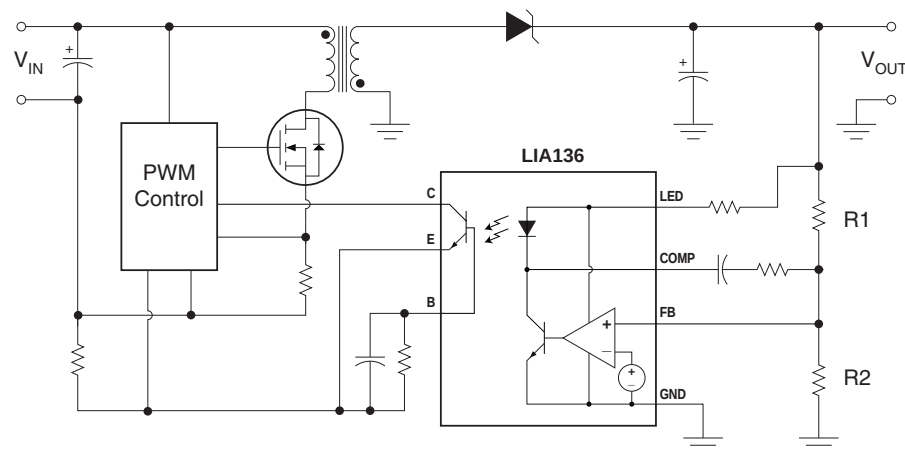
Application:

- SMPS feedback loops
- Power supply feedback

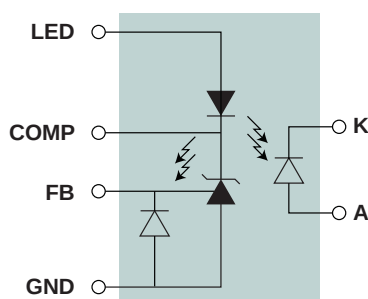
Low 1.6V Operation!
LIA135 and LIA136



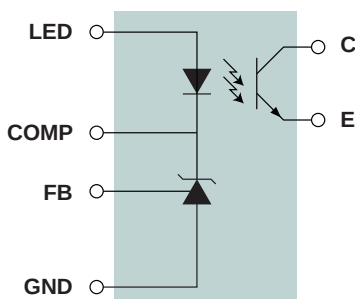
Optical Feedback for Ultra-Low-Voltage Power Supplies



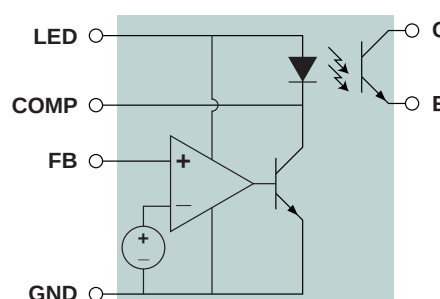
Part Number	Reference Voltage (V)	V _{REF} Tolerance			Isolation Voltage (V _{rms})	Package Type
		25°C (%)	-40°C to +85°C (%)	-40°C to +110°C (%)		
LIA120	1.240	1	2.5	-	3750	8-pin surface mount
LIA130	1.240	1	1.5	-	3750	8-pin DIP, 8-pin surface mount
LIA135	1.299	0.5	1	-	3750	8-pin DIP, 8-pin surface mount
LIA136	1.299	0.5	-	1.5	3750	8-pin DIP, 8-Pin surface mount



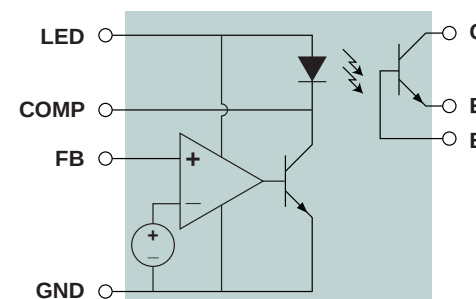
LIA120



LIA130



LIA135



LIA136

K = Cathode, A = Anode
C = Collector, E = Emitter, B = Base
LED = LED Anode, COMP = Compensation, FB = Feedback, GND = Ground

LIGHTING & DISPLAY PRODUCTS

• HIGH VOLTAGE LED DRIVERS

IX9908: High Voltage, Dimmable LED Driver with PFC Control

- Ideal for quasi-resonant flyback LED bulb designs
- Supports phase-cut dimming and power factor correction
- Multiple safety features ensure full system protection

Features:

- Single stage, primary control with PFC and dimming features
- >90% efficiency
- >98% power factor
- Wide operating voltage range: up to 600V
- Digital soft start
- Cycle-by-cycle peak current control

CPC9909: High Efficiency, High Brightness Off-Line LED Driver

- 8V to 550V input voltage range
- Linear or PWM brightness control inputs
- Drives multiple LEDs in series/parallel

Features:

- >90% efficiency
- Stable operation at >50% duty cycle
- Regulated LED current
- Resistor-programmable minimum off-time
- Drives external power MOSFET, enabling high LED output current applications
- Buck or boost configuration

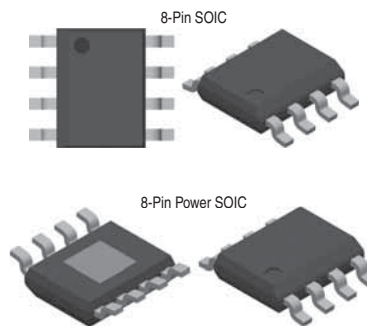
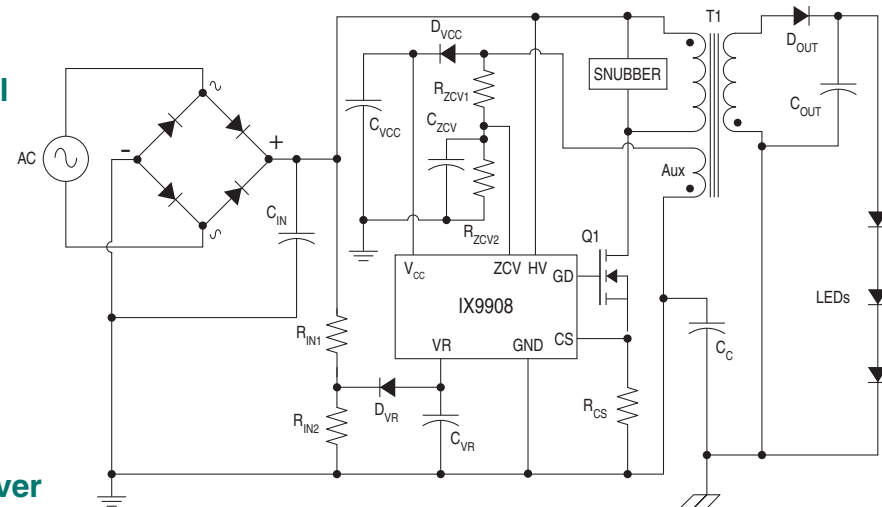
MXHV9910: High Voltage, Off-Line LED Driver

- Signage, decorative LED lighting
- Flat-panel display RGB backlighting
- DC & AC/DC LED driver applications

Features:

- 8V to 450V input voltage range
- >90% efficiency
- Drives multiple LEDs in series/parallel combinations
- Regulated LED drive current
- Linear or PWM brightness control inputs
- Resistor-programmable oscillator frequency

IX9908 Typical Application



NEW! Application Notes:

AN-302: IX9908 Design Considerations (nominal 115V_{rms} - 60Hz)

AN-303: IX9908 Design Considerations (nominal 230V_{rms} - 50Hz)

AN-304: IX9908 Design Calculator

• ePAPER GATE & SOURCE DRIVERS

IXEP1400: 400-Channel ePaper Source Driver

- 8-bit data bus inputs four 2-bit words at a time
- 400-bit long, 2-bit wide serial-input parallel-output digital shift register
- Operating temperature range: -40°C to +85°C
- Available as gold-bumped die in wafer form or waffle pack

Features:

- +/-15V output driver supply voltage
- Drives segment or active matrix displays
- 3-level gray scale
- 50MHz clock frequency
- Bidirectional data transfer
- 2.7V to 5.5V logic supply voltage
- Cascadable

Applications:

- eBooks & eReaders
- Electronic shelf labels & point-of-purchase displays
- Mobile phones & portable handheld devices
- Smart cards
- Signage

IXEP2300: 300-Output ePaper Gate Driver

- Internal pattern generator enables minimal controller interface
- Global blanking and inversion facilitates power-up and power-down
- Token-passing capability
- Sleep mode reduces power consumption
- Available as gold-bumped die in wafer form or waffle pack

Features:

- 300 output gate driver
- 42V HV output drive capable (V_{DD} to V_{EE})
- 3.3V logic operation
- Internal pattern generator
- Reset, blanking, polarity inversion
- Bypass function
- Cascadable with bidirectional shift control

Applications:

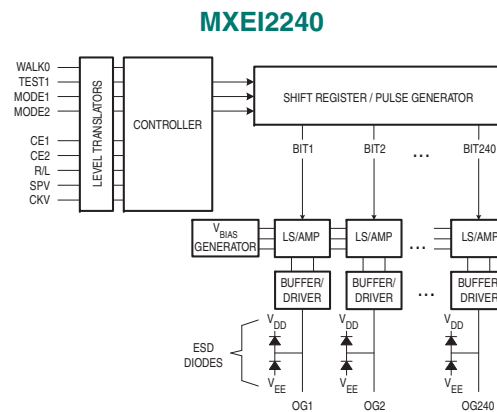
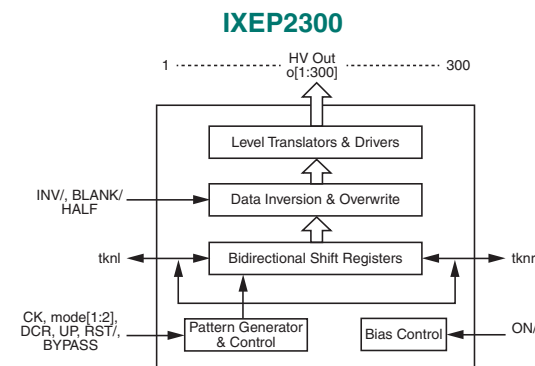
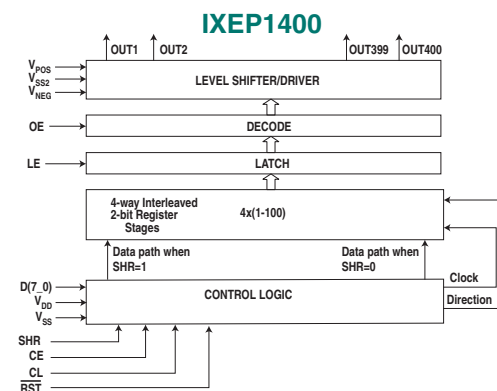
- eBooks & eReaders
- Electronic shelf labels & point-of-purchase displays
- Mobile phones & portable handheld devices
- Smart cards
- Signage

MXEI2240: 240-Output ePaper Gate Driver

- Perfect for driving eBook and eReader displays, portable handheld devices, smart cards
- Output switching modes: one pulse, continuous two pulse, jumping two pulse, no pulse
- May be cascaded up to four deep
- Available as gold-bumped die in wafer form or waffle pack

Features:

- CMOS technology
- Drives segment or active matrix displays
- 16V to 57V output drive (V_{DD} to V_{EE})
- Selectable output shift direction and polarity



MXEI1480: $\pm 15V$ Selectable 400/800 Channel ePaper Source Driver

- Perfect for driving eBook and eReader displays, portable handheld devices, smart cards
- Output switching modes: one pulse, continuous two pulse, jumping two pulse, no pulse
- May be cascaded up to four deep
- Available as gold-bumped die in wafer form or waffle pack

Features:

- CMOS technology
- $\pm 15V$ output driver supply voltage
- Drives segment or active matrix displays
- 4-level gray scale
- 25MHz clock frequency
- Bidirectional data transfer
- Selectable register length
- 2.7V to 5.5V logic supply voltage

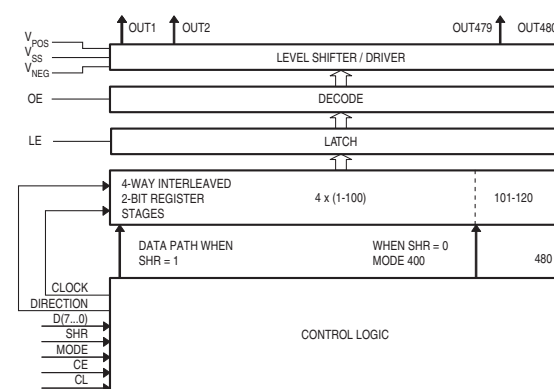
MX860: $\pm 15V$ ePaper Source Driver

- Selectable 240-bit, 256-bit, 268-bit long, 2-bit wide serial-in, parallel-out shift register
- Level conversion on each output converts 2 digital bits into V_{POS} , V_{SS} , or V_{NEG} output
- Available as gold-bumped die in wafer form or waffle pack

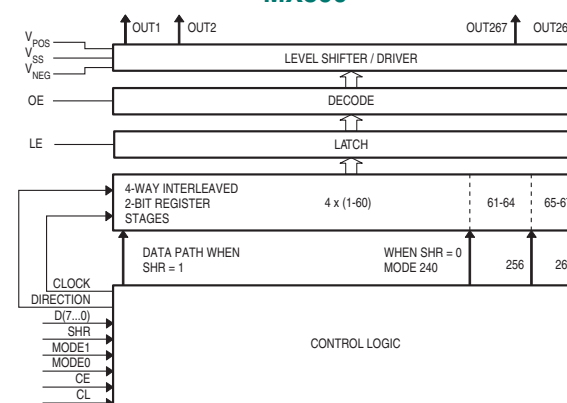
Features:

- CMOS technology
- $\pm 15V$ output driver supply voltage
- Drives segment or active matrix displays
- 4-level gray scale
- 25MHz clock frequency
- Bidirectional data transfer
- Selectable register length
- 2.7V to 5.5V logic supply voltage
- Cascadable

MXEI1480



MX860

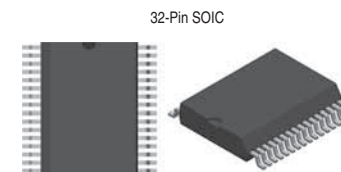


TELECOMMUNICATIONS PRODUCTS

LITELINK™ SILICON DAA PHONE LINE INTERFACE

- Industry's only single-package silicon Data Access Arrangement (DAA)
- Ideal for both voice and data (V.22bis to V.90/V.92) applications in particularly dense circuit environments
- Internal optical isolation barrier eliminates high-cost transformer or capacitive isolation circuits
- Saves cost through reduced passive component count and smaller printed circuit board space
- Available in a thin 32-pin SOIC surface mount package

Part Number	Isolation Voltage (V_{rms})	Power Supply (V)	Caller ID	Ringing Detect
CPC5622	3000	3.3 - 5	Continuous	Half-wave & full-wave
CPC5621	3000	3.3 - 5	Selectable ($\overline{CID}=0$)	Full-wave ($\overline{CID}=1$)
CPC5620	3000	3.3 - 5	Selectable ($\overline{CID}=0$)	Half-wave ($\overline{CID}=1$)



The 3kV_{rms} internal isolation barrier exceeds all worldwide regulatory requirements. The LITELINK application circuit is capable of surviving 6kV (10μsec x 700μsec) lightning surge waveforms making it the most robust silicon DAA on the market.

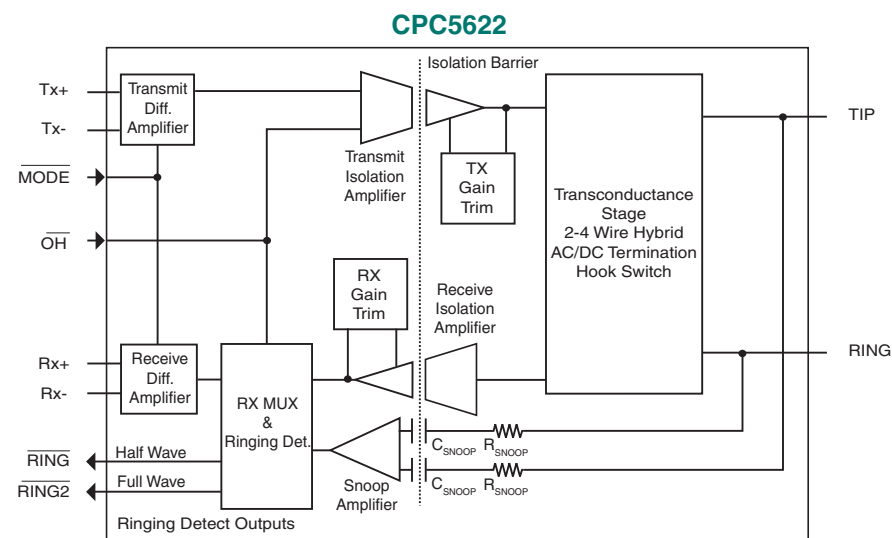
LITELINK offers the lowest operational phone line quiescent current. The device easily interfaces to commonly available standard single-ended or differential voice and modem codecs on the market. Contact IXYS Integrated Circuits Division for information on codec reference designs that offer programmable AC termination impedance for global applications. LITELINK complies with international PSTN agency requirements.

Features:

- Voice and data applications
- Modem DAA for speeds up to V.92
- Half-wave or full-wave ringing detection
- Worldwide telephone network compatibility
- Caller-ID reception
- Line side powered from telephone line
- 3.3V to 5V power supply
- Easy interface with modem ICs and voice codecs
- High power transmit option for voice applications (>3dBm)
- Small 32-pin SOIC package

Applications:

- Computer telephony
- VoIP gateways
- PBXs
- Satellite set-top box
- V.92 modems
- Fax machines
- Voice mail systems
- Embedded modems
- Vending machines
- Automated banking
- Remote metering
- Surveillance
- Security systems



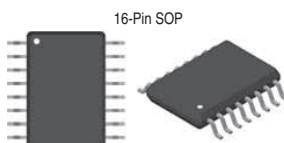
• VOLTAGE MONITOR DEVICES

CPC5712

- Special-purpose “Voltage Monitor with Detectors” integrated circuit used in high voltage telephony applications
- Derives two voltage level detects, polarity information, and a scaled, linear representation of the phone line voltages
- Non-telephony applications include instrumentation and industrial controls; virtually undetectable in use

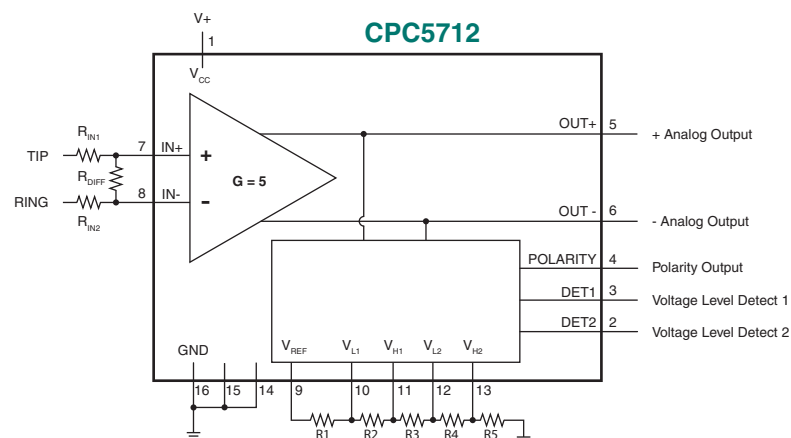
Features:

- 2 independent, programmable level-detectors with programmable hysteresis
- Fixed-level polarity detector with hysteresis
- Differential linear output
- Excellent common-mode rejection ratio (CMRR)
- Worldwide telephone network compatibility
- Minimum external components
- High differential input impedance, very low common-mode input impedance
- Fixed gain
- 3V to 5.5V operation
- Low power consumption
- CMOS logic level output (TTL compatible)



Applications:

- VoIP gateways, IP-PBX, xDSL
- TIP/RING monitoring: polarity detection for caller ID, enhanced 911, line-in-use, battery detection, PSTN check



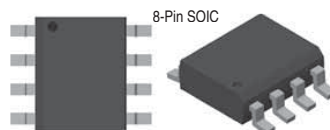
Resistors set the Voltage Level Detect Thresholds

CPC5710

- Telephone line monitor circuit provides linear representation of phone line signal and a ringing detect signal
- Ringing detect signal is set by external resistor network
- Virtually undetectable in use

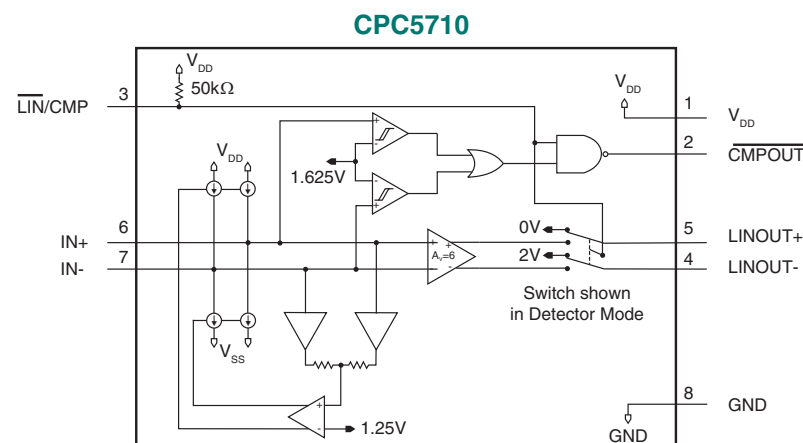
Features:

- Differential or single-ended linear output
- Full-wave ringing level detector comparator with internal threshold, large hysteresis, and TTL logic level output
- High common-mode rejection ratio (CMRR)
- Worldwide telephone network compatibility
- High differential input impedance, very low common-mode input impedance
- Fixed gain
- 3V to 5.5V operation
- CMOS logic level output (TTL compatible)



Applications:

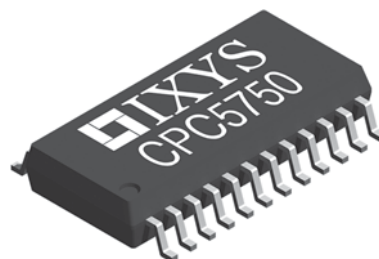
- Display feature (caller ID) signal buffering
- Line-in-use detection (another-phone-off-hook)
- Battery presence monitoring
- TIP/RING voltage monitoring
- Line polarity



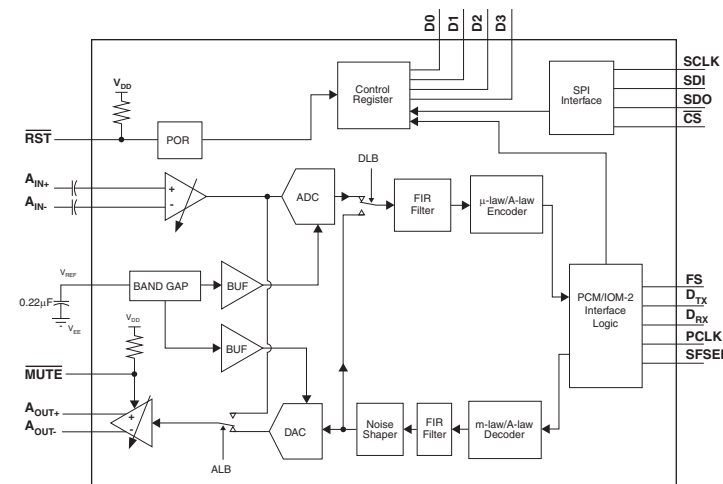
• SINGLE-CHANNEL VOICE-BAND CODEC: CPC5750

Features:

- μ -law and A-law ITU G.711 companding codec
- Operates on +3.3V power
- Differential analog signal paths
- Programmable transmit and receive gain, +/-12dB in 0.1dB increments
- Transmit path 60Hz rejection filter
- Differential amplifier drives +3.2dBm into 600 Ω
- Stable gain over temperature
- PCM and IOM-2 GCI telecommunication interfaces
- Short and long frame syncs supported
- Independent transmit and receive programmable time slots
- Accepts PCLK from 512kHz to 8.192MHz
- SPI serial interface for control in PCM mode
- Programmable power down-mode, $I_{DD} = 20\mu A$
- Analog and digital loopback modes for testing



CPC5750 Block Diagram



• CALL PROGRESS TONE DETECTOR: M-980-02

- Detects common call progress tones including busy tone, dial tone, call waiting tones, and others
- Operates on a 3V to 5V supply

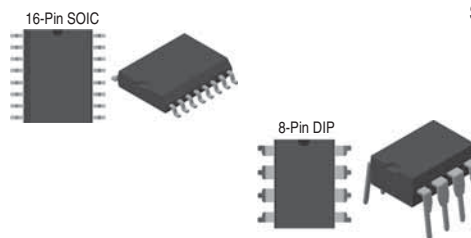
Features:

- Receive common call progress tones
- The M-980-02 operates with a single 3-5 volt supply
- Linear input (detector)
- Inexpensive band detector with wide dynamic range (>38dB)
- Low power consumption

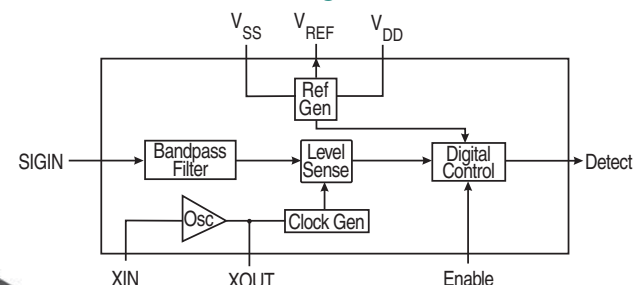
Applications:

- PBX circuits
- Billing systems
- Test equipment
- Point-of-sale terminals

Part Number	Function (315 - 640Hz)	Package Types
M-980-02	Tone detector	16-pin SOIC, 8-pin DIP



M-980-02: Call Progress Tone Detector



• DC TERMINATION ICs (xDSL, ISDN)

CPC1465: SHDSL/ISDN

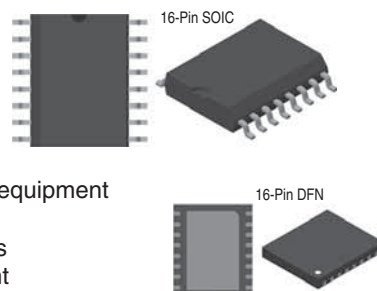
- Polarity-insensitive DC termination for wetting (sealing) current on the CPE side
- Conforms to ITU-T G.991.2 to eliminate corrosion on G.SHDSL/ISDN lines
- Well controlled turn-on and turn-off minimizes injecting impulse noise into the G.SHDSL channel

Features:

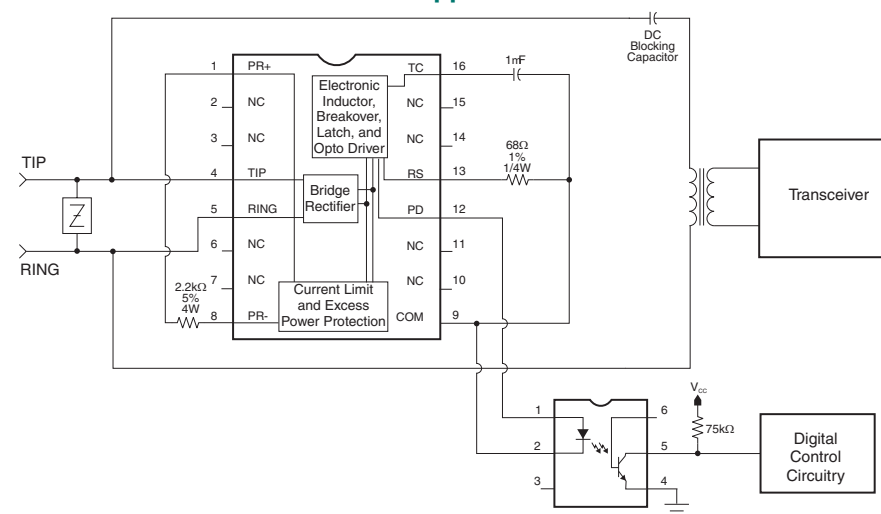
- Integrated bridge rectifier for polarity correction
- Uses inexpensive optocoupler for DC signaling
- Electronic inductor, breakover, and latch circuits
- Current limiting and excess power protection circuits
- ANSI SHDSL and ISDN compatible
- MLT and SARTS compatible
- Excellent linearity (70dB typ.)

Applications:

- G.SHDSL
- ISDN
- Router and bridge customer premises equipment
- Leased line equipment
- T1/E1 network line cards and repeaters
- Network termination 1 (NT1) equipment
- Mechanized loop test (MLT) networks
- Switched access remote test system (SARTS) networks



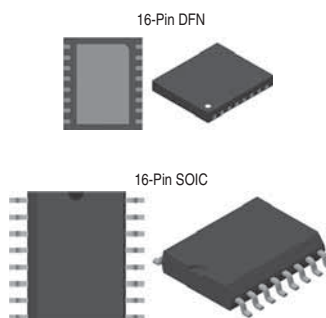
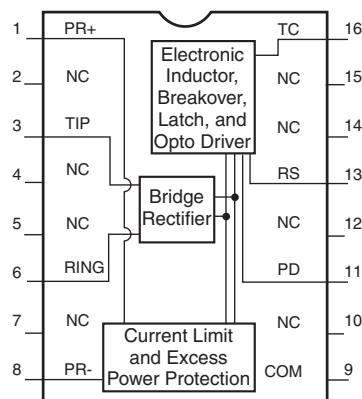
CPC1465 & Application Circuit



CPC1466: Broadband ADSL/VDSL

- DC Termination IC for broadband ADSL/VDSL applications
- Eliminates phone line corrosion on DSL twisted-pair, broadband-only lines

CPC1466



Features:

- Meets wetting (sealing) current requirements per ITU-T G.992.3
- Integrated bridge rectifier for polarity correction
- Uses inexpensive optocoupler for DC sealing current monitoring
- Electronic inductor, breakover, and latch circuits
- Current limiting and excess power protection circuits
- ADSL/VDSL compatible with low-pass filter network
- MLT and SARTS compatible
- Compatible with portable test sets

Applications:

- ADSL/VDSL broadband modems
- Router and bridge customer premises equipment
- Leased line equipment
- Mechanized loop test (MLT) networks
- Switched access remote test systems (SARTS) networks

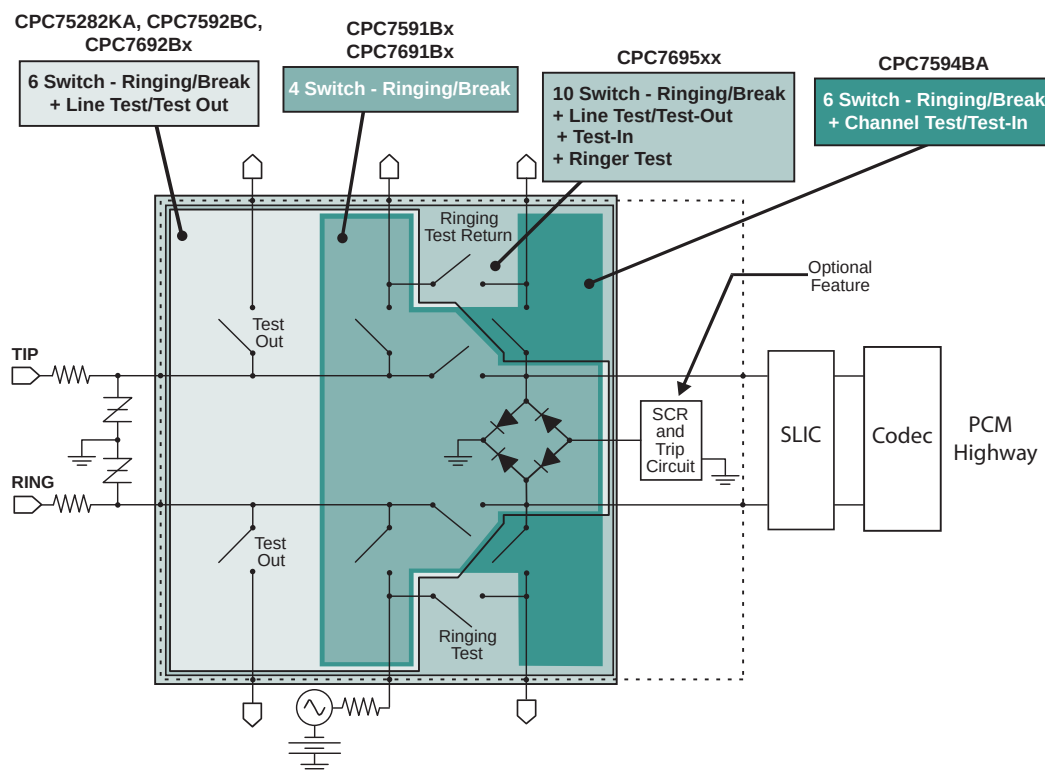
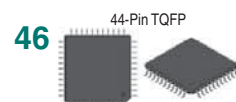
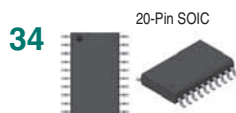
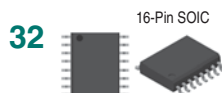
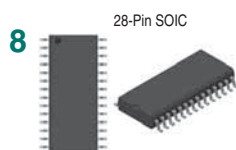
• LINE CARD ACCESS SWITCHES (LCAS)

Features:

- Monolithic IC reliability
- Impulse noise reduction
- Low, matched on-resistance
- Built-in zero-cross ringing switching
- Small surface mount SOIC packages
- Ultra-low power consumption of <10.5mW
- Robust power-cross and lightning surge performance
- Current limiting, thermal shutdown, and SLIC protection
- CPC75282: dual, 6-pole device

Applications:

- PBX systems
- VoIP gateways
- Channel banks
- Pair gain systems
- Central offices (CO)
- Fiber in the loop (FITL)
- Hybrid fiber coax (HFC)
- Digital loop carriers (DLC)
- Digitally added main line (DAML)



Part Number	Minimum 1500V/ μ s dV/dt	Switch Pairs						Zero-Cross Switching	Current Limit	Protection Features			Logic States	Package Type
		# Switches	Break	Ringing	Test Out	Test In	Ringing Test			Diode Bridge	Protection SCR	Minimum Hold Current (mA)		
CPC7691BA	•	4	•	•	•			•	•	•	•	110	3	32
CPC7691BB	•	4	•	•	•			•	•	•	•	110	3	32
CPC7692BA	•	6	•	•	•			•	•	•	•	110	4	32
CPC7692BC	•	6	•	•	•			•	•	•	•	110	5	32
CPC7695xA	•	10	•	•	•	•	•	•	•	•	•	110	7	8, 34
CPC7695xB	•	10	•	•	•	•	•	•	•	•	•	110	7	8, 34
CPC7695xC	•	10	•	•	•	•	•	•	•	•	•	110	8	8, 34
CPC7591BA		4	•	•	•			•	•	•	•	110	3	32
CPC7591BB		4	•	•	•			•	•	•	•	110	3	32
CPC7592BC		6	•	•	•			•	•	•	•	110	5	32

For data sheets, go to www.ixysic.com/Products/ProdList.htm

IXYS Integrated Circuits Division – 78 Cherry Hill Drive – Beverly, MA USA 01915 – www.ixysic.com

• LCAS FOR RINGING SLIC: CPC7508

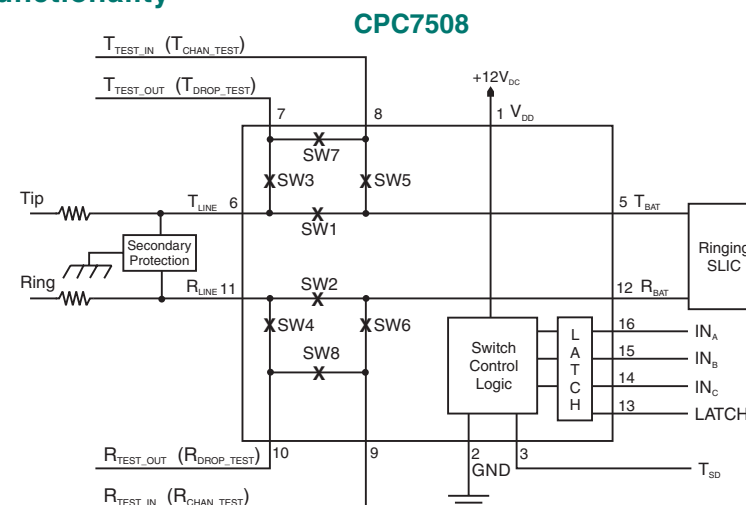
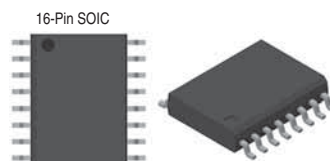
- Next generation LCAS device used with ringing SLICs
- Replaces the two 2-Form-C electromechanical test relays used in fiber-to-the-home and optical network deployments
- Provides TIP and RING line break, drop test, and channel test functionality
- Requires only a single +12V supply

Features:

- TTL logic level inputs for 3.3V logic interfaces
- Smart logic for power-up & hot-plug state control
- Monolithic IC reliability
- Low, matched R_{ON}
- Clean, bounce-free switching
- Tertiary protection consisting of integrated current limiting and thermal shutdown for SLIC protection

Applications:

- Fiber to the home (FTTH)
- Fiber in the loop (FITL)
- VoIP gateways
- PBX systems
- Digitally added main line (DAML)
- Hybrid fiber coax (HFC)



• CYBERGATE™ DATA ACCESS ARRANGEMENT (DAA) MODULES

- Completely functional V.34 DAA circuit in a 1.07" x 1.07" x 0.4" plastic module
- Surge protection, transient protection Zener diodes, ringing detection, hook switch, gyrator, and a transformer
- Caller-ID (CID) and loop current detection are also available as options

Part Number	Region	Features				
		Ringing Detection		Caller ID	Loop Current Detect	2-4 Wire Conversion
		Full Wave	Half Wave			
CYG2000	N. America, Asia		•			
CYG2011	N. America, Asia	•			•	
CYG2020	N. America, Asia		•	•		
CYG2100	European Union Except France & Spain		•			
CYG2110	France		•			
CYG2111	CTR-21		•			
CYG2217	N. America, Asia		•			•
CYG2218	N. America, Asia		•			•
CYG2320	Australia		•			

Features:

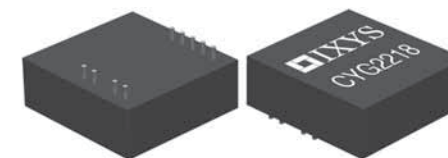
- 28.8kbps
- Optional caller ID and loop current sense
- Ringing detection
- Low power hook switch
- Surge protection
- Gyrator circuitry
- Meets most regulatory agency requirements

Applications:

- Modems
- Remote data acquisition
- Fax machines
- Security/metering
- Computer telephony
- PBX
- Voice mail systems

Small Package Size!

1.07" x 1.07" x 0.4"
27.18mm x 27.18mm x 10.16mm

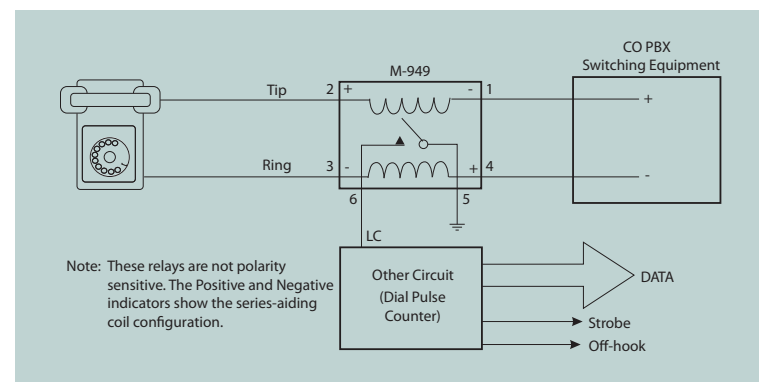
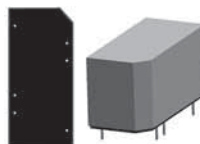


For data sheets, go to www.ixysic.com/Products/ProdList.htm

• LINE SENSE RELAY: M-949-11

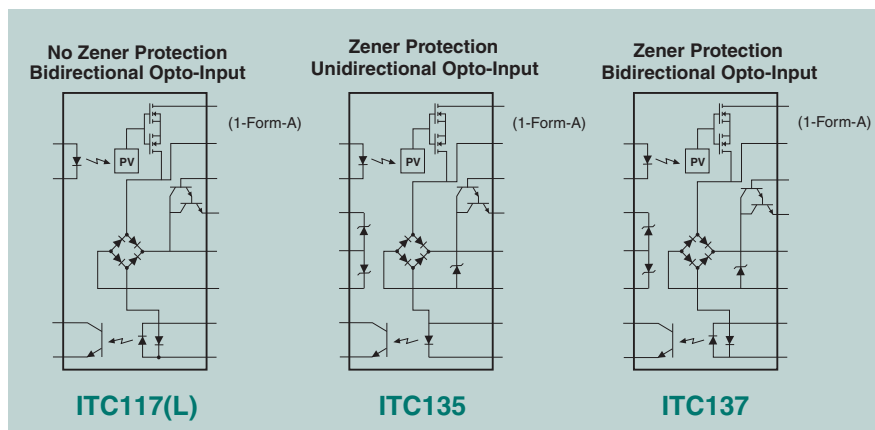
M-949-11 Balanced Dual Coil Telephone Line Current Sensing Relay

- Senses telephone line current from 15mA to 200mA
- Used by control circuitry for:
 - On-hook/off-hook monitoring
 - Switch hook flash detection
 - Rotary dial pulse
- Meets high isolation voltage requirement of 4000V
- Meets UL and British Standard Specifications
- Includes 1-Form-A relay contact



• TELECOM MULTIFUNCTION PRODUCTS (GENERAL PURPOSE MULTIFUNCTION PRODUCTS - PAGE 18)

The OptoMOS line of Telecom Multifunction Products combines a number of discrete optically isolated functions into a single package. These products mix and match solid state relays, optocouplers, bridge rectifiers, Darlington transistors, and Zener diodes to create highly functional circuits in a single, small package. Multifunction devices allow designers to consolidate circuit functions into a single device, freeing up valuable board space and reducing component count. Designed specifically for the telecommunications industry, the Integrated Telecom Circuit (ITC) series is well suited for voice telephony and modem applications, providing most of the major functions required when designing DAA (Data Access Arrangement) or voice (FXO) line interface circuits. Available in a 16-pin SOIC package.

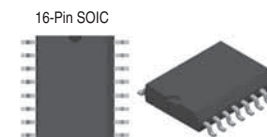


Features:

- 3750V_{rms} input-to-output isolation
- Multiple functionality in a single package
- Current limiting (part numbers with "L" suffix)
- Machine insertable, wave solderable
- TTL and CMOS compatible

Applications:

- Telecommunication/datacommunication
- Instrumentation
- I/O subsystems
- Electronic switching
- Medical equipment (patient/equipment isolation)
- Security
- Aerospace
- Industrial controls



Part Number	Relay Parameters				Optocoupler Parameters				Isolation Voltage (V _{rms})	Package Type	Features
	Blocking Voltage (V _p)	Load Current (mA)	On Resistance (Ω)	Input Control Current (mA)	Breakdown Voltage (V)	Current Transfer Ratio (%)	Saturation Voltage (V)	Input Control Current (mA)			
ITC117	350	120	15	5	20	33	0.5	6	3750	16-Pin SOIC	Full-wave ringing detect
ITC117L	350	120	20	5	20	33	0.5	6	3750	16-Pin SOIC	Full-wave ringing detect, current limiting
ITC135	350	120	15	5	20	33	0.5	6	3750	16-Pin SOIC	Half-wave ringing detect
ITC137	350	120	15	5	20	33	0.5	6	3750	16-Pin SOIC	Full-wave ringing detect

RFID PRODUCTS

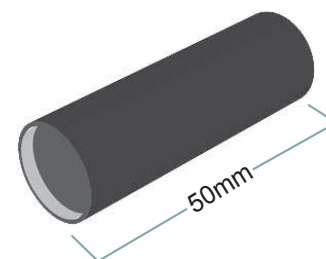
• RFID TAGS

NCD1015ZP: Low Frequency, Half-Duplex, Robust 50mm Transponder

- **Read-Only RFID device for single transponder applications in the area of electronic identification**
- **Supports ISO 11784 and ISO 11785 standards**

The passive transponder uses the applied RF signal to obtain the energy needed to send the 64-bit ID code to the reader. Return data transmission from the transponder to the reader utilizes FSK encoded modulation.

- | | |
|----------------------------------|--|
| Air interface | • Contact-less, sequential power & data transmission (HDX) |
| Radio frequency center frequency | • 134.2 kHz |
| Tag-to-reader transmission | • FSK modulation, NRZ: "0" ~ 134.4kHz; "1" ~ 124.2kHz |
| Tag-to-reader data rate | • RF/16 (~8kbits/sec) |
| On-chip 16-bit CRC generator | • Reverse CRC-CCITT as used in ISO/IEC 11785 |
| Identification data page | • 64 bits data + 16 bits CRC |



NCD1015M: Low Frequency, Half-Duplex RFID Integrated Circuit

- **HDX (R/W) RFID device for single transponder applications in the area of electronic identification**
- **Supports ISO 11784/85 standards**

The NCD1015M contains an ASIC and 2 internal capacitors: one, a resonant capacitor, and the other a storage capacitor. The ASIC contains 3 memory blocks of 32 bits each, based on field programmable, non-volatile EEPROM. Each block contains 32 data bits. Blocks 1 and 2 are referred to as the 64-bit identification data page 1, which is secured by an associated 16-bit CRC. Block 0 offers the option to lock the RFID device. Once the device is locked, it is compatible with ISO 11784/85 standards.

The HDX transponder IC receives Write-Block requests from the reader as a pulse interval encoded, 100% amplitude modulated data signal.

Return data transmission from the transponder to the reader utilizes FSK encoded modulation. This is achieved by a serial data stream controlled Frequency Shift Keying (FSK) of the transponder's resonant circuit oscillation with an additional on-chip modulation capacitor between the two transponder terminals HF and GND. The passive transponder uses the supplied RF signal to obtain the energy needed to send the 64-bit ID code to the reader.

- | | |
|----------------------------------|--|
| Air interface | • Contact-less, sequential power & data transmission (HDX) |
| Radio frequency center frequency | • 134.2 kHz typically |
| Reader-to-tag transmission | • Pulse interval encoding (PIE) ~1 to 2kBits/s |
| Tag-to-reader transmission | • FSK modulation, NRZ: "0" ~134.2kHz; "1" ~124.2kHz |
| Tag-to-reader data rate | • RF/16 (~8kbits/sec) |
| On-chip 16-bit CRC generator | • Reverse CRC-CCITT as used in ISO/IEC 11785 |
| Identification data | • 64 bits data + 16 bits CRC |



DIGITALLY PROGRAMMABLE CAPACITORS

• WIDE CAPACITANCE RANGE, NON-VOLATILE, DIGITAL PROGRAMMABLE CAPACITOR: NCD2400M

The NCD2400M is a dedicated electronic calibrator for oscillators, with reliable performance at 105°C as required by OCXO applications.

This product can be used in series or shunt configuration, to support a wide variety of tuning circuit topologies.

Digitally controlled capacitance trimming information is communicated via a 2-wire (I²C compatible) interface. The calibration value can be stored in the internal, re-programmable, non-volatile memory.

Features:

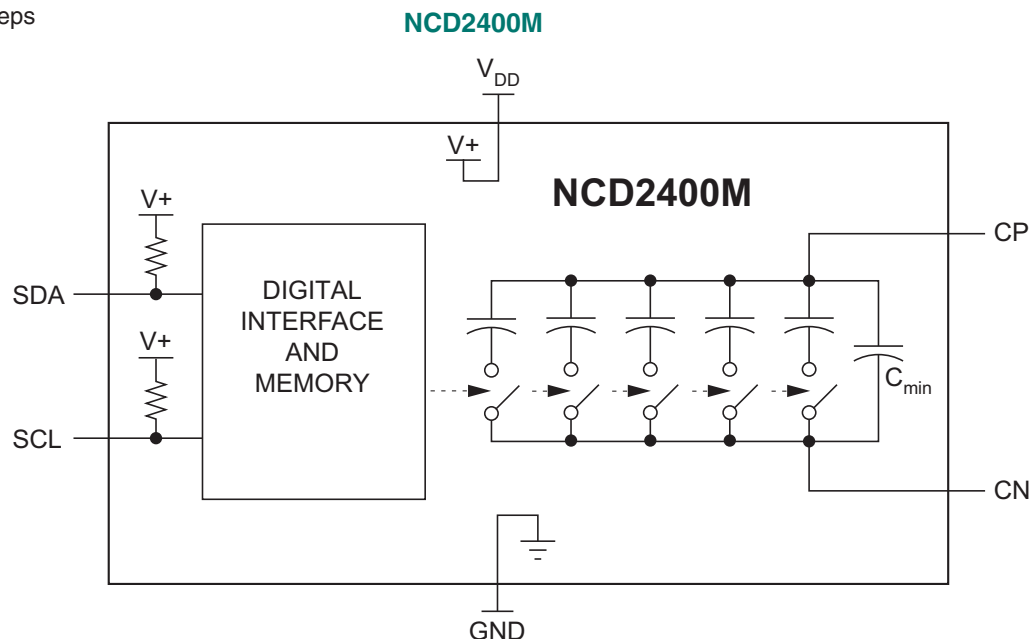
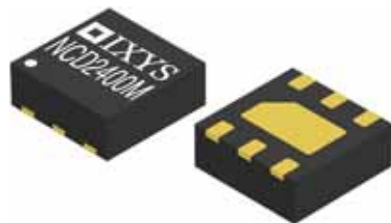
- 2-wire (I²C compatible) serial interface
- 9-bit 512-state digital programmable capacitor
- C_{shunt} = 12.5pF to 194pF (15.6:1 tuning ratio) in discrete 355fF steps
- C_{series} = 1.7pF to 194pF in discrete 376fF steps
- Wide power supply range (2.5 to 5.5V)
- EEPROM non-volatile memory
- Series or shunt configuration supported
- Operation at 105°C
- 2 x 2 x 0.65 mm 6-pin DFN package, MSL 1

Applications:

- OCXOs
- VCXOs
- Crystal oscillators
- Tunable RF stages
- RFID tags
- Industrial wireless control
- Capacitor sensor trimming



DFN Package: 2mm x 2mm



• NON-VOLATILE DIGITAL PROGRAMMABLE CAPACITOR: NCD2100

The NCD2100 is an EEPROM-based digitally programmable variable capacitor that provides capacitive offset trimming for capacitance sensitive circuits. Programming the non-volatile EEPROM register value or implementing on demand capacitance value changes are easily accomplished by means of the simple two-wire serial bus.

Providing 1024 discrete capacitance values over a nominal value range of 6.6pF to 37.553pF with very small step sizes, the NCD2100 is well suited to ensure proper operation of capacitive critical circuits. Additionally, to ensure interoperability over a broad array of design environments, the device is rated for operation with supply voltages of 2.5V to 5.5V across the temperature range of -40°C to +85°C.

Features:

- Very small CDAC3 capacitance step size: 0.063pF
- 1024 programmable capacitance values
- Operating frequency up to 250MHz
(contact the factory for operation at higher frequencies)
- Operating supply voltage: 2.5V to 5.5V
- Operating temperature range: -40°C to +85°C
- Device size: 2mm x 2mm (DFN-6), 2.9mm x 2.8mm (TSOT-6)

Applications:

- VCXOs
- Crystal oscillators
- Tunable RF stages
- RFID tags
- Industrial wireless control
- Capacitor sensor trimming

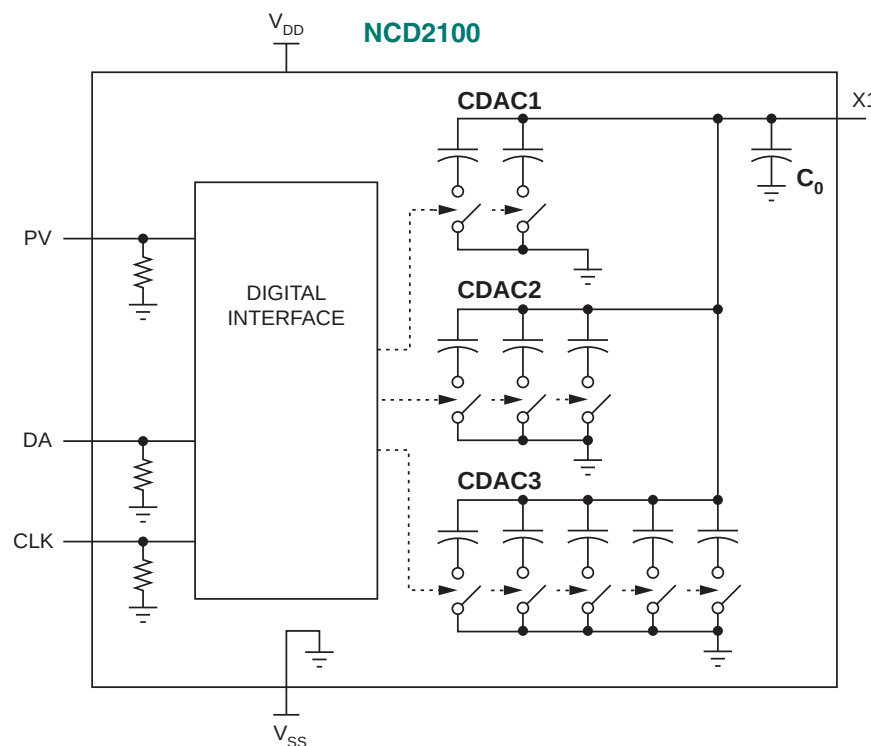
TSOT Package: 2.8mm x 2.9mm



DFN Package: 2mm x 2mm



Capacitance range: 6.6pF to 37.553pF



OTHER SEMICONDUCTOR PRODUCTS

• HALL-EFFECT SWITCHES: MX887D & MX887P

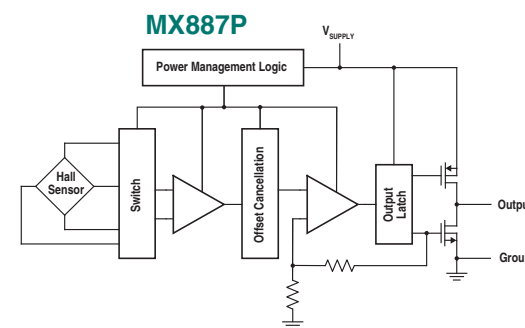
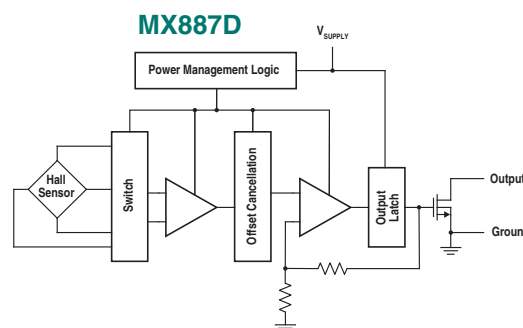
The **MX887D** and **MX887P** integrated Hall-Effect switches target the requirements of low-power portable devices with battery operating voltages from 2.5V to 5.5V. On-chip power management circuitry reduces the effective average current to just 5µA at 3V supply voltage.

Both devices turn on when either a north or south magnetic pole is applied, and turn off when the magnetic field is removed. The MX887D switches between GND and high-impedance state, while the output of the MX887P switches between the supply voltage and GND.

MX887D and MX887P are ideal reed relay replacements, especially in low-power portable device applications. Available in a TSOT-23 package.

Applications:

- Handheld portable devices
- White goods
- Automotive - body systems
- Security systems
- High-reliability reed switch replacement



• LOAD DRIVER: MX877

- 8-channel, high voltage switch with 8-bit parallel or serial input control
- 3-wire serial interface connects directly to a microprocessor using an industry standard protocol
- Designed to operate over a temperature range of -40°C to +85°C

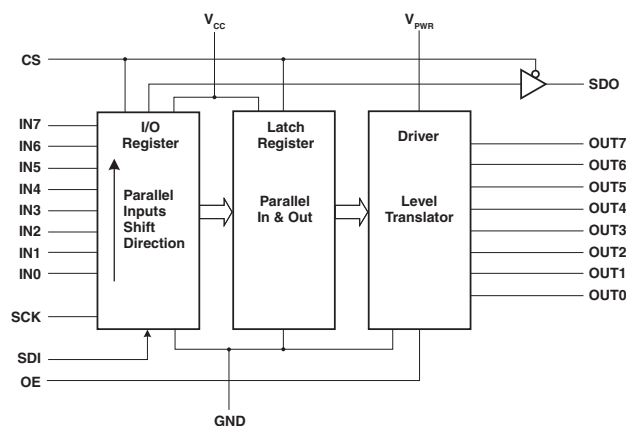
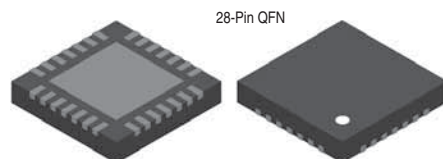
The **MX877**, with push-pull output configuration, can drive up to 80mA at 60V. Outputs can be paralleled for increased drive current up to a device total of 400mA sink or source.

Features:

- 6V to 60V drive supply voltage
- 2.7V to 5.5V logic supply range
- 3-wire serial interface plus chip select
- Captures serial and parallel input data
- Outputs can be paralleled
- Small 28-pin QFN package

Applications:

- White goods
- Automatic test equipment (ATE)
- Industrial equipment
- Automotive relay control



For data sheets, go to www.ixysic.com/Products/ProdList.htm

Worldwide Sales Offices

AMERICAS

World Headquarters
IXYS Integrated Circuits Division
78 Cherry Hill Drive
Beverly, MA USA 01915-1048

☎ +1 978 524 6700
☎ +1 978 524 4700
Toll-Free: 1 800 272 5273

CUSTOMER SERVICE

☎ +1 978 524 6768
☎ +1 978 524 4900

EUROPE

European Customer Service Centre
IXYS Semiconductor BV
Schipholweg 103
2316 XC Leiden, Netherlands

☎ +31 71 303 1500
☎ +31 71 524 9237
E-mail: customerservice@ixys.de

ASIA

Asian Headquarters
IXYS Taiwan
Room N1016, Chia-Hsin, Bldg. II,
10F, No. 96, Sec. 2
Chung Shan North Road
Taipei, Taiwan

☎ +886 2 2523 6368
☎ +886 2 2523 6369
E-mail: sales@ixysic.com.tw

IXYS Integrated Circuits Division

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www.ixysic.com