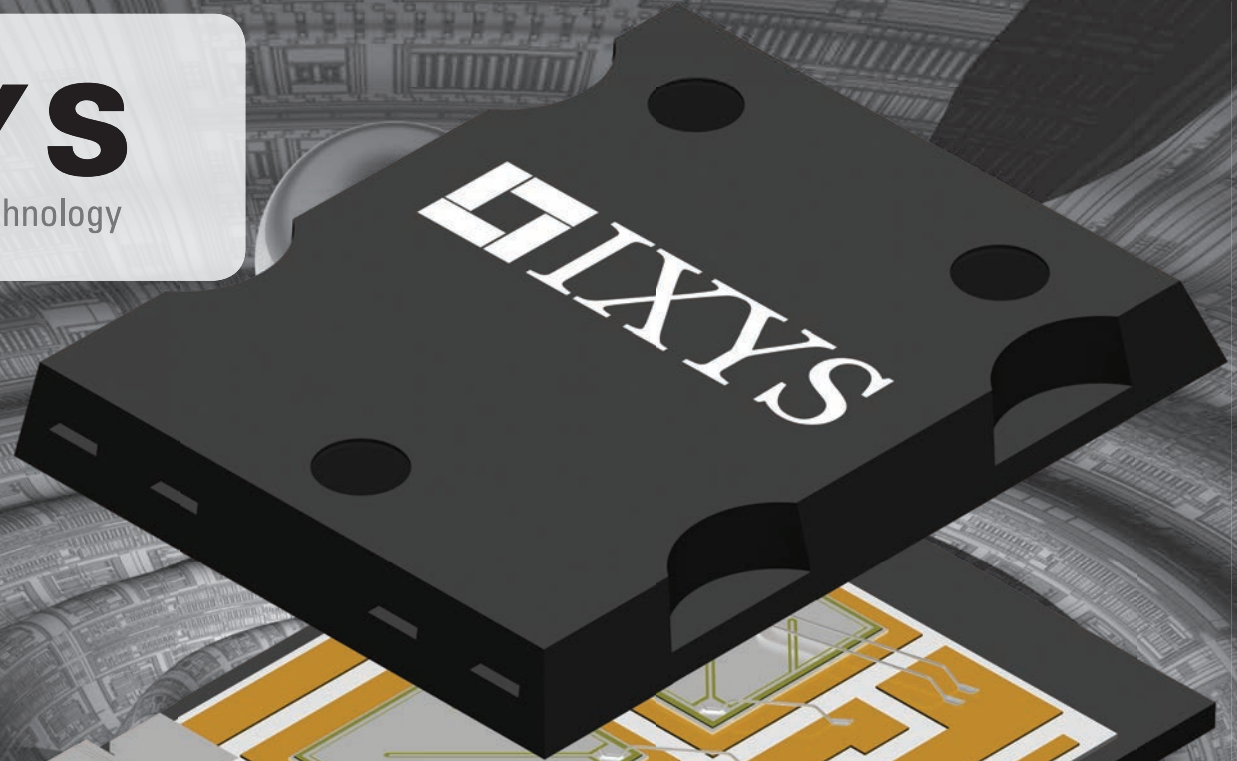




IXYS

A **Littelfuse** Technology



ISO 9001: 2015

IXYS Integrated Circuits Product Catalog 2018 - 2019

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



IXYS Integrated Circuits

IXYS Integrated Circuits, formerly a wholly owned subsidiary of IXYS Corporation, is now part of Littelfuse. IXYS Integrated Circuits designs, manufactures, and markets a wide variety of semiconductor devices and is a major provider of optically isolated electronic components.

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

Products and Markets

- **IGBT and MOSFET Drivers:** High voltage, low-side, and optically isolated 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:** 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 Capacitors:** Provide 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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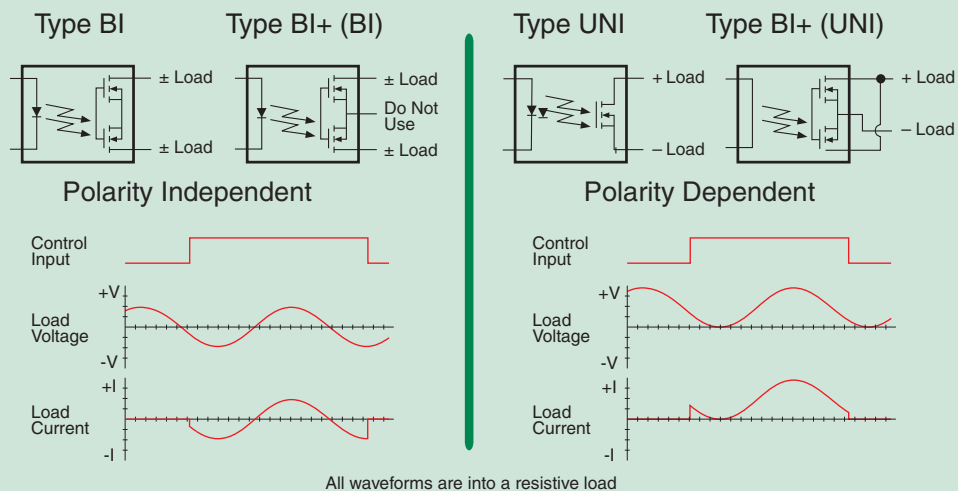
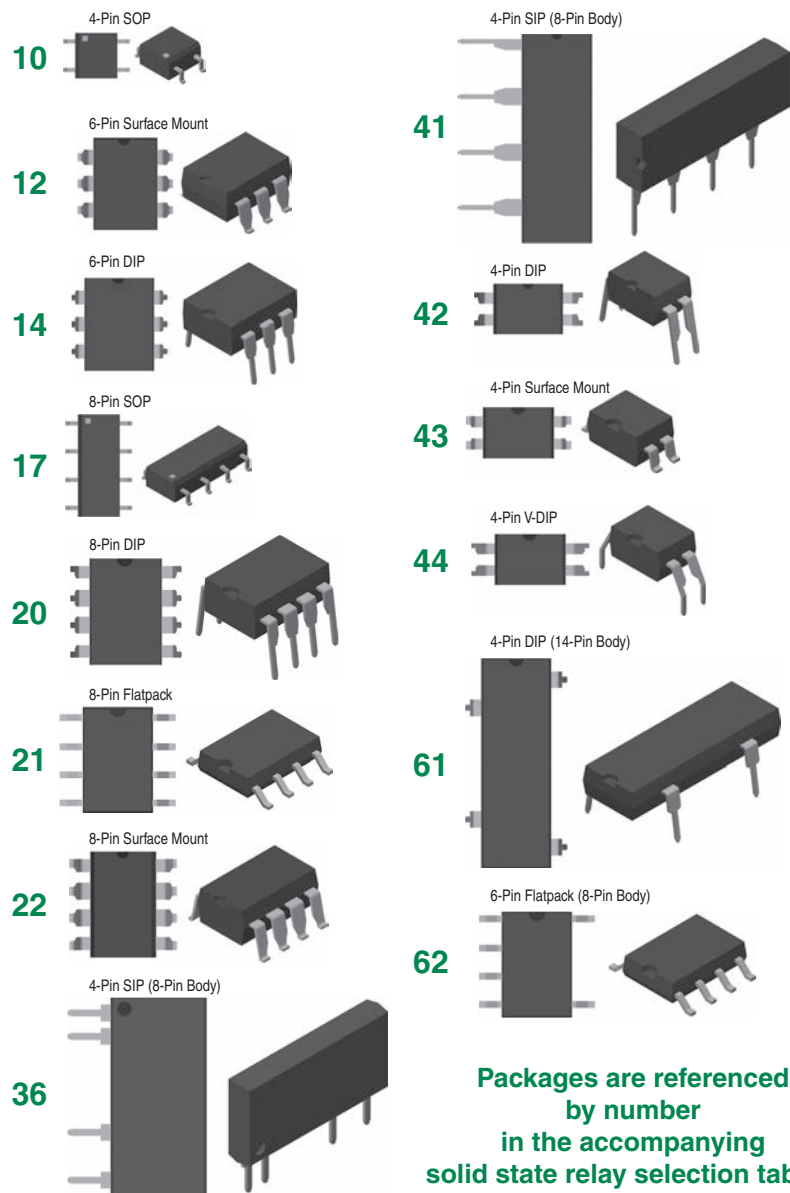
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LBA110	11	LCA715	8	LOC111	31	PD2601	16	TS120	18		
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SOLID STATE RELAYS



Type BI relays conduct load current in both directions.

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

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

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

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

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

Features:

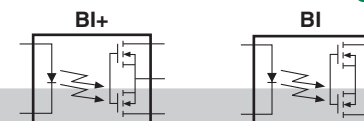
- Low drive current
- High reliability
- No EMI/RFI generation
- Arc-free with no snubbing circuits
- AC or DC switching
- Current limiting devices available
- FCC compatible
- Low off-state leakage

Applications:

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

• 1-FORM-A RELAYS (NORMALLY OPEN)

1-Form-A Relays: Single-Pole

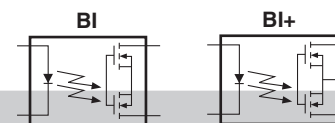


Part Number	Relay Type	Blocking Voltage (V _p)	Load Current (mA)	On Resistance (Ω)	Input Control Current (mA)	Switching Speeds t _{on} / t _{off} (ms)	Isolation Voltage (V _{rms})	Off-State Leakage (μA)	Package Type (Page 6)	Features and Comments
CPC1006N	BI	60	75	10	0.5	10 / 10	1500	1	10	Low I _F , 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

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

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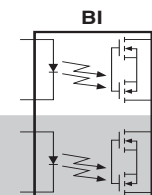
1-Form-A Relays: Single-Pole (continued)



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)
PLA172P	BI	800	100	50	2	5 / 5	5000	1	62	-40°C to +105°C Operational Temperature Range
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	



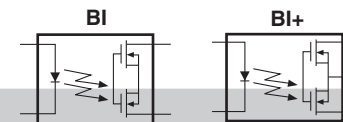
1-Form-A Relays: Dual Single-Pole



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	10	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	6	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	

• 1-FORM-B RELAYS (NORMALLY CLOSED)

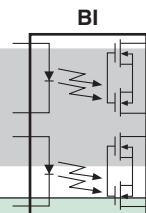
1-Form-B Relays: Single-Pole



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

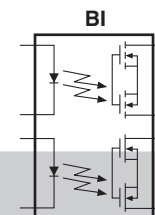
Part Number	Relay Type	Blocking Voltage (V _p)	Load Current (mA)	On Resistance (Ω)	Input Control Current (mA)	Switching Speeds t _{on} / t _{off} (ms)	Isolation Voltage (V _{rms})	Off-State Leakage (μA)	Package Type (Page 6)	Features and Comments
CPC2125N	BI	400	100	35	2	2 / 2	1500	5	17	
LBB110	BI	350	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	



• MISCELLANEOUS RELAYS

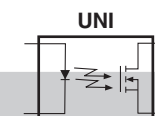
1-Form-A & 1-Form-B Combination Relays

Part Number	Relay Type	Blocking Voltage	Load Current	On Resistance	Input Control Current	Switching Speeds	Isolation Voltage	Off-State Leakage	Package Type	Features and Comments
		(V _p)	(mA)	(Ω)	(mA)	t _{on} / t _{off} (ms)	(V _{rms})	A/B (μA)	(Page 6)	
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	



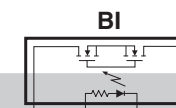
1-Form-A Relays: Single-Pole, Unidirectional (DC-only)

Part Number	Relay Type	Blocking Voltage	Load Current	On Resistance	Input Control Current	Switching Speeds	Isolation Voltage	Off-State Leakage	Package Type	Features and Comments
		(V _p)	(mA)	(Ω)	(mA)	t _{on} / t _{off} (ms)	(V _{rms})	μA	(Page 6)	
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

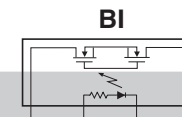


1-Form-A Relays: Single-Pole, Voltage-Controlled

Part Number	Relay Type	Blocking Voltage	Load Current	On Resistance	Input Control Voltage	Switching Speeds	Isolation Voltage	Off-State Leakage	Package Type	Features and Comments
		(V _p)	(mA)	(Ω)	(V)	t _{on} / t _{off} (ms)	(V _{rms})	(μA)	(Page 6)	
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

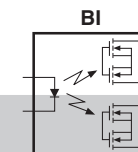


1-Form-B Relays: Single-Pole, Voltage-Controlled



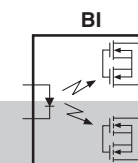
Part Number	Relay Type	Blocking Voltage (V _p)	Load Current (mA)	On Resistance (Ω)	Input Control Voltage (V)	Switching Speeds t _{on} / t _{off} (ms)	Isolation Voltage (V _{rms})	Off-State Leakage (μA)	Package Type (Page 6)	Features and Comments
CPC1219	BI	60	200	16	5 - 12	5 / 5	2500	1	41	EN 50130-4,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

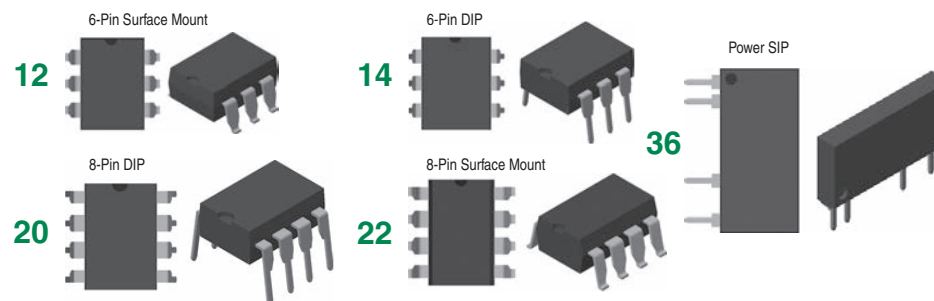


Part Number	Relay Type	Blocking Voltage (V _p)	Load Current (mA)	On Resistance (Ω)	Input Control Current (mA)	Switching Speeds t _{on} / t _{off} (ms)	Isolation Voltage (V _{rms})	Off-State Leakage (μA)	Package Type (Page 6)	Features and Comments
LCC110	BI	350	120	35	8	4 / 4	3750	1	20, 21, 22	
LCC120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

FAULT PROTECTED RELAYS

• CURRENT LIMITING SSRs WITH VOLTAGE TRIGGERED SHUTDOWN & THERMAL MANAGEMENT

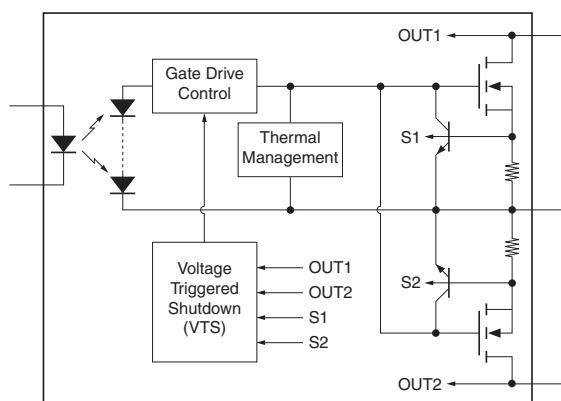
- Active current-limiting circuitry
- Integrated thermal management (ThM)
- Voltage triggered shutdown (VTS)
- Provide excellent power-cross immunity
- Ideal for use in electromagnetically noisy environments
- Resumes normal operation after faults are removed



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

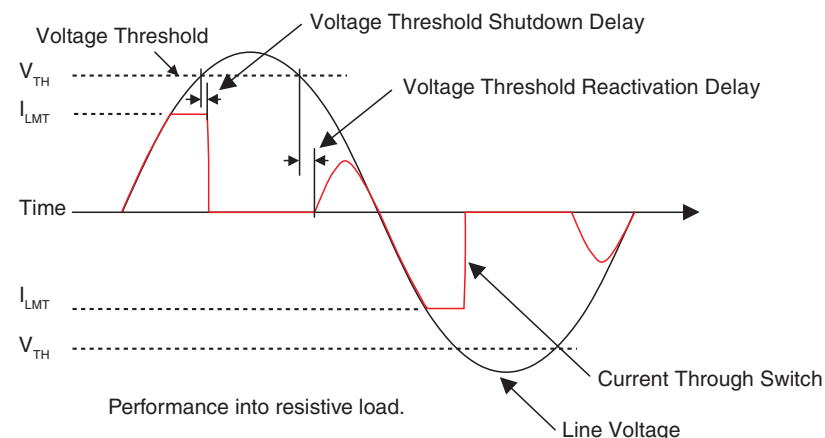
* Deactivates the switch when the load voltage exceeds the V_{TH} threshold while the switch is in current limit.

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

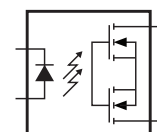
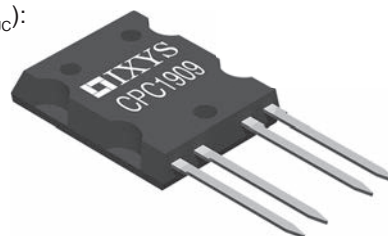
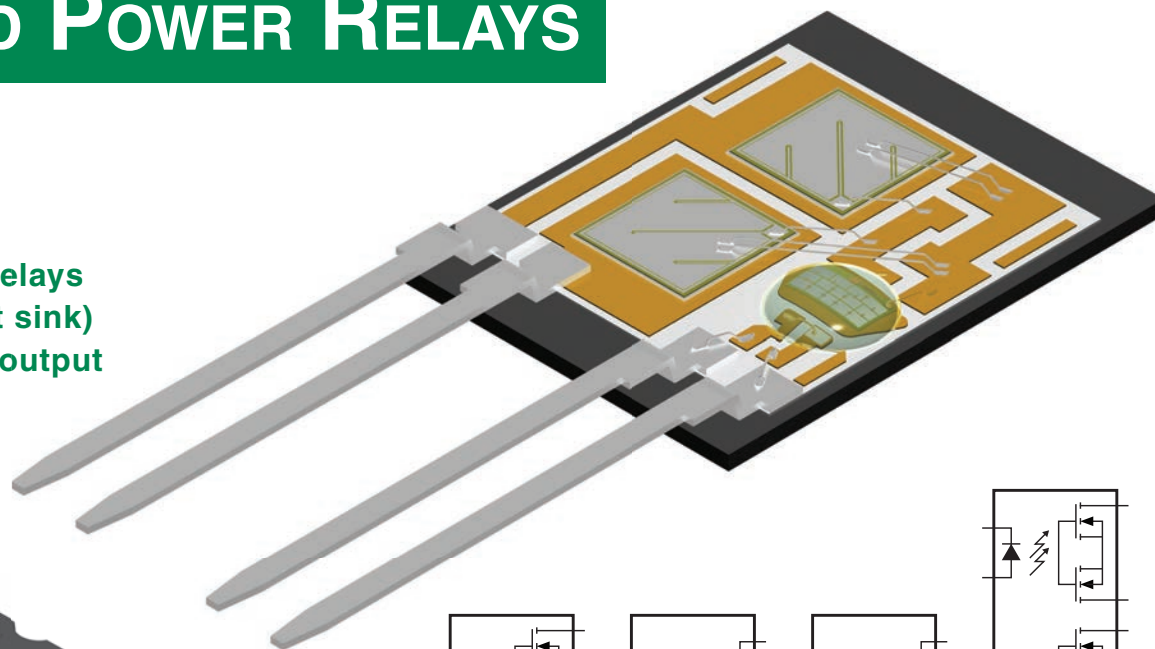
- Blocking voltage up to $1000V_p$
- On-resistance as low as 0.05 Ohms
- On/off times from 1ms to 25ms
- MOSFET-based AC/DC and DC-only power relays
- Load current up to $22.8A_{DC}$ (with $5^\circ C/W$ heat sink)
- $2500V_{rms}$ to $5000V_{rms}$ isolation from input to output and to DCB substrate

Features:

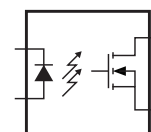
- Isolated, low thermal impedance pad for heat sink applications
- Low input control current
- Low thermal impedances, junction to case (θ_{JC}):
 - 0.30°C/W - ISOPLUS-264
 - 0.35°C/W - i4-PAC
 - 1.50°C/W - Power SIP
 - 1.50°C/W - Power SOIC

Applications:

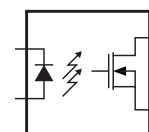
- Robotics
- Medical equipment
- Railroad/traffic controls
- Consumer appliances
- Industrial control
- Test and measurement equipment



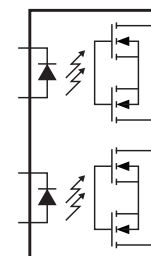
1-Form-A
Bidirectional



1-Form-A
Unidirectional



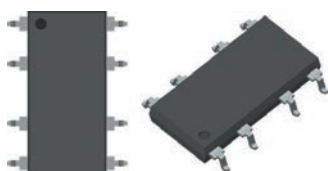
1-Form-B
Unidirectional



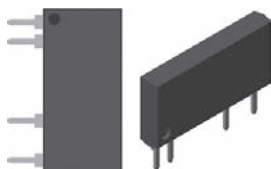
Dual 1-Form-A
Bidirectional

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

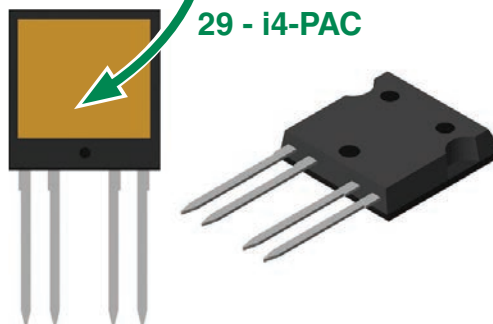
66 - Power SOIC



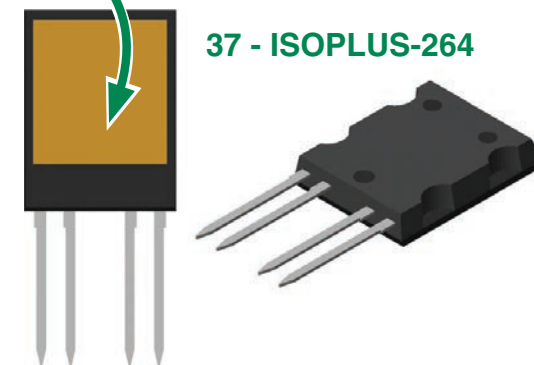
36 - Power SIP



29 - i4-PAC




37 - ISOPLUS-264



• 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 14)	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
CPC1984Y	BI	600	1	-	-	0.66	5	10 / 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 14)	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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For data sheets, go to www.ixysic.com/Products/ProdList.htm

OPTICALLY ISOLATED AC POWER SWITCHES

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

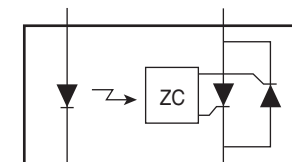
- Blocking voltage from 400V_P to 800V_P
- SCR-based AC power switches
- Maximum load current up to 1A_{rms}

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:

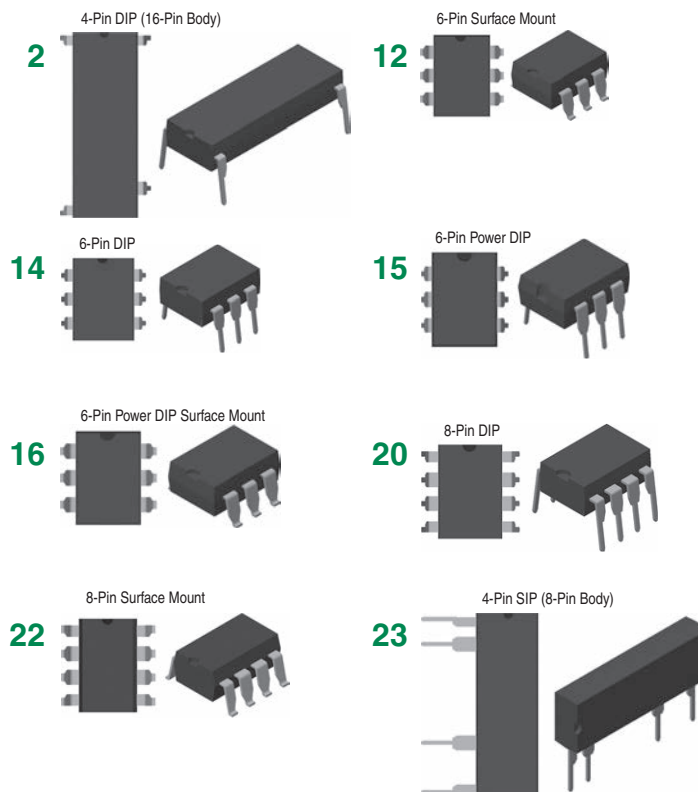
- Programmable controls
- Process control
- Power control panels
- Remote switching
- Gas pump electronics
- Large relay control circuits
- Contactors
- Solenoids
- Motor controls
- Heater controls



Zero-Cross Turn-On

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

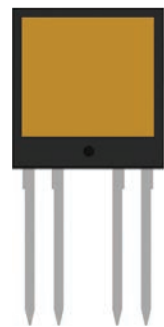
¹ Maximum continuous load current of a single pole or the sum of the load currents with both poles operating simultaneously.



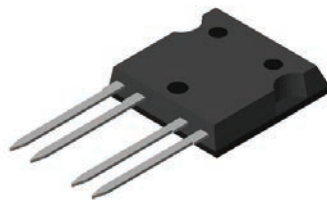
• OPTICALLY ISOLATED AC POWER SWITCHES: LOAD CURRENT >1A

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

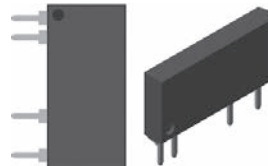
*Metallized, external, Direct Copper Bond (DCB) surface
for heat sink applications*



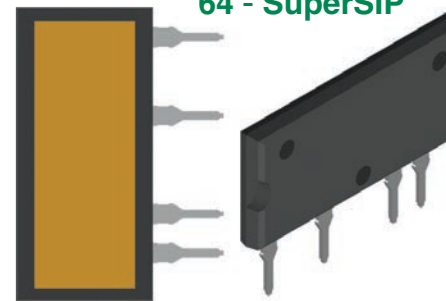
29 - i4-PAC



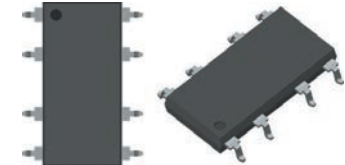
36 - Power SIP



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 load voltage phase, and turn off when the load current 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
CPC1966Y	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	3	-	-	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	3	-	-	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.

MULTIFUNCTION PRODUCTS: SSR/OPTOCOUPLEDERS

• GENERAL PURPOSE MULTIFUNCTION PRODUCTS (TELECOM MULTIFUNCTION PRODUCTS - PAGE 39)

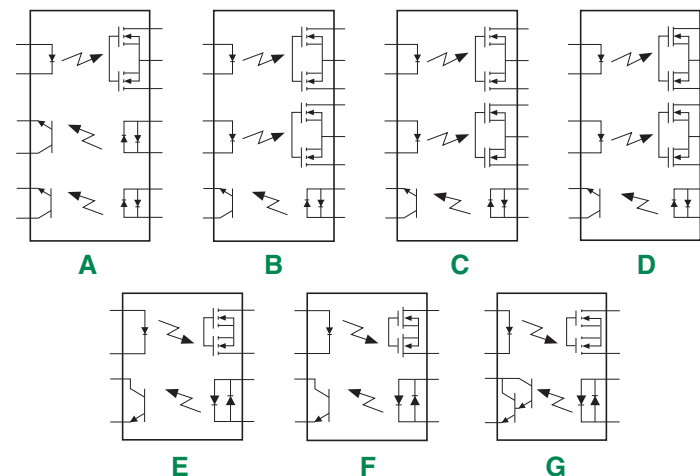
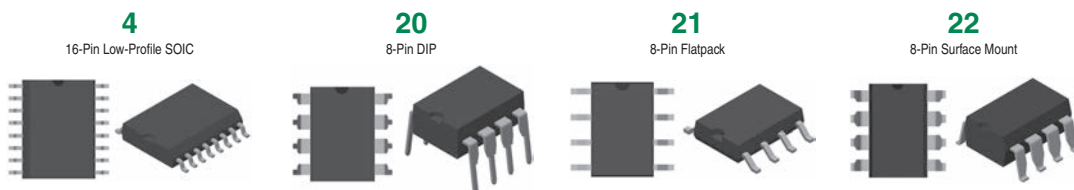
The OptoMOS line of Multifunction Products combines a number of discrete, optically isolated functions into a single package. These products mix and match solid state relays, optocouplers, and Darlington transistors to create highly functional circuits in a single, small package. Multifunction devices 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

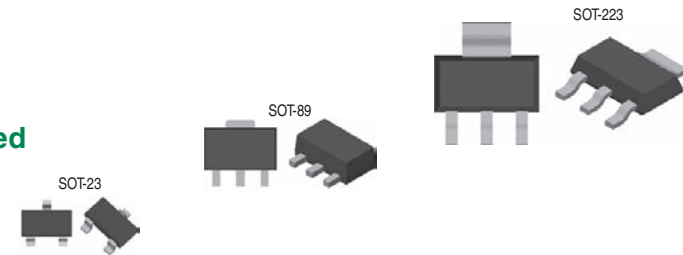


Part Number	Style	SSR Characteristics				Optocoupler Characteristics				Isolation Voltage (V _{rms})	Package Type	Features and Comments
		Blocking Voltage (V _p)	Current Handling (mA)	On Resistance (Ω)	Input Control Current (mA)	Breakdown Voltage (V)	Current Transfer Ratio (%)	Saturation Voltage (V)	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

FIELD EFFECT TRANSISTORS

• N-CHANNEL DEPLETION MODE FETs

- Normally closed 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

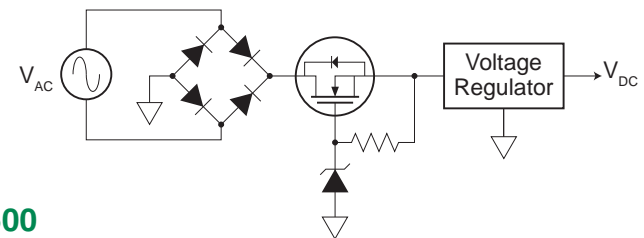
Features:

- Normally closed 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

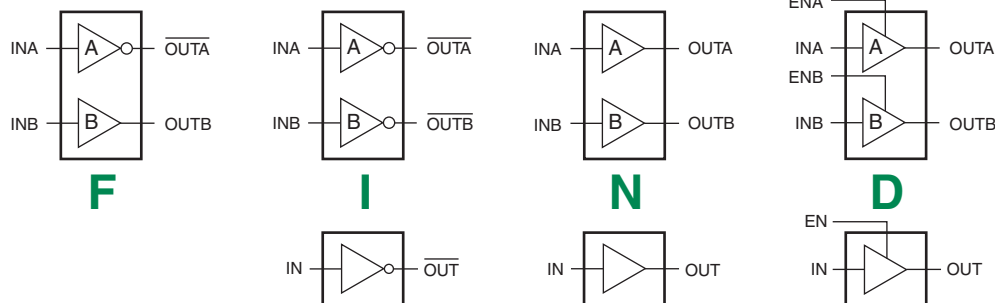
IGBT & MOSFET GATE DRIVERS

• 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	Under-voltage Lockout (V)	Package Type
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
IX4423	DUAL	3	4	I	-	-	54
IX4424	DUAL	3	4	N	-	-	54
IX4425	DUAL	3	4	F	-	-	54
IXD_604	DUAL	4	2.5	F, I, N, D	•	-	20, 53, 54, 56
IX4340	DUAL	5	1.5	D	•	$V_{CC} \leq 3.8$	53, 54, 92
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
IX4340NE	DUAL	5	1.5	D	•	53
IXD_609SI	SINGLE	9	1	I, N, D	•	53
IXD_614SI	SINGLE	14	0.8	I, N, D	•	53



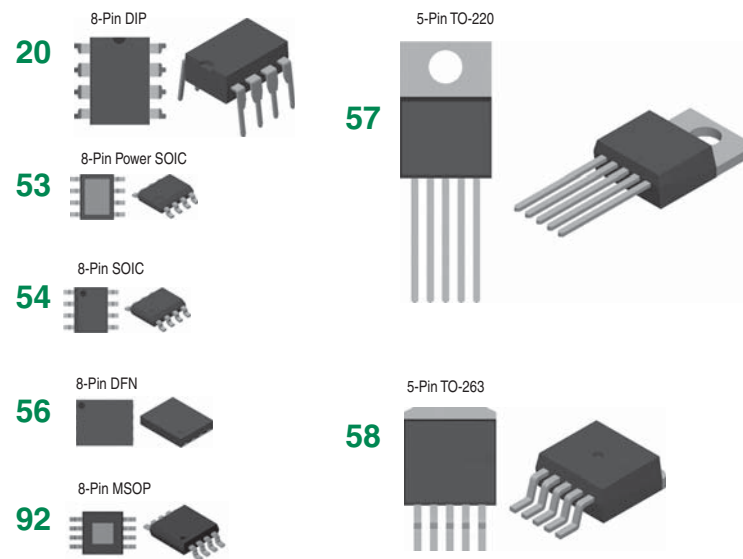
IXD_604SI & SIA
IXD_609SI
IXD_614SI
IX4340NE
are AEC-Q100 qualified!

Features:

- 1.5A to 30A peak source/sink drive current
- Wide operating voltage range
- -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 output impedance

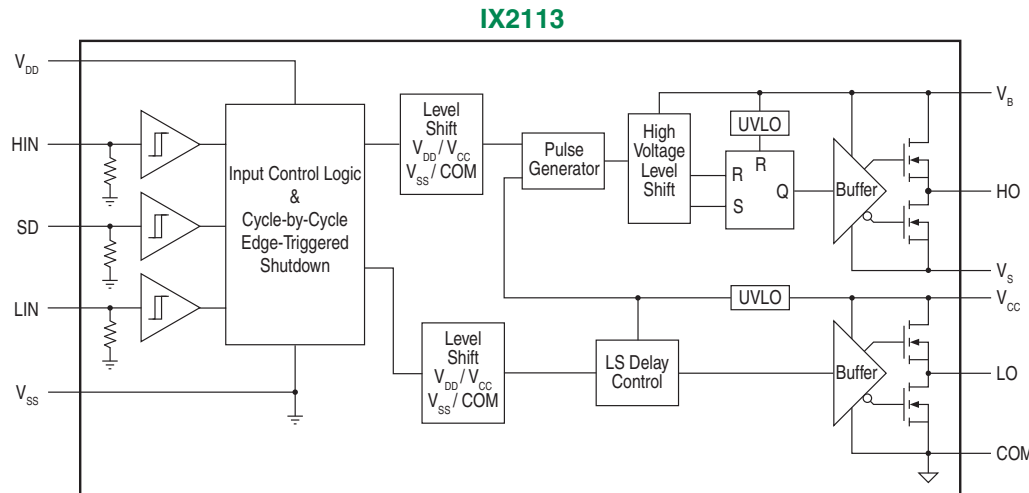
Applications:

- 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

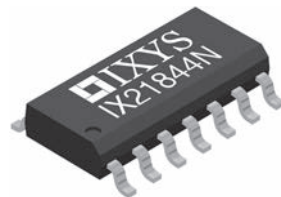
- Programmable dead-time can be set between 400ns and 5μs
- Floating high-side channel can drive an N-channel power MOSFET or IGBT 600V from the common reference

Features:

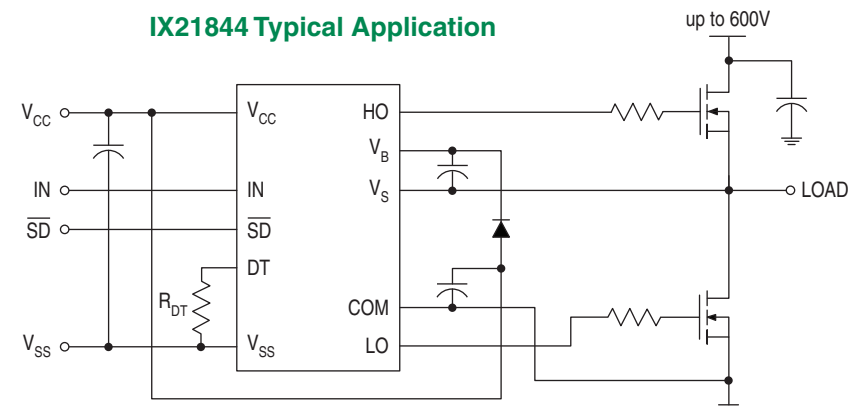
- Floating channel for bootstrap operation to 600V with an absolute maximum rating of 700V
- Outputs can source 1.4A and sink 1.8A
- Gate drive supply range from 10V to 20V
- Tolerant to negative voltage transients: dV/dt immune
- 3.3V and 5V logic compatible
- Under-voltage lockout for both high-side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

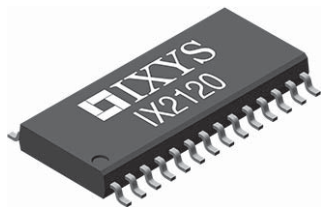


• 1200V HIGH AND LOW SIDE GATE DRIVER: IX2120

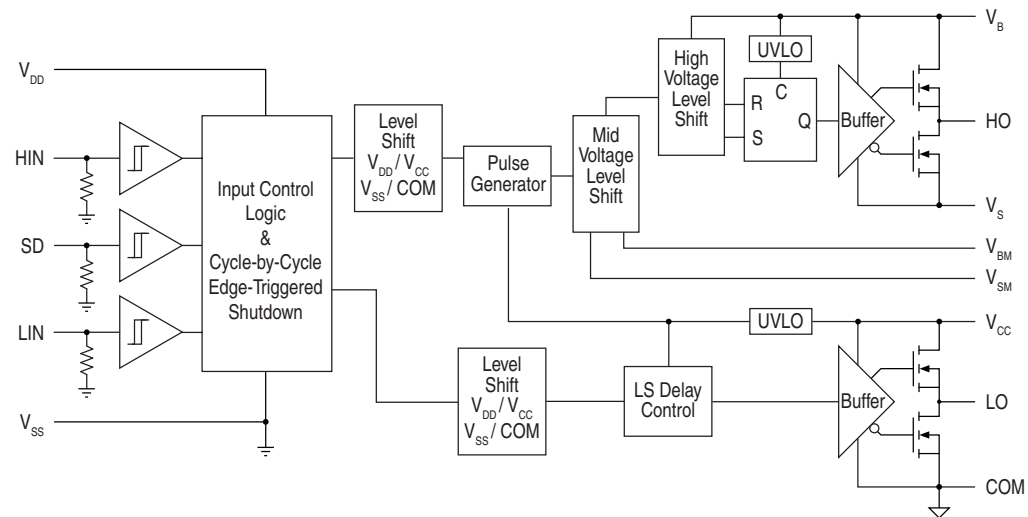
- Floating channel for bootstrap operation to +1200V
- Outputs capable of sourcing and sinking 2A

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



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

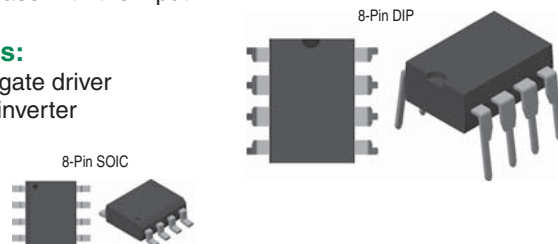
- Stable operation in high dV/dt noise environments
- Outputs typically source 250mA and sink 500mA

Features:

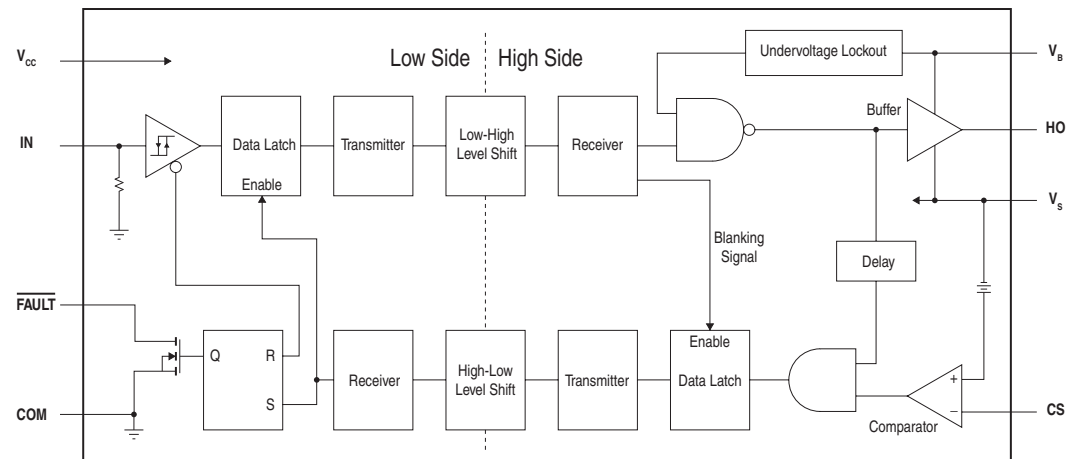
- Floating channel designed for bootstrap operation up to 600V
- Tolerant to negative transient voltages; dV/dt immune
- Under-voltage lockout
- 3.3V, 5V, and 12V input logic compatible
- Open-drain FAULT indicator pin shows over-current shutdown
- Output in-phase with the input

Applications:

- High speed gate driver
- Motor drive inverter



IX2127 Functional Block Diagram



• 2.5A OUTPUT OPTICALLY COUPLED GATE DRIVER: IX3120

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

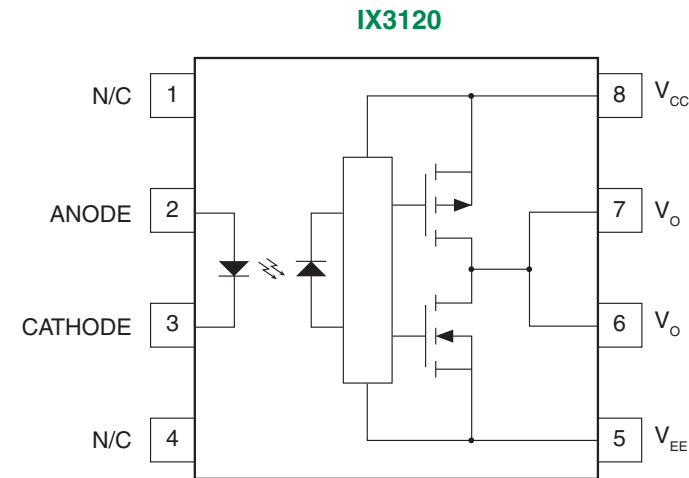
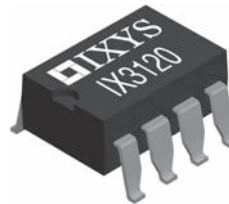
Features:

- 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).



• 2.5A OUTPUT HI SPEED GATE DRIVER OPTOCOUPLER: IX3180

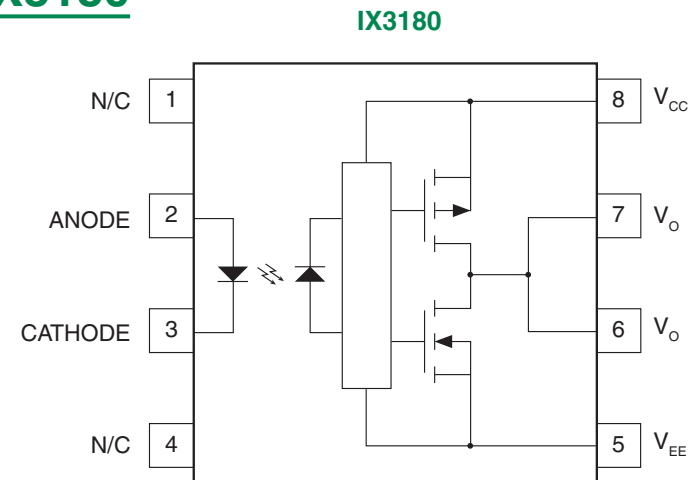
- 2.5A maximum peak output current
- Wide operating voltage range: 10V to 20V

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

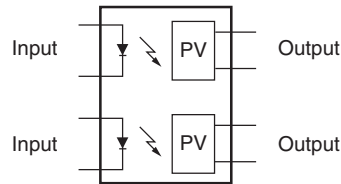
Applications:

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



• OPTICALLY ISOLATED PHOTOVOLTAIC GATE DRIVERS

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

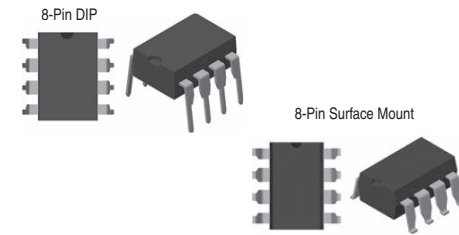


Features:

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

Applications:

- MOSFET driver
- Isolated floating power source

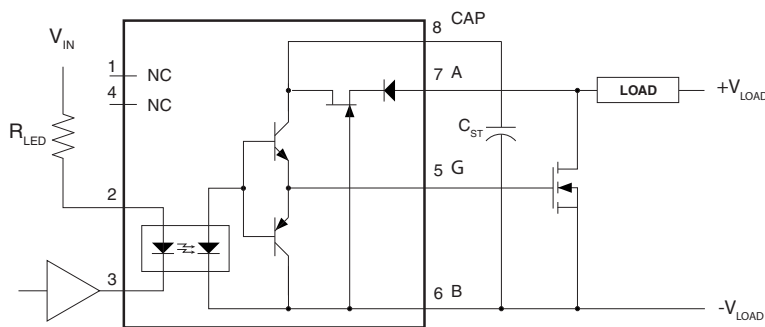


Part Number	Input Control Current (mA)	Nominal Open-Circuit Voltage V_{OC} (V)	Nominal Short-Circuit Current I_{SC} (μ A)	Switching Speeds t_{on} / t_{off} (ms)	Isolation Voltage (V_{rms})	Package Type
FDA215	5	5.5	2.5	5 / 5	3750	8-pin DIP, 8-pin surface mount
FDA217	5	11.75	4.5	2 / 0.5	3750	8-pin DIP,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

• 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

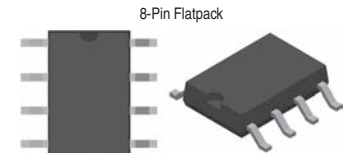


Features:

- No external IC power supply
- Low drive power requirements (TTL/CMOS compatible)
- Load voltages up to 200V
- Fast switching times - 40 μ sec on, 400 μ sec 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 @ $I_F=5mA$ (V_G)	Blocking Voltage (V_P)	Regulated Capacitor Voltage ($V_{CAP-MAX}$)	Switching Speeds t_{on} / t_{off} (μ s)	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

HIGH VOLTAGE PRODUCTS

• HIGH VOLTAGE ANALOG SWITCH ARRAYS

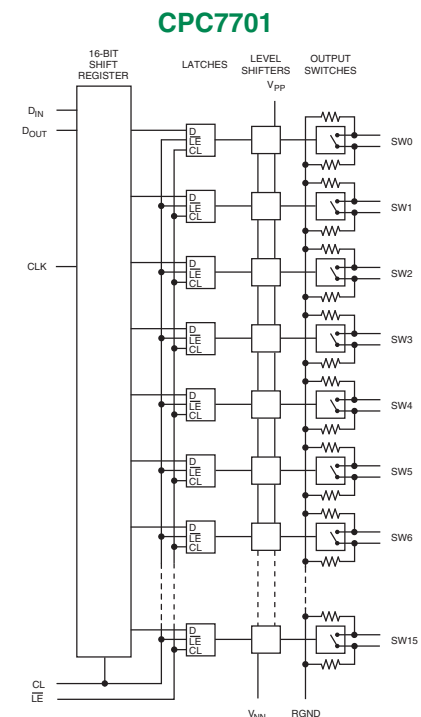
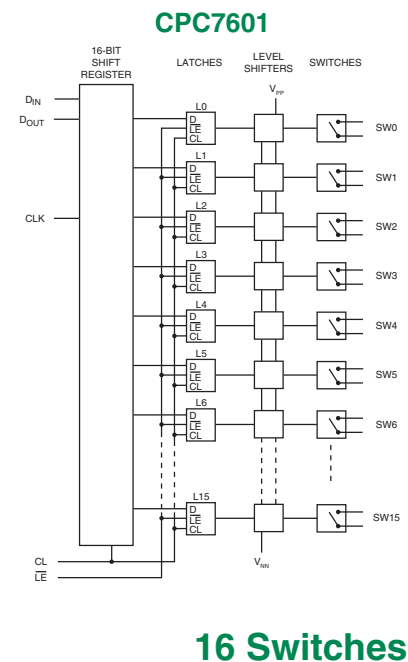
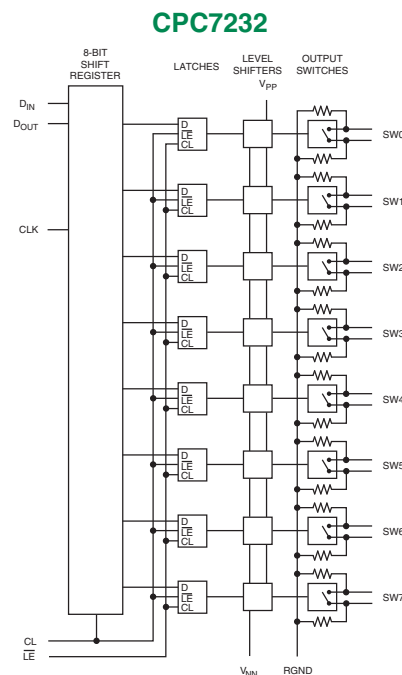
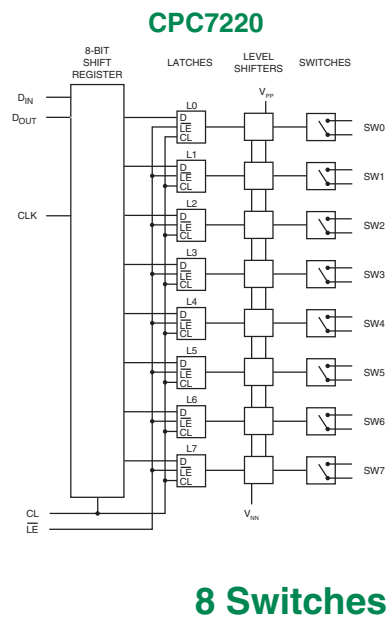
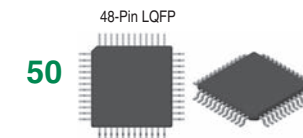
Features:

- 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
CPC7232	8	21	20 - 50	5	5	5	50
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:

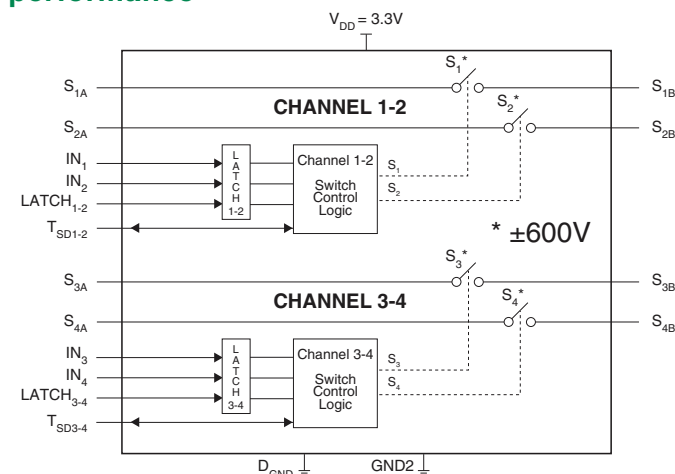
- Switch voltage up to 600V
- 110dB switch-to-switch isolation at 5kHz
- Flexible switch configurations
- Smart logic for power-up/hot-plug state control
- **3.3V operation** with very low power consumption
- Switch current limiting and thermal shutdown protect against fault conditions
- TTL logic-level 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



CPC7524



CPC7514: 320V Quad High Voltage Isolated Analog Switch Array

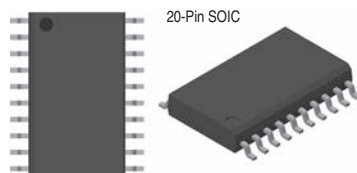
- Provides single-ended or differential access to high voltage networks
- Self-biasing - no external high-voltage supplies required

Features:

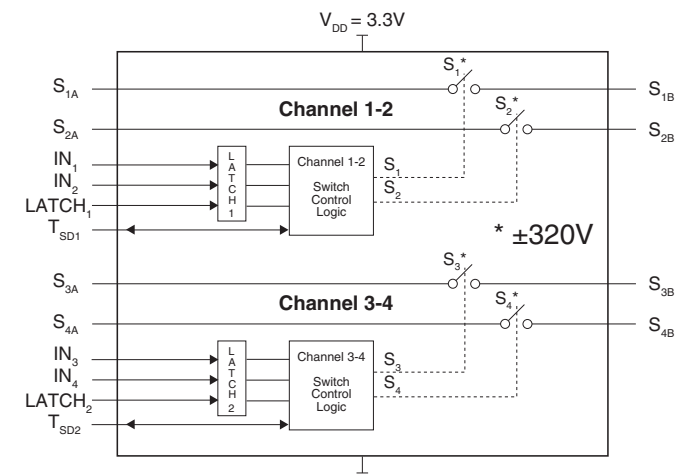
- Low, matched R_{ON}
- Switch voltage up to $\pm 320V$
- 320V logic-input-to-switch-output isolation
- 110dB switch-to-switch isolation at 5kHz
- Flexible switch configurations
- Smart logic for power-up/hot-plug state control
- **3.3V operation** with very low power consumption
- Switch current limiting 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)



CPC7514



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

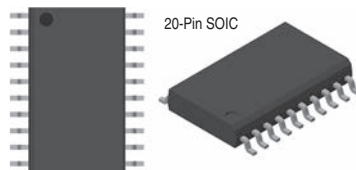
- Provides single-ended or differential access to high voltage networks
- Self-biasing: no external high-voltage supplies required

Features:

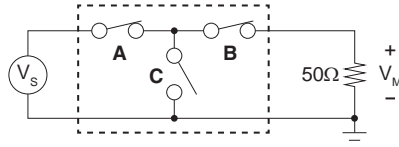
- Low, matched R_{ON}
- Guaranteed break-before-make (BBM)
- Switch voltage up to $\pm 320V$
- 60dB off-isolation at 1MHz
- Smart logic for power-up/hot-plug state control
- 5V operation with very low power consumption
- Thermal shutdown protects against fault conditions
- Latched TTL logic level inputs

Applications:

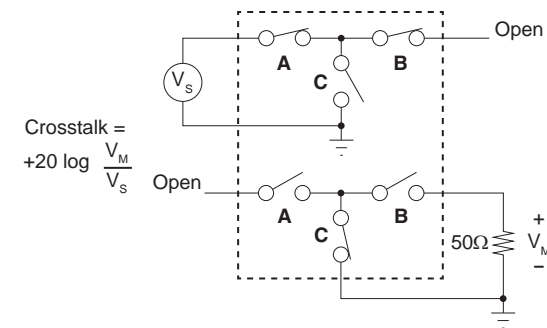
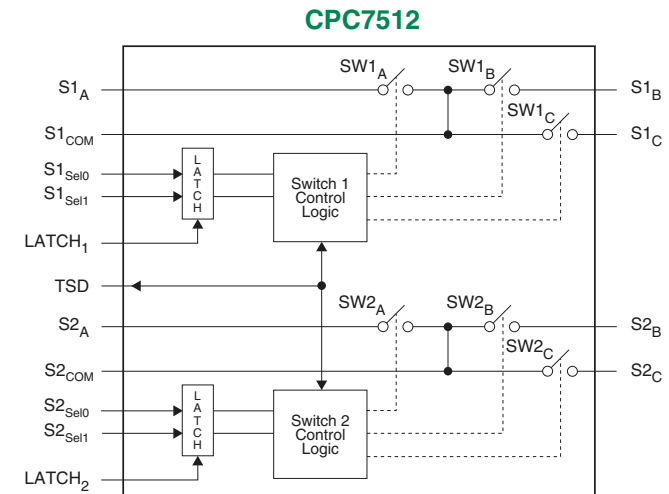
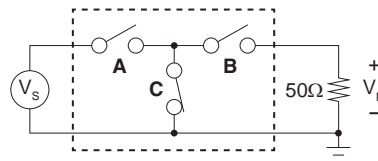
- Instrumentation
- Industrial controls and monitoring
- Multiplexed ultrasonic transducer switching
- Automatic test equipment (ATE)
- Battery monitoring and charging



$$\text{Insertion Loss} = +20 \log \frac{V_S}{V_M}$$

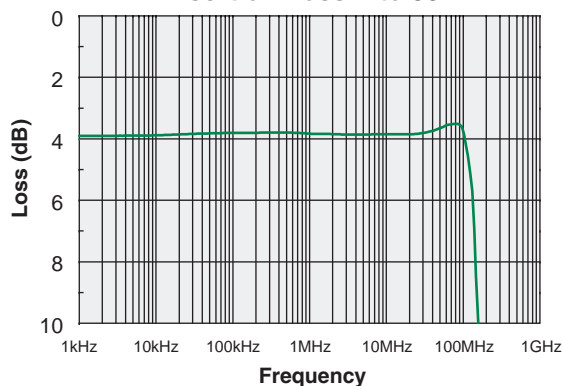


$$\text{Open Circuit} = +20 \log \frac{V_M}{V_S}$$

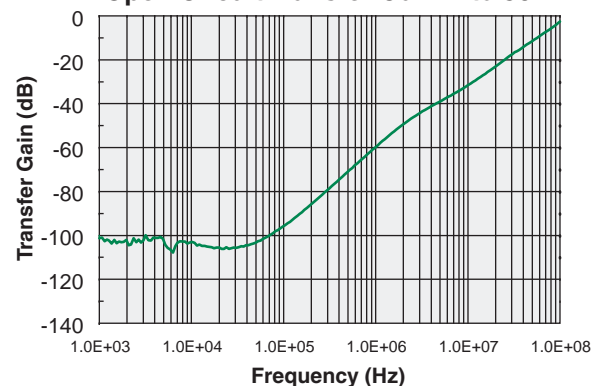


$$\text{Crosstalk} = +20 \log \frac{V_M}{V_S}$$

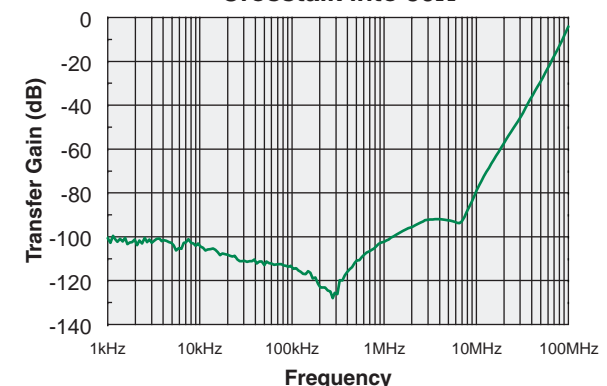
Insertion Loss Into 50Ω



Open Circuit Transfer Gain into 50Ω



Crosstalk into 50Ω



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

High Speed Digital Optical Isolators

• OPTICALLY ISOLATED I²C BUS REPEATERS: CPC5902 & CPC5903

- 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
- No internal clock - low EM & RF generation
- 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
- Immune to external EMI & RF emissions
- High voltage isolation

CPC5903 Features:

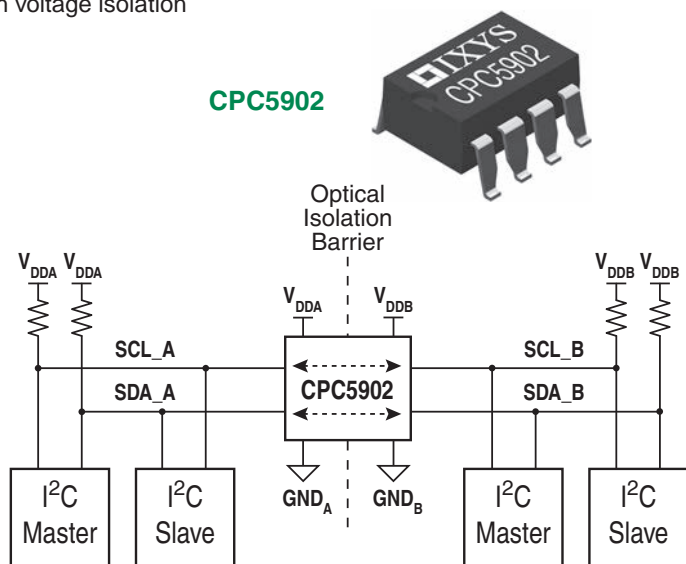
- Bidirectionally buffers SDA I²C signal
- Side A extends and isolates I²C interfaces
- Standard-mode and fast-mode I²C
- Side B fast-mode compliant: $V_{DDB} > 4.5V$
- Operates on 2.7V to 5.5V
- No internal clock - low EM & RF generation
- Voltage level translation
- Slew-limited drivers reduce EMI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

Applications:

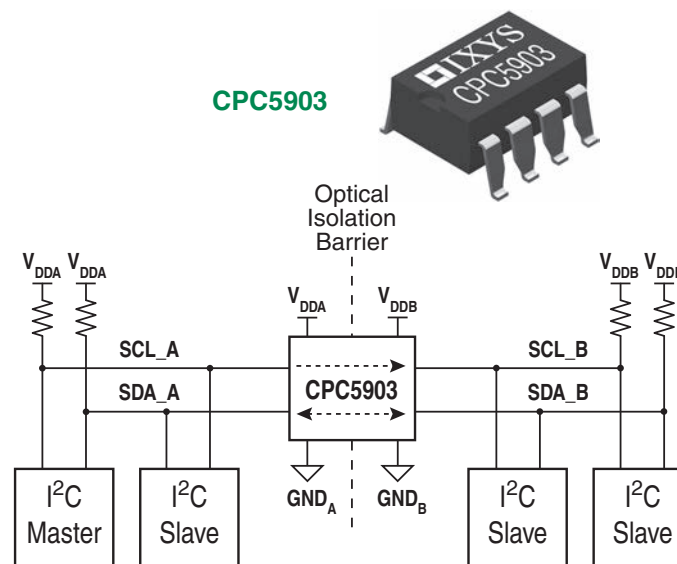
- Power-over-Ethernet (POE)
- I²C bus length extender
- Isolated control and signal monitoring
- Power supply high-side interface
- I²C logic level translation

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

CPC5902



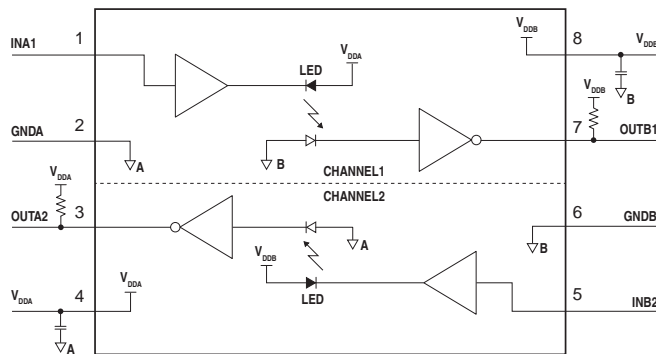
CPC5903



• SINGLE-CHANNEL EACH DIRECTION DIGITAL OPTICAL ISOLATOR: CPC5001

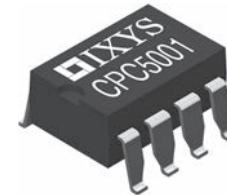
- Logic level translation for levels as low as 2.7V or as high as 5.5V
- Passes DC signals - no refresh clock needed

CPC5001



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
- 5 Mbaud 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:

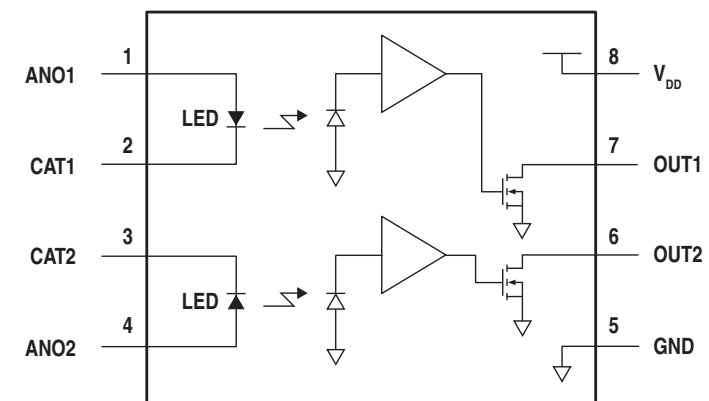
- Dual optics isolate two signals
- 10 Mbaud data rate
- Operates over 2.7V < V_{DD} < 5.5V
- Power down to Hi-Z does not load outputs
- Low-power CMOS reduces supply current
- LED drive current only 1.5mA
- High speed: 10Mbaud typical

Applications:

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



CPC5002



OPTOCOUPLEDERS

• SINGLE & DUAL OPTOCOUPLEDERS

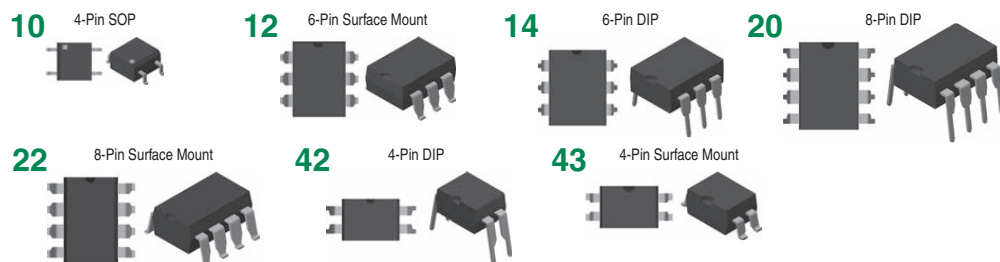
- Single-transistor output or Darlington transistor output for higher current gain
- Single-LED for unidirectional input signal or dual-LED input for bidirectional input signal
- Input-to-output isolation: 1500V_{rms}, 3750V_{rms}, or 5000V_{rms}

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

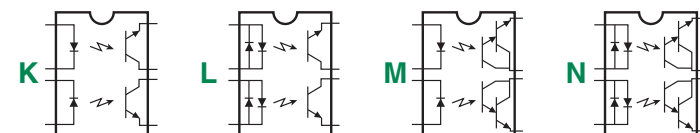
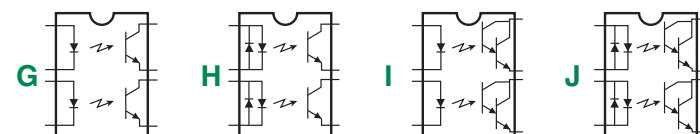
Configurations



4-Pin Package



6-Pin Package



8-Pin Package

• LINEAR OPTOCOUPLEDERS

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

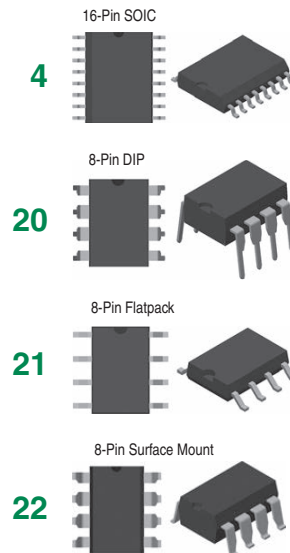
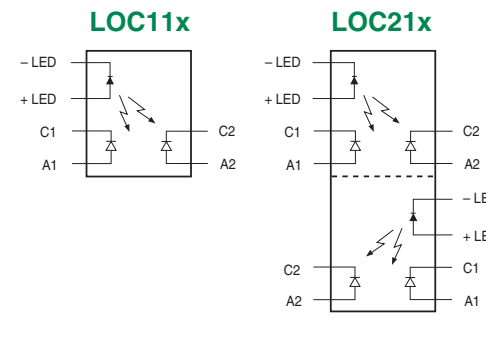
Features:

- 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

Applications:

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

Part Number	Servo Gain $K_1 = I_1 / I_F$ (Min - Max)	Forward Gain $K_2 = I_2 / I_F$ (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:

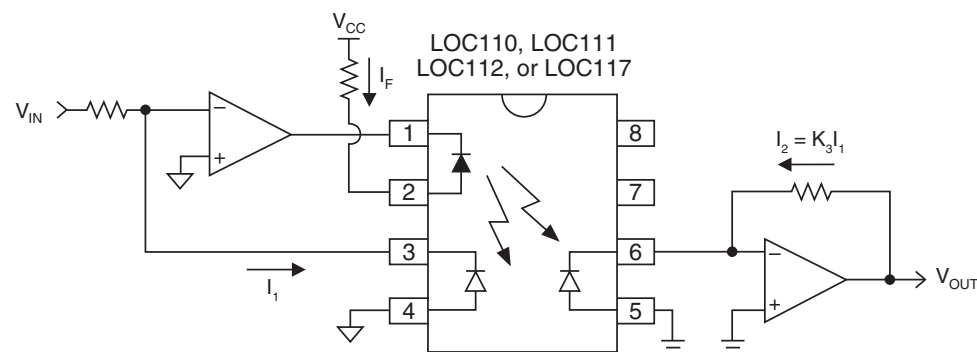
Photoconductive Mode:

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

Photovoltaic Mode:

- 14-bit linearity
- 40kHz bandwidth

Isolation Amplifier (Photovoltaic Mode)



LIGHTING & DISPLAY PRODUCTS

• HIGH VOLTAGE LED DRIVERS

IX9907: High Voltage, Dimmable LED Driver with PFC Control

- Optimized for phase-cut dimmable, off-line LED applications
- Multiple safety features ensure full system protection

Features:

- Internal 650V, 2Ω power MOSFET
- Single stage, primary control with PFC and dimming features
- >90% efficiency
- >98% power factor
- Wide operating voltage range
- Digital soft start
- Foldback correction and cycle-by-cycle peak current control
- Output over-current and over-voltage protection
- Over-temperature protection
- Under-voltage lockout



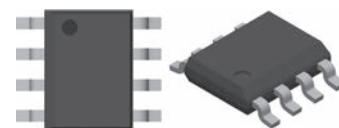
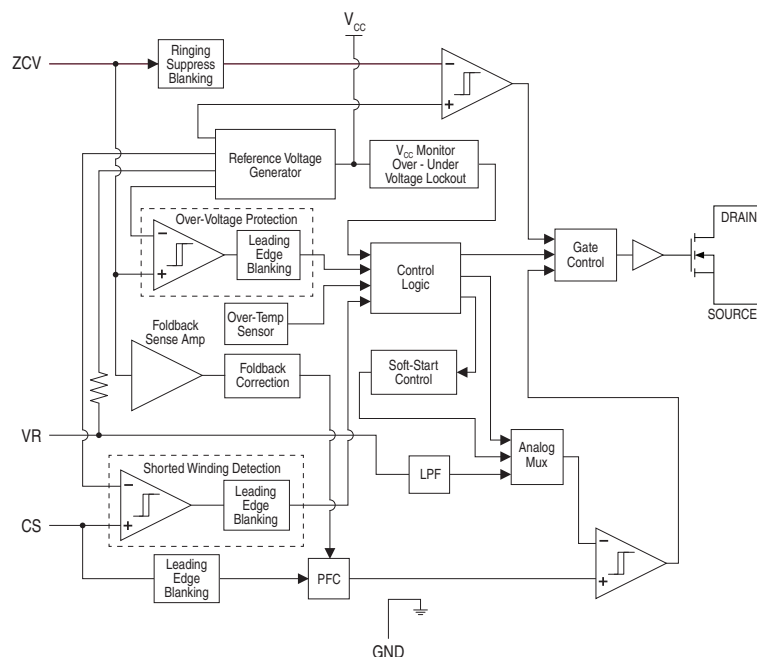
MXHV9910: High Voltage, Off-Line LED Driver

- 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

IX9907
Block Diagram



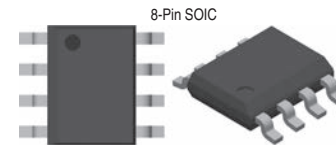
IX9907, MXHV9910

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



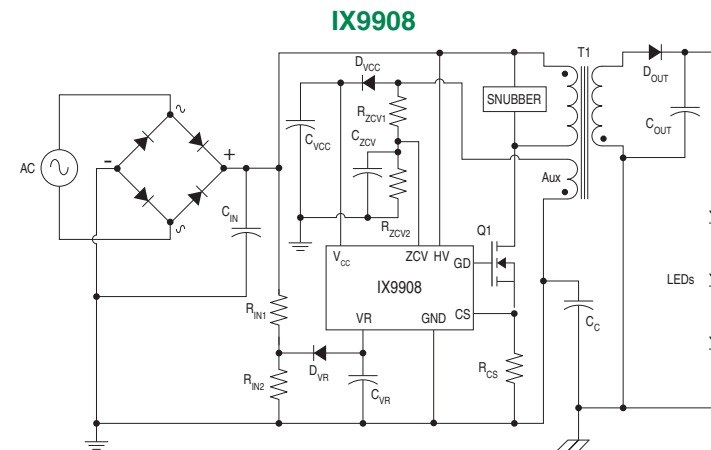
IX9908, CPC9909

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

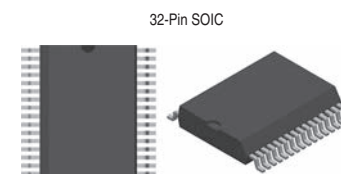


TELECOMMUNICATIONS PRODUCTS

• 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 for information on codec reference designs that offer programmable AC termination impedance for global applications. LITELINK complies with international PSTN agency requirements.

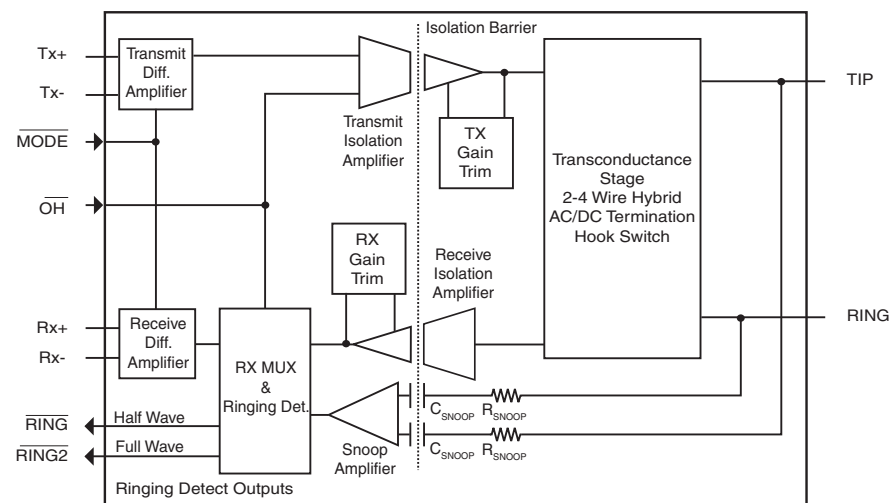
Features:

- 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

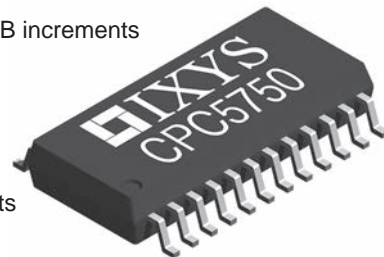
CPC5622



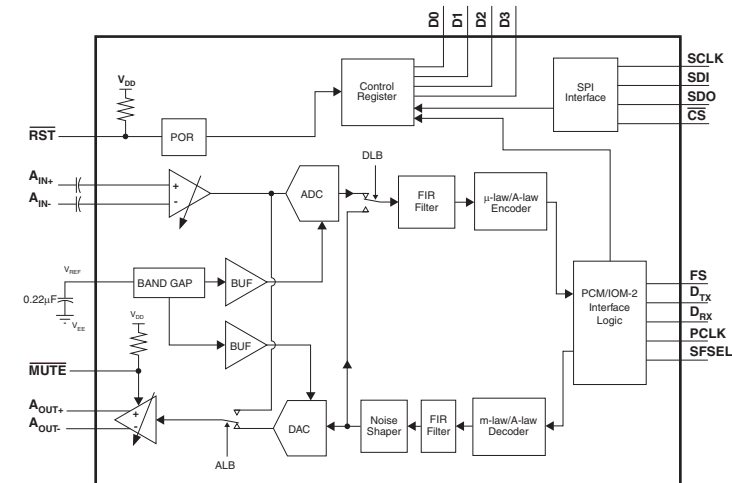
• SINGLE-CHANNEL VOICE-BAND CODEC: CPC5750

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 2.8V to 5.5V supply

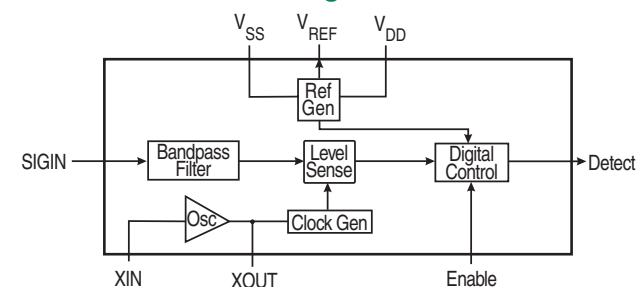
Features:

- Receive common call progress tones
- The M-980-02 operates with a single 2.8-5.5 volt supply
- Linear input (detector)
- Inexpensive band detector with wide dynamic range (>38dB)
- Low power consumption

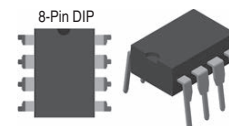
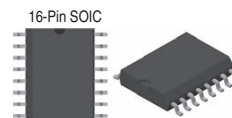
Applications:

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

M-980-02: Call Progress Tone Detector



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



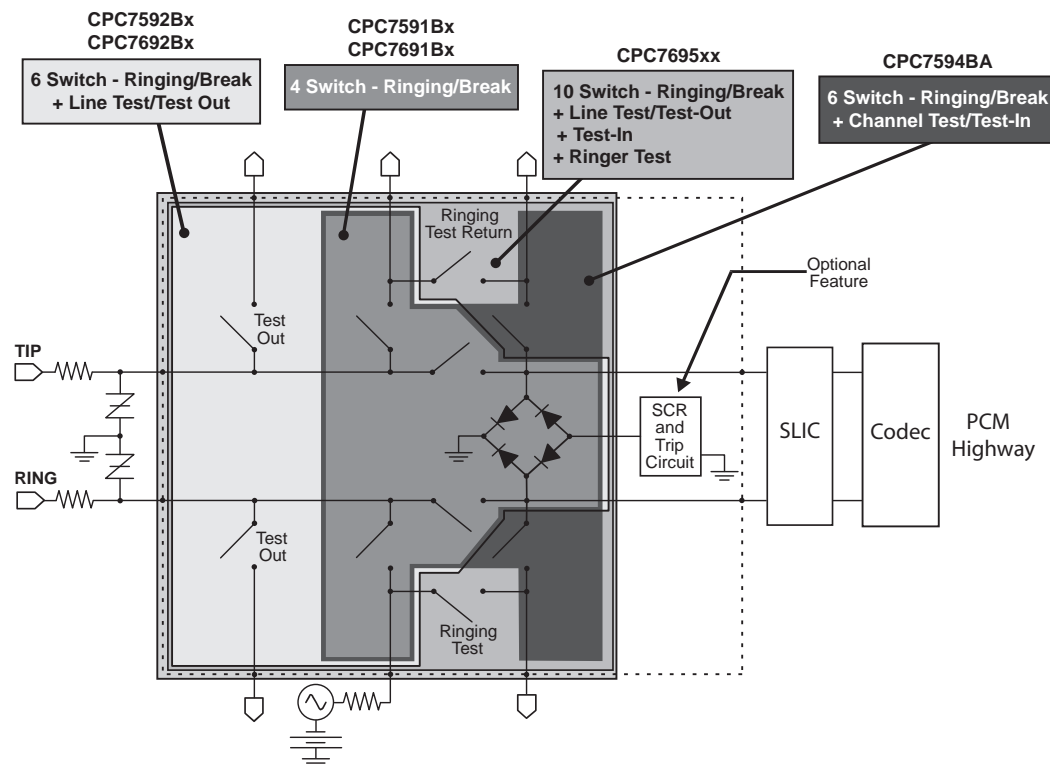
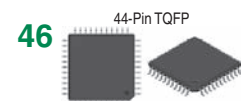
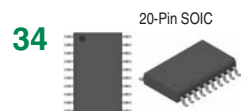
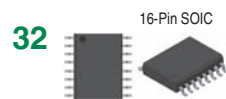
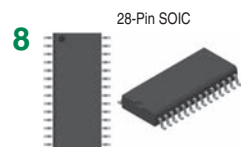
• LINE CARD ACCESS SWITCHES (LCAS)

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

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	Protection Features				Logic States	Package Type
		# Switches	Break	Ringing	Test Out	Test In	Ringing Test		Current Limit	Diode Bridge	Protection SCR	Minimum Hold Current (mA)		
CPC7691BA	•	4	•	•				•	•	•	•	110	3	32
CPC7691BB	•	4	•	•				•	•	•			3	32
CPC7692BA	•	6	•	•	•			•	•	•	•	110	4	32
CPC7692BC	•	6	•	•	•			•	•	•	•	110	5	32
CPC7695xA	•	10	•	•	•	•	•	•	•	•	•	110	7	8, 34
CPC7695xB	•	10	•	•	•	•	•	•	•	•			7	8, 34
CPC7695xC	•	10	•	•	•	•	•	•	•	•	•	110	8	8, 34
CPC7591BA		4	•	•				•	•	•	•	110	3	32
CPC7591BB		4	•	•				•	•	•			3	32
CPC7592BC		6	•	•	•			•	•	•	•	110	5	32

• LCAS FOR RINGING SLIC: CPC7508

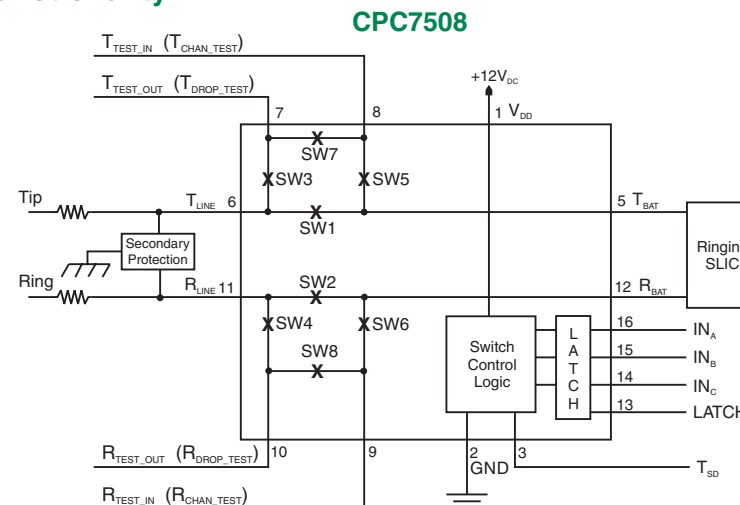
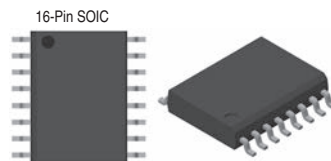
- Next generation LCAS device used with ringing SLICs
- Replaces the two 2-Form-C electromechanical test relays used in fiber-to-the-home and optical network deployments
- Provides TIP and RING line break, drop test, and channel test functionality
- Requires only a single +12V supply

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:

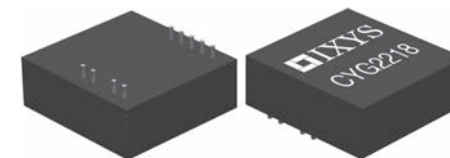
- 28.8kbps
- Optional caller ID and loop current sense
- Ringing detection
- Low power hook switch
- Surge protection
- Gyrator circuitry
- Meets most regulatory agency requirements

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



• DC TERMINATION ICs (xDSL, ISDN)

CPC1465: SHDSL/ISDN

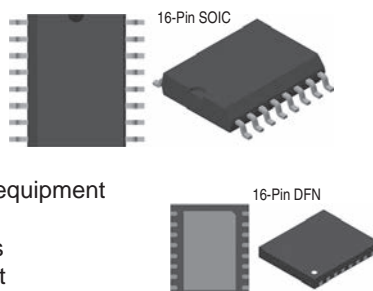
- Polarity-insensitive DC termination for wetting (sealing) current on the CPE side
- Conforms to ITU-T G.991.2 to eliminate corrosion on G.SHDSL/ISDN lines
- Well controlled turn-on and turn-off minimizes injecting impulse noise into the G.SHDSL channel

Features:

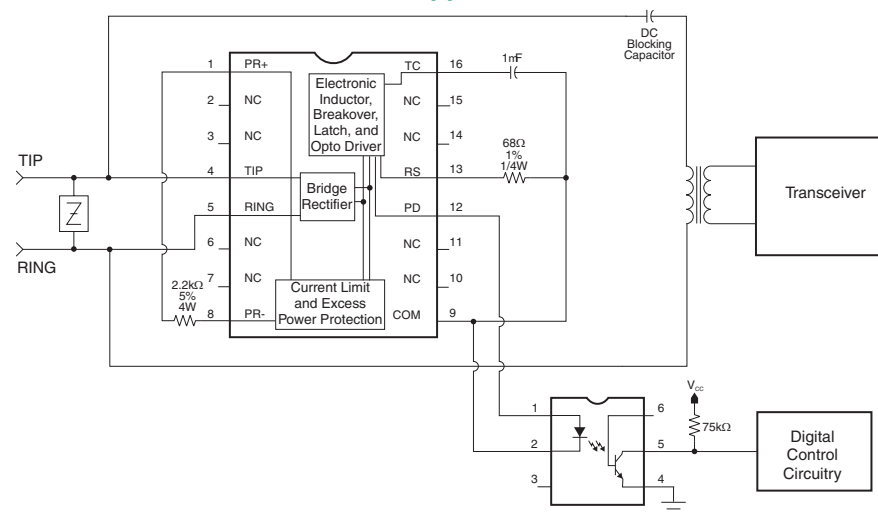
- Integrated bridge rectifier for polarity correction
- Uses inexpensive optocoupler for DC signaling
- Electronic inductor, breakover, and latch circuits
- Current limiting and excess power protection circuits
- ANSI SHDSL and ISDN compatible
- MLT and SARTS compatible
- Excellent linearity (70dB typ.)

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

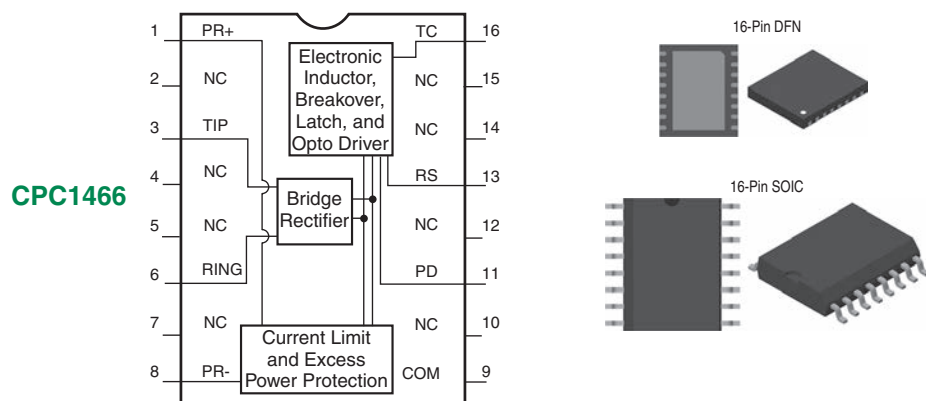


CPC1465 & Application Circuit



CPC1466: Broadband ADSL/VDSL

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



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

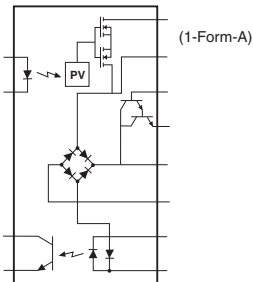
Applications:

- 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

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

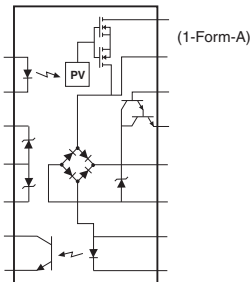
Multifunction devices allow designers to consolidate circuit functions into a single device, freeing up valuable board space and reducing component count. Designed specifically for the telecommunications industry, the Integrated Telecom Circuit (ITC) series is well suited for voice telephony and modem 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.

No Zener Protection
Bidirectional Opto-Input



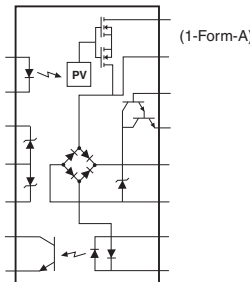
ITC117(L)

Zener Protection
Unidirectional Opto-Input



ITC135

Zener Protection
Bidirectional Opto-Input



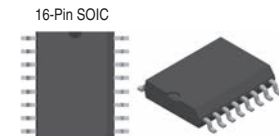
ITC137

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

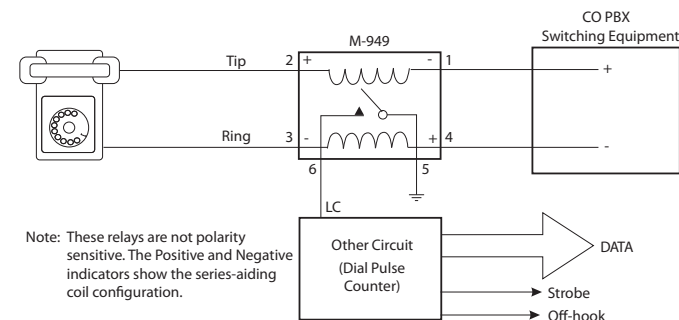
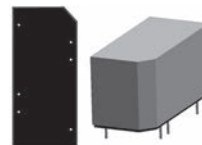


Part Number	Relay Parameters				Optocoupler Parameters				Isolation Voltage (V _{rms})	Package Type	Features
	Blocking Voltage (V _p)	Load Current (mA)	On Resistance (Ω)	Input Control Current (mA)	Breakdown Voltage (V)	Current Transfer Ratio (%)	Saturation Voltage (V)	Input Control Current (mA)			
ITC117P	350	120	15	5	20	33	0.5	6	3750	16-pin SOIC	Full-wave ringing detect
ITC117PL	350	120	20	5	20	33	0.5	6	3750	16-pin SOIC	Full-wave ringing detect, current limiting
ITC135P	350	120	15	5	20	33	0.5	6	3750	16-pin SOIC	Half-wave ringing detect
ITC137P	350	120	15	5	20	33	0.5	6	3750	16-pin SOIC	Full-wave ringing detect

• 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



VOLTAGE MONITORING & SENSING ICs

• VOLTAGE MONITORING DEVICES

CPC5712

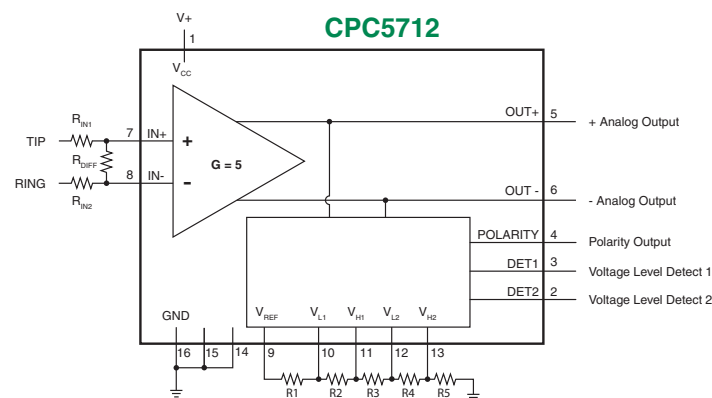
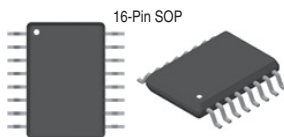
- Special-purpose “Voltage Monitor with Detectors” integrated circuit used in high voltage telephony applications
- Derives two voltage level detects, polarity information, and a scaled, linear representation of the phone line voltages
- Non-telephony applications include instrumentation and industrial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

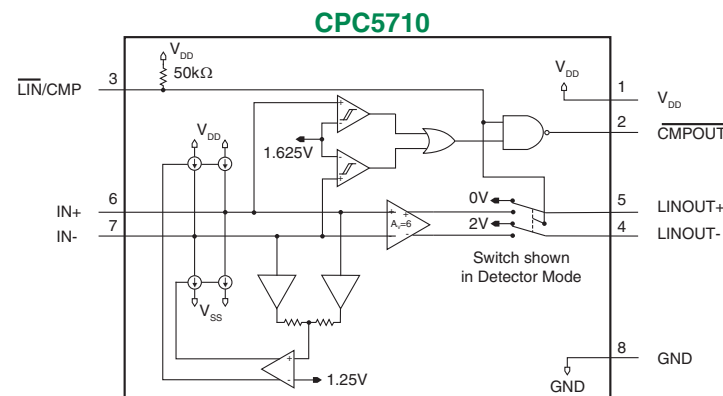
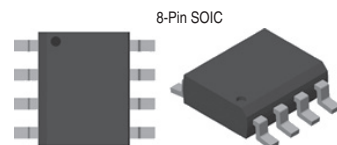
- Telephone line monitor circuit provides linear representation of phone line signal and a ringing detect signal
- Ringing detect signal is set by external resistor network

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, virtually undetectable in use
- High differential input impedance, very low common-mode input impedance
- Fixed gain, 3.3V or 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



• LOW VOLTAGE ERROR AMPLIFIER WITH A HIGH VOLTAGE DARLINGTON TRANSISTOR: IX9915

The IX9915 integrates an error amplifier with a precision reference and a 350V Darlington transistor in a single package. The error amplifier can be operated from 1.3V to 12.5V over the operational temperature range. The breakdown voltage of the Darlington transistor is 350V.

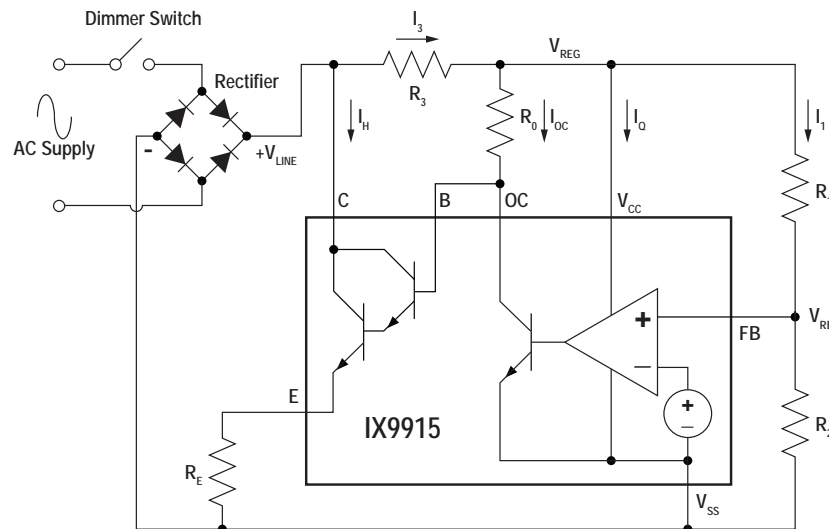
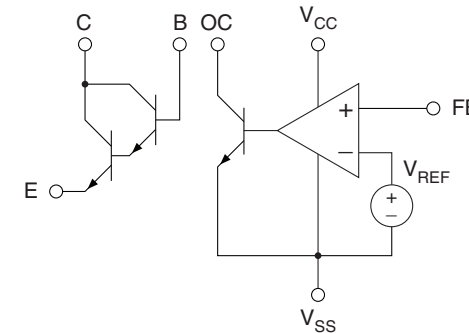
The integrated combination of a 4-terminal 431 type shunt regulator with a high voltage Darlington transistor is ideal for use in LED lamp bleeder control circuits.

Features:

- Precision reference, error amplifier, and a high voltage Darlington transistor in a single package
- $1.299V \pm 1\%$ reference @ $25^{\circ}C$ ($\pm 1.5\%$ @ $-40^{\circ}C$ to $85^{\circ}C$)
- Error amplifier supply voltage range: 1.3V to 12.5V over temperature
- Breakdown voltage of Darlington transistor: 350V

Applications:

- LED lamps
- Low voltage power supply feedback
- AC-to-DC off-line power supplies
- DC-to-DC converters



IX9915 Application Diagram

The high voltage Darlington transistor will bleed the current when V_{LINE} is lower than the predetermined voltage. The 4-terminal 431 type shunt regulator is used to monitor V_{LINE} voltage and control the Darlington transistor bleeding the current (ON) or not (OFF). When V_{LINE} reaches the predetermined voltage, the shunt regulator starts to regulate to drive V_{OC} going low, and turns off the Darlington transistor to make sure this bleeder circuitry only burns a little power at the higher V_{LINE} voltage. Maximum bleeding current I_H can be controlled by properly choosing R_E and V_{REG} .

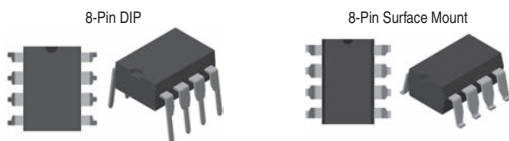
• OPTICALLY ISOLATED ERROR AMPLIFIERS

Features:

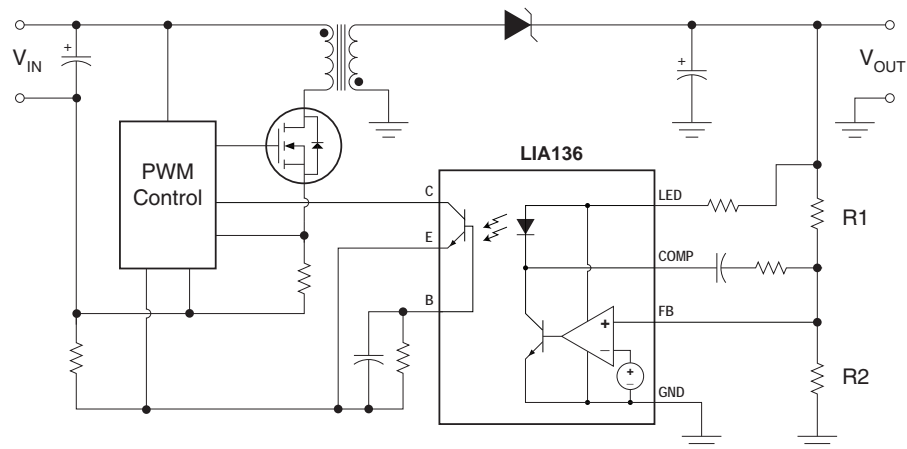
- Low voltage operation:
1.6V: LIA135 & LIA136
2.7V: LIA120 & LIA130
- Optocoupler, precision reference, and error amplifier in a single package
- LIA120: 70dB linearity typical

Application:

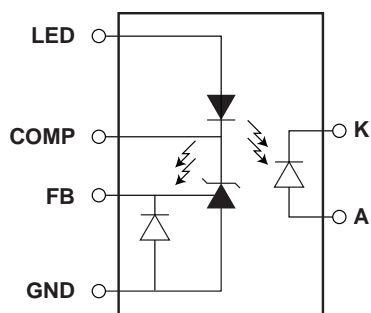
- SMPS feedback loops
- Power supply feedback



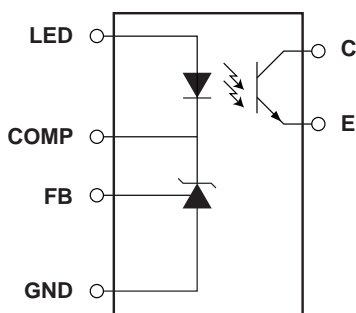
Optical Feedback for Ultra-Low-Voltage Power Supplies



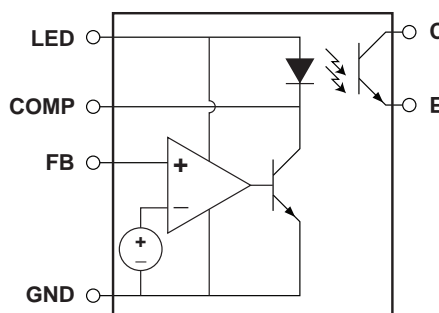
Part Number	Reference Voltage (V)	V _{REF} Tolerance			Isolation Voltage (V _{rms})	Package Type
		25°C (%)	-40°C to +85°C (%)	-40°C to +110°C (%)		
LIA120	1.240	1	2.5	-	3750	8-pin surface mount
LIA130	1.240	1	1.5	-	3750	8-pin DIP, 8-pin surface mount
LIA135	1.299	0.5	1	-	3750	8-pin DIP, 8-pin surface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



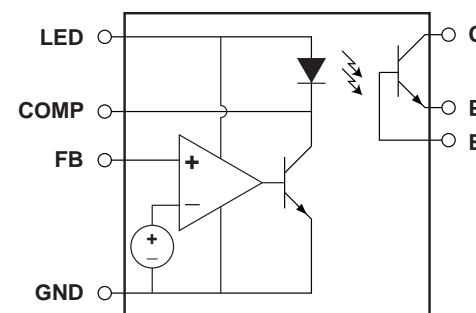
LIA120



LIA130



LIA135



LIA136

K = Cathode, A = Anode

C = Collector, E = Emitter, B = Base

LED = LED Anode, COMP = Compensation, FB = Feedback, GND = Ground

• RFID TAGS

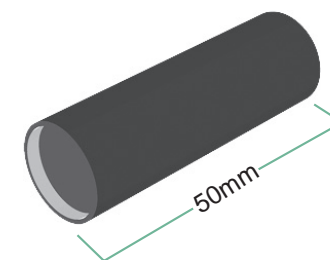
NCD1015ZP: Low Frequency, Half-Duplex, Robust 50mm Transponder

- 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	• 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:

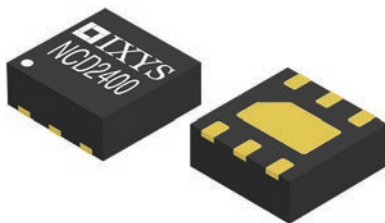
- Operating frequency range of DC to 150MHz
- 512-state digital programmable capacitor
- Series and shunt configurations supported:
 $C_{\text{shunt}} = 12.5\text{pF to } 194\text{pF}$ (15.6:1 tuning ratio) in discrete 355fF steps
 $C_{\text{series}} = 1.7\text{pF to } 194\text{pF}$ in discrete 376fF steps
- Operation at 105°C
- 2-wire (I²C compatible) serial interface
- EEPROM non-volatile memory
- Wide power supply range (2.5 to 5.5V)
- 2 x 2 x 0.65 mm 6-pin DFN package, MSL 1

Applications:

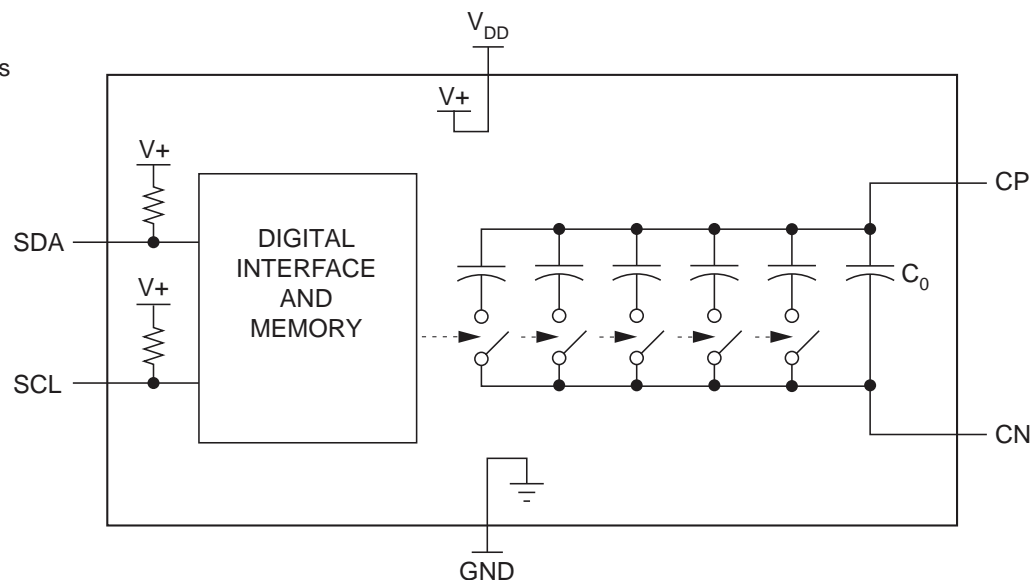
- OCXOs
- VCXOs
- Crystal oscillators
- Tunable RF stages
- RFID tags
- Industrial wireless control
- Capacitor sensor trimming



DFN package: 2mm x 2mm



NCD2400M Functional Block Diagram



• 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.

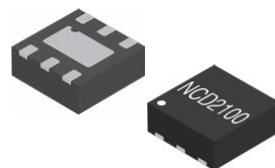
Features:

- Operating frequency range 200kHz to 250MHz (contact the factory for operation at higher frequencies)
- 1024 programmable capacitance values
- Capacitance range 6.6pF to 37.553pF
- Very small CDAC3 capacitance step size: 63fF
- Operating temperature range: -40°C to +85°C
- Operating supply voltage: 2.5V to 5.5V
- Device size: 2mm x 2mm (DFN-6), 2.9mm x 2.8mm (TSOT-6)

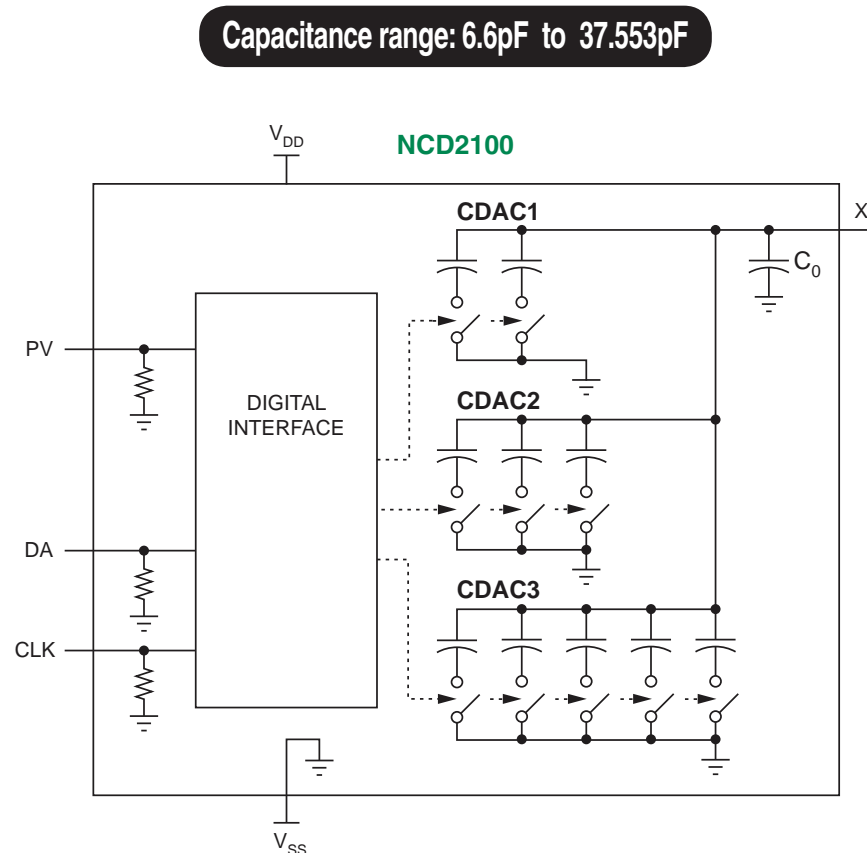
Applications:

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

DFN package: 2mm x 2mm



TSOT package: 2.8mm x 2.9mm



HALL EFFECT PRODUCTS

• HALL-EFFECT SWITCH: MX887D

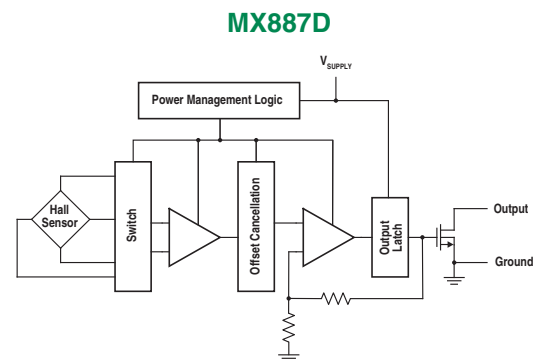
The **MX887D** integrated Hall-Effect switch targets the requirements of low-power portable devices with battery operating voltages from 2.5V to 5.5V. On-chip power management circuitry reduces the effective average current to just 5µA at 3V supply voltage.

The device turns on when either a north or south magnetic pole is applied, and turns off when the magnetic field is removed.

MX887D is an ideal reed relay replacement, 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



NOTES:



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

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ASIA

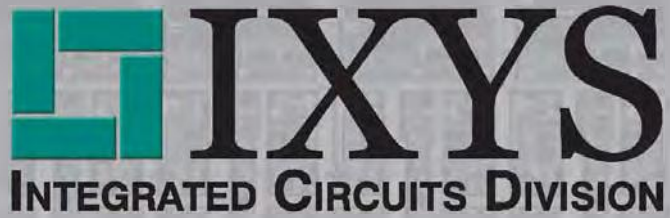
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Semiconductor

Product Catalog

IXYS Integrated Circuits Division

In April, 2012, Clare, Inc., officially became IXYS Integrated Circuits Division.

IXYS Integrated Circuits Division is a wholly owned subsidiary of IXYS Corporation. Conveniently located close to 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 products.



Clare, Inc., founded by Carl P. Clare in 1937 as C. P. Clare & Company, designed and manufactured electromechanical relays (EMR) for the rapidly growing power and telephony markets of the time. C. P. Clare & Company products found their way into aviation and communications products from the very beginning of World War II to the end. Continuously operating under various names from 1937 until the present, C. P. Clare & Company, as Clare, Inc., was purchased by IXYS Corporation in 2002, and is now known as IXYS Integrated Circuits Division.

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.

- **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
- **High Voltage IGBT and MOSFET Drivers:** High speed, high voltage IGBT and MOSFET drivers, some of which are AEC Q100 qualified
- **Solid State Relays:** one of the industry's broadest lines of optically isolated SSRs, available in a wide selection of configurations, blocking voltages, and load currents
- **High Voltage ICs:** high voltage 8-channel and 16-channel Analog Switches for the medical and imaging markets, high voltage LED Drivers, and others
- **Power market:** Power Solid State Relays (SSR); SCR-based AC Power Switches; and N-Channel, Depletion-Mode, Field Effect Transistors (FET)
- **Illumination:** high voltage, grid-powered, high-brightness LED Drivers
- **Telephony:** a broad range of products that includes Line Card Access Switch (LCAS) products, LITELINK® Silicon Data Access Arrangement (DAA), phone-line interface and monitoring devices, DC Termination devices for xDSL and ISDN applications, Cybergate™ DAA, and others
- **Portable reader devices:** display drivers for today's popular electronic-paper readers

Hi-Reliability Program

Building on 20 years of experience supplying Hi-Rel parts to the aerospace industry, IXYS Integrated Circuits Division now offers a line of high-reliability Solid State Relays and Optocouplers that feature full product traceability, extremely low PPM failure rates, guaranteed operation from -40°C to +85°C (and up to 105°C upon request), 100% burn-in (HTRB) 48 hours minimum, 100% post burn-in electrical tests at room temperature and at 85°C, thermal cycle (by sample or 100% for 20 cycles).

Any IXYS Integrated Circuits Division Solid State Relay (SSR) or Optocoupler offered in this catalog can be provided as a Hi-Rel device based on extensive additional environmental stressing and screening performed on standard commercial parts. Please see www.ixysic.com/Products/HiRelProgram.htm for full details.

Custom High Voltage Semiconductor Design Services

IXYS Integrated Circuits Division offers design services to the industry for the custom development of high voltage semiconductor devices. The company's wafer fabrication facility features a 600V BCDMOS process on a bonded-wafer, silicon-on-insulator, trench-isolated technology for IC development. Monolithic silicon with high voltage vertical DMOSFETs along with CMOS logic and bipolar transistors from IXYS Integrated Circuits Division address many applications requiring a high voltage interface. In addition, the company's techniques for optical isolation for relays and signal processing offer high voltage isolation between the load side and the system controller.

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Solid State Relays

The OptoMOS® line of Solid State Relays (SSR) uses discrete semiconductor components and patented OptoMOS architecture to provide fast, reliable, bounce-free switching in a compact design. From one of the world's smallest single pole, high voltage, 4-pin relays to multi-pole and multifunction devices, OptoMOS products are an ideal replacement for larger reed and electromechanical relays. Compared to older electromagnetic technologies, OptoMOS relays offer significantly lower drive current, smaller package size, no susceptibility to magnetic interference, and solid state reliability. All of these are key requirements for the design of today's complex low-power, multichannel products.

IXYS Integrated Circuits Division Solid State Relays are provided in three main types: Unidirectional (UNI), Bidirectional (BI), and Bidirectional Plus (BI+). A UNI relay conducts load current in only one direction, a BI relay conducts load current in both directions, and a BI+ relay has a provision for connecting the output MOSFETs in such a way that the relay in UNI configuration conducts significantly more load current than when it is wired in BI configuration (see the diagram on this page). The accompanying tables reference these three types for all devices listed.

These three main types are available in a variety of configurations: normally open (1-Form-A), normally closed (1-Form-B), dual 1-Form-A, dual 1-Form-B, 1-Form-A and 1-Form-B in the same package, 1-Form-A and 1-Form-B voltage-controlled relays, 2-Form-A, and 1-Form-C.

Drawings of all the available packages are shown below. For exact physical dimensions of any package, download the data sheet for the product that you are interested in from the web site page, a link to which is referenced in the note at the bottom of the page. The packages are referred to by number in the accompanying tables.

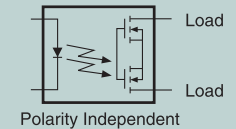
Features:

- Low Drive Current
- High Reliability
- No EMI/RFI Generation
- Arc-Free with No Snubbing Circuits
- AC or DC Switching
- Current Limiting (Available)
- FCC Compatible
- Low Off-State Leakage

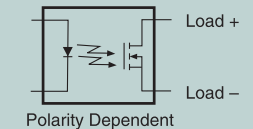
Applications:

- Telecommunications / Datacommunications
- Instrumentation
- Multiplexers
- Data Acquisition / Electronic Switching
- I/O Subsystems
- Meters (Watt-Hour, Water, Gas)
- Medical Equipment (Patient / Equipment Isolation)
- Security
- Aerospace
- Industrial Controls

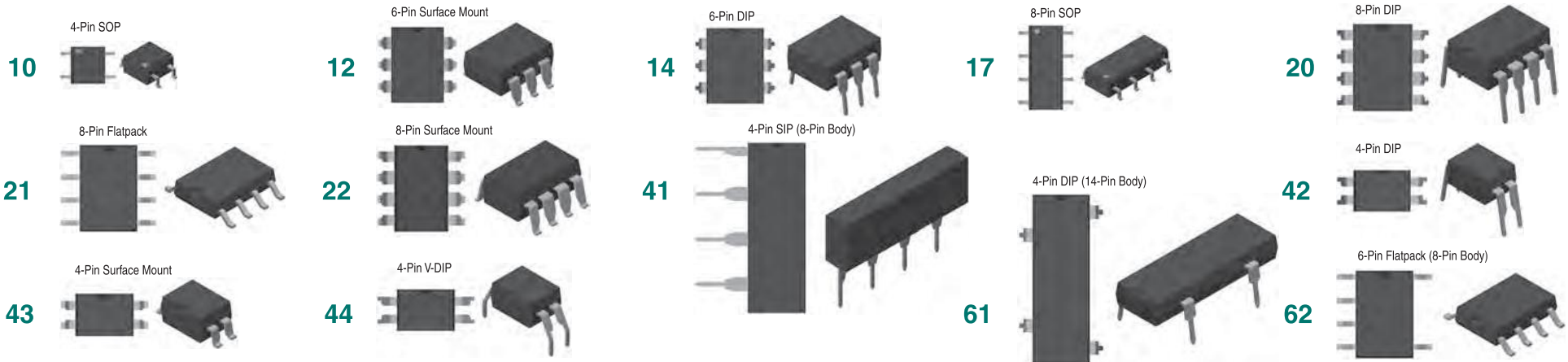
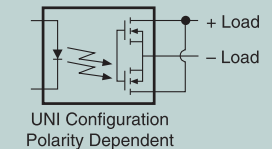
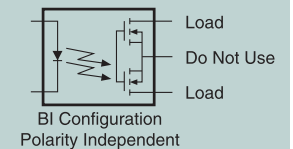
Bidirectional



Unidirectional

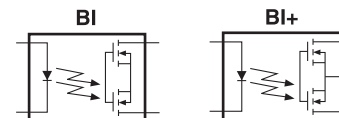


Bidirectional Plus



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

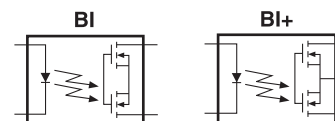
1-Form-A Relays: Single-Pole, Normally Open



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	Features and Comments
CPC1006N	BI	60	75	10	0.5	10 / 10	1500	1	10	Low I _F , EN50130-4
CPC1008N	BI	100	150	8	2	2 / 0.5	1500	1	10	
CPC1009N	BI	100	150	8	2	2 / 0.5	1500	0.02	10	Very Low Off-State I _{LEAK} = 20nA
CPC1014N	BI	60	400	2	2	2 / 1	1500	1	10	EN50130-4
CPC1016N	BI	100	100	16	2	2 / 0.5	1500	1	10	
CPC1017N	BI	60	100	16	1	10 / 10	1500	1	10	Low I _F , EN50130-4
CPC1018N	BI	60	600	0.8	1	3 / 2	1500	1	10	Low I _F , EN50130-4
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/IEC60950-1 Supplementary Isolation Voltage (0.4mm Distance Through Isolation)
CPC1230N	BI	350	120	30	2	2 / 1	1500	1	10	EN/IEC60950-1 Supplementary Isolation Voltage (0.4mm Distance Through Isolation)
CPC1317	BI	70	150	16	1	2.5 / 2.5	3750	1	21	EN50130-4 (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 , EN50130-4 (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 Limited with Thermal Shutdown - See Also Page 14
CPC1540	BI+	350	120	25	2	2 / 2	3750	1	12, 14	Current Limited with Thermal Shutdown - See Also Page 14
CPC1560	BI+	60	300	5.6	1.1	0.1 / 0.4	3750	1	20, 22	Current Limited with Thermal Shutdown - See Also Page 14
CPC1563	BI+	600	120	35	2	2 / 2	3750	1	12, 14	Current Limited with Thermal Shutdown - See Also Page 14
CPC1593	BI+	600	120	35	2	2 / 2	3750	1	12, 14	Current Limited, Thermal Shutdown, Over-Voltage Protection - See Also Page 15
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
LCA126	BI+	250	170	15	5	5 / 5	3750	1	12, 14	
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

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

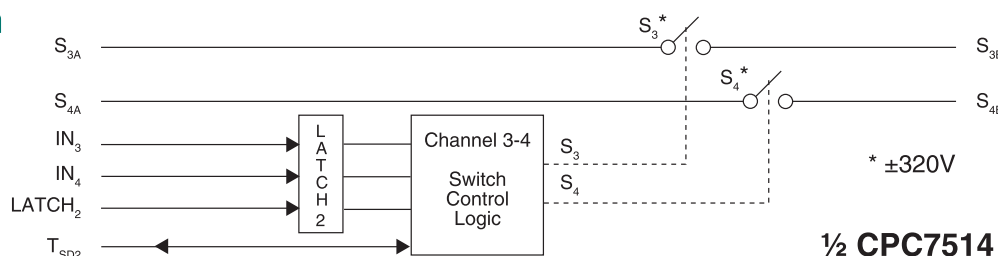
1-Form-A Relays: Single-Pole, Normally Open (Continued)



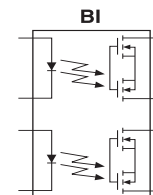
Part Number	Relay Type	Blocking Voltage (V _p)	Load Current (mA)	On Resistance (Ω)	Input Control Current (mA)	Switching Speeds t _{on} / t _{off} (ms)	Isolation Voltage (V _{rms})	Off-State Leakage (μA)	Package Type	Features and Comments
LCA129	BI+	250	170	20	2	8 / 8	3750	1	12, 14	
LCA182	BI+	350	120	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	1	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 (7mm Output Pin 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: Quad Single-Pole, Normally Open

See Page 34 for full details. The CPC7514 Quad High Voltage Isolated Analog Switch Array provides the switching functionality of four independent 1-Form-A relays in a single small economical package. Designed to provide flexible single-ended or differential access to high voltage networks, up to 320V, the CPC7514 is configured as two sets of matched-pair switches. The CPC7514 is self-biasing, and requires no external power supply. Shown to the right is one 2-switch channel.



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



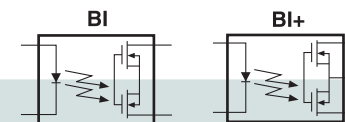
1-Form-A Relays: Dual Single-Pole, Normally Open

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	Features and Comments
CPC2014N	BI	60	400	2	2	2 / 1	1500	1	17	EN50130-4
CPC2017N	BI	60	120	16	1	3 / 3	1500	1	17	Low I _F , EN50130-4
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
LAA126	BI	250	170	15	5	5 / 5	3750	1	20, 22	
LAA126L	BI	250	170	20	5	5 / 5	3750	1	20, 22	Current Limiting
LAA127	BI	250	200	10	5	5 / 5	3750	1	20, 21, 22	
LAA127L	BI	250	170	10	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

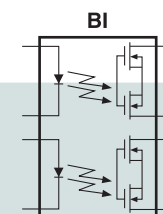
1-Form-B Relays: Single-Pole, Normally Closed

Part Number	Relay Type	Blocking Voltage	Load Current	On Resistance	Input Control Current	Switching Speeds	Isolation Voltage	Off-State Leakage	Package Type	Features and Comments
		(V _p)	(mA)	(Ω)	(mA)	t _{on} / t _{off} (ms)	(V _{rms})	(μA)		
CPC1106N	BI	60	75	10	0.5	10 / 10	1500	1	10	Low I _F , EN50130-4
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 , EN50130-4
CPC1125N	BI	400	100	35	2	2 / 2	1500	1	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/IEC60950-1 Supplementary Isolation Voltage (0.4mm Distance Through Isolation)
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	
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	



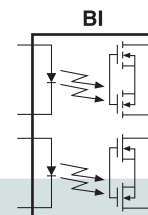
1-Form-B Relays: Dual Single-Pole, Normally Closed

Part Number	Relay Type	Blocking Voltage	Load Current	On Resistance	Input Control Current	Switching Speeds	Isolation Voltage	Off-State Leakage	Package Type	Features and Comments
		(V _p)	(mA)	(Ω)	(mA)	t _{on} / t _{off} (ms)	(V _{rms})	(μA)		
CPC2125N	BI	400	100	35	2	2 / 2	1500	1	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	



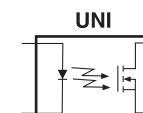
For data sheets, go to www.ixysic.com/Products/ProdList.htm

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



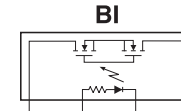
Part Number	Relay Type	Blocking Voltage (V _p)	Load Current (mA)	On Resistance (Ω)	Input Control Current (mA)	Switching Speeds t _{on} / t _{off} (ms)	Isolation Voltage (V _{rms})	Off-State Leakage (μA)	Package Type	Features and Comments
CPC2317N	BI	60	120	16	1	3 / 3	1500	1	17	Low I _F
CPC2330N	BI	350	120	30	2	3 / 3	1500	1	17	
LBA110	BI	350	120	35	2	3 / 3	3750	1	20, 21, 22	
LBA110L	BI	350	120	35	5	3 / 3	3750	1	20, 21, 22	Current Limiting
LBA120	BI	250	170	20	5	5 / 5	3750	1	20, 21, 22	
LBA120L	BI	250	170	20	5	5 / 5	3750	1	20, 22	Current Limiting
LBA126	BI	250	170	15	5	5 / 5	3750	1	20, 21, 22	
LBA126L	BI	250	150	20	5	5 / 5	3750	1	20, 22	Current Limiting
LBA127	BI	250	200	10	5	5 / 5	3750	1	20, 21, 22	
LBA127L	BI	250	150	15	5	5 / 5	3750	1	20, 22	Current Limiting
LBA710	BI	60	1000	0.6	2	5 / 5	3750	1	20, 22	High Load Current
LBA716	BI	60	1000	0.4	2	5 / 5	3750	1	20, 22	High Load Current
PBA150	BI	250	250	7	5	2.5 / 2.5	3750	1	20, 22	
XBA170	BI	350	100	50	2	5 / 5	3750	1	20, 21, 22	

1-Form-A Relays: Single-Pole, Normally Open, Unidirectional (DC-Only)



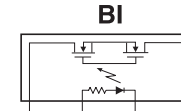
Part Number	Relay Type	Blocking Voltage (V _p)	Load Current (mA)	On Resistance (Ω)	Input Control Current (mA)	Switching Speeds t _{on} / t _{off} (ms)	Isolation Voltage (V _{rms})	Off-State Leakage (μA)	Package Type	Features and Comments
CPC1002N	UNI	60	700	0.55	2	5 / 2	1500	1	10	EN50130-4
CPC1004N	UNI	100	300	4	2	3 / 1	1500	1	10	Extended Operating Temperature Range: -40°C to +110°C

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



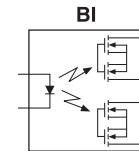
Part Number	Relay Type	Blocking Voltage (V _p)	Load Current (mA)	On Resistance (Ω)	Input Control Voltage (V)	Switching Speeds t _{on} / t _{off} (ms)	Isolation Voltage (V _{rms})	Off-State Leakage (μA)	Package Type	Features and Comments
CPC1215	BI	400	500	6	5 - 12	5 / 3	3750	1	61	Direct drop-in reed relay replacement
CPC1217	BI	60	200	16	5 - 12	5 / 5	2500	1	41	EN50130-4, Direct drop-in reed relay replacement
CPC1218	BI	60	600	1.1	5 - 12	5 / 5	2500	1	41	EN50130-4, Direct drop-in reed relay replacement

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



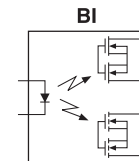
Part Number	Relay Type	Blocking Voltage (V _p)	Load Current (mA)	On Resistance (Ω)	Input Control Voltage (V)	Switching Speeds t _{on} / t _{off} (ms)	Isolation Voltage (V _{rms})	Off-State Leakage (μA)	Package Type	Features and Comments
CPC1219	BI	60	200	16	5 - 12	5 / 5	2500	1	41	EN50130-4, Direct drop-in reed relay replacement

2-Form-A Relays: Common Input, Dual-Pole, Normally Open



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	Features and Comments
LCA210	BI	350	85	35	8	3 / 3	3750	1	20, 22	
LCA210L	BI	350	100	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



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	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	

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

Multifunction SSR Products

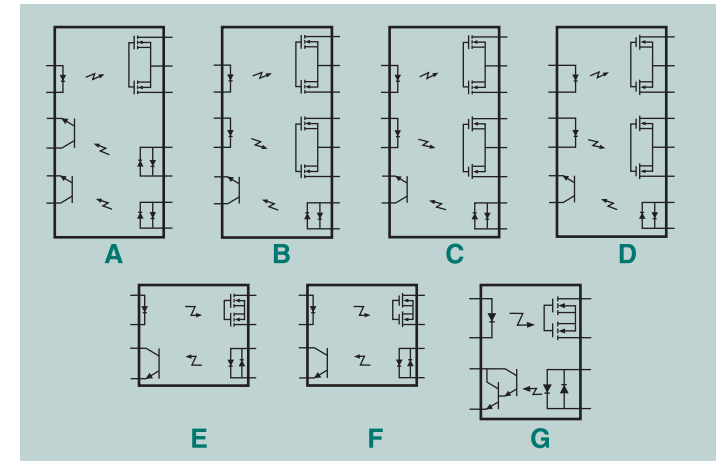
The OptoMOS line of Multifunction products combines optically isolated discrete component functions into a single package. These products mix and match solid state relays, optocouplers, and Darlington transistors to create highly functional circuits in a single, small package. Multifunction devices allow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

Features:

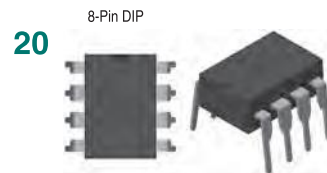
- 3750V_{rms} Input to Output Isolation
- Multiple Functionality in a Single Package
- Current Limiting (Part Numbers with "L" Suffix)
- Machine Insertable, Wave Solderable
- TTL and CMOS Compatible

Applications:

- Telecommunication / Datacommunication
- Instrumentation
- I/O Subsystems / Electronic Switching
- Medical Equipment (Patient / Equipment Isolation)
- Security
- Aerospace
- Industrial Controls



Part Number	Style	Relay Characteristics				Optocoupler Characteristics				Isolation Voltage	Package Type	Features and Comments
		Blocking Voltage	Current Handling	On Resistance	Input Control Current	Breakdown Voltage	Current Transfer Ratio	Saturation Voltage	Input Control Current			
		(V _p)	(mA)	(Ω)	(mA)	(V)	(%)	(V)	(mA)	(V _{rms})		
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
TS122	E	250	170	20	5	20	33	0.5	6	3750	20, 21, 22	One 1-Form-A Relay, One 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, 21, 22	One 1-Form-A Relay, One Optocoupler



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

Integrated Protection Solid State Relay Series

Current Limited SSRs with Thermal Management

These specialized OptoMOS relays are single-pole, normally open (1-Form-A) Solid State Relays, with an integrated current limit feature, that can replace electromechanical relays while enhancing the robustness of wireline-interface applications. They are constructed using a GaAlAs LED for actuation control and an integrated monolithic die for the switch output. The active current-limit circuitry in these relays also has a thermal management feature that provides excellent power cross immunity for improved survivability in harsh environments. These features greatly improve the robustness of end systems that use these devices, when compared to systems using relays without integrated current limit. These devices may be used in both unidirectional DC applications as well as bidirectional AC applications.

CPC1540 and CPC1563 incorporate an additional safety feature, voltage limiting, that quickly shuts the device down if a high voltage transient, >100V, occurs in the load while current limiting is in effect. These two devices are ideal for use in noisy environments where such transients can be expected.

Features:

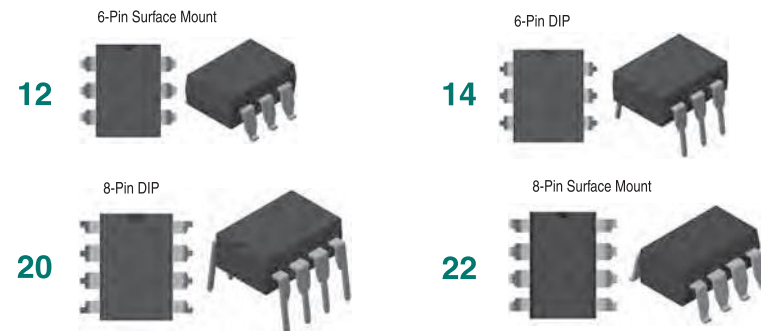
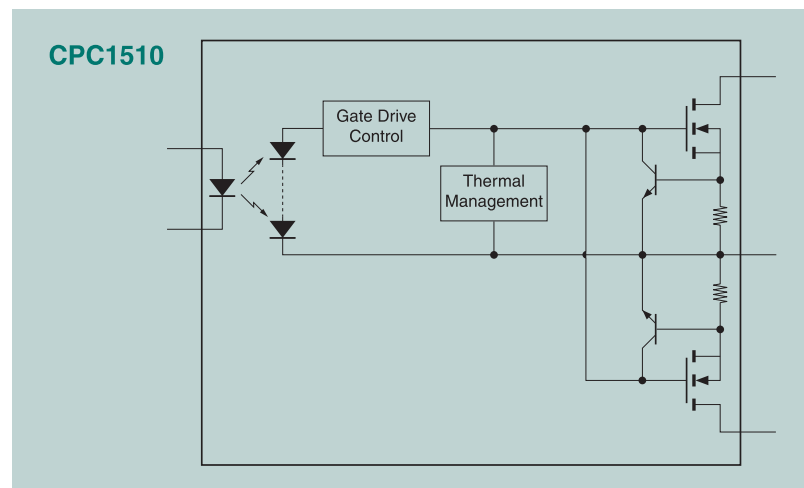
- Integrated Active Current-Limit Protection
- Thermal Management
- Low Input Control Current
- Low Drive Power Requirements
- 3750V_{rms} Isolation, Input-to-Output

Applications:

- Telephony Hook Switch
- VoIP Gateways
- I/O Subsystems
- Electronic Switching
- Medical Equipment (Patient / Equipment Isolation)
- Security
- Aerospace
- Industrial Controls

Part Number	Blocking Voltage (V _p)	Input Control Current (mA)	On-Resistance (Maximum)		Load Current (Maximum)		Current Limit (Maximum)		* Over-Voltage Threshold (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
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

* Provides additional current limiting after primary current limit has been enabled due to a fault condition.



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

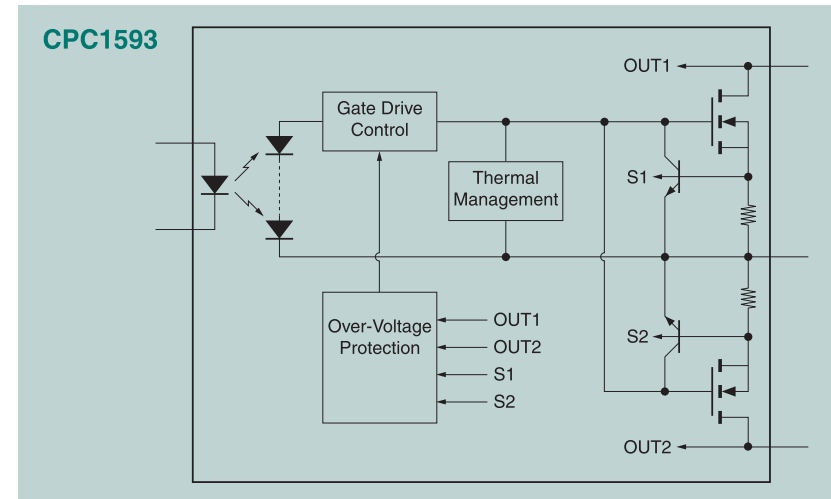
Current Limited SSR with Thermal Management & Over Voltage Protection

The new CPC1593 OptoMOS solid-state relay (SSR) adds special over-voltage protection (OVP) to current limiting and thermal management. The 21V OVP level, if enabled during current limiting, shuts the switch down, thus limiting the power dissipated by the switch and preventing damage to the device due to extended fault conditions.

The CPC1593 is designed for use in AC environments where fault conditions can persist for long periods of time, and where, upon removal of the fault, return to normal operation is expected. The CPC1593 is designed to survive extended power cross conditions.

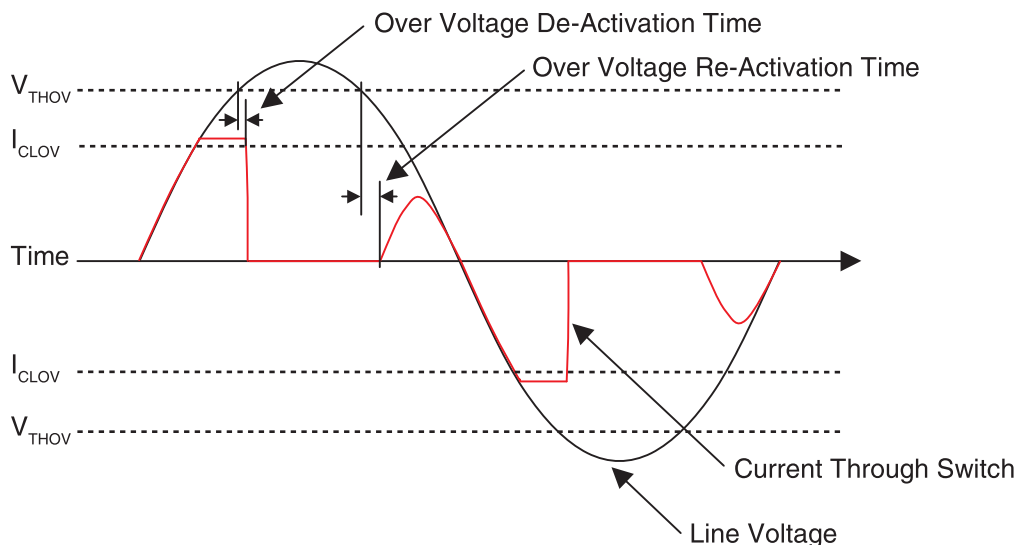
When all fault conditions have been removed, the CPC1593 recommences normal operation, and automatically resets all of its protection circuits. No intervention is necessary.

This self-resetting triple protection scheme not only protects the CPC1593's load, but also protects the CPC1593 itself, thus creating a highly effective switching mechanism that can survive in the harshest operating environments.



Part Number	Blocking Voltage (V _p)	On-Resistance (Maximum)		Load Current (Maximum)		Current Limit (Maximum)		Input Control Current (mA)	Switching Speed t _{on} / t _{off} (ms)	Isolation Voltage (V _{rms})	* Over-Voltage Threshold (V)	Package Type	Features & Comments
		DC-Only (Ω)	AC (Ω)	DC-Only (mA)	AC (mA)	DC-Only (mA _p)	AC (mA _p)						
CPC1593	600	11.75	35	250	120	570	285	2	2 / 2	3750	21	12, 14	Power Supply Start-Up Protection

* Provides additional current limiting after primary current limit has been enabled due to a fault condition.



**Ensures
Power-Cross Survival!**

Features:

- 600V_p Blocking Voltage
- Integrated Active Current-Limit Protection
- Integrated Thermal Regulation
- Integrated Over-Voltage Protection

6-Pin Surface Mount



6-Pin DIP



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

Power Relays

IXYS Integrated Circuits Division's line of power relays features OptoMOS technology, reliability, and compact size in the Power SOIC, Power SIP, i4-PAC™ and ISOPLUS™-264 series of power solid state relays. Development of these products was founded on the blending of our traditional strengths in the design and manufacture of photovoltaic integrated circuits (ICs), leadframe design, and multi-chip packaging with IXYS' expertise in power MOSFETs, power packages, and substrate technology.

Our Power Relays are now offered in four package types, which offer between 2500V_{rms} and 5000V_{rms} of input to output isolation. The Power SIP package offers pin-to-pin compatibility with other solid state relays providing an easy upgrade path for existing designs, and compatibility for new designs. The i4-PAC and the ISOPLUS-264 packages feature a unique assembly process whereby the silicon is soft soldered onto a Direct Copper Bond (DCB) substrate rather than traditional bonding onto an epoxy encapsulated copper frame. This structure allows for a substantially lower junction-to-case thermal impedance when compared to conventionally assembled power relays. The i4-PAC package has a thermal resistance of 0.35°C/W while the ISOPLUS-264 package has an even lower thermal impedance of 0.30°C/W.

Our Power SSRs are provided in two types: Unidirectional (UNI) and Bidirectional (BI). The polarity independent BI relay conducts load current in both directions, while the polarity dependent UNI relay conducts load current in only one direction. The accompanying tables reference these two types for all devices listed.

On the back of the i4-PAC and ISOPLUS-264 packages, the electrically non-conductive surface of the DCB ceramic substrate provides 2500V_{rms} of isolation to the package's electrically conductive power switching and control leads. The combination of an electrically isolated, non-conductive exterior and low thermal impedance makes the new i4-PAC and ISOPLUS-264 power relays an ideal solution for power applications preferring a non-biased heat sink with superior thermal management properties.

Features:

- Handles Loads up to 32A
- Voltage Ratings up to 1000V_p
- Low On-Resistance
- Electrically Non-Conductive Thermal Pad for Heat Sink Applications
- Industry Standard 4-Pin SIP Package
- Low Input Control Current
- Low Thermal Impedances:
 - 0.30°C/W - ISOPLUS-264
 - 0.35°C/W - i4-PAC
 - 1.50°C/W - Power SIP

Applications:

- Robotics
- Medical Equipment
- Railroad / Traffic Controls
- Consumer Appliances
- Industrial Control
- Test and Measurement Equipment

Electrically Isolated Thermal Pad

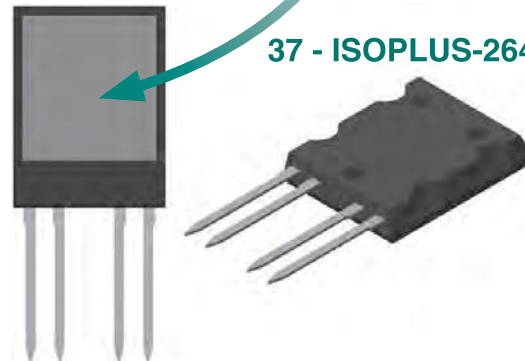
66 - Power SOIC



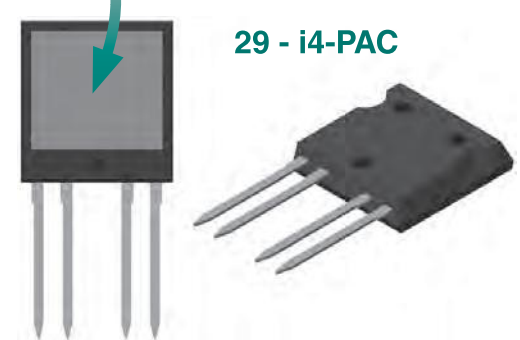
36 - Power SIP



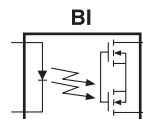
37 - ISOPLUS-264



29 - i4-PAC

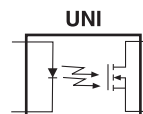


For data sheets, go to www.ixysic.com/Products/ProdList.htm



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	Features & Comments
			Free Air	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	
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	



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	Features & Comments
			Free Air	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	

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

Optically Isolated AC Power Switches

Optically Isolated AC Power Switches: $I_{LOAD} \leq 1A$

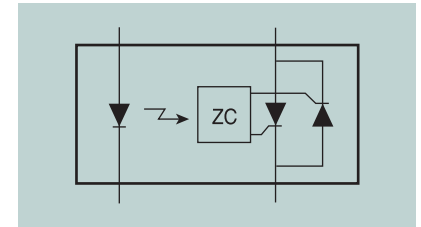
The OptoMOS line of power products uses dual power-SCR outputs to produce an alternative to optocoupler and Triac circuits. These AC Power Switches provide a blocking voltage of up to $800V_p$. In addition, tightly controlled zero-cross circuitry ensures switching of AC loads while minimizing the generation of transients. The input and output circuits are optically coupled to provide $3750V_{rms}$ of isolation and noise immunity between control and load circuits. Long life and environmental integrity make these power switches ideal for controlling a variety of AC circuits in industrial environments where electromagnetic interference would disrupt the operation of electromechanical relays.

Features:

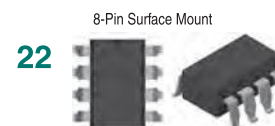
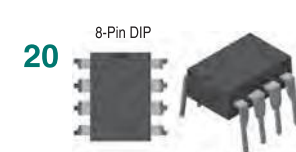
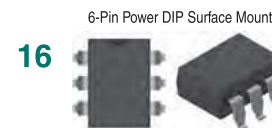
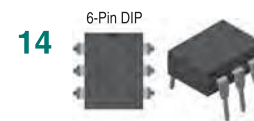
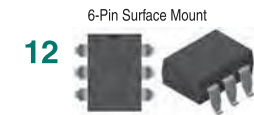
- Load Current up to $1A_{rms}$
- Blocking Voltage up to $800V_p$
- 5mA Sensitivity
- Zero-Crossing Turn-On
- DC Control, AC Switching
- Optically Isolated
- TTL and CMOS Compatible
- Low EMI and RFI Generation
- High Noise Immunity
- VDE Compatible
- Machine Insertable, Wave Solderable
- Switching Speed < 0.5 Cycle

Applications:

- Programmable Controls
- Process Control
- Power Control Panels
- Remote Switching
- Gas Pump Electronics
- Contactors
- Large Relay Control Circuits
- 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	600	0.25	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



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

Optically Isolated AC Power Switches: $I_{LOAD} > 1A$

Our solid-state AC Power Switches are capable of handling very high load currents. With blocking voltages up to $800V_p$ and tightly controlled zero-cross circuitry (ensuring switching of AC loads while minimizing the generation of transients), these robust AC Power Switches enable simpler power switching designs.

Optically coupled input and output circuits provide up to $5000V_{rms}$ of isolation and noise immunity between control and load circuits. These arc-free, heavy-duty AC power switches are ideal for controlling a variety of AC circuits in industrial environments where electromagnetic interference would disrupt the operation of electromechanical relays or where explosive atmospheres exist.

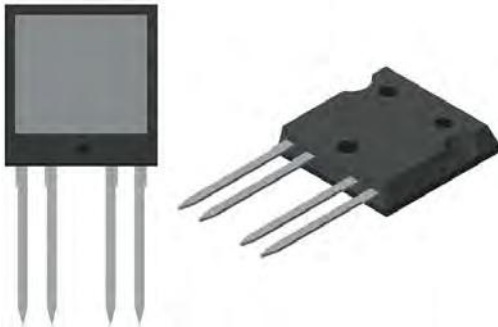
Features:

- Load Current up to $50A_{rms}$
- Blocking Voltage up to $800V_p$
- 5mA Input Sensitivity
- Zero-Crossing Turn-On
- DC Control, AC Switching
- Optically Isolated I/O
- TTL and CMOS Compatible
- Low EMI and RFI Generation
- High Noise Immunity
- VDE Compatible
- Machine Insertable, Wave Solderable
- Switching Speed < 0.5 Cycle

Applications:

- Programmable Controls
- Process Control
- Power Control Panels
- Remote Switching
- Gas Pump Electronics
- Contactors
- Large Relay Control Circuits
- Solenoids
- Motor Controls
- Heater Controls

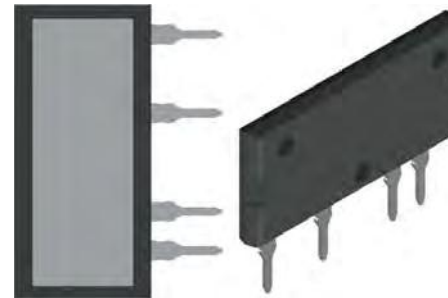
29 - i4-PAC



36 - Power SIP



64 - Super SIP



66 -Power SOIC



Part Number	Blocking Voltage (V_p)	Load Current			Input Control Current (mA)	Input Control Voltage (V)	Operating Frequency Min / Max (Hz)	Isolation Voltage (V_{rms})	Package Type	Features
		No Heat Sink (A_{rms})	With 5°C/W Heat Sink (A_{rms})	$T_c=25^\circ C$ (A_{rms})						
CPC1964B	800	1.5	-	-	5	-	20 - 500	5000	66	Enhanced Isolation Voltage
CPC1966	600	3	-	-	5	-	20 - 500	3750	36	
CPC1966B	800	3	-	-	5	-	20 - 500	5000	66	Enhanced Isolation Voltage
CPC1976	600	2	-	-	5	-	20 - 500	3750	36	
CPC1998	800	5	20	50	5	-	20 - 500	2500	29	High Load Current
CPC40055	800	5	20	50	5	-	20 - 500	2500	64	High Load Current
CPC44055	800	5	20	50	-	9 - 16	20 - 500	2500	64	High Load Current

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

Gate Drivers

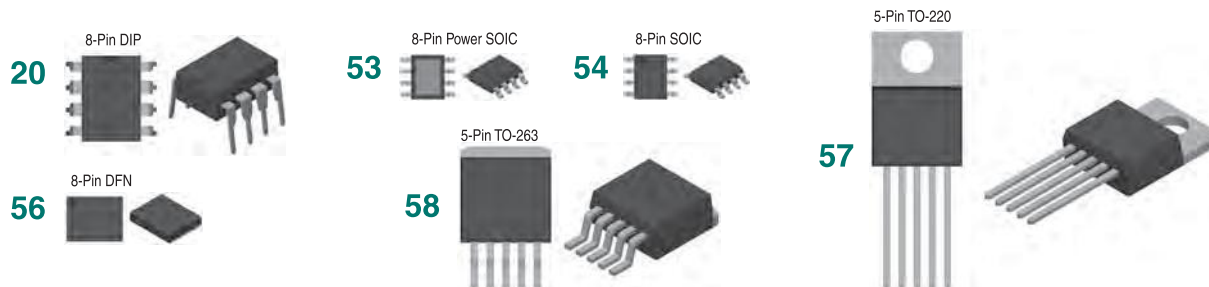
These ultra-fast, high current MOSFET and IGBT gate drivers are optimized for high efficiency performance in motor drive and power conversion applications. With output current ratings of 1.5A to 30A, they are designed to switch the largest MOSFETs and IGBTs with minimum switching times and at frequencies up to 10MHz. Depending on the output current rating, these gate drivers are offered in DFN (56), SOIC (54), Power SOIC (53), DIP (20), TO-220 (57), and TO-263 (58) packages.

The 30A IXD_630 features an undervoltage lockout (UVLO) that keeps the output LOW until a sufficient level of V_{CC} is present.

IXD_604SI (8-Pin Power SOIC) & SIA (8-Pin SOIC) and IXD_609SI (8-Pin Power SOIC) 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	Undervoltage Lockout (V)	Package Type
IX4423	DUAL	3	4	D			54
IX4424	DUAL	3	4	E			54
IX4425	DUAL	3	4	F			54
IX4426	DUAL	1.5	9	D			54, 56
IX4427	DUAL	1.5	9	E			54, 56
IX4428	DUAL	1.5	9	F			54, 56
IXD_602	DUAL	2	4	D, E, F			20, 53, 54, 56
IXD_604	DUAL	4	2.5	D, E, F, G	• (G)		20, 53, 54, 56
IXD_609	SINGLE	9	1	A, B, C	• (A)		20, 53, 54, 56, 57, 58
IXD_614	SINGLE	14	0.8	A, B, C	• (A)		20, 53, 57, 58
IXD_630	SINGLE	30	0.4	A, B, C	• (A)	$V_{CC} \leq 12.5$	57, 58
IXD_630M	SINGLE	30	0.4	A, B, C	• (A)	$V_{CC} \leq 9$	57, 58

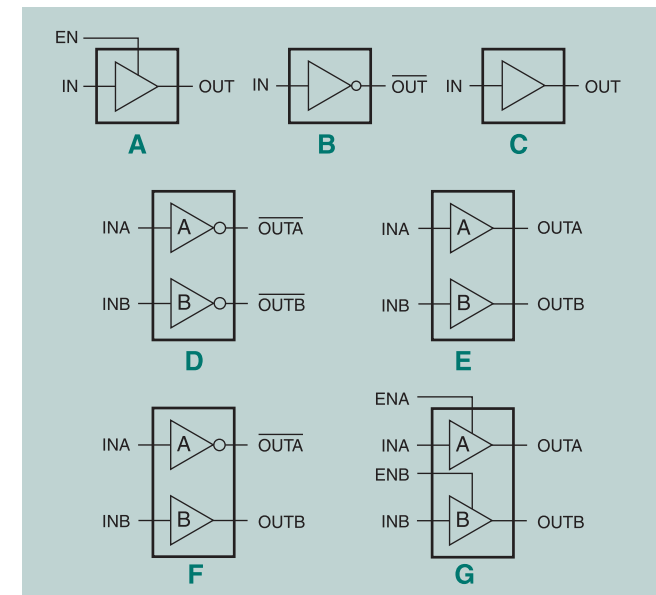


Features:

- 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



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

IX2127 600V High-Side MOSFET and IGBT Gate Driver

The IX2127 is a high voltage, high-speed power MOSFET and IGBT driver. The device's high voltage level-shift technique enables it to operate at up to 600V. Proprietary common-mode design techniques provide stable operation in high dV/dt noise environments.

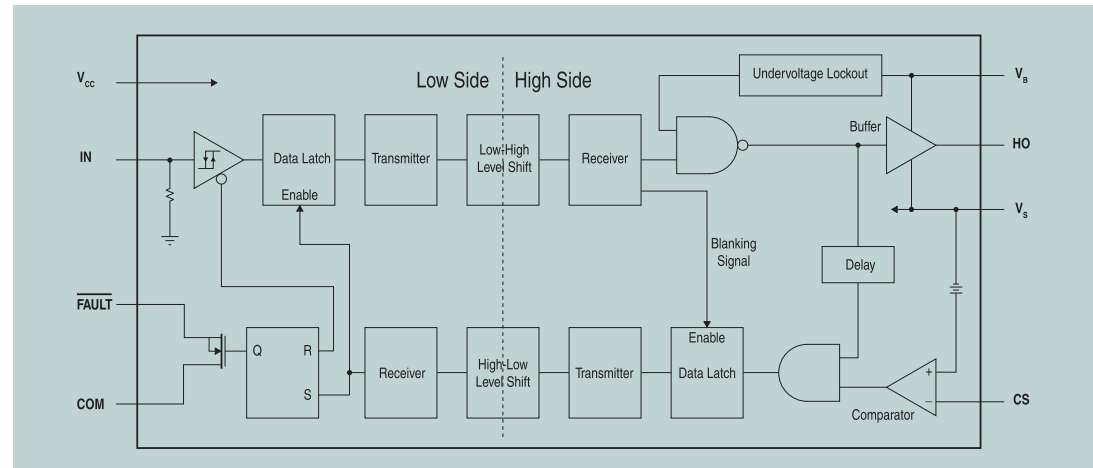
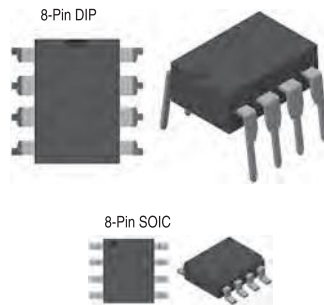
The IX2127 detects an over-current condition in the driven MOSFET or IGBT device, and shuts down drive to that device. An open-drain output, FAULT, indicates that an over-current shutdown has occurred. The gate driver output typically can source 250mA and sink 500mA, which is suitable for fluorescent lamp ballast, motor control, SMPS, and other converter drive topologies. Available in 8-pin DIP and 8-pin SOIC packages.

Features:

- Floating Channel Designed for Bootstrap Operation up to 600V
- Tolerant to Negative Transient Voltages; dV/dt Immune
- Undervoltage 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



MX6895 -550V Full Bridge Gate Driver

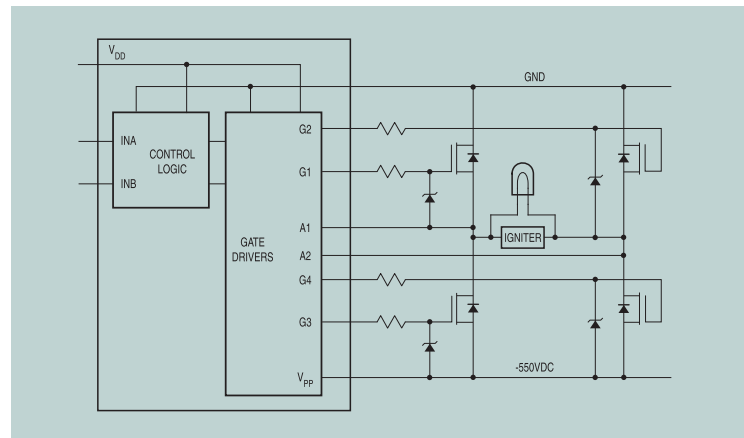
Built on our high voltage integrated circuit (HVIC) technology, the MX6895 combines high-side and low-side N-channel power MOSFET drivers in a full bridge configuration. The circuit is optimally configured to be used as a commutator for High Intensity Discharge (HID) lamps. This device is provided in a 16-pin SOIC package.

Features:

- Internal High Voltage Level Shift Function
- Negative 550V Lamp Supply Voltage
- 3V to 12V CMOS Logic Compatible
- 8V to 12V Input Supply Voltage
- No External Bootstrap Capacitors Needed

Applications:

- Commutator for High Intensity Discharge Lamps
- Vehicle Xenon Head Lamps
- Outdoor/Street Lighting
- Multimedia Projectors
- Retail Accent Lighting
- Warehouse Lighting



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

IX3120 2.5A-Output Optically Coupled Gate Driver

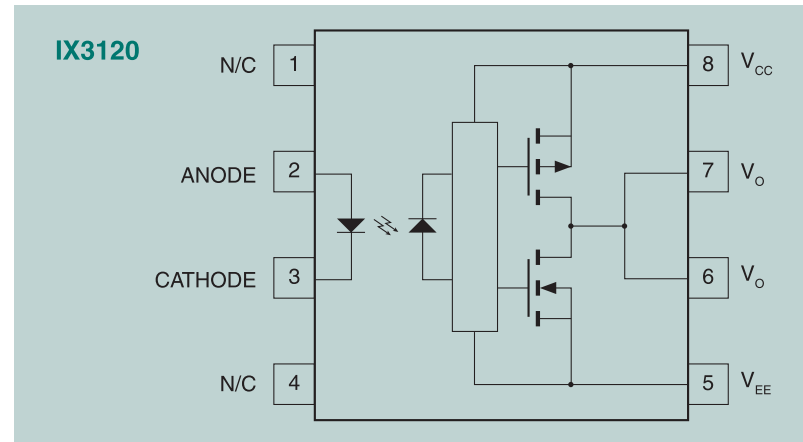
The IX3120 gate driver includes an input infrared LED that is optically coupled to a power output stage. The power output stage is capable of sourcing or sinking 2.5A of peak current, which is ideal for driving IGBTs and MOSFETs in the mid-power range. The gate driver optocoupler with its low input LED current, high output peak current, and high noise immunity (25kV/ μ s) is ideally suited for use in motor control and inverter applications. The IX3120 is provided in an 8-pin DIP package and an 8-pin surface mount package.

Features:

- 2.5A Maximum Peak Output Current
- 25kV/ μ s Minimum Common Mode Rejection (CMR) at 1500V_{CM}
- Wide Operating Voltage Range: 15V to 30V
- Under Voltage Lockout with Hysteresis
- 3750V_{rms} Input to Output Isolation
- Wide Temperature Range: -40°C to +100°C

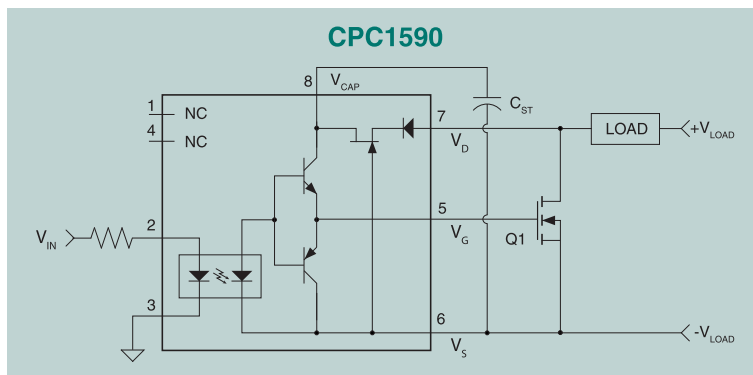
Applications:

- Isolated IGBT/MOSFET Gate Drive
- Switch Mode Power Supplies
- Industrial Inverters
- Motor Drivers



Optically Isolated Gate Drivers

The CPC1580 and CPC1590 are high speed, optically isolated Gate Driver ICs. On-chip circuitry charges an external capacitor from the load voltage which eliminates the need for an external IC power supply. These Gate Drivers are ideal for low duty cycle switching applications. Both devices are provided in an 8-pin flatpack package.



Features:

- No External IC Power Supply
- Low Drive Power Requirements (TTL/CMOS Compatible)
- Load Voltages up to 200V
- Fast Switching Times - On: 40 μ sec / Off: 400 μ sec

Applications:

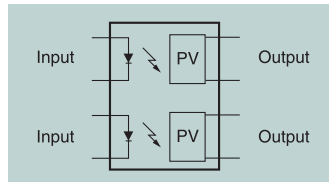
- Instrumentation
- Multiplexers
- I/O Subsystems
- Meters (Watt-Hour, Water, Gas)
- Medical Equipment (Patient/Equipment Isolation)
- Security
- Aerospace
- Industrial Controls

Part Number	Input Control Current (mA)	Gate Voltage @ I _F =5mA (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

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

Optically Isolated Dual MOSFET Gate Drivers

These Dual Optically Isolated Photodiode Arrays, which can produce an open-circuit voltage of up to 12V, are well suited for use in discrete solid state relay designs. The FDA215 and the FDA217 are provided in either an 8-pin DIP package or in an 8-pin surface-mount package.

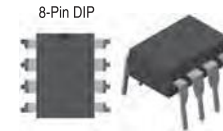


Features:

- 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} (μ A)	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	12	4.5	2 / 0.5	3750	8-Pin DIP, 8-Pin Surface Mount

Load Drivers: MX877 & MX879 (8-Channel, 60V, with Serial Interface)

These devices are 8-channel, high voltage switches with 8-bit parallel or serial input control. The 3-wire serial interface connects directly to a microprocessor using an industry standard protocol. These devices are designed to operate over a temperature range of -40°C to +85°C, and are available in a 28-pin QFN package.

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

MX879, with open-drain pullup output configuration, can drive up to 60V at 120mA. Outputs can be paralleled for increased drive current up to a device total of 600mA source.

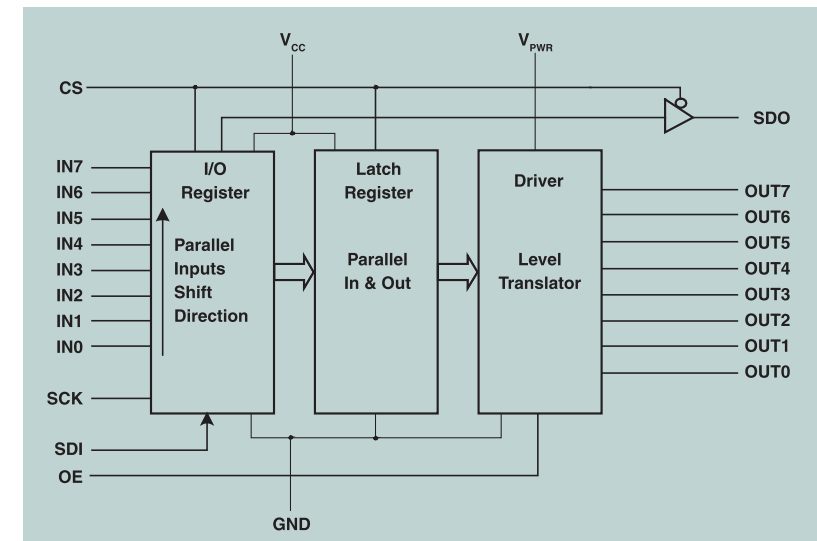
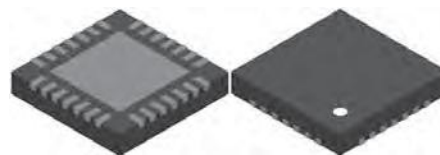
Features:

- 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

28-Pin QFN



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

High Voltage Analog Switches

Our high voltage analog switches are low charge injection 8-channel & 16-channel, high voltage analog switch ICs for use in applications requiring high voltage switching. Control of the high voltage switching is via low voltage, TTL logic level compatible inputs for direct connectivity to the system controller. Switch manipulation is managed by serial to parallel shift registers whose outputs are buffered and stored by a transparent latch. Level shifters buffer the latch outputs, and operate the high voltage switches. Construction of the switches using reliable BCDMOS process technology on SOI (Silicon On Insulator) enables the switches to be organized as solid state switches with direct gate drive.

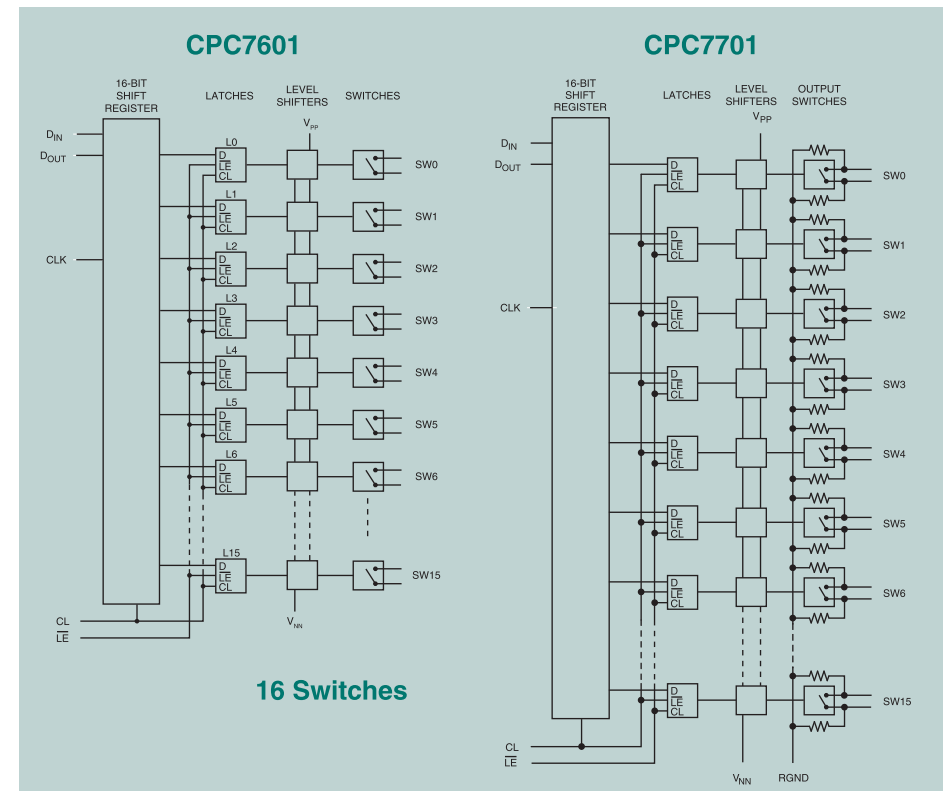
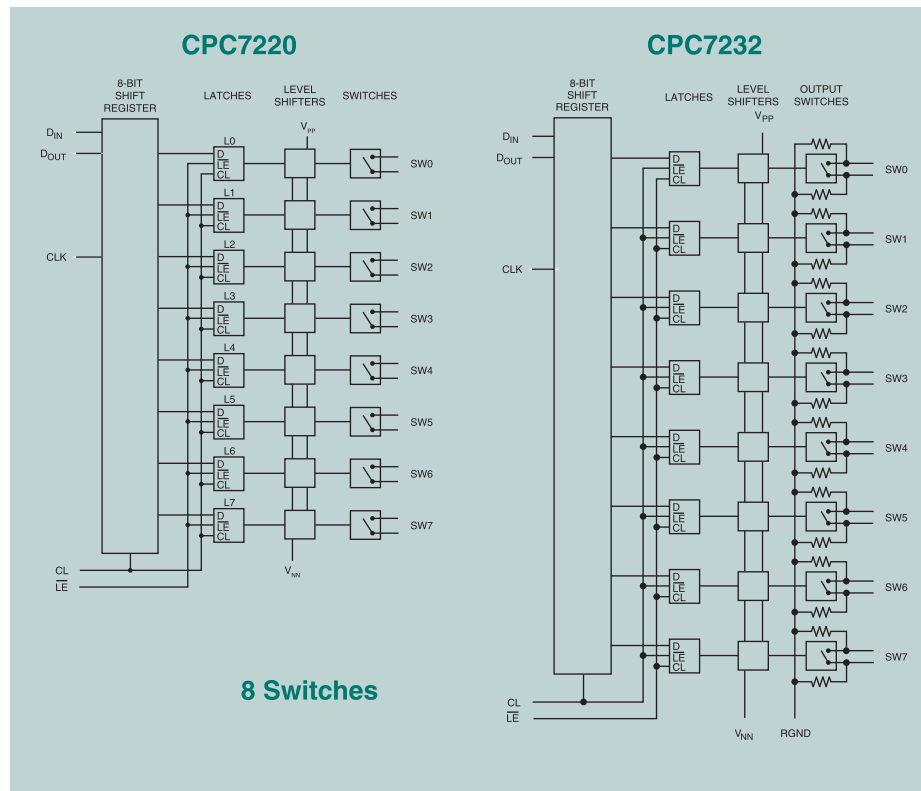
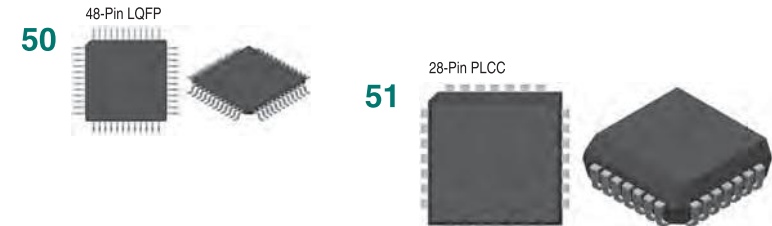
Features:

- 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

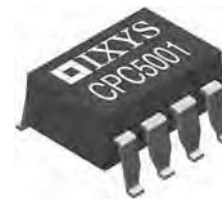
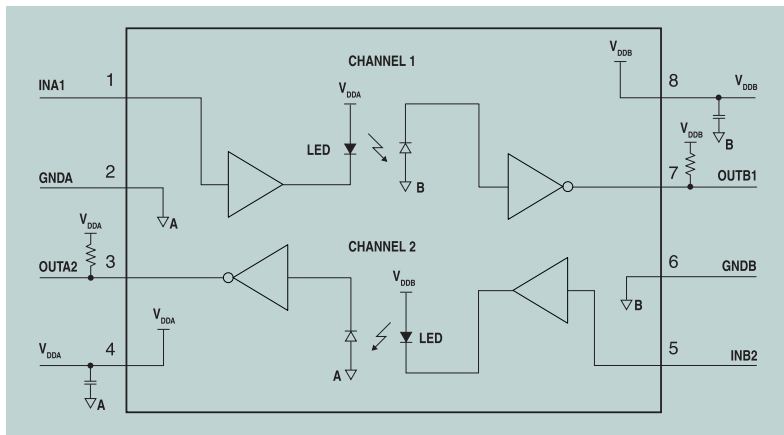


For data sheets, go to www.ixysic.com/Products/ProdList.htm

High Speed Digital Optical Isolators

CPC5001 Single-Channel, Each Direction Digital Optical Isolator

The CPC5001 is a non-inverting digital optical isolator with buffered-logic inputs and open-drain outputs. Channel1 propagates a signal from SideA to SideB, while Channel2 sends a signal from SideB to SideA. It provides galvanic isolation across voltage differences up to 3750Vrms. When the two sides are powered by different supply voltages, it also functions as a logic level translator for levels as low as 2.7V or as high as 5.5V. Available in an 8-pin DIP or 8-pin surface mount package, it functionally replaces two logic buffers and two single-channel optoisolators. Internal bandgap references regulate the LED drive currents to 3mA to reduce peak power requirements. Unlike transformer or capacitive isolators, optical isolation passes DC signals, and does not need to be clocked periodically to refresh state. Buffered signals will always return to their proper value after a transient interruption at either side.



Features:

- Isolates One Signal in Each Direction
- Operates From 2.7V to 5.5V
- Buffered Inputs - No External LED Drive Required
- Voltage Level Translation
- Hysteresis at Inputs for Noise Rejection
- Slew Limited Drivers Reduce EMI
- Power Down to Hi-Z Does Not Load Outputs
- 5Mbd Data Rate

Applications:

- Isolated Signal Monitoring and Control
- Power-Over-Ethernet
- 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

CPC5002 - Dual High-Speed Digital Optical Isolator

The CPC5002 is a high speed dual optical logic isolator with open-drain outputs. It galvanically isolates two open-drain logic signals across voltage differences up to 3750V_{rms}. Turning on the LED forces the output to turn on, which pulls the voltage at any external pullup resistor towards ground. Its high-gain CMOS comparator requires only 1.4mA of supply current, and only 1.5mA of LED drive current. Unlike transformer or capacitive isolators, optical isolation passes DC logic-level signals, and does not need to be clocked periodically to refresh state. Buffered signals will always return to their proper value after a transient interruption at either side. Available in 8-pin DIP and surface mount packages.

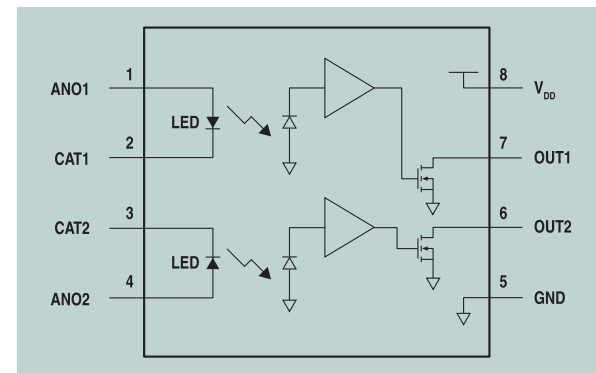
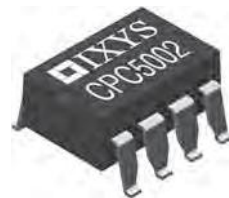
Features:

- Dual Optics Isolates Two Signals
- Operates Over $2.7V < V_{DD} < 5.5V$
- 3750V_{rms} Galvanic Isolation
- 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!



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

CPC5902 Optically Isolated I²C Bus Repeater

The CPC5902 is a dual, optically isolated, bidirectional logic-bus repeater. It galvanically isolates two open-drain logic signals, and provides a galvanic isolation of 3750V_{rms}. When the two sides' supply voltages are configured with different voltages, the CPC5902 also functions as a logic level translator for levels as low as 2.7V or as high as 5.5V.

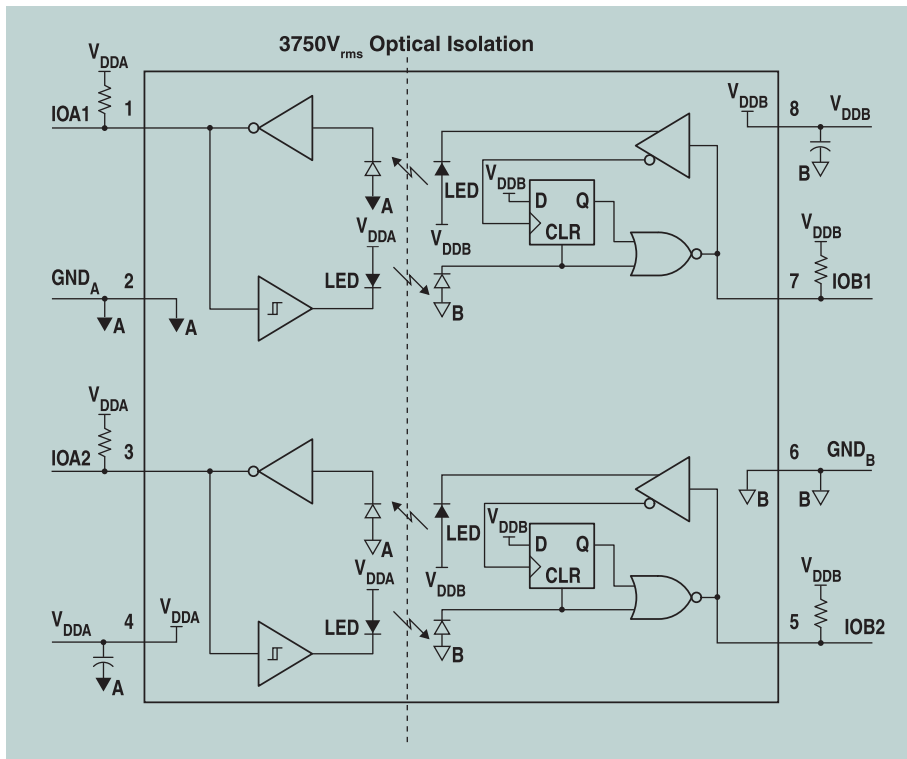
Unlike transformer or capacitive isolators, this optically isolated repeater passes logic-level DC signals, and does not need to be clocked periodically to sustain logic states. Buffered signals will always return to their proper value after a transient interruption on either side. As a result, the CPC5902 does not generate the clocking or modulation signal interference that other types of bus repeaters can generate. Available in 8-pin DIP and surface mount packages.

Features:

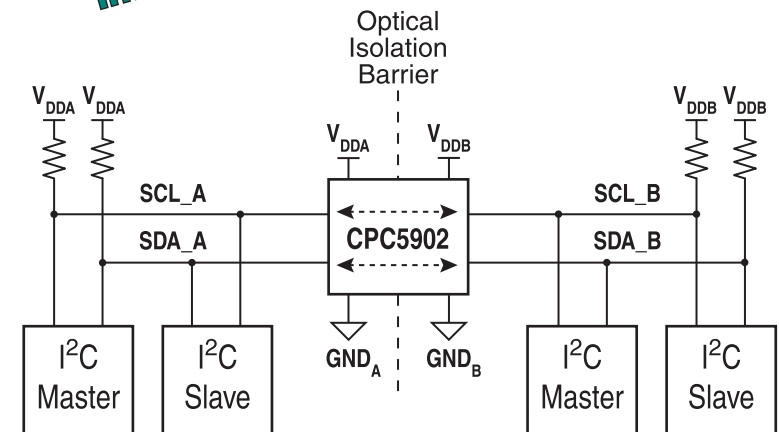
- Bidirectionally Buffers Both I²C Signals
- Extends and Isolates I²C Interfaces
- Supports Standard and Fast Mode I²C (400kbps)
- Supports I²C Clock Stretching
- Operates on 2.7V to 5.5V
- Supports DC Logic Level Buffering Without Refresh
- Glitch-Free Operation
- Powerdown to Hi-Z Does Not Load I²C
- Slew-Limited Drivers Reduce EMI
- Tested Above 6kV_p for Adverse Environments

Applications:

- Power Over Ethernet
- I²C Bus Length Extender
- Isolated Control and Signal Monitoring
- Power Supply High-Side Interface



No Internal Clock - Minimal EM & RF Emissions
High Voltage Isolation
Immune to External EMI and RFI



Visit our web site and download our Tech Brief, TB-101: "Optically Isolating an I²C Interface"

CPC5903 Optically Isolated I²C Bus Repeater

The CPC5903 is a dual, optically isolated, logic-bus repeater. It galvanically isolates two open-drain logic signals, and provides galvanic isolation across voltage differences up to 3750V_{rms}. When the two sides are powered by different supply voltages, it also functions as a logic level translator for levels as low as 2.7V or as high as 5.5V. It enables full bidirectional isolation of the I²C data signal and unidirectional isolation of the I²C clock signal.

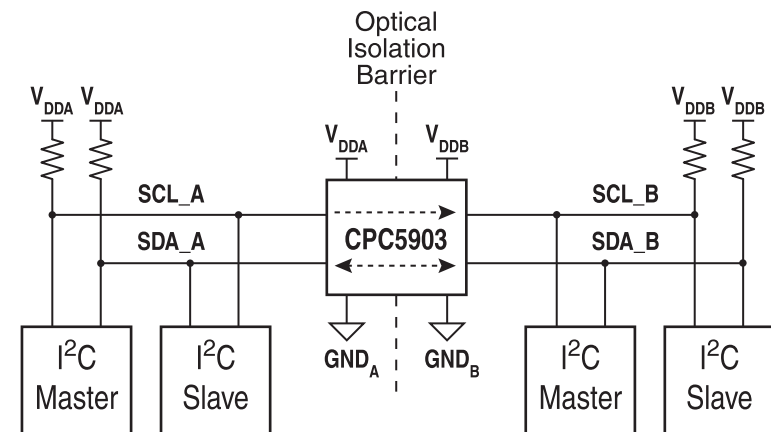
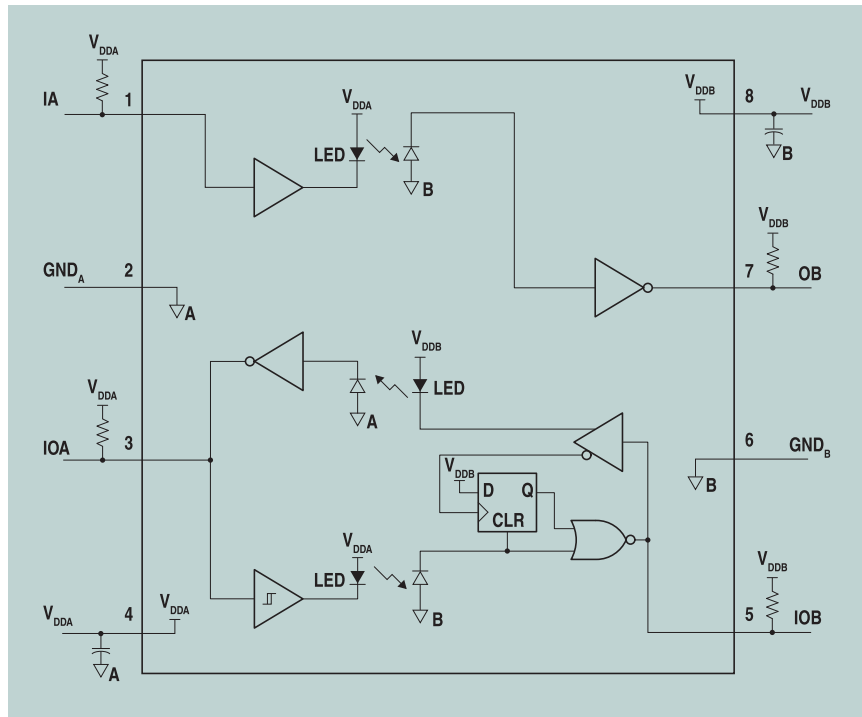
Unlike transformer or capacitive isolators, optical isolation passes DC logic-level signals, and does not need to be clocked periodically to refresh state. Buffered signals will always return to their proper value after a transient interruption at either side. Available in 8-pin DIP and surface mount packages.

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
- Powerdown to Hi-Z Does Not Load I²C
- 3750V_{rms} Galvanic Isolation

Applications:

- Isolated Signal Monitoring and Control
- Power-over-Ethernet
- Power Supply High Side Interface
- I²C Bus Length Extenders
- I²C Logic Level Translation



Visit our web site and download our Tech Brief, TB-101: “Optically Isolating an I²C Interface”

Optocouplers

Single & Dual Optocouplers

Single and dual OptoMOS optocouplers provide an optically isolated means of current detection or control of switching circuits. These devices offer a single or dual anti-parallel LED input stage for unidirectional or bidirectional signal control to the optically coupled output. The output can be either a single transistor or, for greater gain, a Darlington transistor. These optocouplers are ideal for use in circuits where electrical isolation of control circuitry or voltage detection is crucial.

Features:

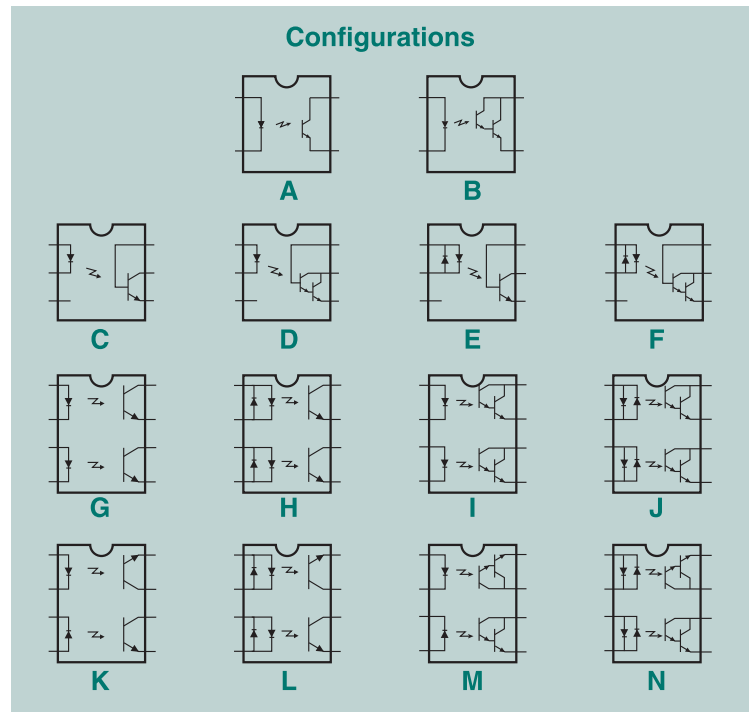
- AC and DC Compatible Inputs
- 1500V_{rms}, 3750V_{rms}, 5000V_{rms} I/O Isolation
- Machine Insertable, Wave Solderable

Applications:

- Voltage Detection
- Tip/Ring Circuits
- Modem Switching (Laptops, Notebooks, PDAs)

- Loop Detection
- Ringing Detection
- Current Sensing
- Telecom Switching

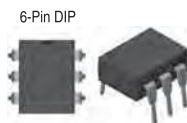
Part Number	Minimum Breakdown Voltage (BV _{CEO})	Typical Current Transfer Ratio (%)	Maximum Saturation Voltage (V)	Input Control Current (mA)	Minimum Isolation Voltage (V _{rms})	Package Type	Configuration
CPC1001N	30	330	0.3	0.2	1500	10	A
CPC1301	350	5500	1.2	1	5000	42, 43	B
CPC1302	350	5500	1.2	1	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



10



12



14



20



22



42



43

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

Linear Optocouplers

OptoMOS Linear Optocouplers feature an infrared LED optically coupled to a pair of photodiodes. One feedback (input) photodiode is used to generate a feedback signal that provides a servomechanism to the LED drive current thus compensating for the LED's nonlinear time and temperature characteristics. The output photodiode provides an isolated output signal that is linear with respect to the servo LED current.

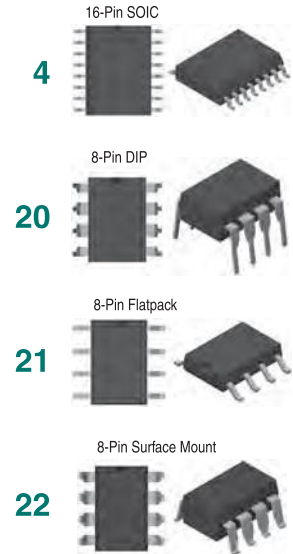
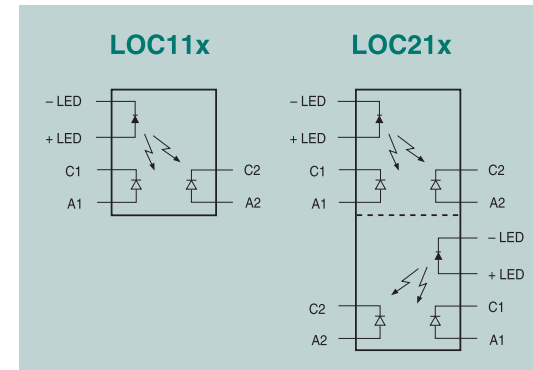
Features:

- Couples Analog & Digital Signals
- 3750V_{rms} Input / Output Isolation
- Wide Bandwidth (>200kHz)
- High Gain Stability
- Low Input / Output Capacitance
- Low Power Consumption
- 0.01% Servo Linearity
- THD 87dB Typical
- VDE Compatible
- Machine Insertable, Wave Solderable

Part Number	Servo Gain K1 (Min / Max)	Forward Gain K2 (Min / Max)	Transfer Gain K3 (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

Applications:

- Modem Transformer Replacement with No Insertion Loss
- Digital Telephone Isolation
- Power Supply Feedback Voltage / Current
- Medical Sensor Interfacing
- Isolation of Process Control Transducers



Optically Isolated Error Amplifiers

Optically Isolated Linear Error Amplifiers combine our optical technology with an industry standard 431-type precision programmable shunt regulator to provide linear isolated feedback for power supply designs. The LIA120 features matched photodiodes for linear high-gain response with excellent temperature stability for a total gain error of less than 2dB.

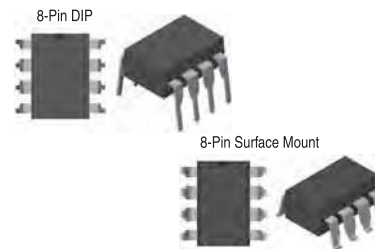
These devices are well suited for isolated high-gain feedback amplifiers that require excellent linearity and low temperature variation such as power supply feedback stages, modem and audio transformer replacements, industrial control signals, and sensor feedback.

Features:

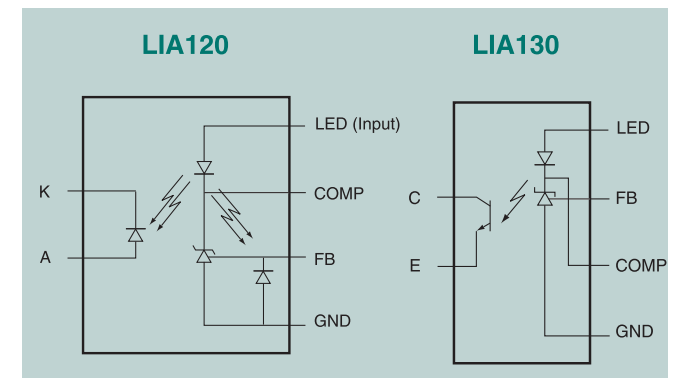
- 70dB Linearity Typical
- Optocoupler, Precision Reference, and Error Amplifier in a Single Package
- Low Voltage Operation: 2.7V

Application:

- Power Supply Feedback



Part Number	Reference Voltage (V)	V _{REF} Tolerance (%)	CTR K1 (%)	CTR K2 (%)	CTR Matching K3 (%)	Linearity (dB)	Isolation Voltage (V _{rms})	Package Type
LIA120	1.24V	1	1 - 3	1 - 3	85 - 115	70	3750	8-Pin Surface Mount
LIA130	1.24V	1	-	-	-	-	3750	8-Pin DIP, 8-Pin Surface Mount



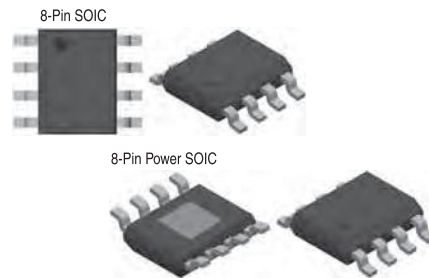
For data sheets, go to www.ixysic.com/Products/ProdList.htm

CPC9909 High Efficiency, High Brightness Off-Line LED Driver

The CPC9909 is a low-cost, high-efficiency, off-line, high-brightness (HB) LED driver manufactured using our high voltage BCDMOS on SOI process. It has an internal regulator that allows it to operate from $8V_{DC}$ to $550V_{DC}$. This wide input operating voltage range enables the driver to be used in a broad range of HB LED applications.

Features:

- 8V to 550V Input Voltage Range
- >90% Efficiency
- Stable Operation at >50% Duty Cycle
- Drives Multiple LEDs in Series/Parallel
- Regulated LED Current
- Linear or PWM Brightness Control Inputs
- Resistor-Programmable Minimum Off-Time
- Buck or Boost Configuration
- Available in 8-Pin SOIC and Power SOIC Packages

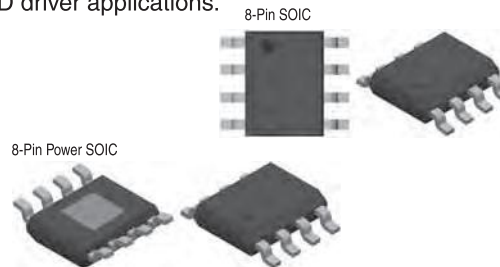


MXHV9910 High Voltage, Off-Line LED Driver

The MXHV9910 features a fixed-frequency, peak-current control method, which provides an ideal solution for driving multiple LEDs in series and in parallel. Internal circuitry allows it to operate from a universal AC line, or from $8V_{DC}$ to $450V_{DC}$. This highly versatile input operating voltage enables this IC to be used in a broad range of HB LED applications. In addition, LED dimming can be implemented by applying a small DC voltage to the LD pin, or by applying a low-frequency digital PWM signal to the PWMD pin. Applications include flat-panel display RGB backlighting, signage, decorative LED lighting, and 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
- Available in 8-Pin SOIC and Power SOIC Packages

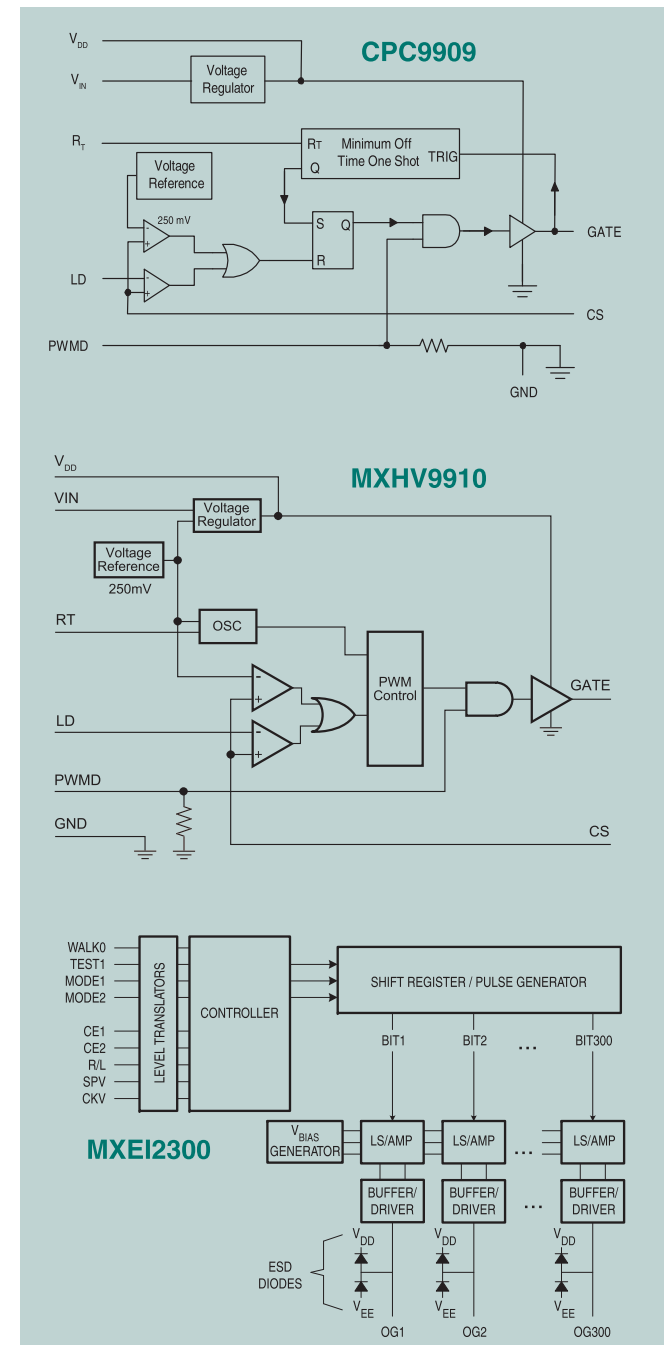
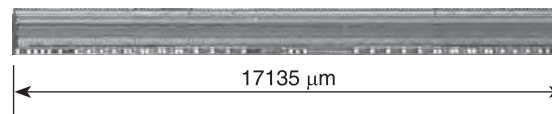


MXEI2300 300-Output ePaper Gate Driver

MXEI2300 is a 300 bit serial shift register, level translator, and high voltage buffered driver. MXEI2300 is an excellent choice for driving the displays of eBooks and eReaders, mobile phones and other portable hand-held devices, smart cards, and other electronic display devices. MXEI2300 output switching modes are: one pulse, continuous two pulse, jumping two pulse, or no pulse pattern. MXEI2300 can be cascaded up to a maximum of four devices. MXEI2300 is available as gold bumped die in wafer form or wafer pack.

Features:

- CMOS Technology
- Drives Segment or Active Matrix Displays
- 16V to 47V Output Drive (V_{DD} to V_{EE})
- Selectable Output Shift Direction and Polarity



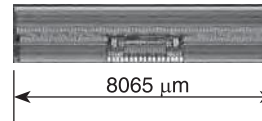
For data sheets, go to www.ixysic.com/Products/ProdList.htm

MXEI2240 240-Output ePaper Gate Driver

MXEI2240 is a 240 bit serial shift register, level translator, and high voltage buffered driver. MXEI2240 is an excellent choice for driving the displays of eBooks and eReaders, mobile phones and other portable hand-held devices, smart cards, and other electronic display devices. MXEI2240 output switching modes are: one pulse, continuous two pulse, jumping two pulse, or no pulse pattern. MXEI2240 can be cascaded up to a maximum of four devices. MXEI2240 is 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 ±15V ePaper Source Driver

The MXEI1480 is a selectable 400 or 480 bit long, 2-bit wide, serial-input, parallel-output digital shift register with level conversion on each parallel output, which convert the 2 digital bits into V_{POS} , V_{SS} , or V_{NEG} analog output voltages. An 8-bit input bus simultaneously inputs 4 groups of 2 bits each. MXEI1480 is available as gold-bumped die in waffle pack and gold-bumped die in wafer form.

Features:

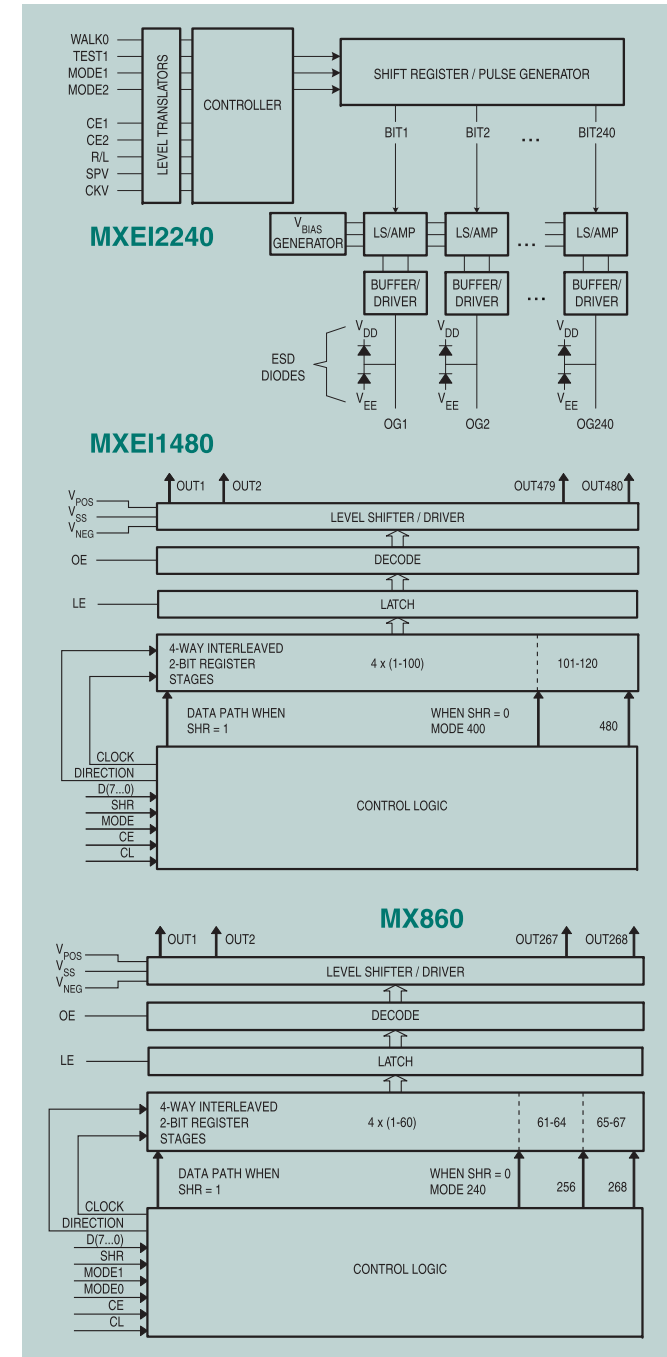
- CMOS Technology
- ±15V Output Driver Supply Voltage
- Drives Segment or Active Matrix Displays
- 4-Level Gray Scale
- 25MHz Clock Frequency
- Bidirectional Data Transfer
- Selectable Register Length
- 2.7V to 5.5V Logic Supply Voltage
- Cascadable

MX860 ±15V ePaper Source Driver

The MX860 is a selectable 240, 256, or 268 bit long 2-bit wide serial-input, parallel-output digital shift register with level conversion on each parallel output, which convert the 2 digital bits into V_{POS} , V_{SS} , or V_{NEG} analog output voltages. An 8-bit input bus simultaneously inputs 4 groups of 2 bits each. MX860 is available as gold-bumped die in waffle pack and gold-bumped die in wafer form.

Features:

- CMOS Technology
- ±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



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

Telecommunications Products

Line Card Access Switches - LCAS

The LCAS product family consists of monolithic ICs that contain high voltage switches for tip and ring line break, power ringing, line test access, test in access, and ringing generator testing. They provide the necessary functions to replace all 2-Form-C electromechanical relays found on both traditional voice and integrated voice and data (IVD) line cards found in Central Office, Digital Loop Carriers, and Channel Banks. LCAS ICs enable low-power, high-density line cards.

New features include: (1) TTL compatible inputs, (2) Smart logic for safe power up and hot plug state control, and (3) Increased dV/dt immunity.

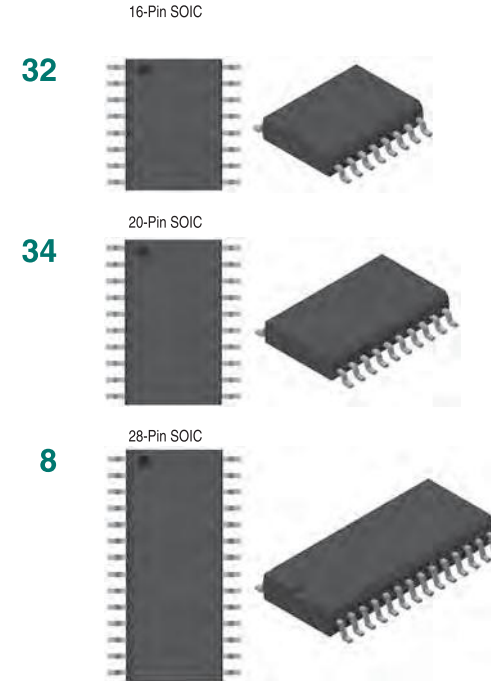
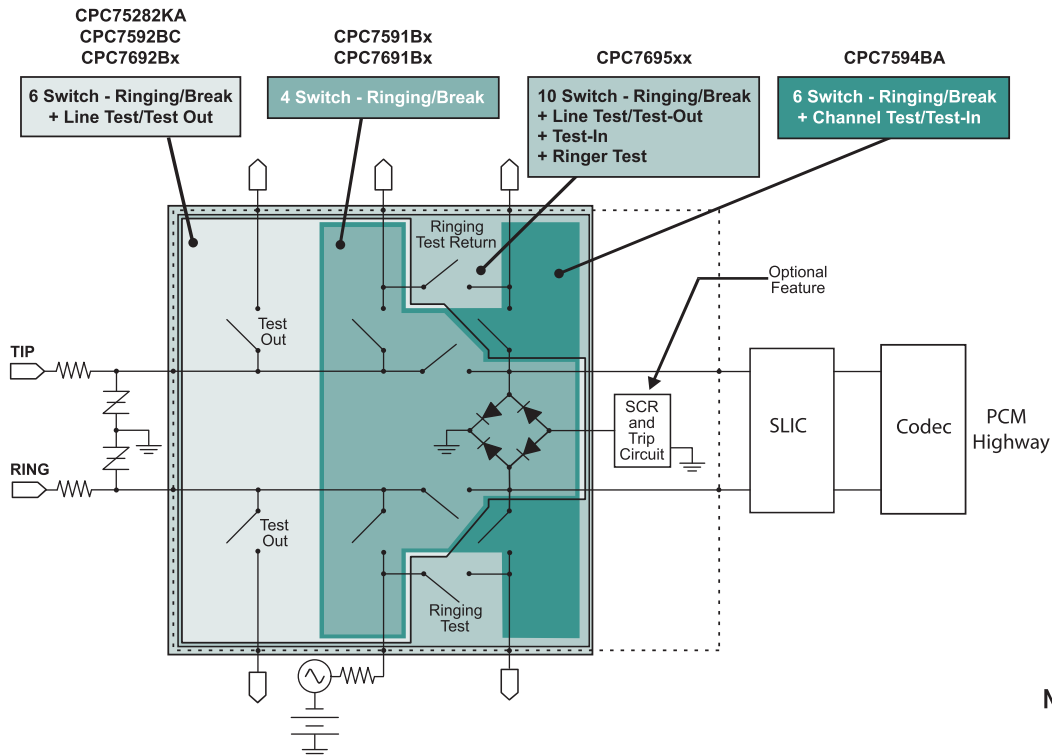
Features:

- Small Surface Mount SOIC or DFN Packages
- Monolithic IC Reliability
- Low, Matched On-Resistance
- Built-in Zero-Cross Switching
- Impulse Noise Reduction
- Current Limiting, Thermal Shutdown, and SLIC Protection
- Robust Power Cross and Lightning Surge Performance
- Ultra-Low Power Consumption of <10.5mW

Applications:

- VoIP Gateways
- Central Offices (CO)
- Digital Loop Carriers (DLC)
- Digitally Added Main Line (DAML)
- Hybrid Fiber Coax (HFC)
- Fiber in the Loop (FITL)
- Pair Gain Systems
- Channel Banks
- PBX Systems

1500V/ μ s!
Switch dV/dt Immunity
CPC769x Family



Note: Packages refer to devices in the table on the next page.

Part Number	Minimum 1500V/ μ s dV/dt	Switch Pairs						Zero-Cross Switching	Protection Features				Logic States	Package Type
		# Switches	Break	Ringing	Test Out	Test In	Ringing Test		Current Limit	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
CPC7594BA		6	•	•		•		•	•	•	•	110	4	32

Dual LCAS: 6-Pole CPC75282

The CPC75282 Dual Line Card Access Switch (LCAS), a member of our next generation Line Card Access Switch family, is a monolithic solid state device that provides the switching functionality of four 2-Form-C relays in a single, small, economical package.

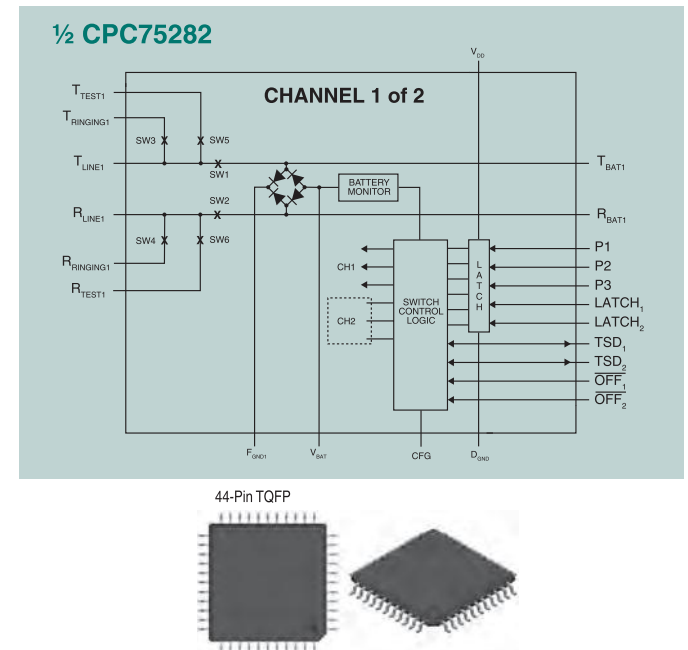
The CPC75282 Dual LCAS device is designed to provide ringing and test access to the telephone loop in Central Office, Digitally Added Main Line, Private Branch Exchange, Digital Loop Carrier, and Hybrid Fiber Coax/Fiber-In-The-Loop analog line card applications. Test access switches provide access to the telephone loop for line (drop) test or message waiting in the PBX application. Available in a 44-pin TQFP package.

Features:

- Improved Switch dV/dt Immunity of 1500V/ μ s
- Smart Logic for Power-Up/Hot-Plug State Control
- Low, Matched R_{ON}
- Eliminates the Need for Zero-Cross Switching
- Flexible Switch Timing to Transition from Ringing Mode to Talk Mode
- Tertiary Protection Consisting of Integrated Current Limiting, Voltage Clamping, and Thermal Shutdown for SLIC Protection
- 5V Operation with Very Low Power Consumption
- Intelligent Battery Monitor
- Latched Logic-Level Inputs, No External Drive Circuitry Required

Applications:

- VoIP Gateways
- Central Office (CO)
- Digital Loop Carrier (DLC)
- PBX Systems
- Digitally Added Main Line (DAML)
- Hybrid Fiber Coax (HFC)
- Fiber In The Loop (FITL)
- Pair Gain System
- Channel Banks



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

LCAS for Ringing SLIC: CPC7508

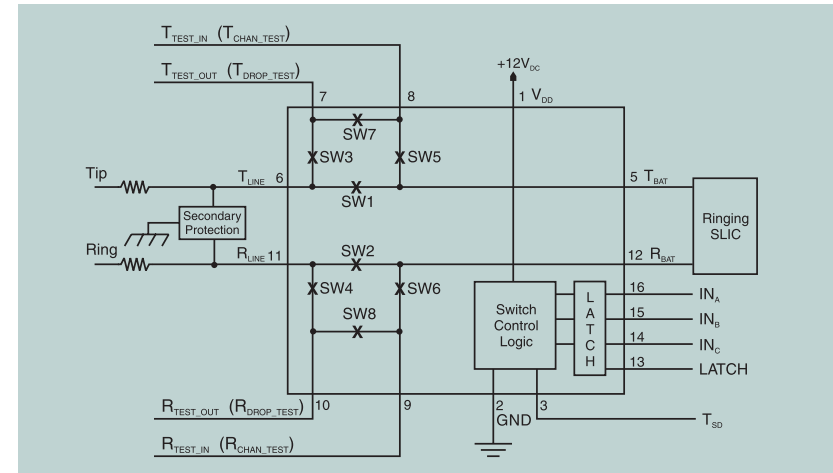
The CPC7508 is a member of our next generation Line Card Access Switch family. Used with ringing SLICs, it provides the necessary functions to replace the two 2-Form-C electromechanical test relays used in contemporary Fiber To The Home (FTTH) and Optical Network Unit (ONU) deployments as well as Voice over IP (VoIP) telephony terminals. Solid state switches provide the mechanism for tip and ring line break, drop test, and channel test while requiring only a single +12V supply for operation. Interface compatibility with 3.3V or 5V logic for switch state control is provided by the TTL logic-level inputs. The CPC7508 is designed for fiber access units where EMR's are used for test access and line monitoring functions but solid-state switches are desired due to reduced operating noise, lower power consumption and longer lifetimes. Available in a 16-pin SOIC package.

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)



Quad High Voltage Isolated Analog Switch Array: CPC7514

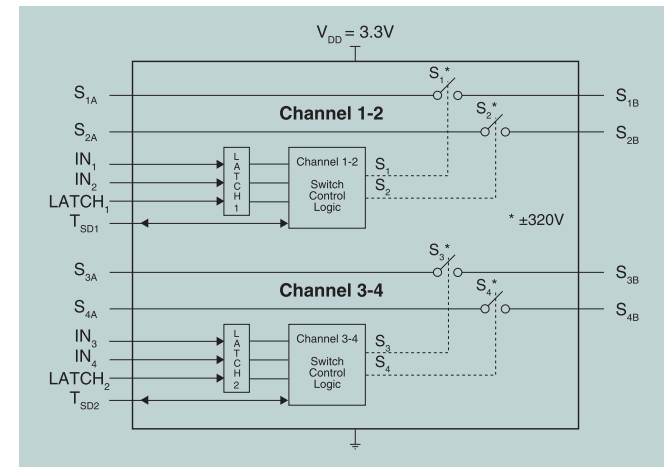
The CPC7514 Quad High Voltage (HV) isolated Analog Switch Array builds upon our Line Card Access Switch (LCAS) design and fabrication expertise for telecom and non-telecom applications. This monolithic solid state device provides the switching functionality of four normally open (1-Form-A) relays in one small economical package. Designed to provide flexible single-ended or differential access to high voltage networks, the CPC7514 High Voltage Array (HVA) is configured as two sets of matched, paired switches for improved differential performance. Additionally, sensitive differential applications will benefit from the matched pairs excellent pair-to-pair isolation. The self-biasing switches do not require external high voltage supplies for proper operation. Independent switch current limiting and switch-pair thermal shutdown features provide enhanced protection for devices connected to high voltage networks up to +320V.

Features:

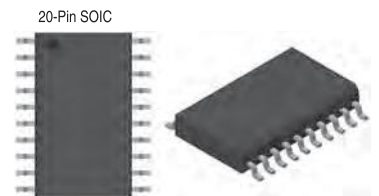
- Low, Matched R_{ON}
- Switch Voltage up to 320V
- 320V Logic Input to Switch Output Isolation
- 110dB Switch-to-Switch Isolation at 5kHz
- Flexible Switch Configurations
- Smart Logic for Power-Up / Hot-Plug State Control
- 3.3V Operation with Very Low Power Consumption
- Switch Current Limiting Protects 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) and Optical Network Units (ONU)
- Hybrid Fiber Coax (HFC)



3.3V Supply!



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

LITELINK™ Silicon DAA, Phone Line Interface

The LITELINK phone line interface is the industry's only single package silicon Data Access Arrangement, featuring a 32-pin, small outline, low profile, surface mount package. It is ideal for both voice and data (V.22bis to V.90/V.92) and applications in particularly dense circuit environments. The internal optical isolation barrier eliminates high-cost transformer or capacitive isolation circuits. This solution saves cost relative to competitive circuits through reduced passive component count and smaller printed circuit board space.

The 3kV_{rms} internal isolation barrier exceeds all worldwide regulatory requirements. In addition, 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.

The newest device is the CPC5622 that offers continuous Caller-ID (CID) signal monitoring, which is ideal for telephony applications in countries where CID information is present before the ringing signal. The CPC5622 also offers both full-wave and half-wave ringing signal detection, enabling the designer to choose the appropriate interface to the codec/DSP block.

Features:

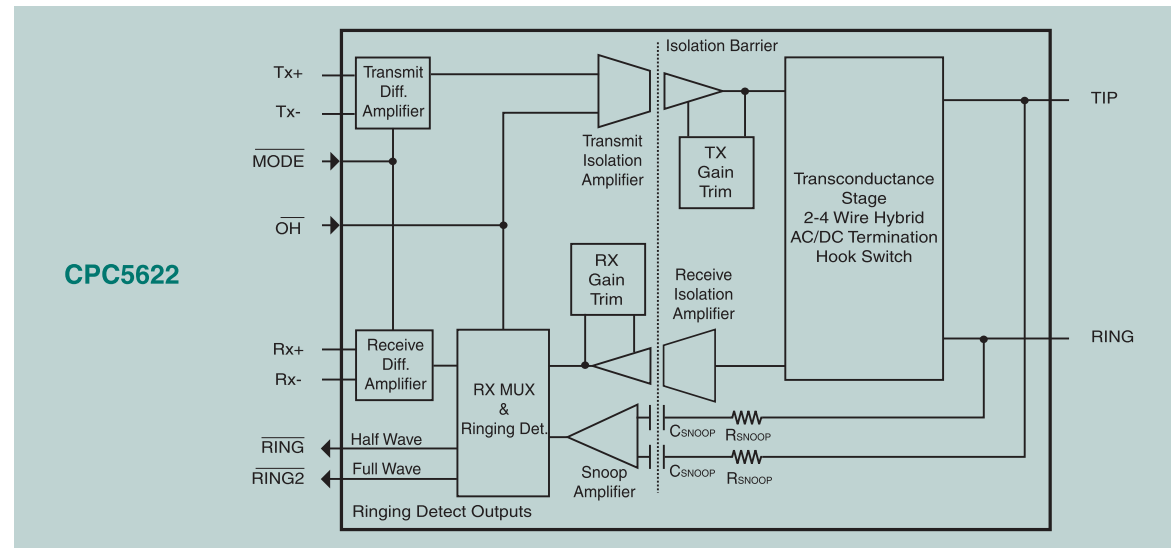
- Voice and Data Applications
- Modem DAA for Speeds up to V.92
- Half-Wave or Full-Wave Ringing Detection
- Worldwide Telephone Network Compatibility
- Caller-ID Reception
- Line Side Powered from Telephone Line
- 3.3V to 5V Power Supply
- Easy Interface with Modem ICs and Voice Codecs
- High Power 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



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	Full-Wave
CPC5620	3000	3.3 - 5	Selectable	Half-Wave
CPC5601	Optional Optically Isolated Auxiliary Programmable Driver IC: Enables Host Equipment Control For LITELINK Silicon DAA Devices			
CPC5608	Low-Power Transistor Array (see page 39)			



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

Voltage Monitor Devices

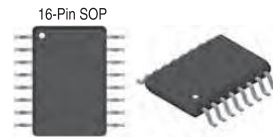
The CPC5712 is a special-purpose “Voltage Monitor with Detectors” integrated circuit that is used in various high voltage telephony applications such as VoIP gateways and IP-PBXs, as well as non-telephony applications in instrumentation and industrial control. The device monitors the TIP/RING potential through a high-impedance divider (resistor isolation) to derive two resistor-programmable signal level detects, polarity information, and a scaled, linear representation of the phone line voltages.

CPC5710N is a versatile building block for designing telephone line monitoring circuits. The device has two outputs: a scaled, linear representation of the input TIP/RING voltage, and a switchable, internally set comparator output. The comparator output provides a ringing detect signal, the level of which is set by the resistor values selected for the input network. A formula for selecting these input resistors is given in the CPC5710 Data Sheet that is available at our web site. The Data Sheet also includes an application circuit that derives Line-in-Use (LIU) and line polarity information from the scaled output signal. This high-impedance, resistive-barrier application circuit is fully compliant to the EN60950 safety standard, and meets the ITU-T K.21 over-voltage and over-current specifications (with appropriate PCB layout).

In use, the resistor divider and the high input impedance of both the CPC5710 and the CPC5712 make the circuits practically undetectable on the line.

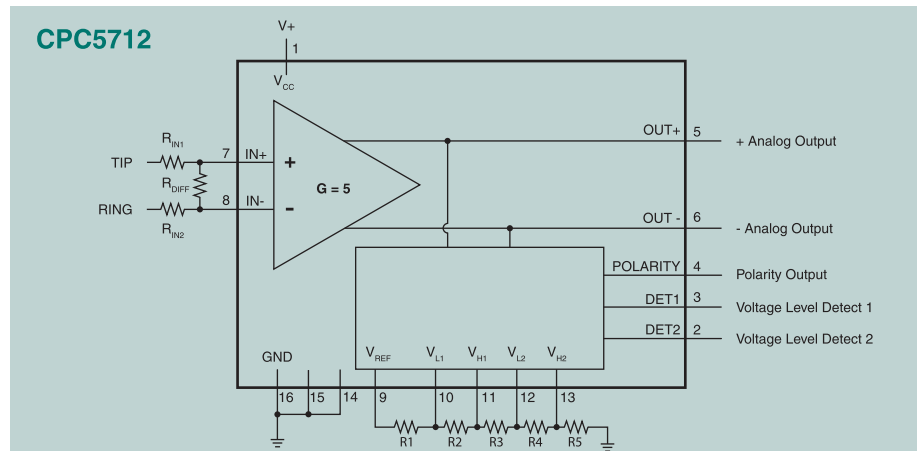
CPC5712 Features:

- Two Independent, Programmable Level Detectors with Programmable Hysteresis
- Fixed-Level Polarity Detector with Hysteresis
- Differential Linear Output
- Excellent Common-Mode Rejection Ratio (CMRR)
- 16-Pin SOP Package
- 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)



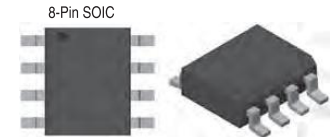
CPC5712 Applications:

- VoIP Gateways, IP-PBX, xDSL
- TIP/RING Monitoring: Polarity Detection for Caller ID, Enhanced 911, Line-in-Use, Battery Detection, PSTN Check
- Non-Telephony Voltage Level Detection Applications: Instrumentation and Industrial Control



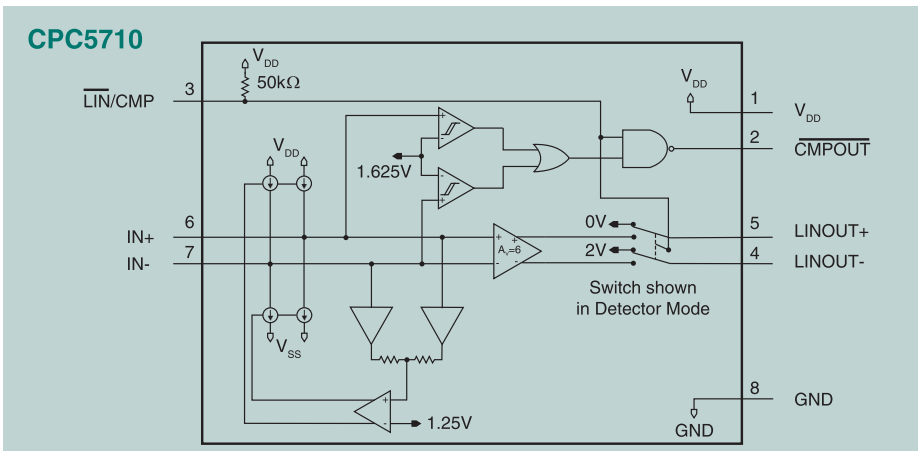
CPC5710 Features:

- 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)
- 8-Pin SOIC Package
- 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)



CPC5710 Applications:

- Display Feature (Caller ID) Signal Buffering
- Line-in-Use Detection (Another Phone-Off-Hook)
- Ringing Signal Detection
- Battery Presence Monitoring
- TIP/RING Voltage Monitoring
- Line Polarity



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

DC Termination IC: CPC1465 SHDSL/ISDN

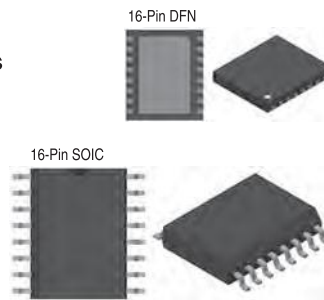
The CPC1465 provides a polarity-insensitive DC termination for wetting (sealing) current on the CPE side conforming to ITU-T G.991.2 to eliminate corrosion on G.SHDSL/ISDN lines. The CPC1465 has excellent linearity (70dB typ.) to minimize harmonic distortion, and well-controlled turn-on and turn-off characteristics to minimize injecting impulse noise with in-band signal energy into the G.SHDSL channel. This DC termination IC, which interfaces with the tip/ring pair, is rated at 300V, and is able to handle power cross and lightning transients with appropriate protection. Manufactured in our proven 320V Silicon-On-Insulator (SOI) process, the CPC1465 is packaged as a 16-pin SOIC or as a 16-pin DFN.

Features:

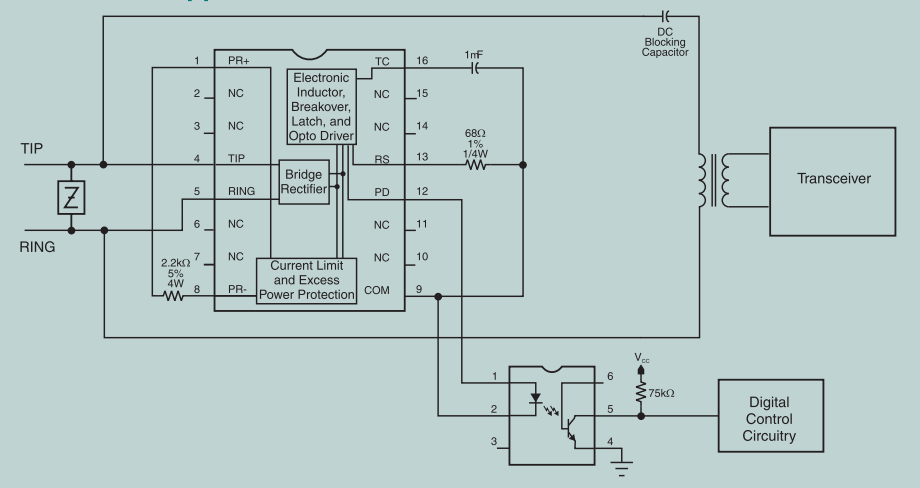
- Meets Wetting (Sealing) Current Requirements Per ITU-T G.991.2
- Integrated Bridge Rectifier for Polarity Correction
- Uses Inexpensive Optocoupler for DC Signaling
- Electronic Inductor, Breakover, and Latch Circuits
- Current Limiting and Excess Power Protection Circuits
- ANSI SHDSL and ISDN Compatible
- 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



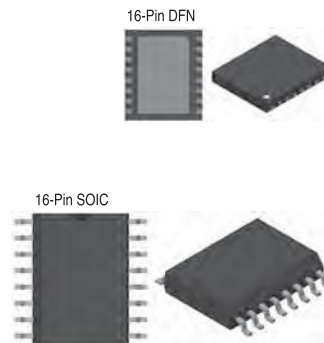
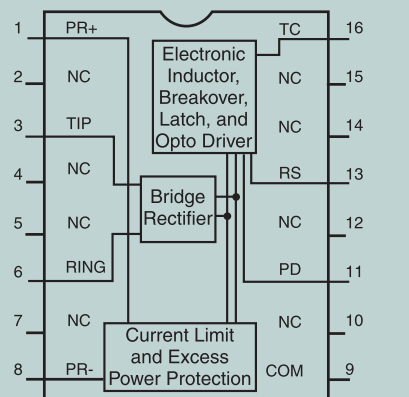
CPC1465 & Application Circuit



DC Termination IC: CPC1466 Broadband ADSL/VDSL

The CPC1466 is a DC Termination IC for broadband ADSL/VDSL applications. The high voltage, monolithic device provides a path for DC wetting (sealing) current in customer premises equipment (CPE) to eliminate phone line corrosion on DSL twisted-pair copper lines without telephone voice services (i.e. broadband-only services).

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
- Small 16-Pin SOIC and 16-Pin DFN Packages

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

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

Telecom Multifunction Products

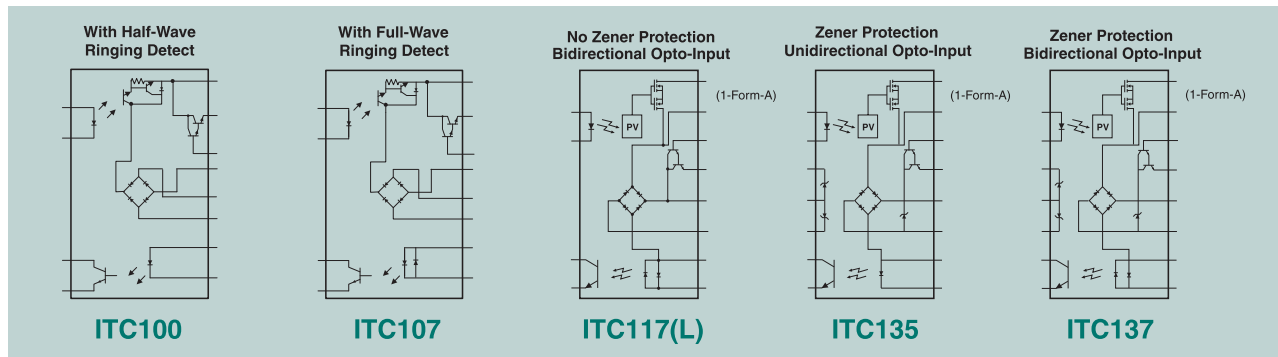
The OptoMOS line of Multifunction Products combines optically isolated discrete component functions into a single package. These products mix and match solid state relays, optocouplers, bridge rectifiers, Darlington transistors, and Zener diodes to create highly functional circuits in a single, small 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

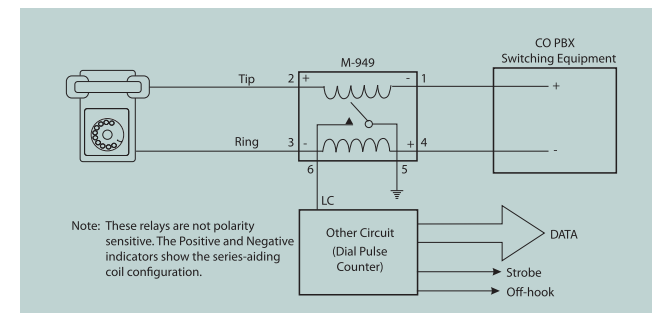


Relay Parameters					Optocoupler Parameters				Isolation Voltage (V _{rms})	Package Type	Features
Part Number	Blocking Voltage (V _p)	Load Current (mA)	On Resistance (Ω)	Input Control Current (mA)	Breakdown Voltage (V)	Current Transfer Ratio (%)	Saturation Voltage (V)	Input Control Current (mA)			
ITC117	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

Line Sense Relay

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



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

Cybergate™ Data Access Arrangement (DAA) Modules

The Cybergate family is a turnkey modular DAA solution. The V.34 family provides the circuitry required in a single, completely functional DAA circuit in a 1.07" x 1.07" x 0.4" plastic module. This plug-and-play design allows the user to choose the necessary options to minimize costs, and in turn maximize value. Standard features include surge protection, transient protection Zeners, ringing detection, hook switch circuitry, gyrator circuitry (impedance balancing), and a transformer. Caller-ID (CID) and loop current detection are also available as options.

Features:

- 28.8kbps (Except for CYG2911 at 9.6kbps)
- 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



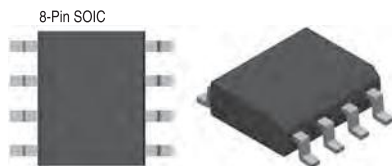
Small Package Size!

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

Part Number	Region	Hook Switch Resistance (Ω)	DC Loop Current (mA)	Return Loss (Min) (dB)	Insertion Loss (Max) TX - Transmit (dB) RX - Receive (dB)	Ringing Voltage Detection Range (V _{rms})	Isolation Voltage (V _{rms})	FEATURES				
								Ringing Detection		Caller ID	Loop Current Detect	2-4 Wire Conversion
CYG2000	N. America Asia	15	20-120	18	TX 7 RX 7	20-150	1000		•			
CYG2011	N. America Asia	15	20-120	18	TX 7 RX 7	20-150	1000	•			•	
CYG2020	N. America Asia	15	20-120	18	TX 7 RX 7	20-150	1000		•	•		
CYG2100	Europe	35	5-120	14	TX 7 RX 7	29-150	1500		•			
CYG2110	France	35	5-120	14	TX 7 RX 7	29-150	1500		•			
CYG2111	CTR-21	35	5-60	14	TX 7.5 RX 7.5	29-150	1500		•			
CYG2217	N. America Asia	15	20-120	39	TX 7 RX 1	20-150	1000		•			•
CYG2218	N. America Asia	15	20-120	39	TX 1 RX 1	20-150	1000		•			•
CYG2320	Australia	-	5-120	14	TX 7 RX 7	29 MIN	1500		•			

Low Power Transistor Array: CPC5608

The CPC5608 is a 5-channel, low-power transistor array IC with a simple 2-state logic control input. A logic-low input turns on switches OUT1, OUT2, and OUT3; a logic high turns on switches OUT4 and OUT5. Output transistors are capable of sinking 50mA in low output voltage (<7V) circuits. The IC features a low supply voltage range of 2.5V to 5.5V and no static supply bias current draw making it ideal for portable battery and on-hook telephone applications.

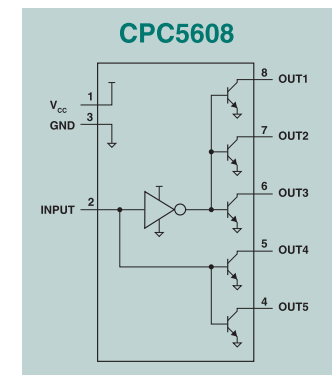


Features:

- No Static Current Draw from Power Supply (CMOS Control)
- Low-Voltage Operation (V_{CC} = 2.5V)
- Low Output Transistor Leakage

Applications:

- Portable Battery Equipment
- Telephony
- Instrumentation



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

Call Progress Tone Detector

This Call Progress device is an inexpensive band detector that provides an accurate method of detecting common call progress tones including busy tone, dial tone, call waiting tones, and others. The detector is available in both DIP and SOIC packages, and operates on a 3V to 5V supply.

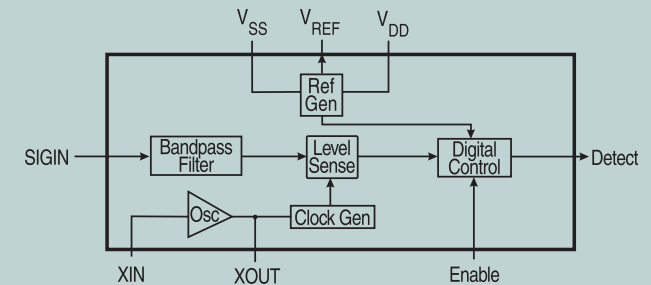
Features:

- 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

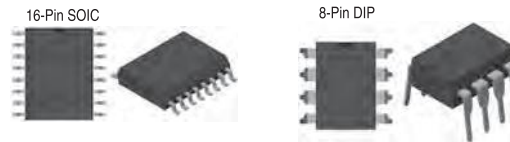
Applications:

- PBX Circuits
- Billing Systems
- Test Equipment
- Point-of-Sale Terminals

M-980-02: Call Progress Tone Detector



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



Embedded Modem Module: CPC2400E

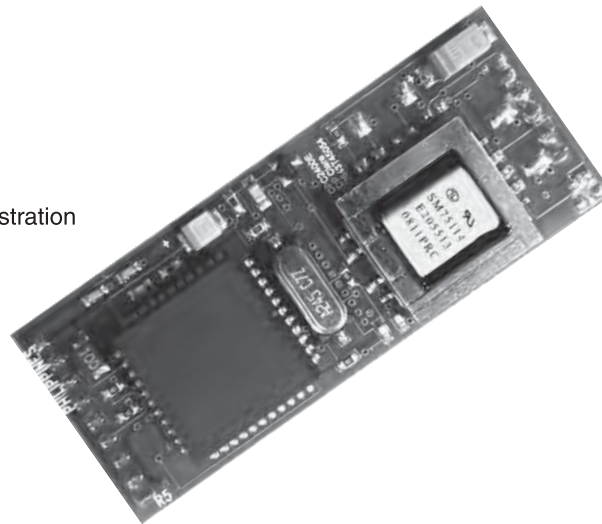
The Embedded Modem Module (EMM) combines a datapump and microcontroller with the Data Access Arrangement (DAA) to deliver an all-in-one solution for V.22bis modem transaction-oriented applications. This plug-and-play module provides a total solution complete with transferable FCC registration. It supports a standard serial V.24 TTL interface to the DTE equipment. The CPC2400E features a quick handshake time of 1.6 seconds. This offers a clear advantage for short connection sessions when compared to V.34 and V.90 modems which have a data handshake period greater than 10 seconds.

Features:

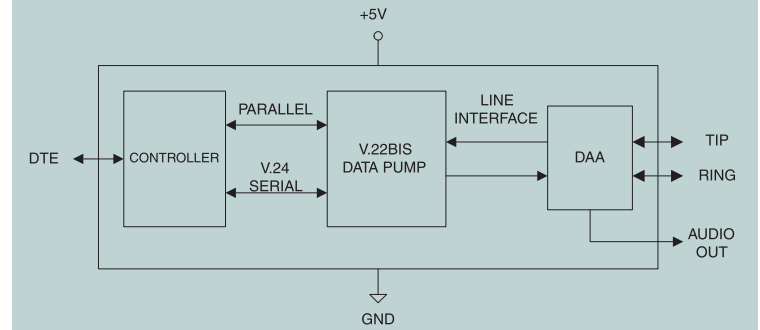
- Easy Integration and Installation
- Small Footprint of 1.00" x 2.50"
- Low Power Consumption
- 5V Power Supply Operation
- Supports V.22bis, V.22, V.23
- FCC Part 15B Compliant
- FCC Part 68 User Transferable Registration
- UL Approved

Applications:

- Point-of-Sale (POS)
- Gaming Equipment
- Utility Metering
- Lock Boxes
- Remote Monitoring
- Embedded Applications
- Medical Appliances



CPC2400E

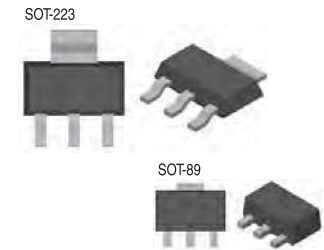


Discrete Components

N-Channel Depletion Mode FETs

Our N-channel depletion mode Field Effect Transistors (FETs) utilize a proprietary third generation vertical DMOS process. The third generation process realizes world class, high voltage MOSFET performance in an economical silicon gate process. The vertical DMOS process yields a robust device for low-power applications with high input impedance. These highly reliable FET devices have been used extensively in our solid state relays for industrial and telecommunications applications.

These normally-on MOSFETs are well suited for low cost, pre-regulator applications that are tolerant of high voltage drop and power dissipation between the power source and the output regulator stage. The pre-regulator is particularly effective as an inexpensive solution for filtering AC line voltage variations in non-isolated DC power supplies as compared to switch-mode power supplies or step-down transformers.



Part Number	$V_{(BR)DSX}$ (V)	$R_{DS(on)}$ Max (Ω)	$V_{GS(off)}$ Min (V)	$V_{GS(off)}$ Max (V)	I_{DSS} @ $V_{GS} = 0V$ Min (mA)	I_D @ $V_{GS} = -0.57V$ Min (mA)	Package Type	Features & Comments
CPC3701	60	1	-0.8	-2.9	600	-	SOT-89	
CPC3703	250	4	-1.6	-3.9	360	-	SOT-89	
CPC3708	350	14	-2	-3.6	-	130	SOT-89, SOT-223	
CPC3710	250	10	-1.6	-3.9	220	-	SOT-89	
CPC3714	350	14	-1.6	-3.9	240	-	SOT-89	
CPC3720	350	22	-1.6	-3.9	130	-	SOT-89	
CPC3730	350	30	-1.6	-3.9	140	-	SOT-89	
CPC5602	350	14	-2	-3.6	-	130	SOT-223	Designed for Use with LITELINK Designs
CPC5603	415	14	-2	-3.6	-	130	SOT-223	Designed for Use with LITELINK Designs

Diode Bridges

The CPC7556N integrated diode bridge offers protection from high voltage transients by means of an adjustable voltage clamp. The clamp performs two actions, first to limit the voltage across the diode bridge rectified outputs to a value determined by external resistors and the gate voltage, and second to fully discharge the V+ to V- outputs when the gate's trigger threshold is exceeded during the voltage limiting function. The rectified outputs are discharged as a result of the voltage fold-back function of the OVP device. Voltage fold-back of the OVP circuit will continue until the current through the protector falls below the hold current threshold.

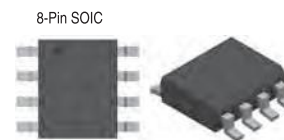
The CPC7557N is an integrated diode bridge built on our High Voltage SOI technology. Very small in size, this integrated diode bridge device offers a space-saving method for inclusion of a highly reliable, monolithic, full-wave bridge rectifier into today's miniature circuit designs.

Features:

- Monolithic Construction
- Surface Mount Package

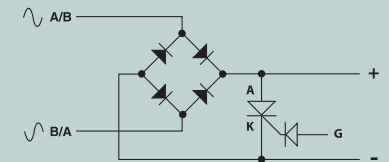
Applications:

- Telecommunications Protection Clamp
- High Voltage Multiplexer / Switch
- High Voltage ESD Clamp

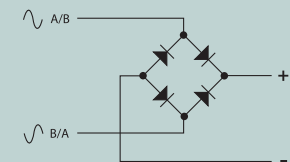


Part Number	Reverse Voltage (V)	Forward Current (mA _{rms})	Diode V_F Drop (V)	Thyristor Current (mA)	Reverse Leakage I_{LEAK} (μA)
CPC7556	100	240	0.97	120	1
CPC7557	100	240	0.97	-	1

CPC7556



CPC7557



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

Other Semiconductor Products

Hall-Effect Switches

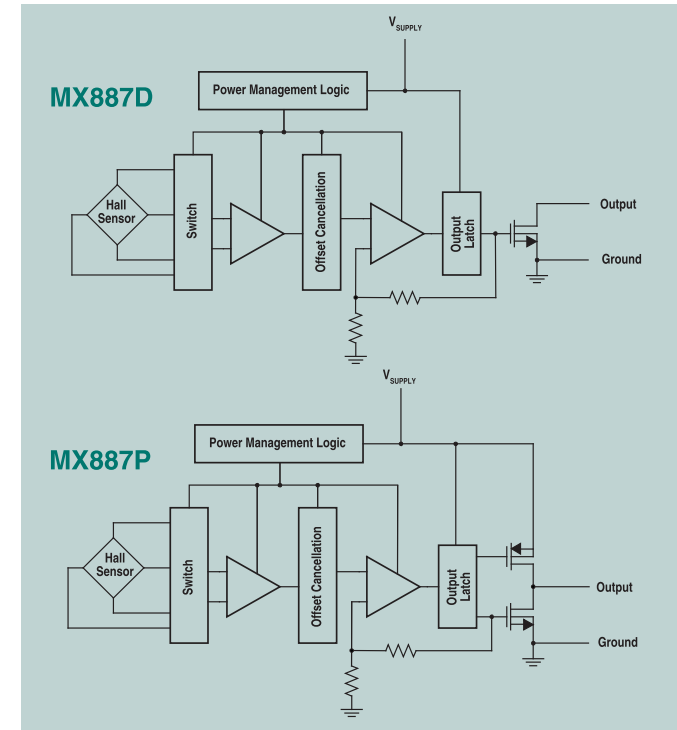
The MX887D and MX887P integrated Hall-Effect switches target the requirements of low-power portable devices with battery operating voltages from 2.5V to 5.5V. On-chip power management circuitry reduces the effective average current to just 5µA at 3V supply voltage.

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



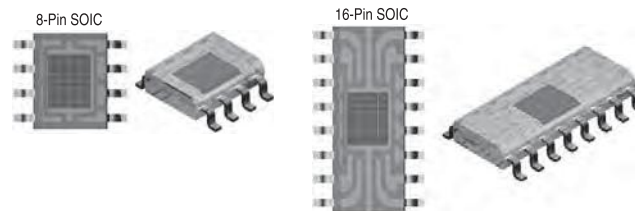
Solar Cells

Our Solar Cells address the diverse needs of the growing number of micro-power solar applications. The SOI process, which also creates isolation trenches on the die, produces multiple solar cells on a single, monolithic piece of monocrystalline silicon. These isolated solar cells can then be interconnected to give a useful level of voltage from a small, SOIC package that can be easily installed in an automated process. Ideal for use in applications where high current is not needed, but voltages higher than those provided by single solar cells is required.

Part Number	Open-Circuit Voltage (V)	Short-Circuit Current (µA)	Package Type
CPC1822	4	50	8-Pin SOIC
CPC1824	4	100	16 Pin SOIC
CPC1831	8	25	8-Pin SOIC
CPC1832	8	50	16-Pin SOIC

Features:

- Provides True Wireless Power
- Triggers with Natural Sunlight or Artificial Light
- Semiconductor Miniature Size and Reliability



Applications:

- µ-Power Wireless Sensors
- Solar Tracking
- Portable Electronics
- Solar Battery Chargers
- Battery Operated Equipment
- Consumer Electronics
- Sunlight / Light / Flame Detection

The following application notes can be downloaded from our web site at www.ixysic.com

General

- AN-131 Handling MOS Devices

Solid State Relays

- AN-145 Advantages of Solid State Relays Over Electromechanical Relays (English, Espanol, Deutsch, Francais)

High Voltage LED Drivers

- AN-301 CPC9909 Design Considerations
- AN-300 MXHV9910 Design Considerations

Gate Drivers

- AN-401 MOSFET / IGBT Drivers Theory and Applications
- AN-400 IX2127 Design Considerations
- AN-202 CPC1590 Application Technical Information
- AN-201 Using the CPC1580 Isolated Gate Driver IC

Linear Optocouplers

- AN-118 Detecting Line Polarity Reversal
- AN-111 Isolated 0-10V to 4-20mA Converter Application
- AN-109 LOC110 - Variable Speed Motor Controller Design
- AN-107 LOCxx Series - Isolated Amplifier Design Principals

Multifunction Products for Telecom

- AN-151 FXO/DAA Design Using IXYS Integrated Circuits Division OptoMOS Components
- AN-114 ITC117P Integrated Telecom Circuit
- AN-112 Ground-Start Supervision Circuit Using IXYS Integrated Circuits Division's IAA110

High Speed Digital Opto Isolators

- TB-101 Optically Isolating an I²C Interface

Line Interface Products

- AN-154 Line Card Access Switch (LCAS) Longitudinal Balance Calculator Excel Spreadsheet for Line Card Applications
- AN-144 Impulse Noise Benefits of Line Card Access Switches
- AN-100 Design Surge and Power Fault Protection for Subscriber Line Interfaces

LITELINK Silicon DAA

- AN-158 LITELINKIII Application Circuit Calculations
- AN-157 Increased LITELINK Transmit Power
- AN-146 Guidelines for Effective LITELINK Designs
- AN-112 Ground-Start Supervision Circuit Using IXYS Integrated Circuits Division's IAA110
- AN-102 Loop Current Detection for LITELINK



Tone Signaling Products

- AN-142 M-949 - Loop Current Sensing and Ring Chatter
- AN-138 M-980 - Call Progress Tone Detector Applications
- AN-130 Call Progress Tone Standards
- AN-129 M-991 - Call Progress Tone Generator
- AN-128 M-980 - Algorithm for Call Progress Signal Detection
- AN-125 M-986 - Configuring the M-986 MF Trunk Signaling



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