DUAL CHANNEL ILD3
QUAD CHANNEL ILQ3
Phototransistor Optocoupler

FEATURES
- **Current Transfer Ratio at I_F=1.6 mA, 300% Min.**
- **High Collector-Emitter Voltage**
- **BV_{CEO}=50 V**
- **Field-Effect Stable by TRansparent IOn Shield (TRIOS)**
- **Double Molded Package Offers Isolation Test Voltage 5300 V_{RMS}, 1.0 sec.**
- **Underwriters Lab File #E52744**

Maximum Ratings (Each Channel)

Emitter

Reverse Voltage .....6.0 V
Continuous Forward Current ..... 60 mA
Surge Current ..... 2.5 A
Power Dissipation.....100 mW
Derate Linearly from 25°C .....1.3 mW/°C

Detector

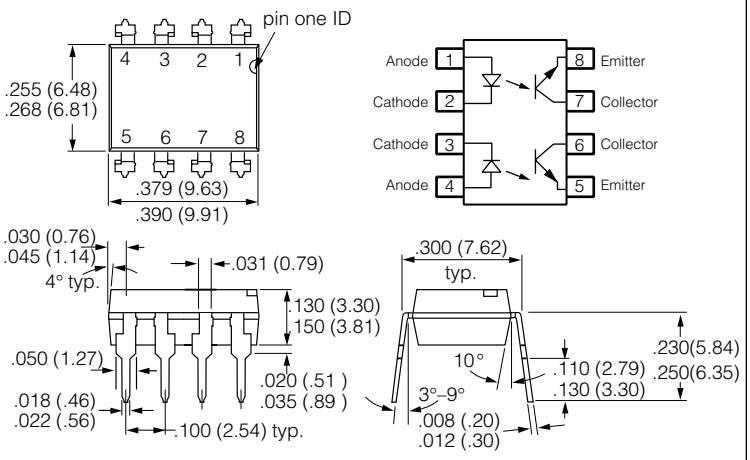
Collector-Emitter Reverse Voltage.....50 V
Collector Current ..... 50 mA
Collector Current (t<1.0 ms)..... 400 mA
Total Power Dissipation .....200 mW
Derate Linearly from 25°C .....2.6 mW/°C

Package

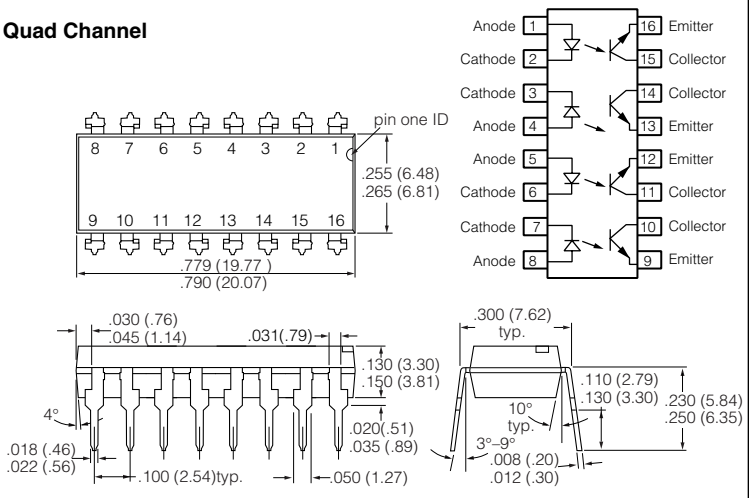
Isolation Test Voltage (between emitter and detector, refer to standard climate 23°C/50% RH, DIN50014) t=1 sec. ..... 5300 V_{RMS}
Creepage ..... ≥7.0 mm
Clearance ..... ≥7.0 mm
Isolation Resistance
V_{IO}=500 V, T_A=25°C..... $R_{IO}=10^{12}\ \Omega$
V_{IO}=500 V, T_A=100°C..... $R_{IO}=10^{11}\ \Omega$
Power Dissipation.....250 mW
Derate Linearly from 25°C .....3.3 mW/°C
Storage Temperature Range .....–40 to +150°C
Operating Temperature Range.....–40 to +100°C
Junction Temperature.....100°C
Soldering Temperature,
2.0 mm from case bottom.....260°C

Dimensions in Inches (mm)

Dual Channel



Quad Channel



DESCRIPTION

The ILD/Q3 are optically coupled isolated pairs employing GaAs infrared LEDs and silicon NPN phototransistor. Signal information, including a DC level, can be transmitted by the drive while maintaining a high degree of electrical isolation between input and output. The ILD/Q3 are especially designed for driving medium-speed logic and can be used to eliminate troublesome ground loop and noise problems. Also these couplers can be used to replace relays and transformers in many digital interface applications such as CRT modulation. The ILD3 has two isolated channels in a single DIP package and the ILQ3 has four isolated channels per package.

See Appnote 45, *"How to Use Optocoupler Normalized Curves"*.

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Characteristics

Emitter (IR GaAs)	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Forward Voltage	V_F	—	1.25	1.65	V	I_F=60 mA
Reverse Current	I_R	—	0.01	10	µA	V_R=6.0 V
Capacitance	C_0	—	25	—	pF	V_R=0 V, f=1.0 MHz
Thermal Resistance, Junction to Lead	R_{THJL}	—	750	—	K/W	—
Detector						
Collector-Emitter Leakage Current	I_{CEO}	—	5.0	70	nA	V_{CE}=15 V
Capacitance	C_{CE}	—	6.8	—	pF	V_{CE}=5.0 V, f=1.0 MHz
Thermal Resistance, Junction to Lead	R_{THJL}	—	500	—	K/W	—
Package Transfer Characteristics (Each Channel)						
Saturated Current Transfer Ratio, ILD/Q3-1	CTR_{SAT}	300	—	—	%	I_F=1.6 mA, V_{CE}=0.4 V
Saturated Current Transfer Ratio, ILD/Q3-2	CTR_{SAT}	100	—	—	%	I_F=1.0 mA, V_{CE}=0.4 V
Common Mode Rejection Output High	CMH	—	5000	—	V/µs	V_{CM}=50 V_{P-P}, R_L=10 kΩ, I_F=0 mA
Common Mode Rejection Output Low	CML	—	5000	—	V/µs	V_{CM}=50 V_{P-P}, R_L=10 kΩ, I_F=0 mA
Common Mode Coupling Capacitance	C_{CM}	—	0.01	—	pF	—
Package Capacitance	C_{IO}	—	0.8	—	pF	V_{IO}=0 V, f=1.0 MHz