SINGLE CHANNEL **IL766**
DUAL CHANNEL **ILD766**

Bidirectional Input Darlington Optocoupler

FEATURES

- **Internal R_{BE} for Better Stability**
- **High Current Transfer Ratios, V_{CE}=5.0 V**
  IL/ILD766-1: 500% at I_F=2.0 mA
  IL/ILD766-2: 500% at I_F=1.0 mA
- **BV_{CEO} >60 V**
- **AC or Polarity Insensitive Inputs**
- **Built-In Reverse Polarity Input Protection**
- **Industry Standard DIP Package**
- **Underwriters Lab File #E52744**

DESCRIPTION

The IL/ILD766 are bidirectional input optically coupled isolators. They consist of two Gallium Arsenide infrared emitting diodes coupled to a silicon NPN photodarlington per channel.

The IL766 are single channel optocouplers. The ILD766 has two isolated channels in a single DIP package. They are designed for applications requiring detection or monitoring of AC signals.

Maximum Ratings

Emitter (Each Channel)

Continuous Forward Current ..... 60 mA
Power Dissipation at 25°C
  Single Channel ..... 200 mW
  Dual Channel ..... 90 mW
Derate Linearly from 25°C
  Single Channel ..... 2.6 mW/°C
  Dual Channel ..... 1.2 mW/°C

Detector (Each Channel)

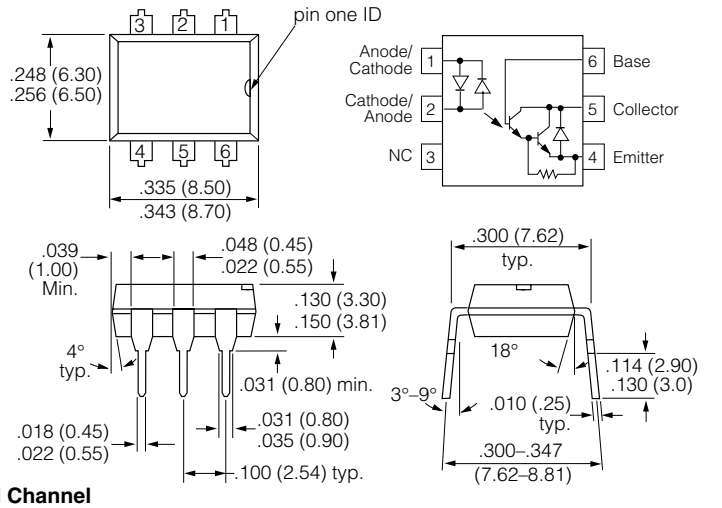
Collector-Emitter Breakdown Voltage ..... 60 V
Collector-Base Breakdown Voltage ..... 70 V
Power Dissipation at 25°C ..... 100 mW
Derate Linearly from 25°C ..... 1.33 mW/°C

Package

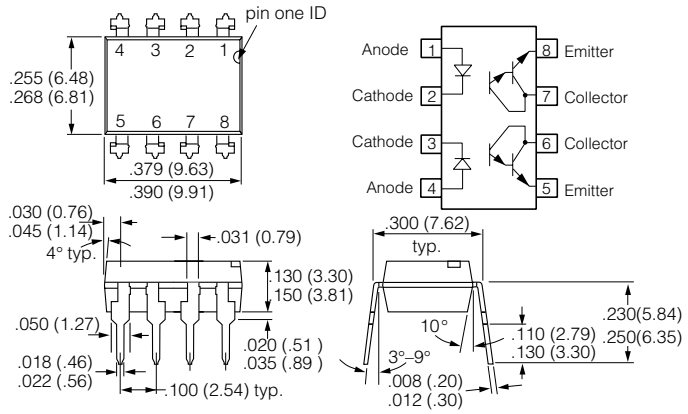
Isolation Test Voltage
  (t=1.0 sec.) ..... 5300 V_{RMS}
Isolation Resistance
  T_A=25°C ..... $\geq 10^{12}$ Ω
  T_A=100°C ..... $\geq 10^{11}$ Ω
Total Power Dissipation at T_A=25°C
(LED Plus Detector)
  Single Channel ..... 250 mW
  Dual Channel ..... 400 mW
Derate Linearly from 25°C
  Single Channel ..... 3.3 mW/°C
  Dual Channel ..... 5.3 mW/°C
Creepage ..... ≥7.0 mm
Clearance ..... ≥7.0 mm
Comparative Tracking Index per
  DIN IEC 112/VDE303, part 1 175
Storage Temperature ..... –55°C to +150°C
Operating Temperature ..... –55°C to +100°C
Lead Soldering Time at 260°C ..... 10 sec.

Dimensions in inches (mm)

Single Channel



Dual Channel



Electrical Characteristics T_A=25°C

Parameter	Sym	Min	Typ	Max	Unit	Condition
Emitter						
Forward Voltage	V_F	—	1.2	1.5	V	I_F=±10 mA
Detector						
Breakdown Voltage, Collector-Emitter Collector-Base	BV_{CEO} BV_{CBO}	60 60	75 90	—	V V	I_C=1.0 mA I_C=10 µA
Leakage Current, Collector-Emitter	I_{CEO}	—	10	100	nA	V_{CE}=10 V
Package						
Saturation Voltage, Collector-Emitter	V_{CEsat}	—	—	1.0	V	I_F=±10 mA I_C=10 mA
DC Current Transfer Ratio IL766/ILD766-1 IL766-2	CTR	 500 500	—	—	 % %	V_{CE}=5.0 V I_F=±2.0 mA I_F=±1.0 mA
Rise Time, Fall Time	—	—	100	—	µs	V_{CC}=10 V I_F=±2.0 mA R_L=100 Ω

Figure 1. Input characteristics

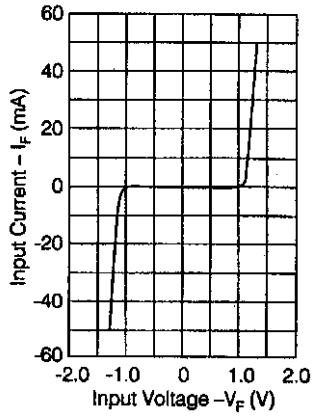


Figure 2. Transistor current versus voltage

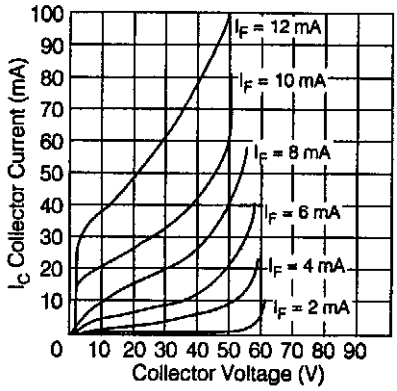


Figure 3. Transistor output current versus voltage

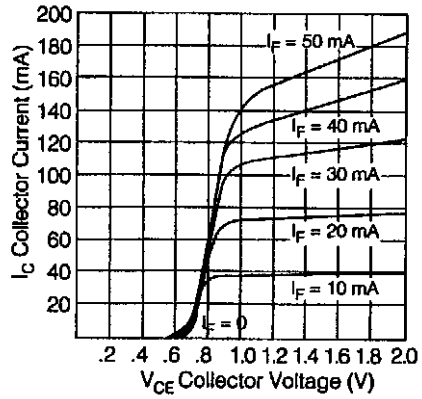


Figure 4. I_{CEO} at V_{CE}=10 V versus temperature

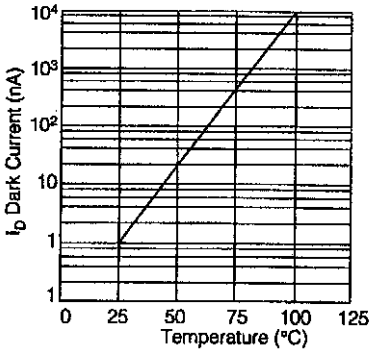


Figure 5. Normalized CTR versus forward current

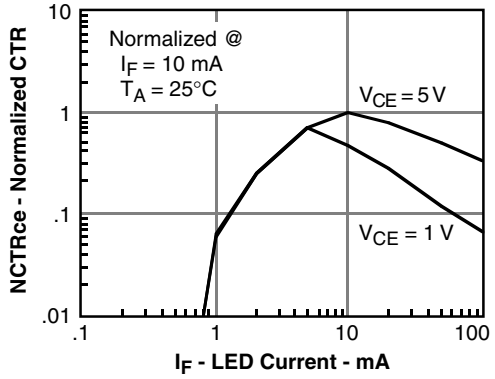


Figure 6. t_r versus forward current

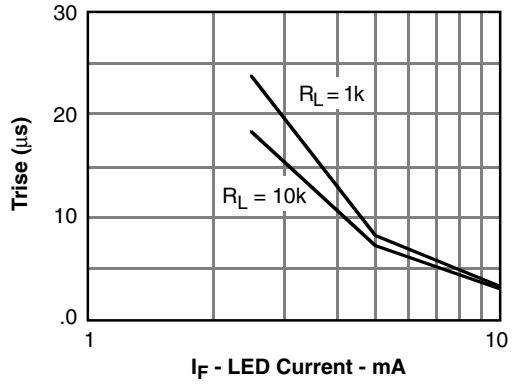


Figure 7. Saturated switching characteristics measurements—schematic and waveform

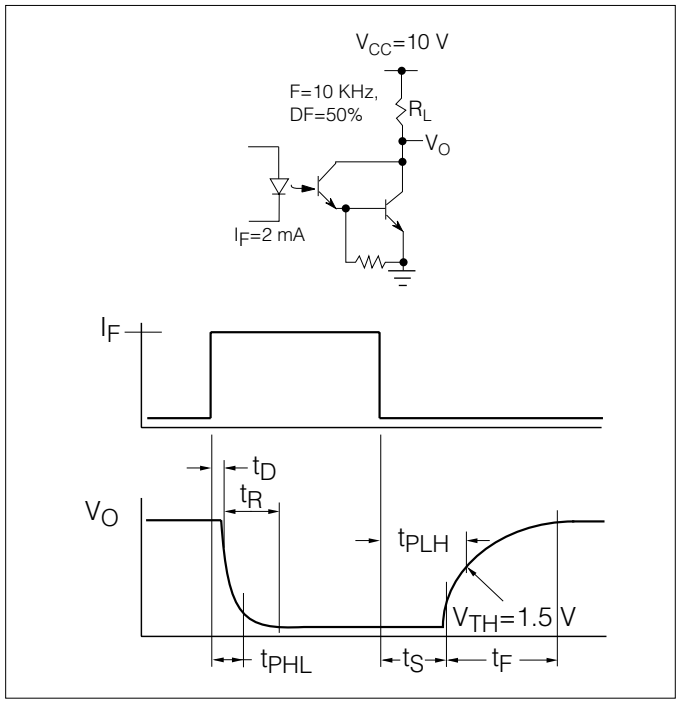


Figure 8. t_{fall} versus forward current

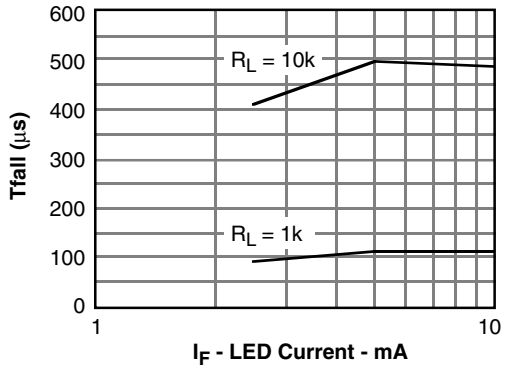


Figure 9. t_{on} versus forward current

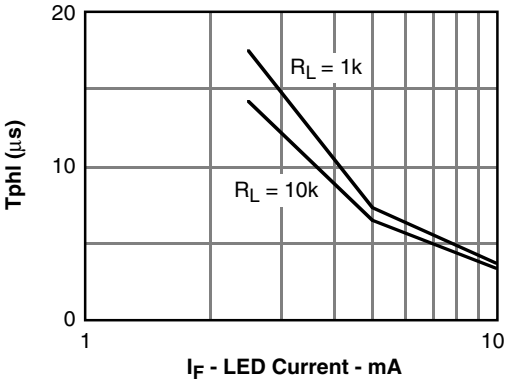


Figure 10. t_{off} versus forward current

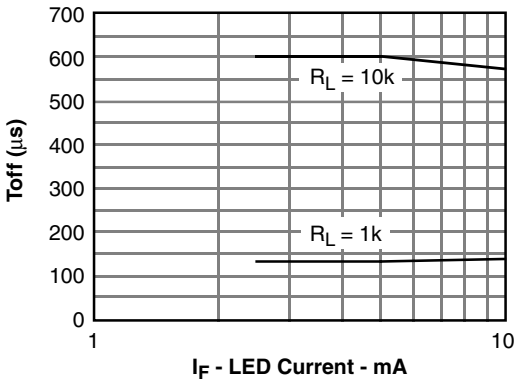


Figure 11. t_{phl} versus forward current

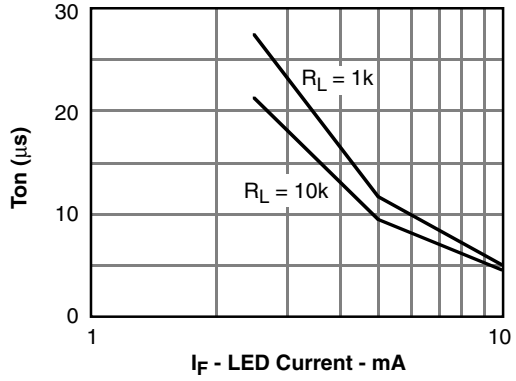


Figure 12. t_{plh} versus forward current