SIEMENS

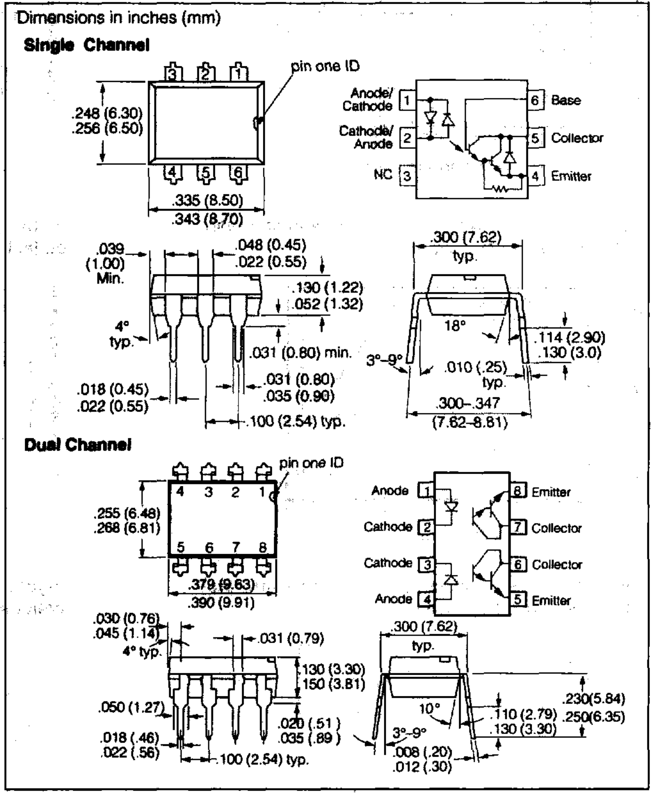
SINGLE CHANNEL **IL766**
DUAL CHANNEL **ILD766**
Bidirectional Input Darlington Optocoupler

FEATURES
- **Internal R_{BE} for Better Stability**
- **High Current Transfer Ratios, V_{CE}=5 V**
  IL/ILD766-1: 500% at I_F=2 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 sec.) .... 7500 VAC_{PK}/5300 VAC_{RMS}
Isolation Resistance
  T_A=25°C .... ≥10^{12} Ω
  T_A=100°C .... ≥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 mm min.
Clearance .... 7 mm min.
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.



Electrical Characteristics T_A=25°C

	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 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 V I_F=±2 mA, I_F=±1.0 mA,
Rise Time, Fall Time			100		µs	V_{CC}=10 V, I_F=±2 mA, R_L=100 Ω

Figure 1. Input characteristics

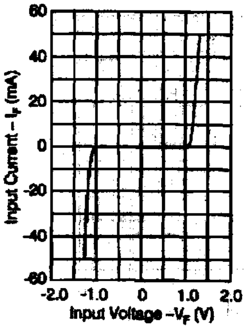


Figure 2. Transistor current versus voltage

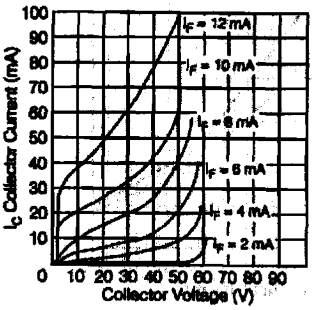


Figure 3. Transistor output current versus voltage

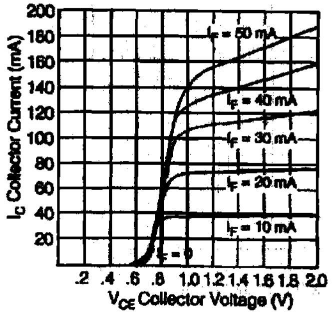


Figure 4. I_{CEO} at V_{CE}=10 V versus temperature

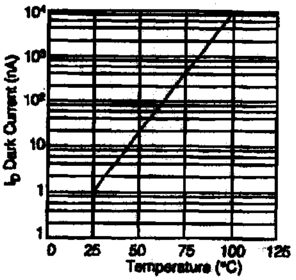


Figure 5. Normalized CTR versus forward current

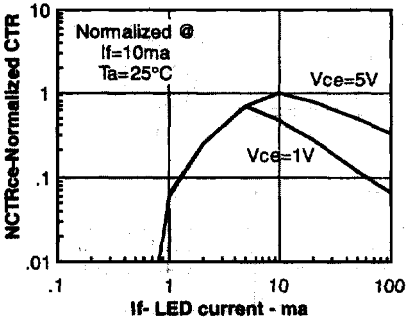


Figure 6. Tr versus forward current

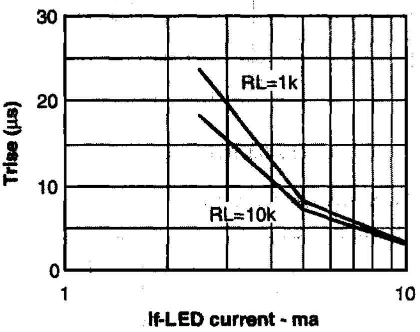


Figure 7. Saturated switching characteristics measurements—schematic and waveform

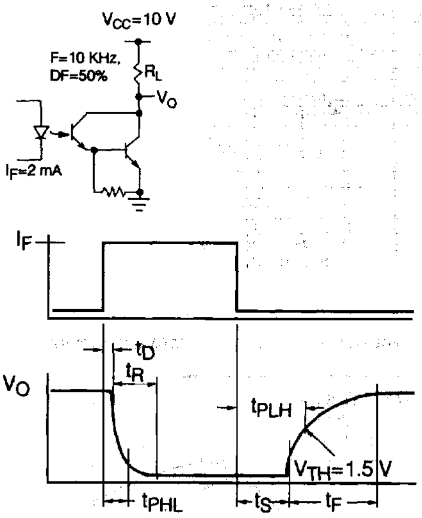


Figure 8. T_{fall} versus forward current

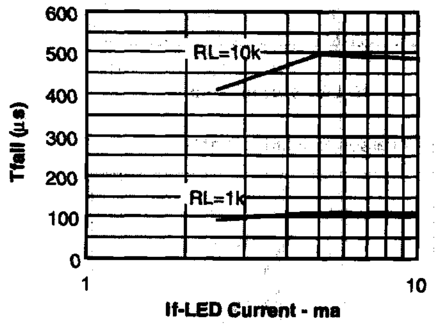


Figure 9. T_{on} versus forward current

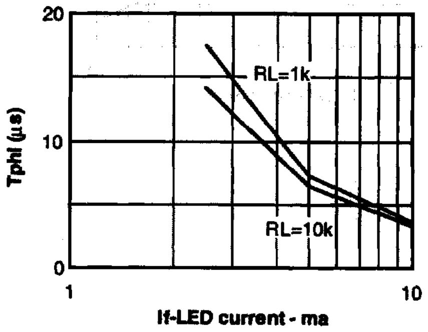


Figure 10. T_{off} versus forward current

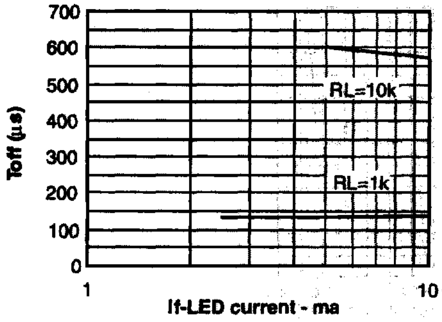


Figure 11. T_{phl} versus forward current

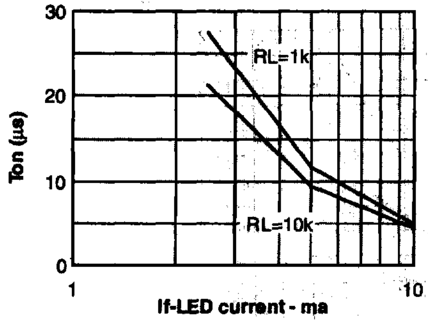


Figure 12. T_{plh} versus forward current