

Bidirectional Input Darlington Optocoupler

FEATURES

- **High Current Transfer Ratios, $V_{CE}=5.0\text{ V}$**
IL/ILD755-1: 750% at $I_F=2.0\text{ mA}$
- IL/ILD755-2: 1000% at $I_F=1.0\text{ mA}$
 $BV_{CEO} > 60\text{ V}$
- **AC or Polarity Insensitive Inputs**
- **Built-In Reverse Polarity Input Protection**
- **Industry Standard DIP Package**
- **Underwriters Lab File #E52744**
-  **VDE #0884 Available with Option 1**

DESCRIPTION

The IL/ILD755 are bidirectional input optically coupled isolators. They consist of two Gallium Arsenide infrared emitting diodes coupled to a silicon NPN photodarlington per channel.

The IL755 are single channel Darlington optocouplers. The ILD755 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.....	100 mW
Derate Linearly from 25°C	1.33 mW/°C

Detector (Each Channel)

Collector-Emitter Breakdown Voltage.....	60 V
Collector-Base Breakdown Voltage	60 V
Power Dissipation at 25°C	

IL755	200 mW
ILD755	150 mW

Derate Linearly from 25°C

ILD755	2.6 mW/°C
ILD755	2.0 mW/°C

Package

Isolation Test Voltage (PK)

(t=1.0 sec.) 7500 VAC_{PK}/5300 V_{RMS}

Total Power Dissipation at 25°C Ambient
(LED Plus Detector)

IL755.....	250 mW
ILD755.....	400 mW

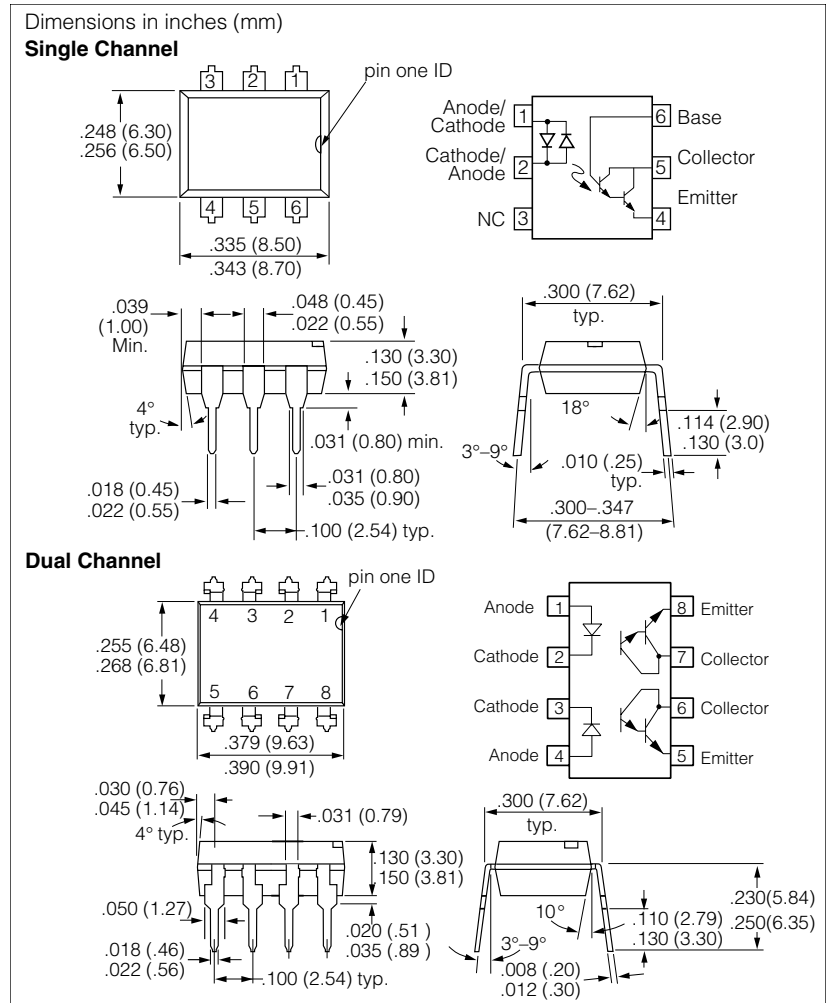
Derate Linearly from 25°C

IL7553.....	3.0 mW/°C
ILD7555.....	3.0 mW/°C

Creepage	≥7.0 mm
Clearance.....	≥7.0 mm

Storage Temperature.....	-55°C to +150°C
Operating Temperature.....	-55°C to +100°C

Lead Soldering Time at 260°C 10 sec.



Electrical Characteristics $T_A=25^{\circ}\text{C}$

	Symbol	Min.	Typ.	Max.	Unit	Condition
Emitter						
Forward Voltage	V_F	—	1.2	1.5	V	$I_F = \pm 10 \text{ mA}$
Detector						
—	BV_{CEO}	60	75	—	V	$I_C = 1.0 \text{ mA}$
—	BV_{CBO}	60	90	—		$I_C = 10 \text{ }\mu\text{A}$
—	I_{CEO}	—	10	100	nA	$V_{CE} = 10 \text{ V}$
Package						
—	V_{CEsat}	—	—	1.0	—	$I_F = \pm 10 \text{ mA}$, $I_C = 10 \text{ mA}$
DC Current Transfer Ratio IL755/ILD755-1 IL755/ILD755-2	CTR	750 1000	—	—	% %	$V_{CE} = 5.0 \text{ V}$ $I_F = \pm 2.0 \text{ mA}$, $I_F = \pm 1.0 \text{ mA}$,
Rise Time/Fall Time IL/ILD755-1 IL/ILD755-2	—	—	50 70	—	μs μs	$V_{CC} = 10 \text{ V}$, $R_L = 100 \text{ }\Omega$, $I_F = 2.0 \text{ mA}$ $I_F = 1.0 \text{ mA}$

Figure 1. LED forward current versus forward voltage

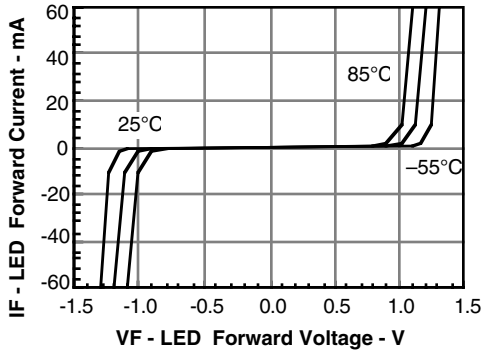


Figure 2. Normalized non-saturated and saturated CTR_{ce} versus LED current

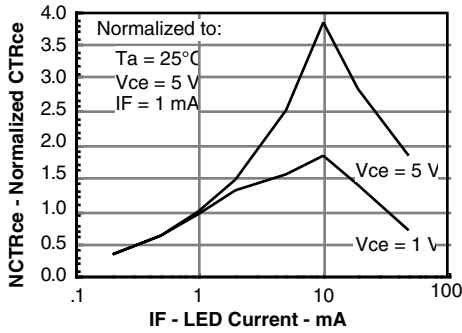


Figure 3. Normalized non-saturated and saturated CTR_{ce} versus LED current

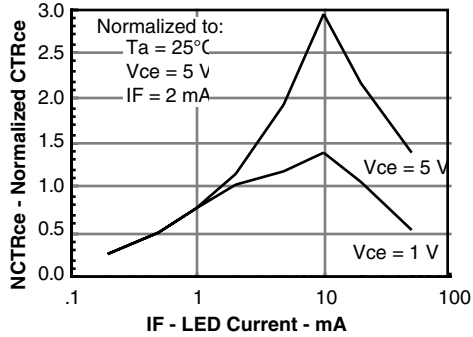


Figure 4. Normalized non-saturated and saturated I_{ce} versus LED current

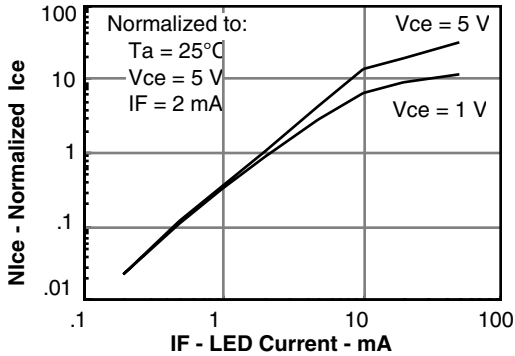


Figure 5. Normalized non-saturated and saturated collector-emitter current versus LED current

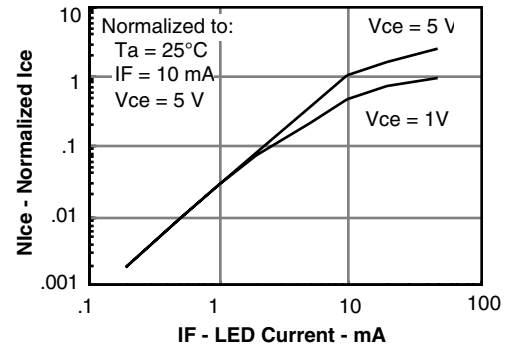


Figure 6. Non-saturated and saturated HFE versus base current

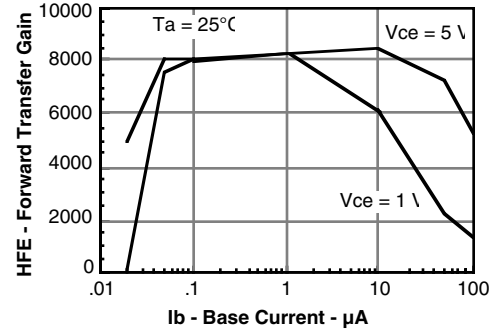


Figure 7. Low to high propagation delay versus collector load resistance and LED current

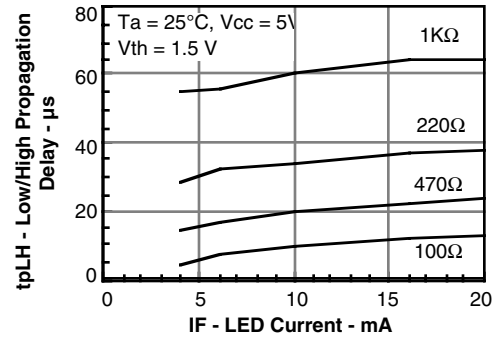


Figure 8. High to low propagation delay versus collector load resistance and LED current

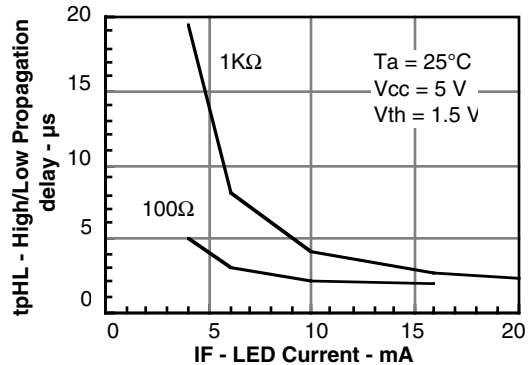


Figure 9. Switching waveform

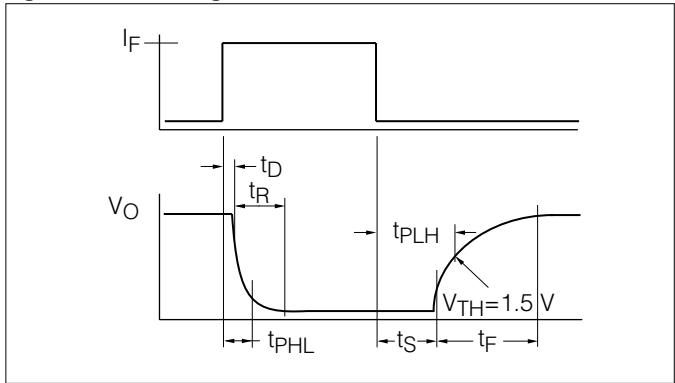


Figure 10. Normalized non-saturated and saturated CTR_{ce} versus LED current

