# SINGLE CHANNEL IL755
# DUAL CHANNEL ILD755
## Bidirectional Input Darlington Optocoupler

### FEATURES

- **High Current Transfer Ratios, $V_{CE}$=5.0 V**
  **IL/ILD755-1: 750% at $I_F$=2.0 mA**
- **IL/ILD755-2: 1000% 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**
- **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.

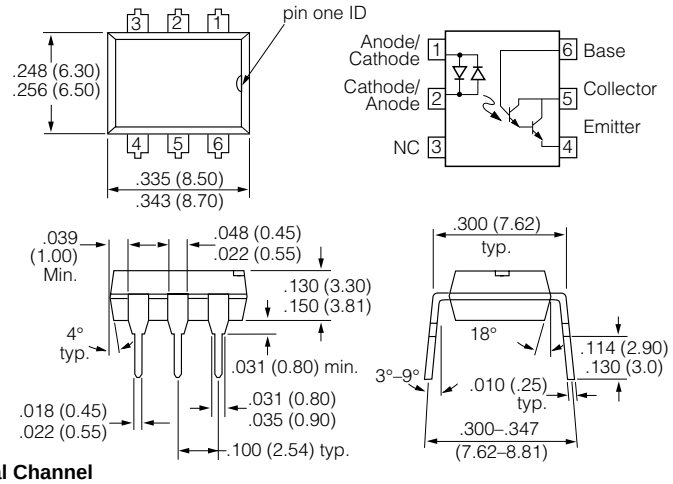
They are designed for applications requiring detection or monitoring of AC signals.

### Maximum Ratings

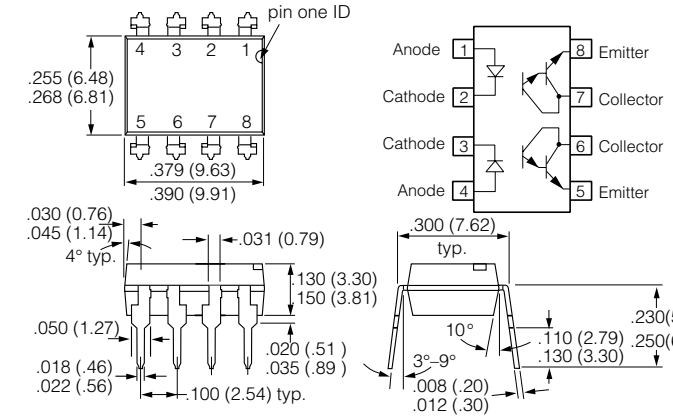
**Emitter** (Each Channel)
Continuous Forward Current ..... 60 mA
Power Dissipation at 25°C ..... 100 mW
Derate Linearly from 25°C ..... 1.33 mW/°C
**Detector** (Each Channel)
Collector-Emitter Breakdown Voltage ..... 60 V
Collector-Base Breakdown Voltage ..... 60 V
Power Dissipation at 25°C
IL755 ..... 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 $VAC_{RMS}$
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 min.
Clearance ..... 7.0 mm min.
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

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

**Figure 1. LED forward current versus forward voltage**

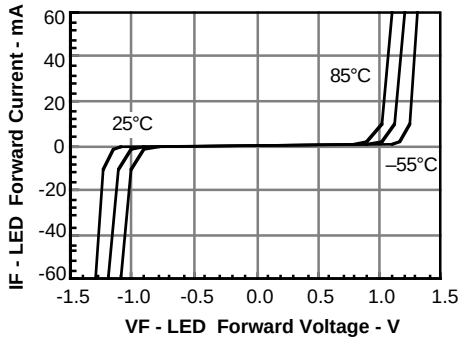



**Figure 2. Normalized non-saturated and saturated $CTR_{ce}$ versus LED current**

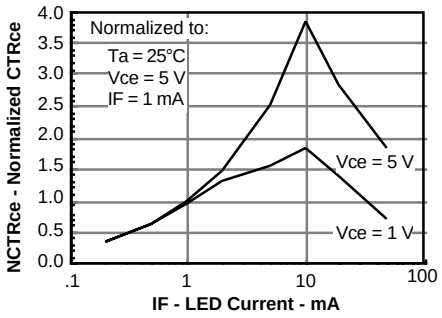



**Figure 3. Normalized non-saturated and saturated $CTR_{ce}$ versus LED current**

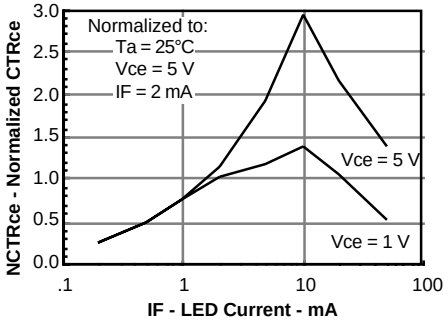



**Figure 4. Normalized non-saturated and saturated $I_{ce}$ versus LED current**

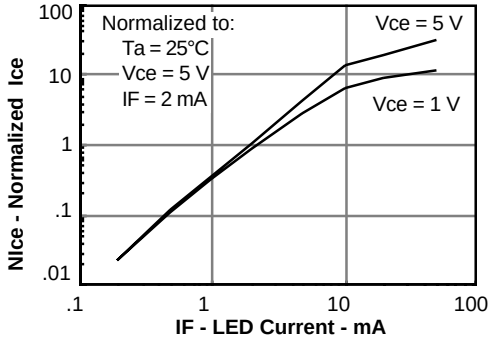



**Figure 5. Normalized non-saturated and saturated collector-emitter current versus LED current**

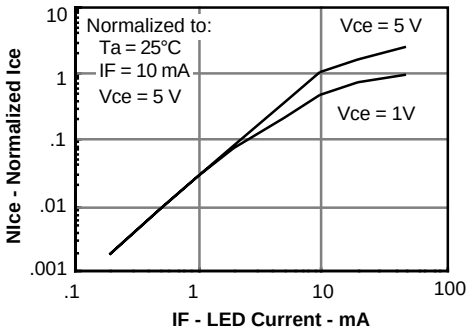



**Figure 6. Non-saturated and saturated HFE versus base current**

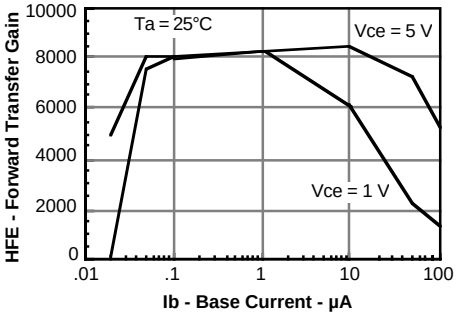



**Figure 7. Low to high propagation delay versus collector load resistance and LED current**

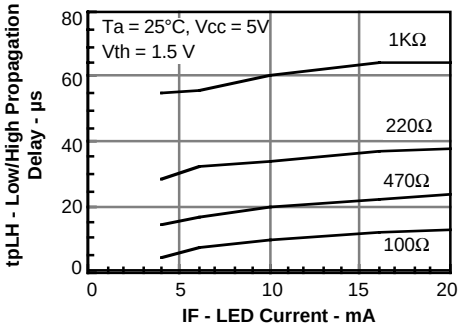



**Figure 8. High to low propagation delay versus collector load resistance and LED current**

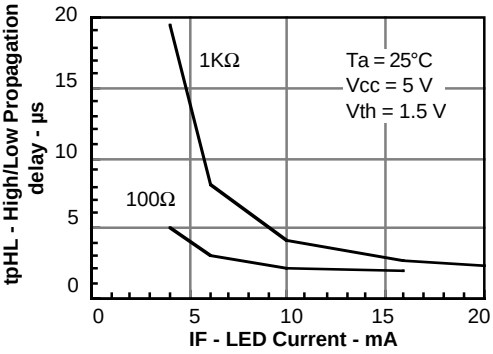


**Figure 9. Switching waveform**

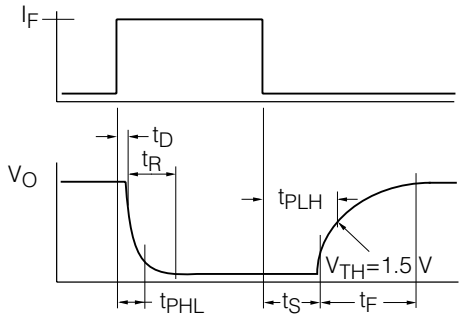



**Figure 10. Normalized non-saturated and saturated $CTR_{ce}$ versus LED current**