

**FEATURES**

- **AC or Polarity Insensitive Inputs**
- **Continuous Forward Current, 130 mA**
- **Applications—Telecommunications**
 - Ring Detection
 - Loop Current Detector
- **Built-in Reverse Polarity Input Protection**
- **Improved CTR Symmetry**
- **Industry Standard DIP Package**
- **Underwriters Lab File #E52744**
-  **VDE Approval #0884**
Available with Option 1

DESCRIPTION

The IL255 is a bidirectional input optically coupled isolator consisting of two high current Gallium Arsenide infrared LEDs coupled to a silicon NPN phototransistor. The IL255 has a minimum CTR of 20%.

This optocoupler is ideal for applications requiring AC signal detection and monitoring.

Maximum Ratings**Emitter**

Peak Pulsed Current (1.0 μ s, 300 pps)3.0 A
Continuous Forward Current 130 mA
Power Dissipation at 25°C..... 175 mW
Derate Linearly from 25°C..... 2.3 mW/°C

Detector

Collector-Emitter Breakdown Voltage 30 V
Emitter-Base Breakdown Voltage 5.0 V
Collector-Base Breakdown Voltage..... 70 V
Power Dissipation at 25°C..... 200 mW
Derate Linearly from 25°C..... 2.6 mW/°C

Package

Isolation Test Voltage.....5300 V_{RMS}
(between emitter and detector,
refer to standard climate
23°C/50%RH, DIN 50014)

Creepage ≥ 7.0 mm

Clearance..... ≥ 7.0 mm

Isolation Resistance

$V_{IO}=500$ V, $T_A=25^\circ\text{C}$ $\geq 10^{12}$ Ω

$V_{IO}=500$ V, $T_A=100^\circ\text{C}$ $\geq 10^{11}$ Ω

Total Dissipation at 25°C..... 250 mW

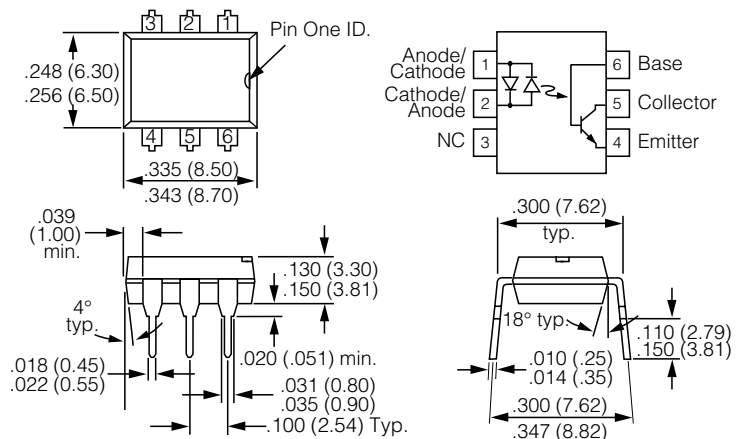
Derate Linearly from 25°C..... 3.3 mW/°C

Storage Temperature -55°C to $+150^\circ\text{C}$

Operating Temperature -55°C to $+100^\circ\text{C}$

Lead Soldering Time at 260°C 10 sec.

Package Dimensions in Inches (mm)

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

Parameter	Min.	Typ.	Max.	Unit	Test Condition		
Emitter							
Forward Voltage	—	1.4	1.7	V	$I_F=\pm 100$ mA		
Detector							
BV_{CEO}	30	50	—	V	$I_C=10$ mA		
BV_{ECO}	7.0	10	—	V	$I_E=10$ μ A		
BV_{CBO}	70	—	—	V	$I_C=100$ μ A		
BV_{EBO}	7.0	—	—	V	$I_E=100$ μ A		
I_{CEO}	—	5.0	50	nA	$V_{CE}=10$ V		
Package							
Parameter	Device	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Current Transfer Ratio	IL255	CTR	20	—	—	%	$I_F=\pm 10$ mA, $V_{CE}=10$ V
	IL255-1		20	—	80	%	$I_F=\pm 100$ mA, $V_{CE}=2.0$ V
	IL255-2		50	—	—	%	$I_F=\pm 10$ mA, $V_{CE}=10$ V
Current Transfer Ratio Symmetry	IL255	—	0.33	—	3.0	—	$I_F=\pm 10$ mA, $V_{CE}=10$ V
	IL255-1		—	—	—	—	—
	IL255-2		0.5	1.0	2.0	—	$I_F=\pm 10$ mA, $V_{CE}=10$ V
Collector-Emitter Saturation Voltage	IL255	$V_{CE(sat)}$	—	—	0.4	V	$I_F=\pm 10$ mA, $I_C=0.5$ mA
	IL255-1		—	0.1	0.2	V	$I_F=\pm 100$ mA, $I_C=1.0$ mA
	IL255-2		—	—	0.4	V	$I_F=\pm 16$ mA, $I_C=2.0$ mA

Figure 1. LED forward current versus forward voltage

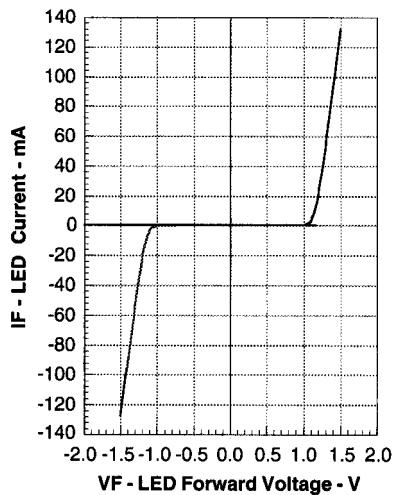


Figure 3. Maximum LED power dissipation

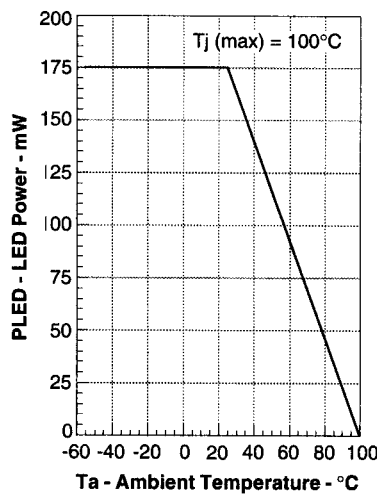


Figure 5. Saturated and non-saturated collector-emitter current versus LED current

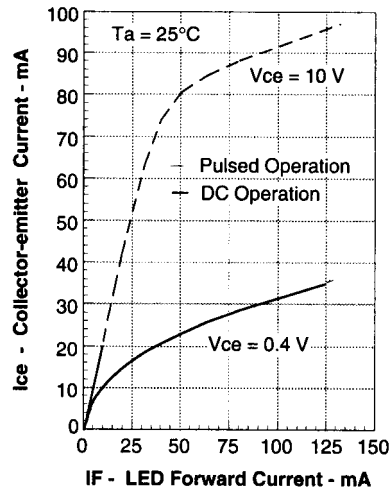


Figure 2. Maximum LED current versus ambient temperature

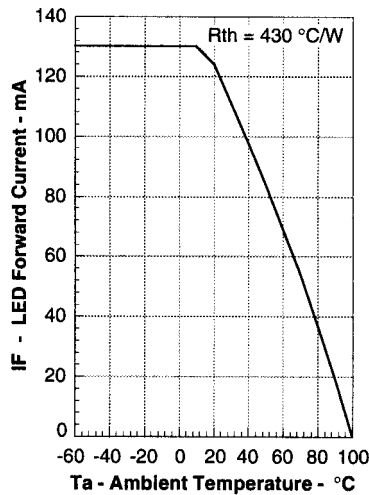


Figure 4. Current transfer ratio versus LED current and collector-emitter voltage

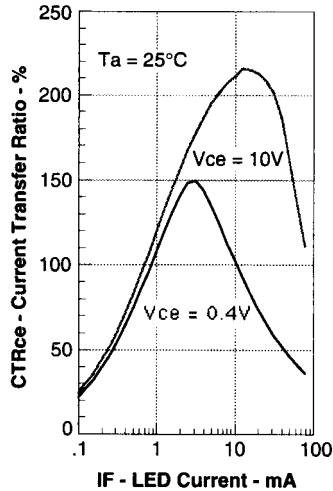


Figure 6. Saturated and non-saturated collector-emitter current versus LED current

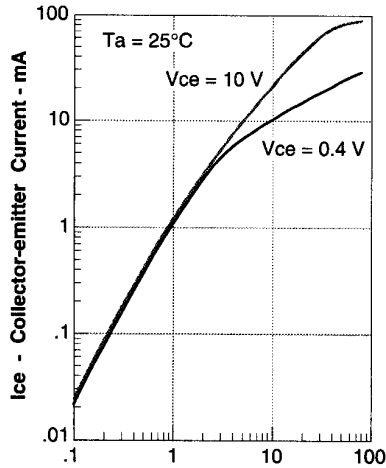


Figure 7. Collector-emitter current versus LED collector-emitter voltage

