SIEMENS

SINGLE CHANNEL IL255

BIDIRECTIONAL INPUT OPTOCOUPLER

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 Applied For**

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 µs, 300 pps) ..... 3 A
Continuous Forward Current..... 130 mA RMS
Power Dissipation at 25°C ..... 175 mW
Derate Linearly from 25°C ..... 2.3 mW/°C

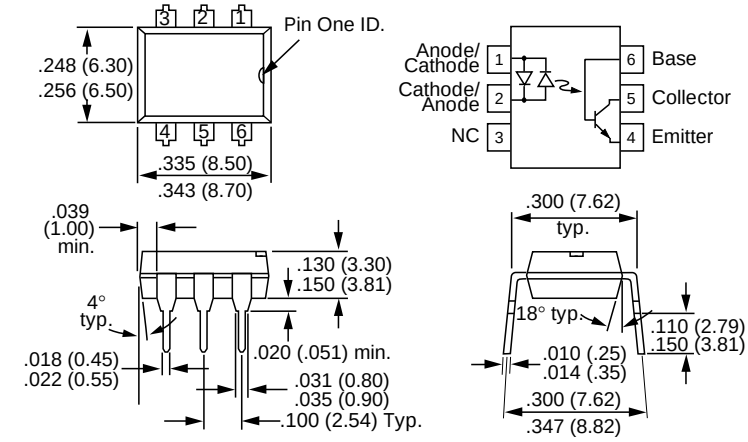
Detector

Collector-Emitter Breakdown Voltage ..... 30 V
Emitter-Base Breakdown Voltage ..... 5 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 VAC_{RMS}
Between Emitter and Detector
Refer to Standard Climate
23°C/50%RH, DIN 50014
Creepage.....min. 7 mm
Clearance .....min. 7 mm
Isolation Resistance
V_{IO}=500 V, T_A=25°C.....$\geq 10^{12}\ \Omega$
V_{IO}=500 V, T_A=100°C.....$\geq 10^{11}\ \Omega$
Total Dissipation at 25°C..... 250 mW
Derate Linearly from 25°C ..... 3.3 mW/°C
Storage Temperature ..... –55°C to +150°C
Operating Temperature ..... –55°C to +100°C
Lead Soldering Time at 260°C .....10 sec.

Package Dimensions in Inches (mm)



Electrical Characteristics (T_A=25°C)

Parameter	Min.	Typ.	Max.	Unit	Test Condition
Emitter					
Forward Voltage		1.4	1.7	V	I_F=±100 mA
Detector					
BV_{CEO}	30	50		V	I_C=10 mA
BV_{ECO}	7	10		V	I_E=10 µA
BV_{CBO}	70			V	I_C=100 µA
BV_{EBO}	7			V	I_E=100 µA
I_{CEO}		5	50	nA	V_{CE}=10 V
Package					

Parameter	Device	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Current Transfer Ratio	IL255	CTR	20			%	I_F=±10 mA, V_{CE}=10 V
	IL255-1		20		80	%	I_F=±100 mA, V_{CE}=2 V
	IL255-2		50			%	I_F=±10 mA, V_{CE}=10 V
Current Transfer Ratio Symmetry	IL255		0.33		3.0		I_F=±10 mA, V_{CE}=10 V
	IL255-1						
	IL255-2		0.5	1.0	2.0		I_F=±10 mA, V_{CE}=10 V
Collector-emitter Saturation Voltage	IL255	$V_{CE(sat)}$			0.4	V	I_F=±10 mA, I_C=0.5 mA
	IL255-1			0.1	0.2	V	I_F=±100 mA, I_C=1 mA
	IL255-2				0.4	V	I_F=±16 mA, I_C=2 mA

Figure 1. LED forward current versus forward voltage

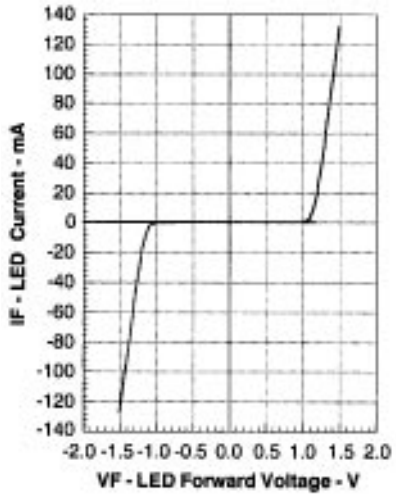


Figure 2. Maximum LED current versus ambient temperature

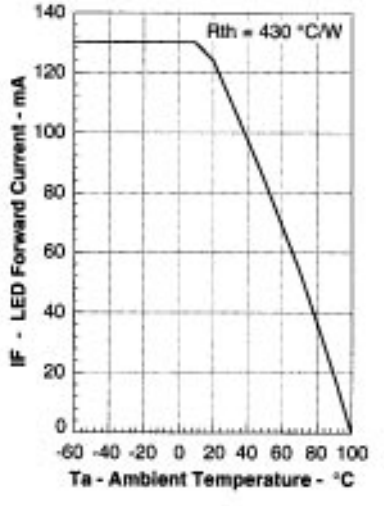


Figure 3. Maximum LED power dissipation

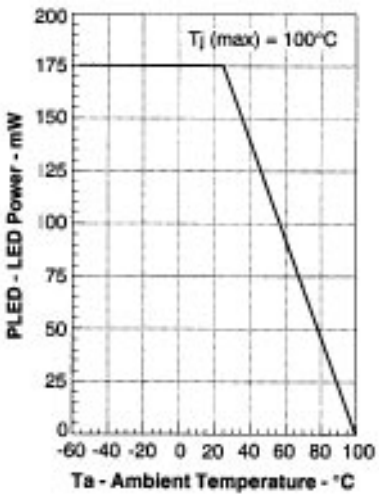


Figure 4. Current transfer ratio versus LED current and collector-emitter voltage

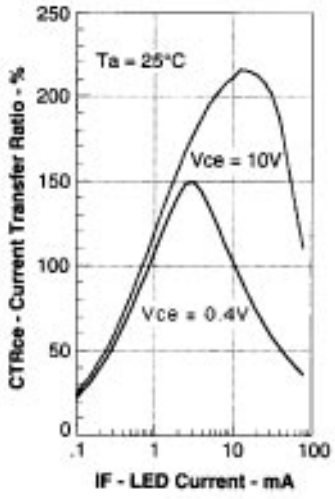


Figure 5. Saturated and non-saturated collector-emitter current versus LED current

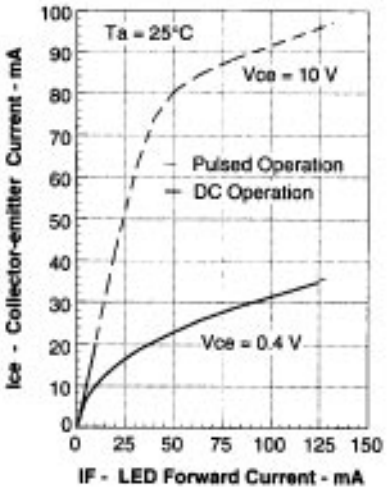


Figure 6. Saturated and non-saturated collector-emitter current versus LED current

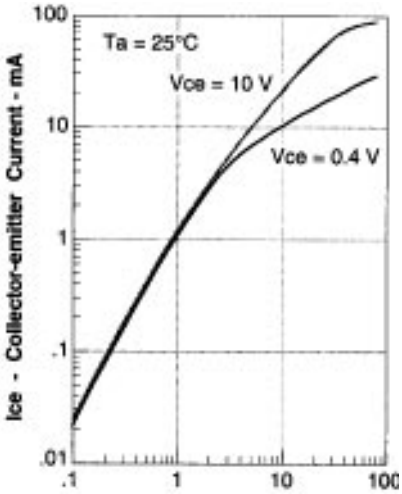


Figure 7. Collector-emitter current versus LED collector-emitter voltage