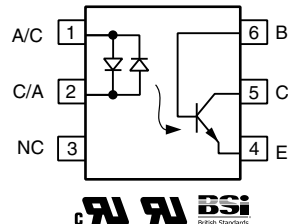
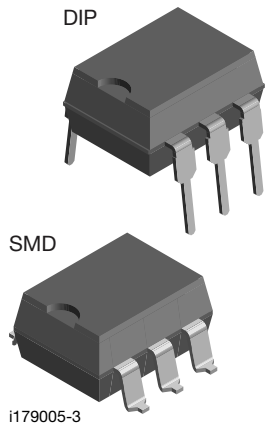




Optocoupler, Phototransistor Output, AC Input, With Base Connection



FEATURES

- AC or polarity insensitive inputs
- Continuous forward current, 130 mA
- Built-in reverse polarity input protection
- Improved CTR symmetry
- Industry standard DIP package
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT

APPLICATIONS

- Telecommunications
- Ring detection
- Loop current detector

AGENCY APPROVALS

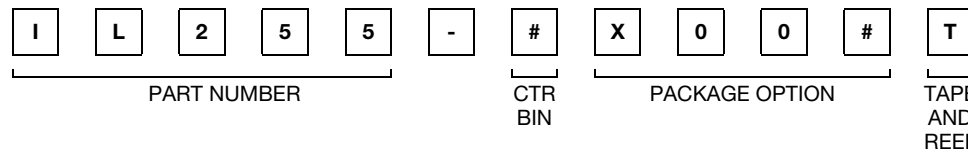
- UL1577, file no. E52744, double protection
- cUL tested to CSA 22.2 bulletin 5A
- BSI EN 60950, BSI EN 60065

DESCRIPTION

The IL255 is a bidirectional input optically coupled isolator consisting of two high current GaAs 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.

ORDERING INFORMATION



AGENCY CERTIFIED/PACKAGE	CTR (%)	
UL, cUL, BSI	≥ 20	≥ 50
DIP-6	-	IL255-2
SMD-6, option 7	IL255-X007T	-

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C, unless otherwise specified)

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
INPUT				
Peak pulsed current	1 μs, 300 pps	I _{FP}	3	A
Forward continuous current		I _F	130	mA
Power dissipation		P _{diss}	175	mW
Derate linearly from 25 °C			2.3	mW/°C
OUTPUT				
Collector emitter breakdown voltage		BV _{CEO}	30	V
Emitter base breakdown voltage		BV _{EBO}	5	V
Collector base breakdown voltage		BV _{CBO}	70	V
Power dissipation		P _{diss}	200	mW
Derate linearly from 25 °C			2.6	mW/°C



ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
COUPLER				
Total dissipation		P_{tot}	250	mW
Derate linearly from 25 °C			3.3	mW/°C
Storage temperature		T_{stg}	-55 to +150	°C
Operating temperature		T_{amb}	-55 to +100	°C
Lead soldering time at $\geq 260\text{ }^{\circ}\text{C}$ (1)			10	s

Notes

- Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of this document. Exposure to absolute maximum ratings for extended periods of the time can adversely affect reliability
- (1) Refer to reflow profile for soldering conditions for surface mounted devices (SMD). Refer to wave profile for soldering conditions for through hole devices (DIP)

ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
INPUT							
Forward voltage	$I_F = \pm 100\text{ mA}$		V_F		1.4	1.7	V
OUTPUT							
Collector emitter breakdown voltage	$I_C = 10\text{ mA}$		BV_{CEO}	30	50	-	V
Emitter collector breakdown voltage	$I_E = 10\text{ }\mu\text{A}$		BV_{ECO}	7	10	-	V
Collector base breakdown voltage	$I_C = 100\text{ }\mu\text{A}$		BV_{CBO}	70	-	-	V
Emitter base breakdown voltage	$I_E = 100\text{ }\mu\text{A}$		BV_{EBO}	70	-	-	V
Collector emitter leakage current	$V_{CE} = 10\text{ V}$		I_{CEO}	-	5	50	nA
COUPLER							
Collector emitter saturation voltage	$I_F = \pm 10\text{ mA}, I_C = 0.5\text{ mA}$	IL255	V_{CEsat}	-	-	0.4	V
	$I_F = \pm 16\text{ mA}, I_C = 2\text{ mA}$	IL255-2	V_{CEsat}	-	-	0.4	V

Note

- Minimum and maximum values are testing requirements. Typical values are characteristics of the device and are the result of engineering evaluation. Typical values are for information only and are not part of the testing requirements

CURRENT TRANSFER RATIO ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Current transfer ratio	$I_F = \pm 10\text{ mA}, V_{CE} = 10\text{ V}$	IL255	CTR	20	-	-	%
	$I_F = \pm 10\text{ mA}, V_{CE} = 10\text{ V}$	IL255-2	CTR	50	-	-	%
Current transfer ratio symmetry	$I_F = \pm 10\text{ mA}, V_{CE} = 10\text{ V}$	IL255		0.33	-	3	
	$I_F = \pm 10\text{ mA}, V_{CE} = 10\text{ V}$	IL255-2		0.5	1	2	

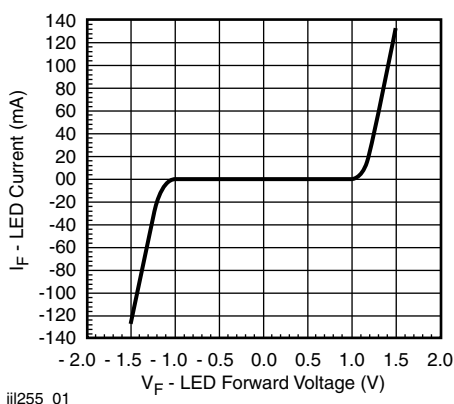


SAFETY AND INSULATION RATINGS				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Climatic classification	According to IEC 68 part 1		55 / 100 / 21	
Comparative tracking index		CTI	175	
Maximum rated withstanding isolation voltage	t = 1 min	V_{ISO}	4420	V_{RMS}
Maximum transient isolation voltage		V_{IOTM}	10 000	V_{peak}
Maximum repetitive peak isolation voltage		V_{IORM}	890	V_{peak}
Isolation resistance	$V_{IO} = 500 V, T_{amb} = 25\text{ }^{\circ}C$	R_{IO}	$\geq 10^{12}$	Ω
	$V_{IO} = 500 V, T_{amb} = 100\text{ }^{\circ}C$	R_{IO}	$\geq 10^{11}$	Ω
Output safety power		P_{SO}	400	mW
Input safety current		I_{SI}	275	mA
Safety temperature		T_S	175	$^{\circ}C$
Creepage distance			≥ 7	mm
Clearance distance			≥ 7	mm
Insulation thickness		DTI	≥ 0.4	mm

Note

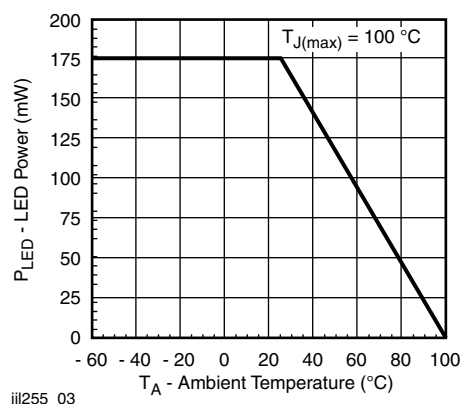
- As per IEC 60747-5-5, § 7.4.3.8.2, this optocoupler is suitable for “safe electrical insulation” only within the safety ratings. Compliance with the safety ratings shall be ensured by means of protective circuits

TYPICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}C$, unless otherwise specified)



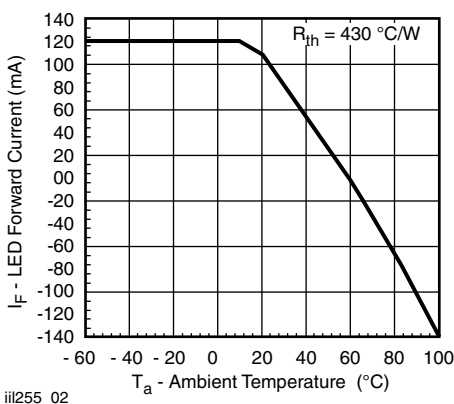
iii255_01

Fig. 1 - LED Forward Current vs. Forward Voltage



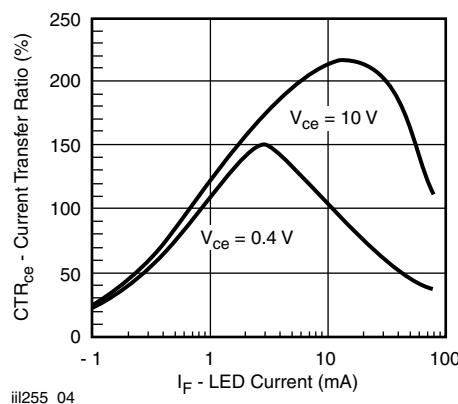
iii255_03

Fig. 3 - Maximum LED Power Dissipation



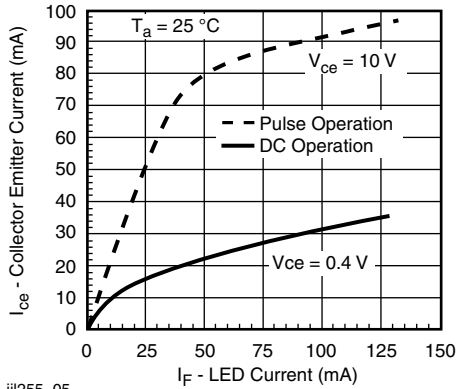
iii255_02

Fig. 2 - Maximum LED Current vs. Ambient Temperature



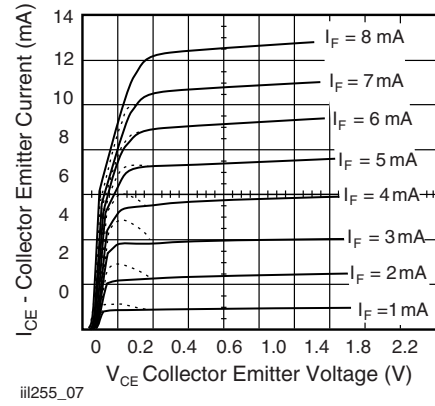
iii255_04

Fig. 4 - Current Transfer Ratio vs. LED Current and Collector-Emitter Voltage



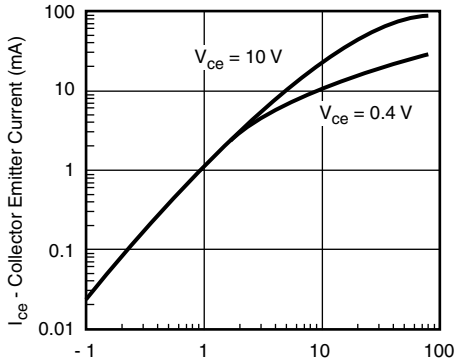
iii255_05

Fig. 5 - Non-Saturated and Saturated Collector Emitter Current vs. LED Current



iii255_07

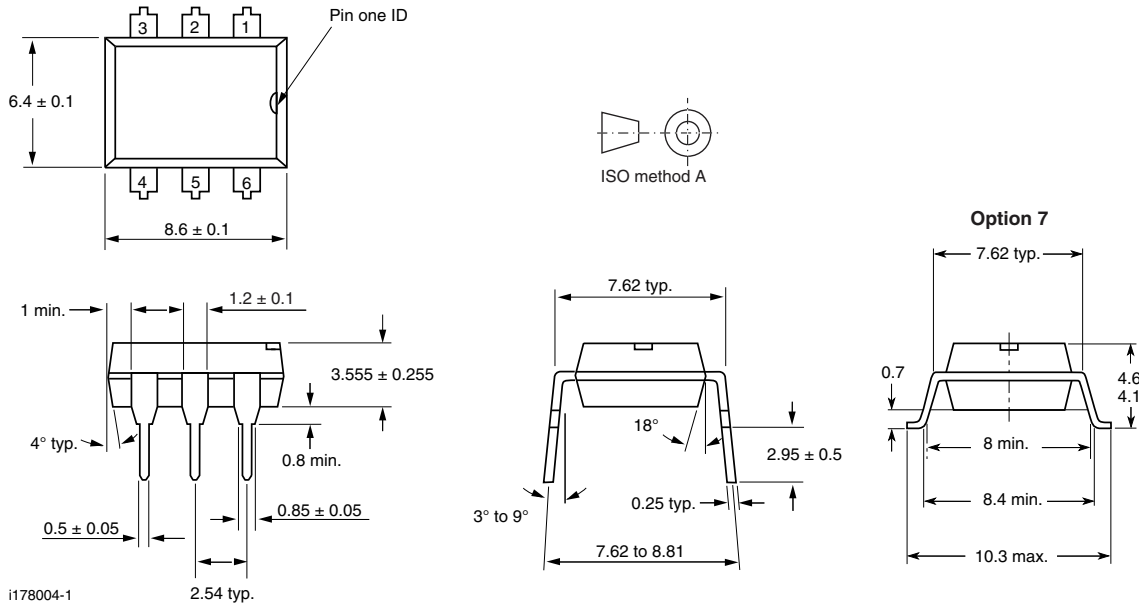
Fig. 7 - Collector Emitter Current vs. LED Collector Emitter Voltage



iii255_06

Fig. 6 - Non-Saturated and Saturated Collector Emitter Current vs. LED Current

PACKAGE DIMENSIONS in millimeters



i178004-1



PACKAGE MARKING



Notes

- Only option 7 reflected in the package marking
- Tape and reel suffix (T) is not part of the package marking



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