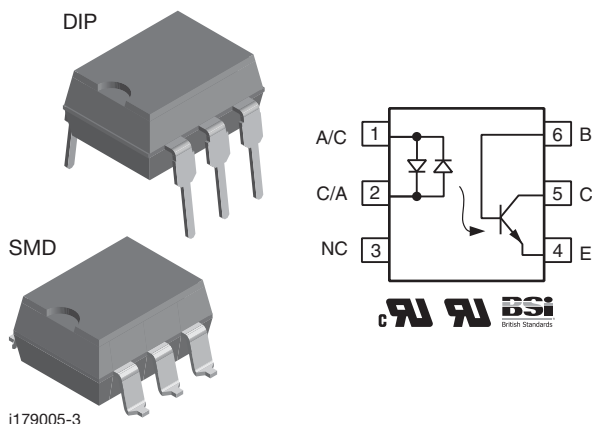


Optocoupler, Phototransistor Output, AC Input, with Base Connection



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.

FEATURES

- AC or polarity insensitive inputs
- Continuous forward current, 130 mA
- Built-in reverse polarity input protection
- Improved CTR symmetry
- Industry standard DIP package
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC



RoHS
COMPLIANT

APPLICATIONS

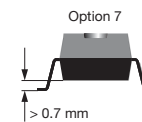
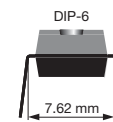
- Telecommunications
- Ring detection
- Loop current detector

AGENCY APPROVALS

- UL1577, file no. E52744 system code H, double protection
- cUL tested to CSA 22.2 bulletin 5A
- BSI IEC 60950; IEC 60065

ORDERING INFORMATION

I	L	2	5	5	-	#	X	0	0	#	T
PART NUMBER						CTR BIN	PACKAGE OPTION				TAPE AND REEL



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

Vishay Semiconductors Optocoupler, Phototransistor Output, AC Input, with Base Connection

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
COUPLER				
Isolation test voltage between emitter and detector		V_{ISO}	5300	V_{RMS}
Creepage distance			≥ 7	mm
Clearance distance			≥ 7	mm
Isolation resistance	$V_{IO} = 500\text{ V}, T_{amb} = 25\text{ }^{\circ}\text{C}$	R_{IO}	$\geq 10^{12}$	Ω
	$V_{IO} = 500\text{ V}, T_{amb} = 100\text{ }^{\circ}\text{C}$	R_{IO}	$\geq 10^{11}$	Ω
Total dissipation		P_{tot}	250	mW
Derate linearly from 25 $^{\circ}\text{C}$			3.3	mW/ $^{\circ}\text{C}$
Storage temperature		T_{stg}	- 55 to + 150	$^{\circ}\text{C}$
Operating temperature		T_{amb}	- 55 to + 100	$^{\circ}\text{C}$
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

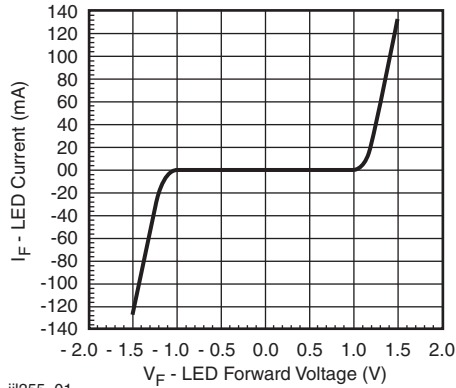
Note

- 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	

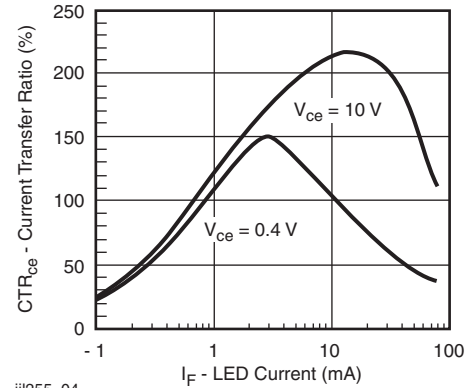
Optocoupler, Phototransistor Output, Vishay Semiconductors AC Input, with Base Connection

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



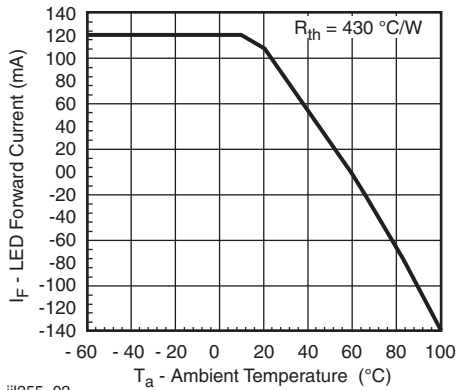
iii255_01

Fig. 1 - LED Forward Current vs. Forward Voltage



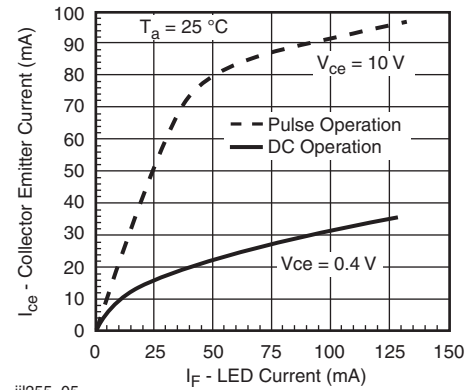
iii255_04

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



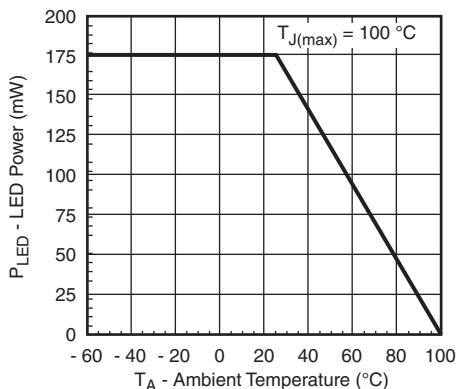
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Fig. 2 - Maximum LED Current vs. Ambient Temperature



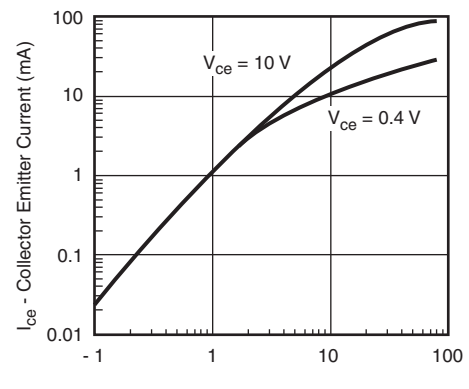
iii255_05

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



iii255_03

Fig. 3 - Maximum LED Power Dissipation



iii255_06

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

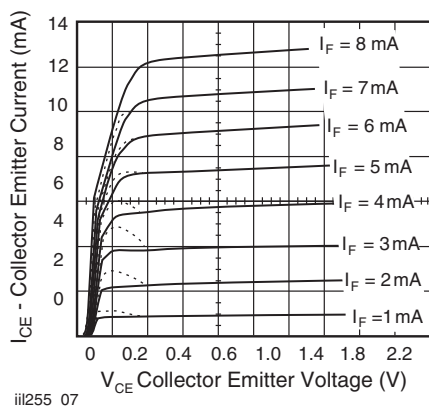
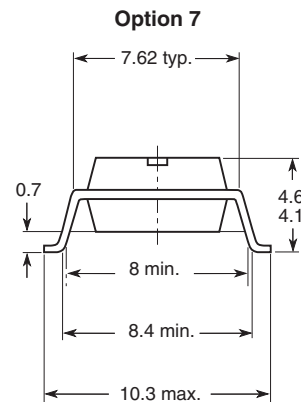
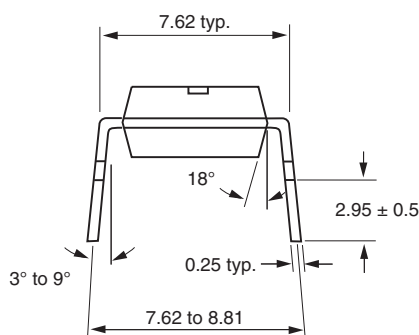
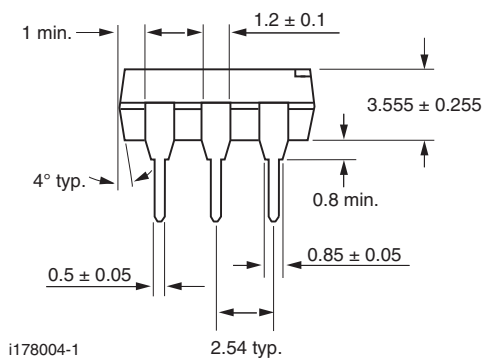
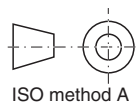
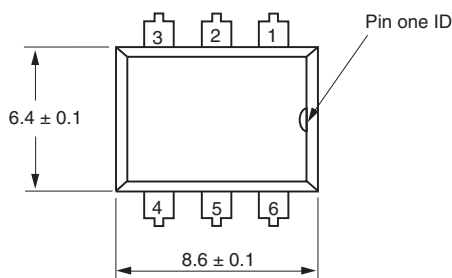


Fig. 7 - Collector Emitter Current vs. LED Collector Emitter Voltage

PACKAGE DIMENSIONS in millimeters



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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