

Optocoupler, Phototransistor Output, AC Input, with Base Connection

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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

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 INFORMATIO	N	
I L 2 5 PART NUMBER	5 - # X 0 0 CTR PACKAGE OPTI BIN	ION TAPE AND REEL 7.62 mm
AGENCY CERTIFIED/PACKAGE	C.	TR (%)
UL, cUL, BSI	≥ 20	≥ 50
DIP-6	-	IL255-2
SMD-6, option 7	II 255-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	А			
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			

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For technical questions, contact: optocoupleranswers@vishay.com



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COMPLIANT

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

ABSOLUTE MAXIMUM RATINGS (T _{amb} = 25 °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		
	$V_{IO} = 500 \text{ V}, \text{ T}_{amb} = 25 ^{\circ}\text{C}$	R _{IO}	≥ 10 ¹²	Ω		
Isolation resistance	$V_{IO} = 500 \text{ V}, \text{ T}_{amb} = 100 ^{\circ}\text{C}$	R _{IO}	≥ 10 ¹¹	Ω		
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 \ge 260 °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 °C, unless otherwise specified)							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
INPUT							
Forward voltage	I _F = ± 100 mA		VF		1.4	1.7	V
OUTPUT							
Collector emitter breakdown voltage	I _C = 10 mA		BV _{CEO}	30	50		V
Emitter collector breakdown voltage	I _E = 10 μA		BV _{ECO}	7	10		V
Collector base breakdown voltage	I _C = 100 μA		BV _{CBO}	70			V
Emitter base breakdown voltage	I _E = 100 μA		BV _{EBO}	70			V
Collector emitter leakage current	V _{CE} = 10 V		I _{CEO}		5	50	nA
COUPLER							
Collector emitter saturation voltage	$I_{\rm F} = \pm 10$ mA, $I_{\rm C} = 0.5$ 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 °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	
	$I_{\rm F} = \pm 10$ mA, $V_{\rm CE} = 10$ V	IL255-2		0.5	1	2	

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TYPICAL CHARACTERISTICS (Tamb = 25 °C, unless otherwise specified)



Fig. 1 - LED Forward Current vs.Forward Voltage



Fig. 2 - Maximum LED Current vs. Ambient Temperature







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



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





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





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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