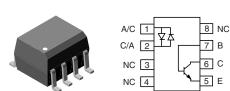




Optocoupler, Phototransistor Output, AC Input, with Base Connection



DESCRIPTION

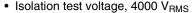
The IL256AT is an AC input phototransistor optocoupler. The device consists of two infrared emitters connected in reverse parallel and coupled to a silicon NPN phototransistor detector.

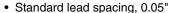
These circuit elements are constructed with a standard SOIC-8 foot print.

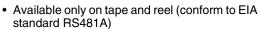
The product is well suited for telecom applications such as ring detection or off/on hook status, given its bidirectional LED input and guaranteed current transfer ratio (CTR) minimum of 20 % at $I_F = 10$ mA.

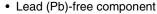
FEATURES

- Guaranteed CTR symmetry, 2:1 maximum
- Bidirectional AC input industry standard SOIC-8 Surface mountable package









 Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



Telecom applications ring detection

AGENCY APPROVALS

- UL1577, file no. E52744 system code Y
- CUL file no. E52744, equivalent to CSA bulletin 5A
- DIN EN 60747-5-2 (VDE 0884) available with option 1

ORDER INFORMATION	
PART	REMARKS
IL256AT	CTR > 20 %, tape and reel, SOIC-8

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
INPUT				
Forward continuous current		I _F	60	mA
Power dissipation		P _{diss}	90	mW
Derate linearly from 25 °C			0.8	mW/°C
OUTPUT				
Collector-emitter breakdown voltage		BV _{CEO}	30	V
Emitter-collector breakdown voltage		BV _{ECO}	5	V
Collector-base breakdown voltage		BV _{CBO}	70	V
Power dissipation		P _{diss}	150	mW
Derate linearly from 25 °C			2.0	mW/°C
COUPLER				
Isolation voltage, input to output		V _{ISO}	4000	V_{RMS}
Total package dissipation (LED and detector)		P _{tot}	240	mW
Derate linearly from 25 °C			3.2	mW/°C
Storage temperature		T _{stg}	- 55 to + 150	°C
Operating temperature		T _{amb}	- 55 to + 100	°C
Soldering time at 260 °C			10	S

Note

 T_{amb} = 25 °C, unless otherwise specified.

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.

IL256AT

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ELECTRICAL CHARACTERISTICS						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
INPUT						
Forward voltage	$I_F = \pm 10 \text{ mA}$	V _F		1.2	1.5	V
OUTPUT						
Collector emitter breakdown voltage	$I_C = 1.0 \text{ mA}$	BV _{CEO}	30	50		V
Emitter collector breakdown voltage	$I_E = 100 \mu A$	BV _{ECO}	5	10		V
Collector base breakdown voltage	I _C = 100 μA	BV _{CBO}	70	90		V
Collector emitter leakage current	V _{CE} = 10 V	I _{CEO}		5	50	nA
COUPLER				·		
Saturation voltage, collector emitter	$I_F = 16 \text{ mA}, I_C = 2 \text{ mA}$	V _{CEsat}			0.4	V

Note

 T_{amb} = 25 °C, unless otherwise specified. 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						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
DC current transfer ratio	$I_F = 10 \text{ mA}, V_{CE} = 5 \text{ V}$	CTR _{DC}	20			%
Symmetry (CTR at + 10 mA)/(CTR at -10 mA)			0.5	1	2	

SAFETY AND INSULATION RATINGS							
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT	
Climatic classification (according to IEC 68 part 1)				55/100/21			
Comparative tracking index		CTI	175		399		
V _{IOTM}			6000			V	
VIORM			560			V	
PSO					350	mW	
ISI					150	mA	
TSI					165	°C	
Creepage distance			4			mm	
Clearance distance			4			mm	
Insulation thickness, reinforced rated	per IEC 60950 2.10.5.1		0.2			mm	

Note

As per IEC 60747-5-2, §7.4.3.8.1, this optocoupler is suitable for "safe electrical insulation" only within the safety ratings. Compliance with the safety ratings shall be ensured by means of prodective circuits.



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

TYPICAL CHARACTERISTICS

T_{amb} = 25 °C, unless otherwise specified

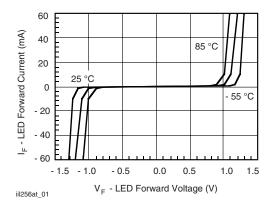


Fig. 1 - LED Forward Current vs.Forward Voltage

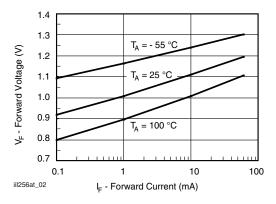


Fig. 2 - Forward Voltage vs. Forward Current

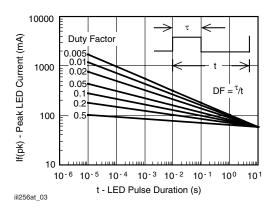


Fig. 3 - Peak LED Current vs. Duty Factor, Tau

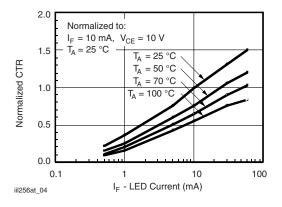


Fig. 4 - Normalized CTR vs. I_F and T_{amb}

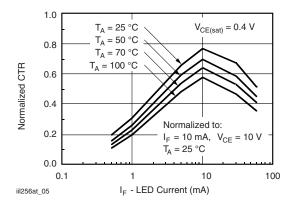


Fig. 5 - Normalized Saturated CTR

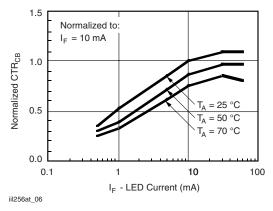


Fig. 6 - Normalized CTR_{cb}

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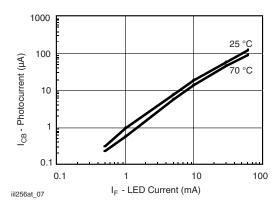


Fig. 7 - Photocurrent vs. LED Current

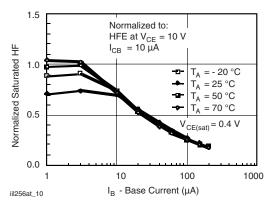


Fig. 10 - Normalized Saturated h_{FE} vs. Base Current

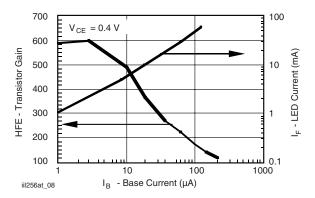


Fig. 8 - Base Current vs. I_F and h_{FE}

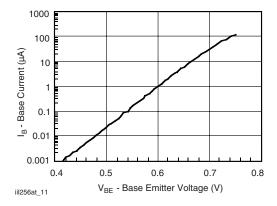


Fig. 11 - Base Emitter Voltage vs. Base Current

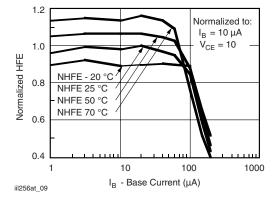


Fig. 9 - Normalized $h_{\mbox{\scriptsize FE}}$ vs. Base Current and Temp.

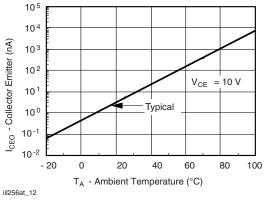
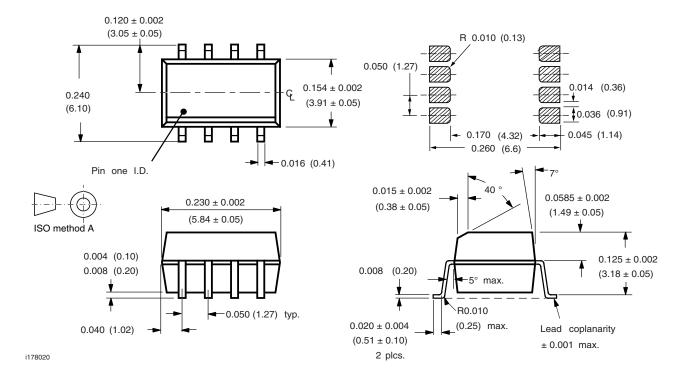


Fig. 12 - Collector-Emitter Leakage Current vs.Temp.



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PACKAGE DIMENSIONS in inches (millimeters)



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- 1. Meet all present and future national and international statutory requirements.
- 2. Regularly and continuously improve the performance of our products, processes, distribution and operating systems with respect to their impact on the health and safety of our employees and the public, as well as their impact on the environment.

It is particular concern to control or eliminate releases of those substances into the atmosphere which are known as ozone depleting substances (ODSs).

The Montreal Protocol (1987) and its London Amendments (1990) intend to severely restrict the use of ODSs and forbid their use within the next ten years. Various national and international initiatives are pressing for an earlier ban on these substances.

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- 1. Annex A, B and list of transitional substances of the Montreal Protocol and the London Amendments respectively.
- 2. Class I and II ozone depleting substances in the Clean Air Act Amendments of 1990 by the Environmental Protection Agency (EPA) in the USA.
- 3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

Vishay Semiconductor GmbH can certify that our semiconductors are not manufactured with ozone depleting substances and do not contain such substances.

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Vishay Semiconductor GmbH, P.O.B. 3535, D-74025 Heilbronn, Germany



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Vishay

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Revision: 02-Oct-12 Document Number: 91000

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многоканальный

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