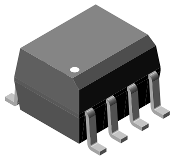
IL256AT

Vishay Semiconductors

Optocoupler, Phototransistor Output, AC Input, with Base Connection



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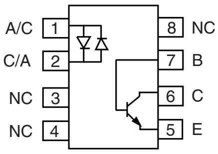


DESCRIPTION

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
- Isolation test voltage, 4000 V_{RMS}
- Standard lead spacing, 0.05"
- Available only on tape and reel (conform to EIA standard RS481A)
- Lead (Pb)-free component
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

Pb-free
e3
RoHS
COMPLIANT

APPLICATIONS

- 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

ABSOLUTE MAXIMUM RATINGS				
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.

ELECTRICAL CHARACTERISTICS						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
INPUT						
Forward voltage	I_F = ± 10 mA	V_F		1.2	1.5	V
OUTPUT						
Collector emitter breakdown voltage	I_C = 1.0 mA	BV_{CEO}	30	50		V
Emitter collector breakdown voltage	I_E = 100 µA	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 mA, I_C = 2 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 mA, V_{CE} = 5 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.

TYPICAL CHARACTERISTICS

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

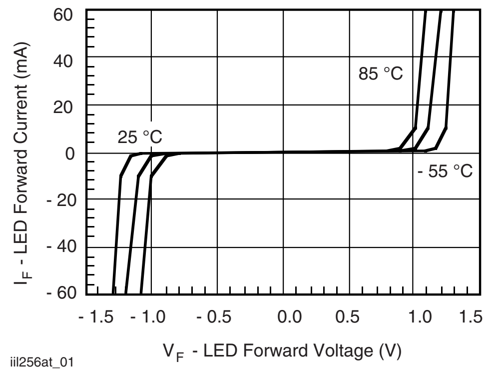


Fig. 1 - LED Forward Current vs.Forward Voltage

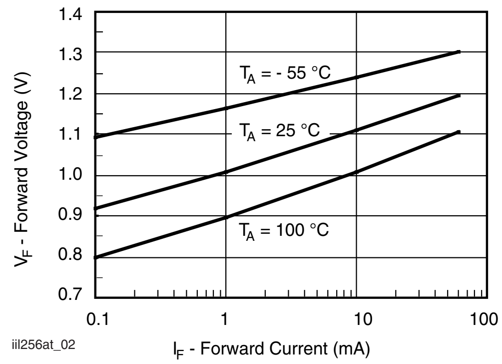


Fig. 2 - Forward Voltage vs. Forward Current

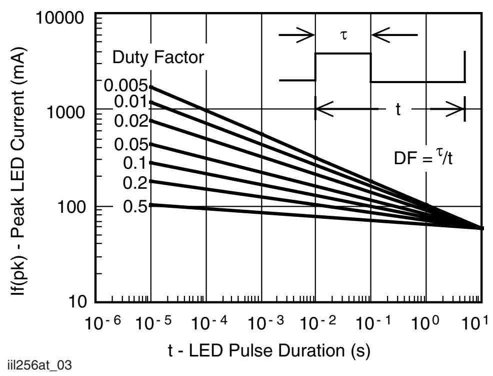


Fig. 3 - Peak LED Current vs. Duty Factor, Tau

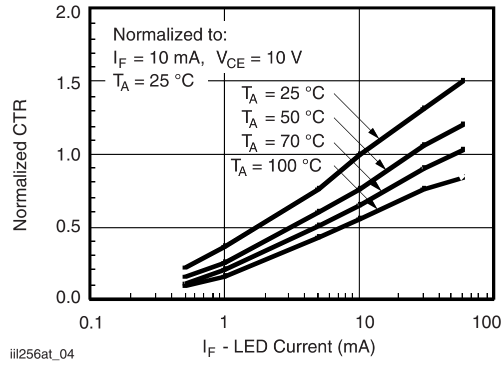


Fig. 4 - Normalized CTR vs. I_F and T_{amb}

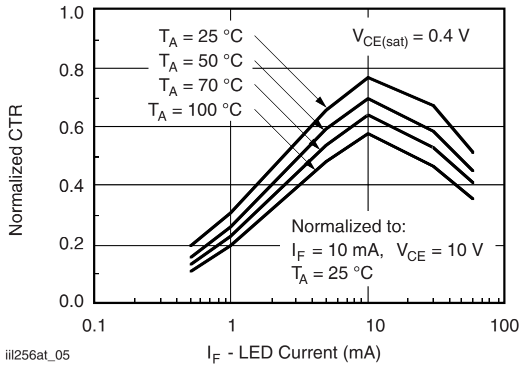


Fig. 5 - Normalized Saturated CTR

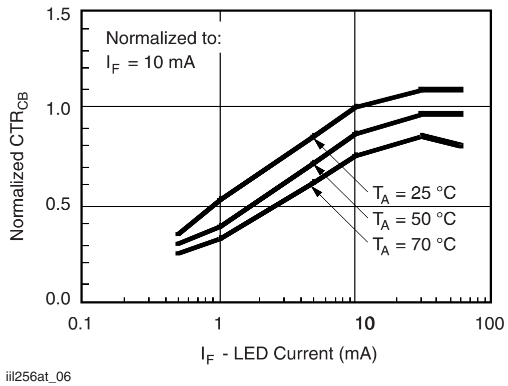


Fig. 6 - Normalized CTR_{cb}

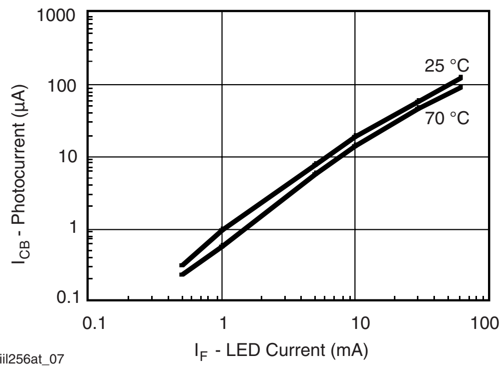


Fig. 7 - Photocurrent vs. LED Current

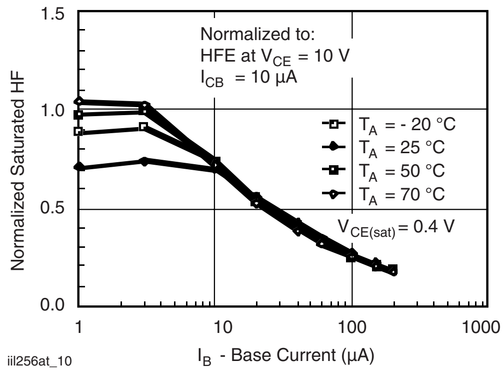


Fig. 10 - Normalized Saturated h_{FE} vs. Base Current

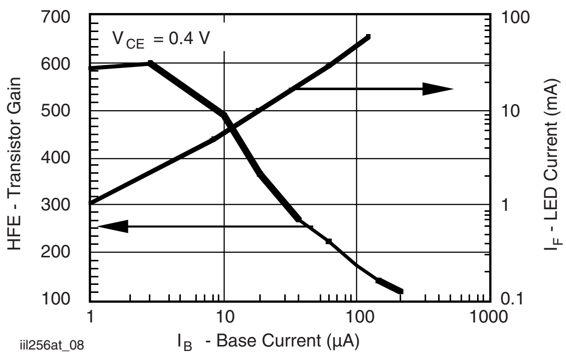


Fig. 8 - Base Current vs. I_F and h_{FE}

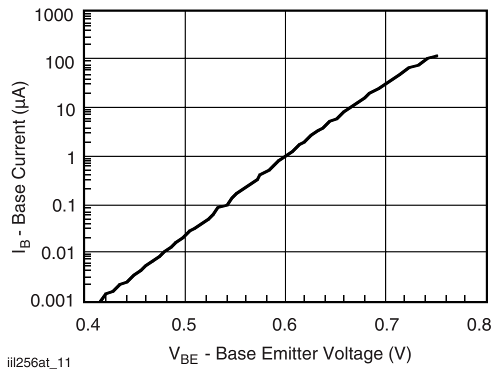


Fig. 11 - Base Emitter Voltage vs. Base Current

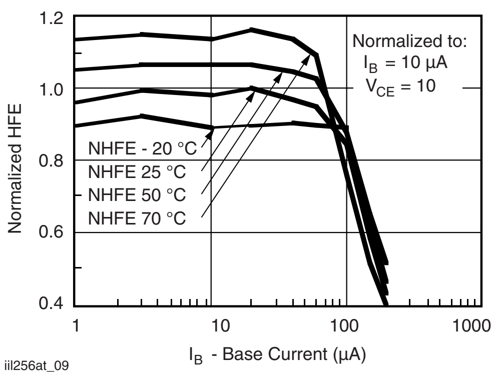


Fig. 9 - Normalized h_{FE} vs. Base Current and Temp.

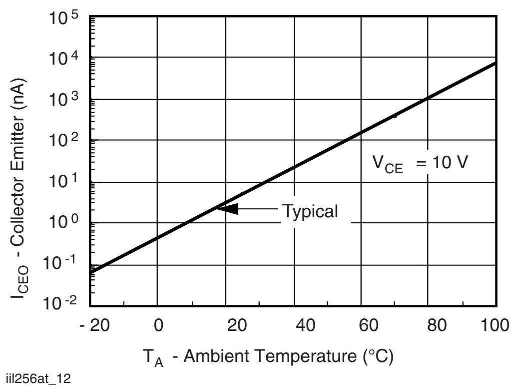
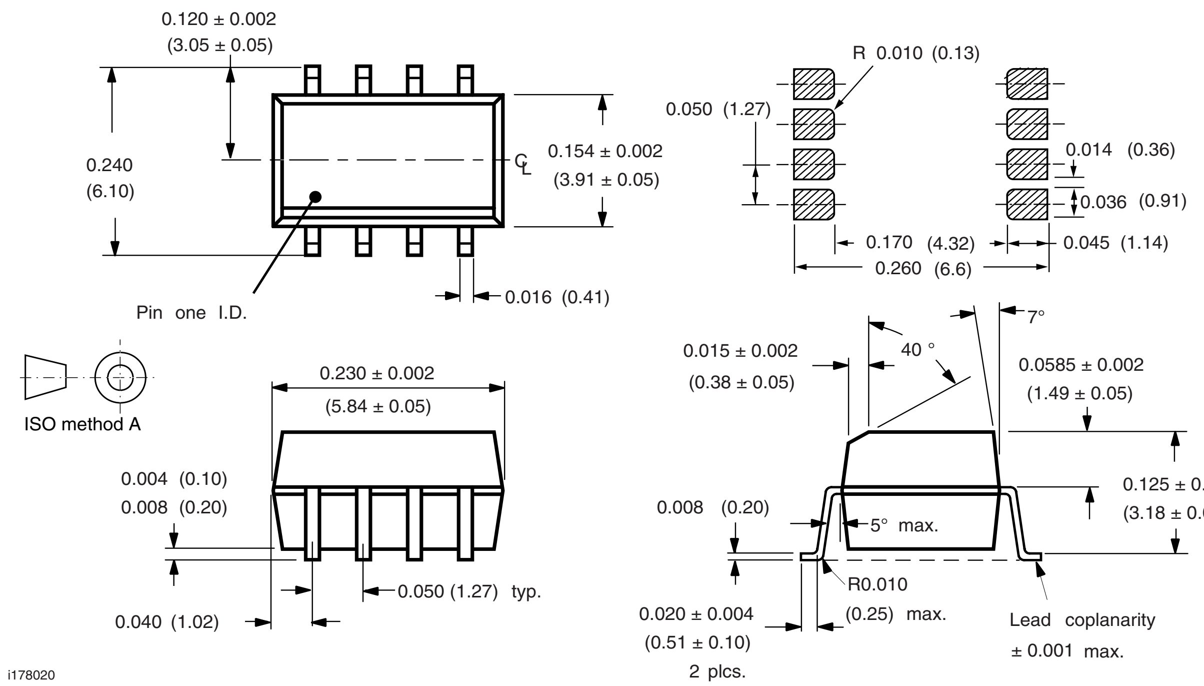


Fig. 12 - Collector-Emitter Leakage Current vs.Temp.

PACKAGE DIMENSIONS in inches (millimeters)



OZONE DEPLETING SUBSTANCES POLICY STATEMENT

It is the policy of Vishay Semiconductor GmbH to

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.

Vishay Semiconductor GmbH has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.

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.

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

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Vishay

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