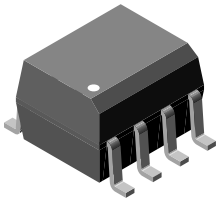
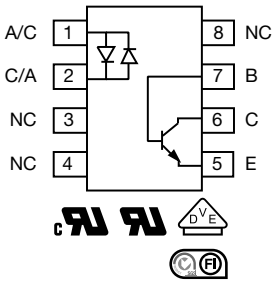
Optocoupler, Phototransistor Output, AC Input, With Base Connection





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)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free

e3

RoHS COMPLIANT

LINKS TO ADDITIONAL RESOURCES

Related Documents | Design Tools | 3D Models | Footprints | Schematics

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.

APPLICATIONS

- Telecom applications ring detection

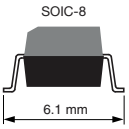
AGENCY APPROVALS

- UL
- cUL
- DIN EN 60747-5-5 (VDE 0884-5), available with option 1

ORDERING INFORMATION

I	L	2	5	6	A	T

PART NUMBER



AGENCY CERTIFIED / PACKAGE	CTR (%)
UL, cUL, VDE	**≥ 20**
SOIC-8, tape and reel	IL256AT

Note

- Additional options may be possible, please contact sales office

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

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

ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)						
PARAMETER	**TEST CONDITION**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
INPUT						
Forward voltage	I_F = 50 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

- 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**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
I_C/I_F	I_F = 10 mA, V_{CE} = 5 V	CTR	20	-	-	%
Symmetry (CTR at +10 mA)/(CTR at -10 mA)			0.5	1	2	

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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
V_{IORM}			560	-	-	V
P_{SO}			-	-	350	mW
I_{SI}			-	-	150	mA
T_{SI}			-	-	165	°C
Creepage distance			4	-	-	mm
Clearance distance			4	-	-	mm
Insulation thickness			0.2	-	-	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 °C, unless otherwise specified)

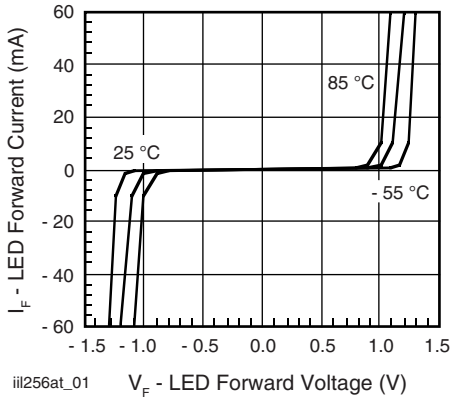

Fig. 1 - LED Forward Current vs.Forward Voltage

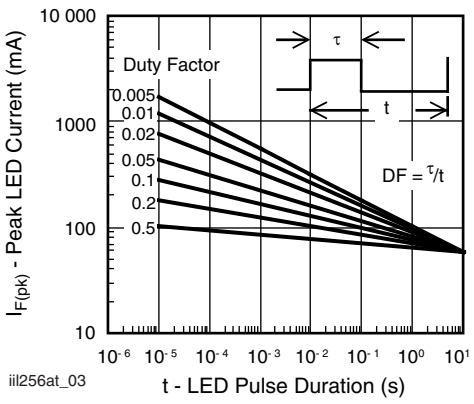

Fig. 3 - Peak LED Current vs. Duty Factor, Tau

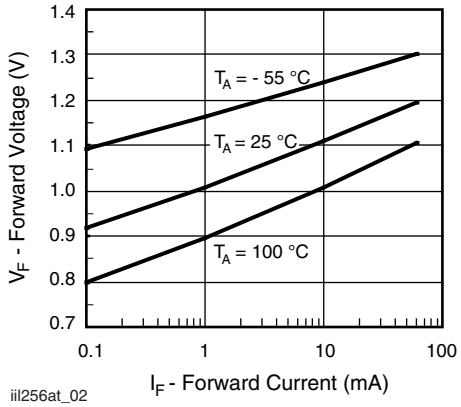

Fig. 2 - Forward Voltage vs. Forward Current

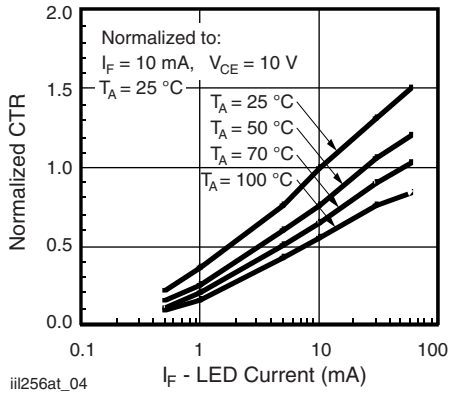

Fig. 4 - Normalized CTR vs. I_F and T_{amb}

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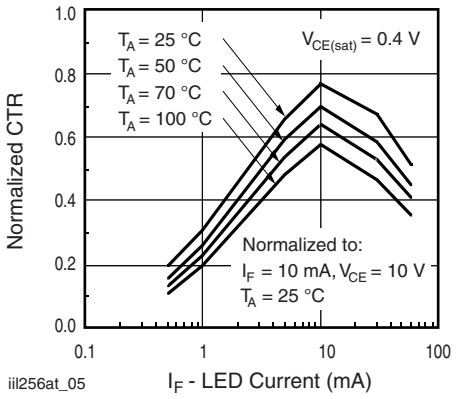

Fig. 5 - Normalized Saturated CTR

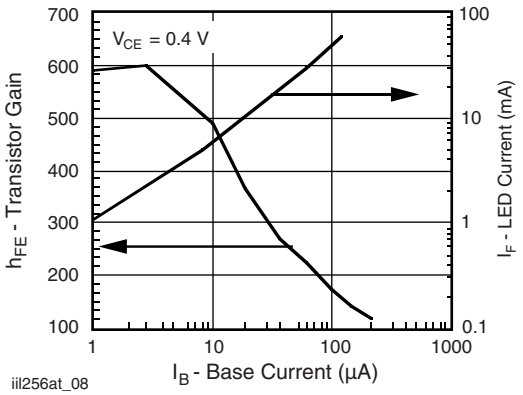

Fig. 8 - Base Current vs. I_F and h_{FE}

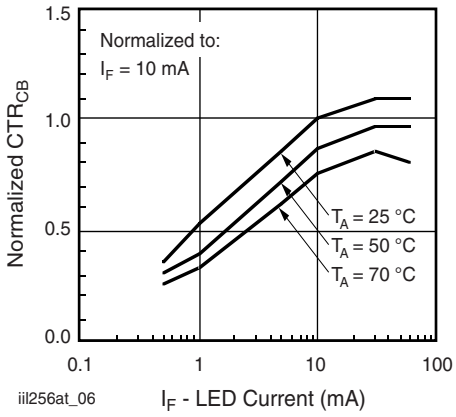

Fig. 6 - Normalized CTR_{cb}

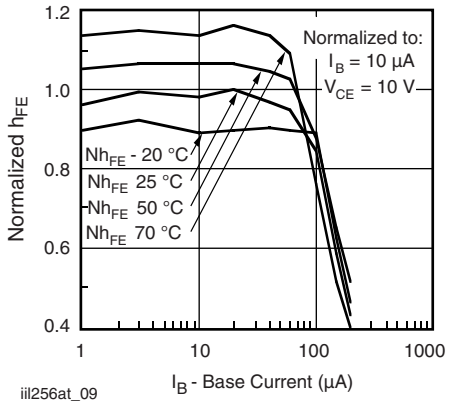

Fig. 9 - Normalized h_{FE} vs. Base Current and Temp.

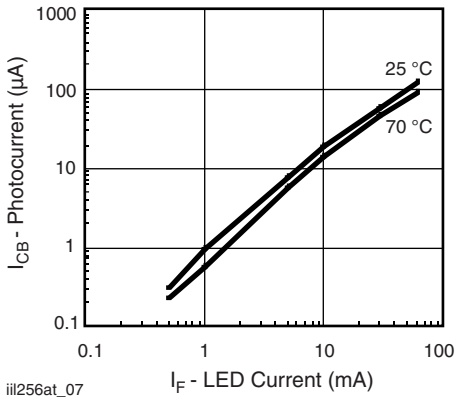

Fig. 7 - Photocurrent vs. LED Current

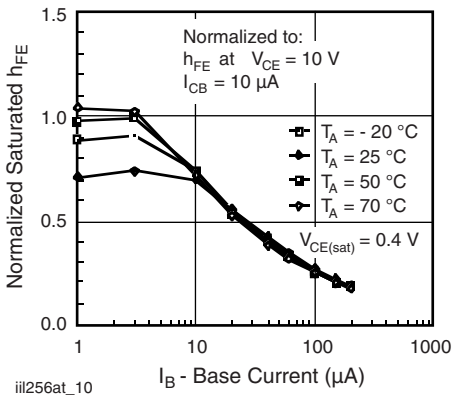

Fig. 10 - Normalized Saturated h_{FE} vs. Base Current

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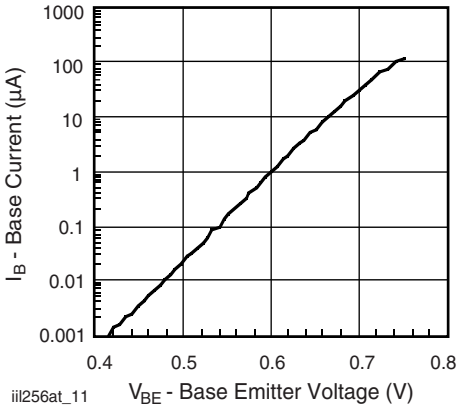


Fig. 11 - Base Emitter Voltage vs. Base Current

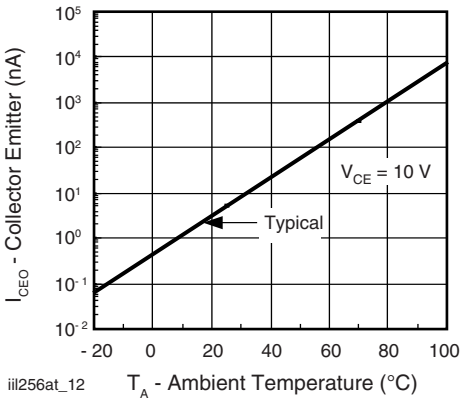
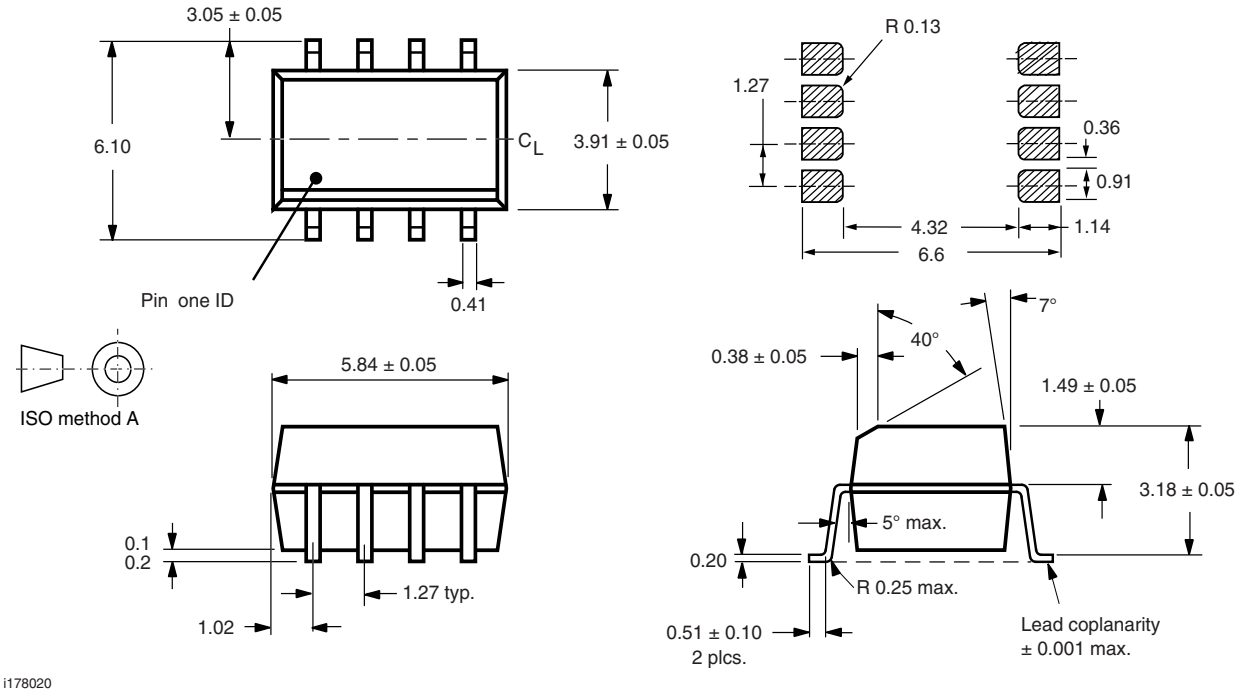
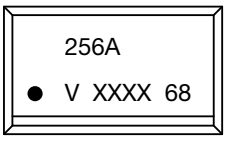


Fig. 12 - Collector-Emitter Leakage Current vs.Temp.

PACKAGE DIMENSIONS in millimeters



PACKAGE MARKING (example)



Notes

- XXXX = LMC (lot marking code)
- Tape and reel suffix (T) is not part of the package marking

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