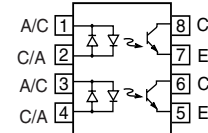
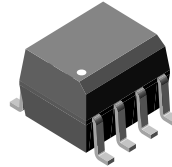


## Optocoupler, Phototransistor Output, Dual Channel, AC Input

### Features

- Each Channel: Guaranteed CTR Symmetry, 2:1 Maximum
- Bidirectional AC Input
- SOIC-8 Surface Mountable Package
- Standard Lead Spacing, .05 "
- Available only on Tape and Reel Option (Conforms to EIA Standard 481-2)



### Agency Approvals

- UL File #E52744 System Code Y

### Applications

Telecom applications ring detection off/on hook status

### Description

The ILD256T is a dual channel optocoupler. Each channel consists of two infrared emitters coupled to a silicon NPN phototransistor detector.

These circuit elements are constructed with a standard SOIC-8A footprint.

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) of 20 % at  $I_F = 10 \text{ mA}$ .

### Order Information

Part	Remarks
ILD256T	CTR > 20 %, SOIC-8

For additional information on the available options refer to Option Information.

### Absolute Maximum Ratings

$T_{amb} = 25 \text{ }^\circ\text{C}$ , 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 Rating for extended periods of the time can adversely affect reliability.

### Input

Each channel,  $T_{amb} = 25 \text{ }^\circ\text{C}$

Parameter	Test condition	Symbol	Value	Unit
Forward continuous current		$I_F$	30	mA
Power dissipation		$P_{diss}$	50	mW
Derate linearly from 25 °C			0.66	mW/°C

### Output

Each channel

Parameter	Test condition	Symbol	Value	Unit
Collector-emitter breakdown voltage		$BV_{CEO}$	70	V
Emitter-collector breakdown voltage		$BV_{ECO}$	7.0	V
Power dissipation		$P_{diss}$	125	mW
Derate linearly from 25 °C			1.67	mW/°C

### Coupler

Parameter	Test condition	Symbol	Value	Unit
Total package dissipation (LED + detector)		$P_{tot}$	300	mW
Derate linearly from 25 °C			4.0	mW/°C
Storage temperature		$T_{stg}$	- 55 to + 150	°C
Operating temperature		$T_{amb}$	- 55 to + 100	°C
Soldering temperature at 260 °C		$T_{sld}$	10	sec.

### Electrical Characteristics

$T_{amb} = 25\text{ °C}$ , 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.

### Input

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	$I_F = \pm 10\text{ mA}$	$V_F$		1.2	1.55	V
Reverse current	$V_R = 6.0\text{ V}$	$I_R$		0.1	100	mA

### Output

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Collector-emitter breakdown voltage	$I_C = 10\ \mu\text{A}$	$BV_{CEO}$	70			V
Emitter-collector breakdown voltage	$I_E = 10\ \mu\text{A}$	$BV_{ECO}$	7.0			V
Collector-emitter leakage current	$V_{CE} = 10\text{ V}$	$I_{CEO}$		5.0	50	nA

### Coupler

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Symmetry (CTR at + 10 mA)/ (CTR at -10 mA)			0.5	1.0	2.0	
Saturation voltage, collector-emitter	$I_F = \pm 16\text{ mA}$ , $I_C = 2.0\text{ mA}$	$V_{CEsat}$			0.4	V
Isolation voltage, input to output	$t = 1.0\text{ sec.}$	$V_{ISO}$	3000			$V_{RMS}$

### Current Transfer Ratio

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
DC Current Transfer Ratio	$I_F = \pm 10\text{ mA}$ , $V_{CE} = 5.0\text{ V}$	$CTR_{DC}$	20			%

## Typical Characteristics ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified)

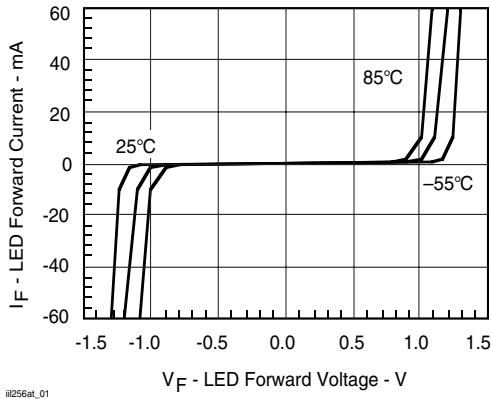


Fig. 1 LED Forward Current vs. Forward Voltage

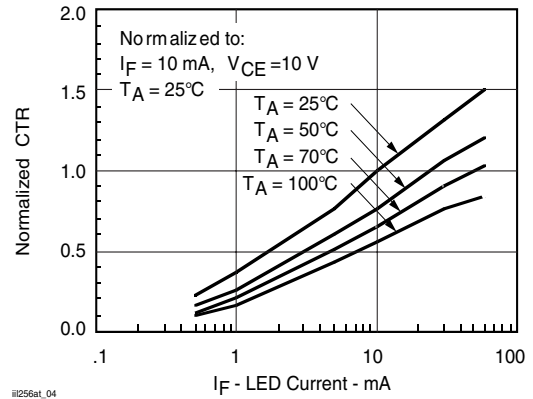


Fig. 4 Normalized CTR vs.  $I_F$  and  $T_{amb}$

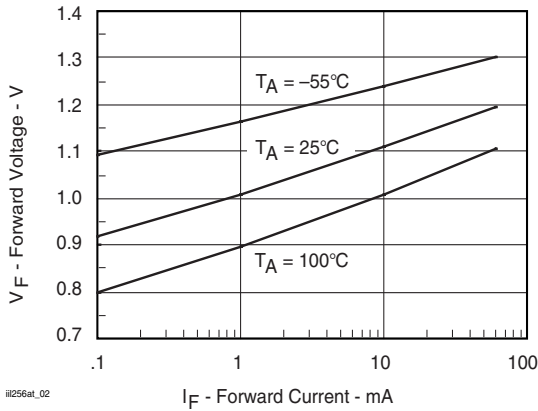


Fig. 2 Forward Voltage vs. Forward Current

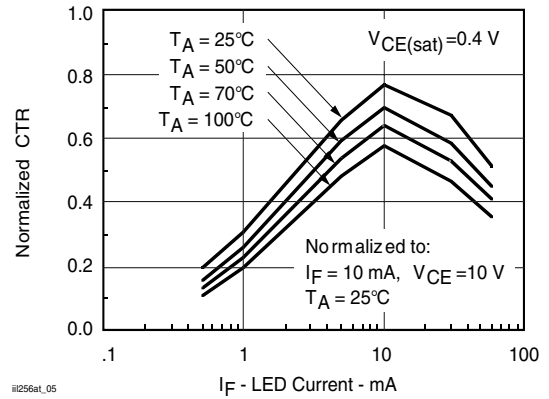


Fig. 5 Normalized Saturated CTR

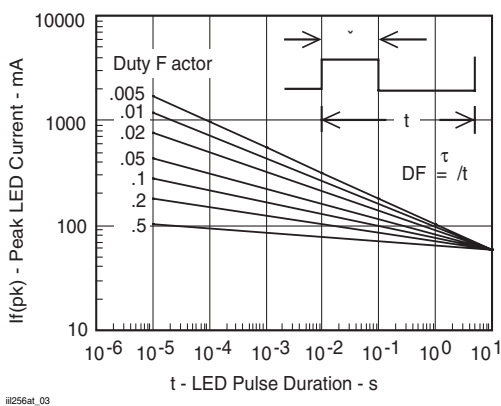


Fig. 3 Peak LED Current vs. Duty Factor,  $\tau$

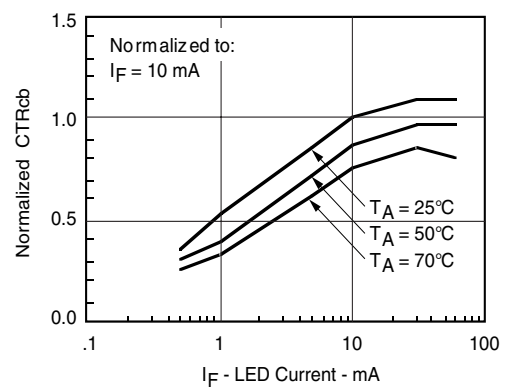
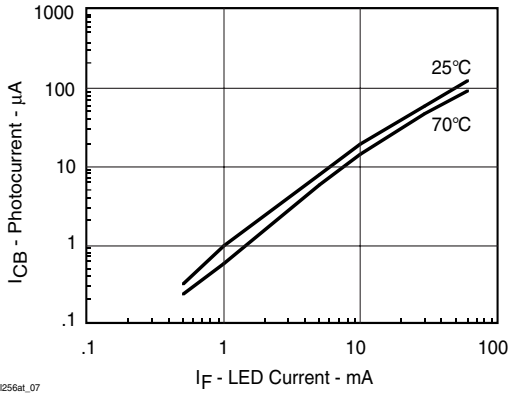
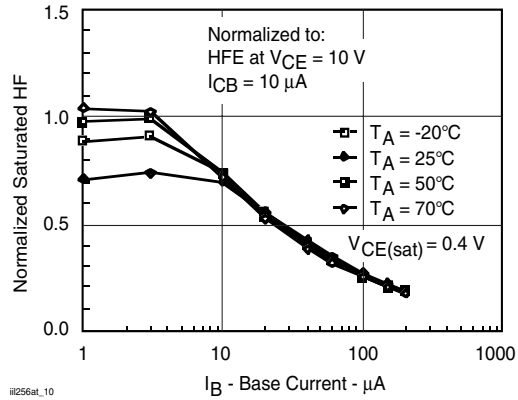


Fig. 6 Normalized  $CTR_{cb}$



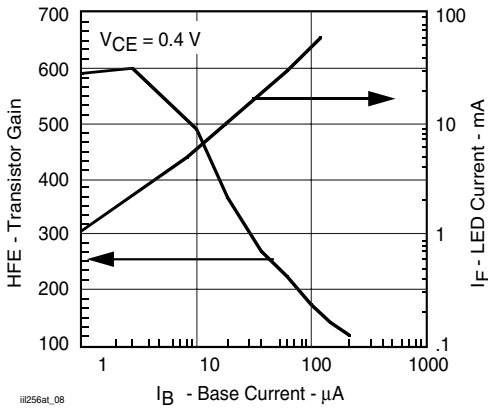
#256at\_07

Fig. 7 Photocurrent vs. LED Current



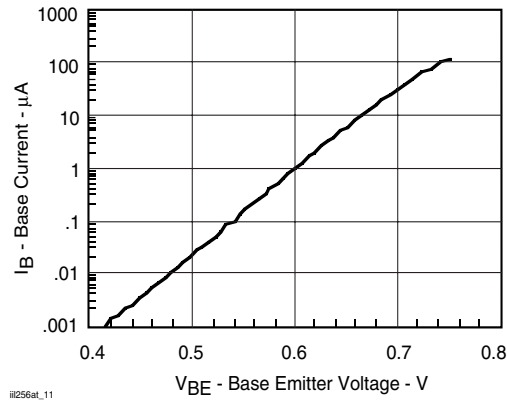
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Fig. 10 Normalized Saturated HFE vs. Base Current



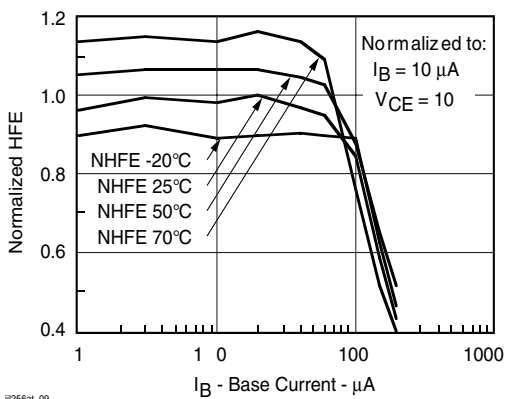
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Fig. 8 Base Current vs.  $I_F$  and HFE



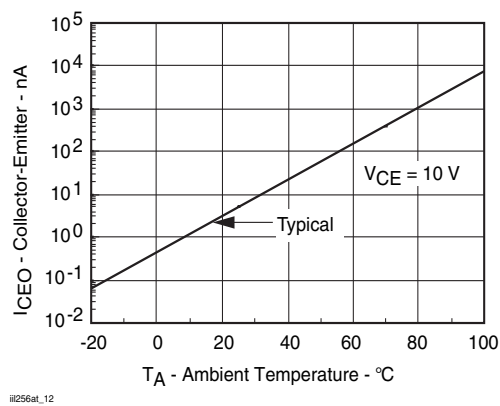
#256at\_11

Fig. 11 Base Emitter Voltage vs. Base Current



#256at\_09

Fig. 9 Normalized HFE vs. Base Current and Temp.



#256at\_12

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



### 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.

**We reserve the right to make changes to improve technical design  
and may do so without further notice.**

Parameters can vary in different applications. All operating parameters must be validated for each customer application by the customer. Should the buyer use Vishay Semiconductors products for any unintended or unauthorized application, the buyer shall indemnify Vishay Semiconductors against all claims, costs, damages, and expenses, arising out of, directly or indirectly, any claim of personal damage, injury or death associated with such unintended or unauthorized use.

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