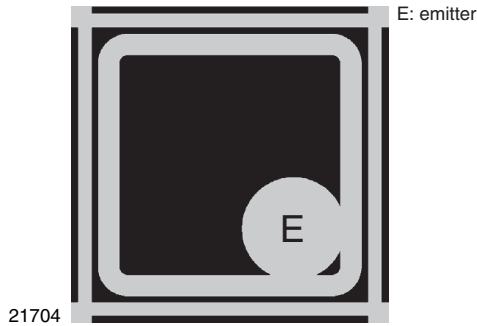


## Silicon NPN Phototransistor



### FEATURES

- Package type: chip
- Package form: chip
- Dimensions (L x W x H in mm): 0.39 x 0.39 x 0.185
- High photo sensitivity
- High collector current
- Small size
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



### DESCRIPTION

T5096P is an epitaxial phototransistor especially designed for optocoupler applications. Despite its small size it has a high sensitivity and ability to drive high currents even under saturation.

### GENERAL INFORMATION

The datasheet is based on Vishay optoelectronics sample testing under certain predetermined and assumed conditions, and is provided for illustration purpose only. Customers are encouraged to perform testing in actual proposed packaged and used conditions. Vishay optoelectronics die products are tested using Vishay optoelectronics based quality assurance procedures and are manufactured using Vishay optoelectronics established processes. Estimates such as those described and set forth in this datasheet for semiconductor die will vary depending on a number of packaging, handling, use, and other factors. Therefore sold die may not perform on an equivalent basis to standard package products.

### PRODUCT SUMMARY

COMPONENT	$I_{ca}$ ( $\mu A$ )	$\varphi$ (deg)	$\lambda_{0.1}$ (nm)
T5096P	200 to 310	$\pm 60$	480 to 1080

#### Note

- Test conditions see table "Basic Characteristics"

### ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
T5096P-SD-F	Wafer sawn on foil with disco frame	MOQ: 200 000 pcs	Chip

#### Note

- MOQ: minimum order quantity

### ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25\text{ }^{\circ}C$ , unless otherwise specified)

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Collector emitter voltage		$V_{CEO}$	85	V
Emitter collector voltage		$V_{ECO}$	7.8	V
Collector current		$I_C$	50	mA
Junction temperature		$T_j$	125	$^{\circ}C$
Operating temperature range		$T_{amb}$	-55 to +125	$^{\circ}C$
Storage temperature range		$T_{stg1}$	-55 to +150	$^{\circ}C$

<b>BASIC CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Collector emitter breakdown voltage	$E = 0\text{ mW/cm}^2$ ; $I_C = 10\text{ }\mu\text{A}$	$V_{(BR)CEO}$	85			V
Collector emitter dark current	$V_{CE} = 50\text{ V}$ , $E = 0\text{ lx}$	$I_{CEO}$		< 1	50	nA
Wavelength of peak sensitivity		$\lambda_p$		910		nm
Range of spectral bandwidth		$\lambda_{0.1}$		480 to 1080		nm

**Note**

- The measurements are based on samples of die which are mounted on a TO-header without resin coating

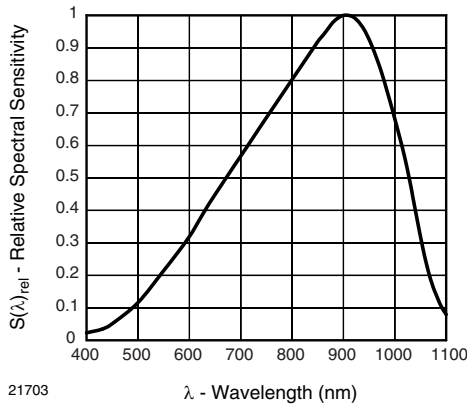
**BASIC CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)


Fig. 1 - Relative Spectral Sensitivity vs. Wavelength

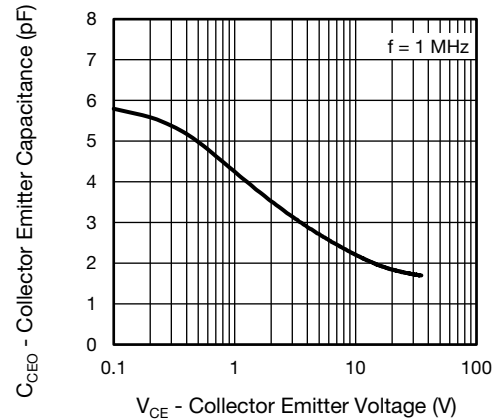


Fig. 2 - Collector Emitter Capacitance vs. Collector Emitter Voltage

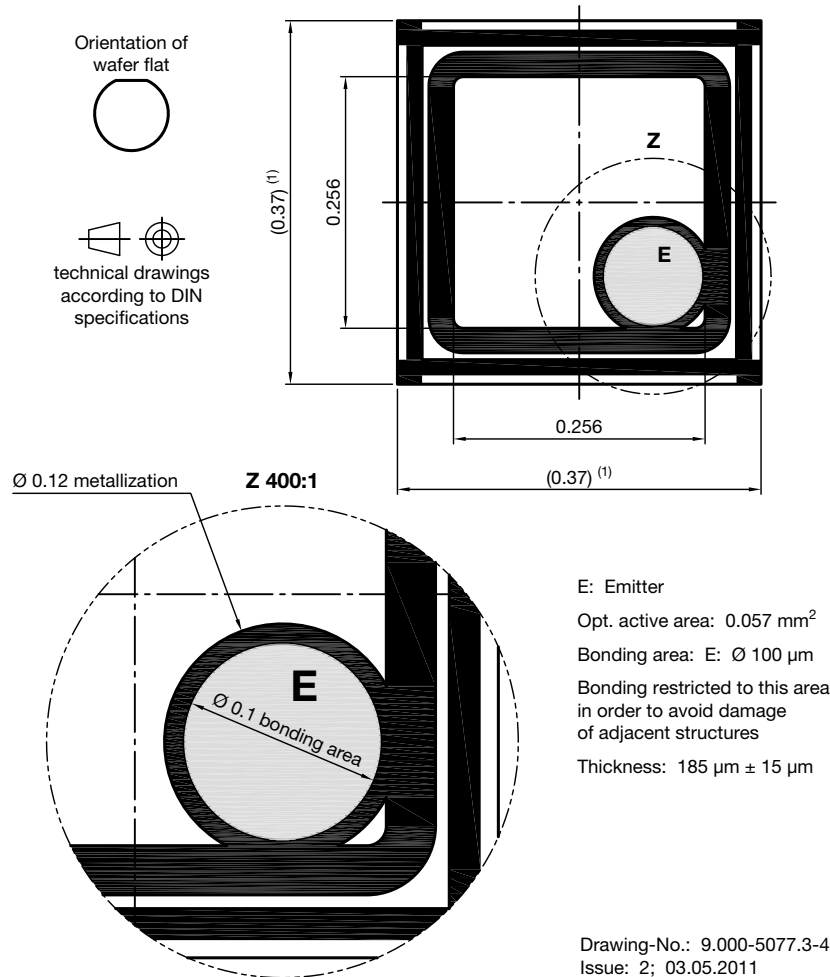
<b>MECHANICAL DIMENSIONS</b>						
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	
Length of chip edge (x-direction)	$L_x$		0.39		mm	
Length of chip edge (y-direction)	$L_y$		0.39		mm	
Die height	H	0.170	0.185	0.200	mm	
Bond pad emitter	d		$\varnothing 0.10$ (bonding area)		mm	

<b>ADDITIONAL INFORMATION</b>	
Frontside metallization, emitter	AlSi 1.2 $\mu\text{m}$
Backside metallization, collector	AuSb 0.4 $\mu\text{m}$
Dicing	Sawing
Die bonding technology	Epoxy bonding

**Note**

- All products are checked in accordance with the Vishay Semiconductor, specification of visual inspection FVOV6870. The visual inspection shall be made in accordance with the "specification of visual inspection as referenced". The visual inspection of wafer backside is performed with stereo microscope with incident light and 40x to 80x magnification. The quality inspection (final visual inspection) is performed by production. An additional visual inspection step as special release procedure by QM is not installed.

**CHIP DIMENSIONS** in millimeters



**Note**

- Not indicated tolerances:  $\pm 0.005$
- (1) Only for information: dimension of sawn die under consideration of 30  $\mu\text{m}$  saw kerf

**HANDLING AND STORAGE CONDITIONS**

- The hermetically sealed shipment lots shall be opened in temperature and moisture controlled cleanroom environment only. It is mandatory to follow the rules for disposition of material that can be hazardous for humans and environment.
- Product must be handled only at ESD safe workstations. Standard ESD precautions and safe work environments are as defined in MIL-HDBK-263.
- Singulated die are not to be handled with tweezers. A vacuum wand with non metallic ESD protected tip should be used.

**PACKING**

Chips are fixed on adhesive foil. For shipment, the wafers are arranged to stacks and hermetically sealed in plastic bags to ensure protection against environmental influence (humidity and contamination). Use for recycling reliable operators only. We can help getting in touch with your nearest sales office. By agreement we will take back packing material, if it is sorted. You will have to bear the costs of transport. We will invoice you for any costs incurred for packing material that is returned unsorted or which we are not obliged to accept.



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