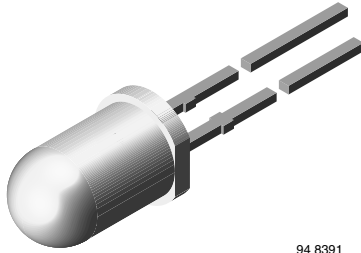


## Silicon NPN Phototransistor



94 8391



### FEATURES

- Package type: leaded
- Package form: T-1 1/4
- Dimensions (in mm): Ø 5
- Leads with stand-off
- High photo sensitivity
- High radiant sensitivity
- Suitable for visible and near infrared radiation
- Fast response times
- Angle of half sensitivity:  $\phi = \pm 20^\circ$
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC

### Note

\*\* Please see document "Vishay Material Category Policy": [www.vishay.com/doc?99902](http://www.vishay.com/doc?99902)

### APPLICATIONS

- Detector in electronic control and drive circuits

### DESCRIPTION

BPW96 is a silicon NPN phototransistor with high radiant sensitivity in clear, T-1 1/4 plastic package. It is sensitive to visible and near infrared radiation.

PRODUCT SUMMARY			
COMPONENT	I <sub>ca</sub> (mA)	$\phi$ (deg)	$\lambda_{0.1}$ (nm)
BPW96B	2.5 to 7.5	$\pm 20$	450 to 1080
BPW96C	4.5 to 15	$\pm 20$	450 to 1080

### Note

- Test condition see table "Basic Characteristics"

ORDERING INFORMATION			
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
BPW96B	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1 1/4
BPW96C	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1 1/4

### Note

- MOQ: minimum order quantity

ABSOLUTE MAXIMUM RATINGS (T <sub>amb</sub> = 25 °C, unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Collector emitter voltage		V <sub>CEO</sub>	70	V
Emitter collector voltage		V <sub>ECO</sub>	5	V
Collector current		I <sub>C</sub>	50	mA
Collector peak current	t <sub>p</sub> /T ≤ 0.5, t <sub>p</sub> ≤ 10 ms	I <sub>CM</sub>	100	mA
Power dissipation	T <sub>amb</sub> ≤ 47 °C	P <sub>V</sub>	150	mW
Junction temperature		T <sub>j</sub>	100	°C
Operating temperature range		T <sub>amb</sub>	- 40 to + 100	°C
Storage temperature range		T <sub>stg</sub>	- 40 to + 100	°C
Soldering temperature	t ≤ 3 s	T <sub>sd</sub>	260	°C
Thermal resistance junction/ambient	Connected with Cu wire, 0.14 mm <sup>2</sup>	R <sub>thJA</sub>	350	K/W

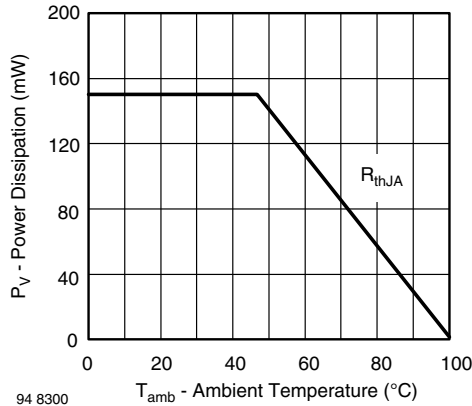


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

<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	$I_C = 1\text{ mA}$	$V_{(BR)CEO}$	70			V
Collector emitter dark current	$V_{CE} = 20\text{ V}, E = 0$	$I_{CEO}$		1	200	nA
Collector emitter capacitance	$V_{CE} = 5\text{ V}, f = 1\text{ MHz}, E = 0$	$C_{CEO}$		3		pF
Angle of half sensitivity		$\varphi$		$\pm 20$		deg
Wavelength of peak sensitivity		$\lambda_p$		850		nm
Range of spectral bandwidth		$\lambda_{0.1}$		450 to 1080		nm
Collector emitter saturation voltage	$E_e = 1\text{ mW/cm}^2, \lambda = 950\text{ nm}, I_C = 0.1\text{ mA}$	$V_{CEsat}$			0.3	V
Turn-on time	$V_S = 5\text{ V}, I_C = 5\text{ mA}, R_L = 100\text{ }\Omega$	$t_{on}$		2.0		$\mu\text{s}$
Turn-off time	$V_S = 5\text{ V}, I_C = 5\text{ mA}, R_L = 100\text{ }\Omega$	$t_{off}$		2.3		$\mu\text{s}$
Cut-off frequency	$V_S = 5\text{ V}, I_C = 5\text{ mA}, R_L = 100\text{ }\Omega$	$f_c$		180		kHz

<b>TYPE DEDICATED CHARACTERISTICS</b>							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Collector light current	$E_e = 1\text{ mW/cm}^2, \lambda = 950\text{ nm}, V_{CE} = 5\text{ V}$	BPW96B	$I_{ca}$	2.5	4.5	7.5	mA
		BPW96C	$I_{ca}$	4.5	8	15	mA



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

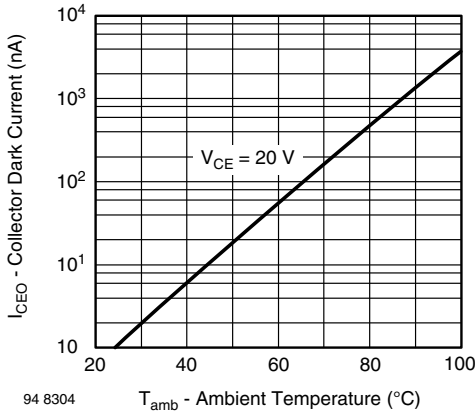


Fig. 1 - Collector Dark Current vs. Ambient Temperature

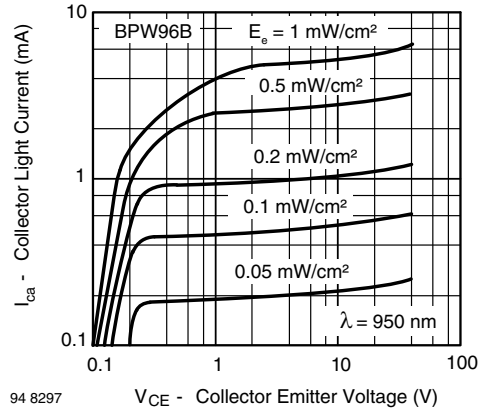


Fig. 4 - Collector Light Current vs. Collector Emitter Voltage

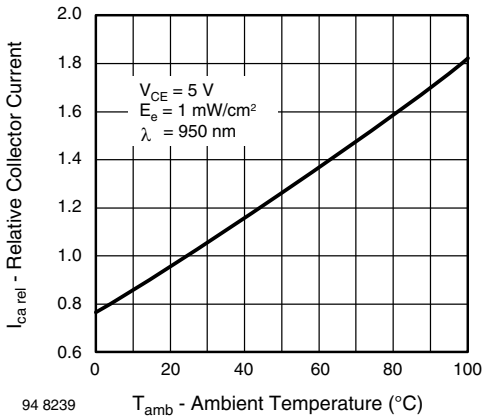


Fig. 2 - Relative Collector Current vs. Ambient Temperature

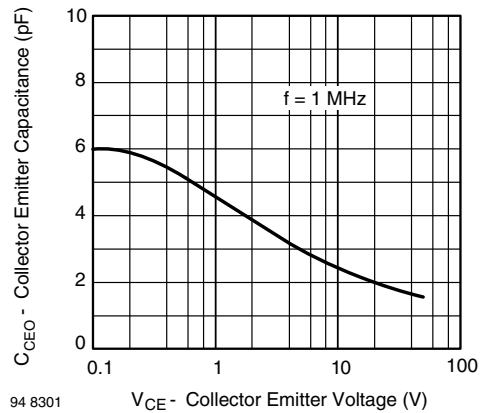


Fig. 5 - Collector Emitter Capacitance vs. Collector Emitter Voltage

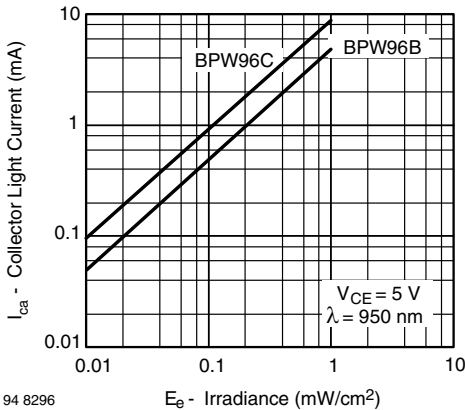


Fig. 3 - Collector Light Current vs. Irradiance

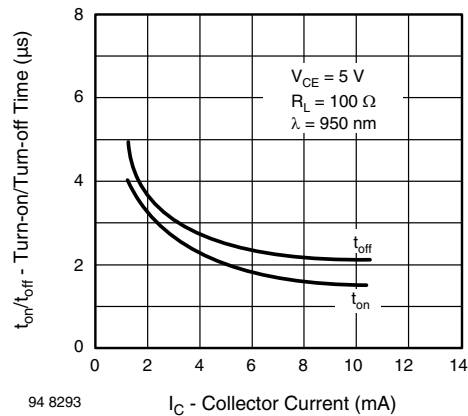


Fig. 6 - Turn-on/Turn-off Time vs. Collector Current

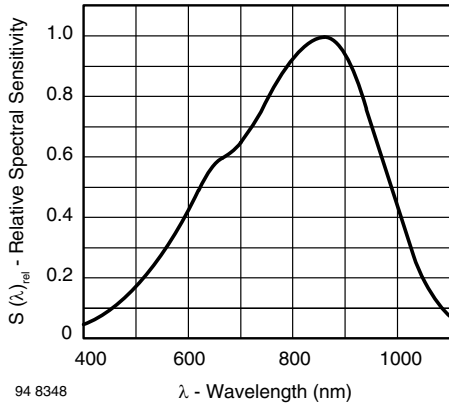


Fig. 7 - Relative Spectral Sensitivity vs. Wavelength

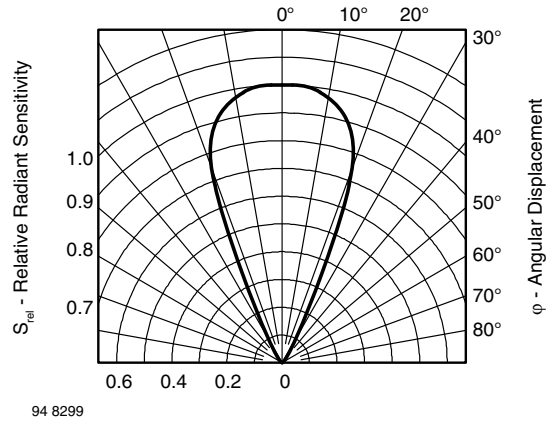
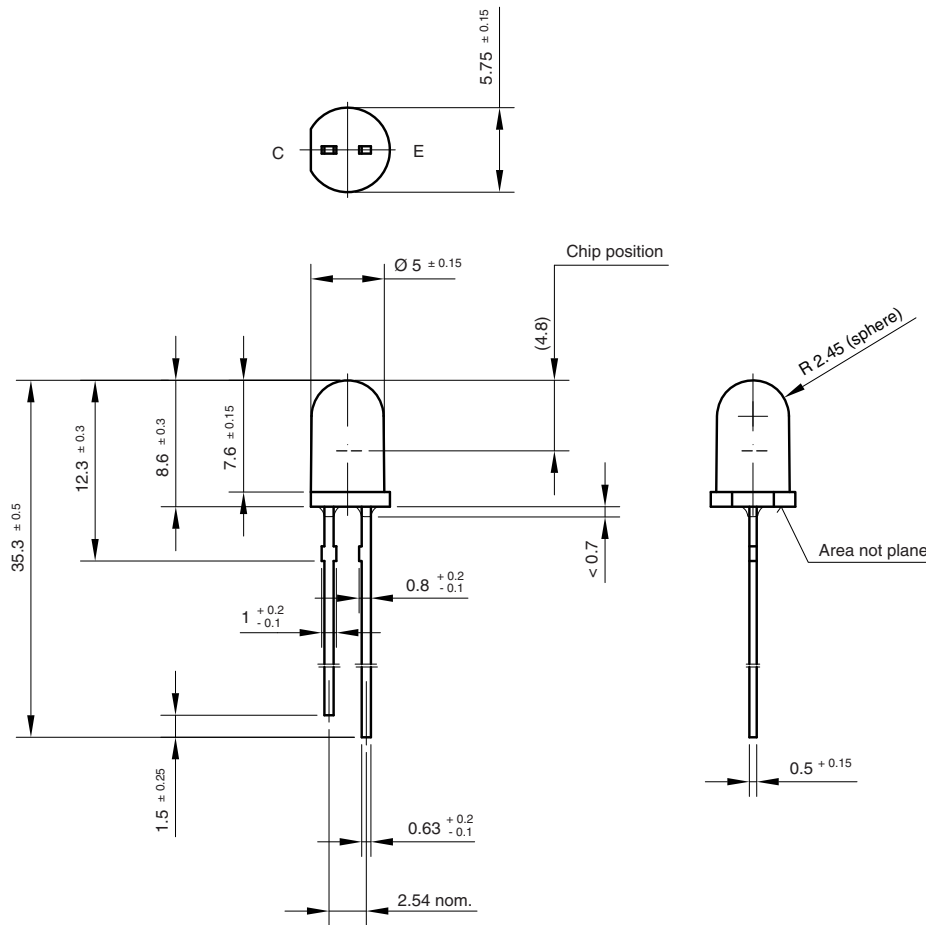


Fig. 8 - Relative Radiant Sensitivity vs. Angular Displacement

**PACKAGE DIMENSIONS** in millimeters



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