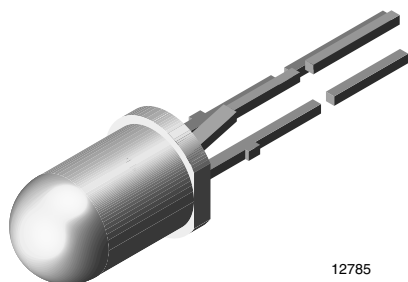




Silicon NPN Phototransistor



FEATURES

- Package type: leaded
- Package form: T-1 $\frac{3}{4}$
- Dimensions (in mm): $\varnothing$ 5
- High photo sensitivity
- High radiant sensitivity
- Suitable for visible and near infrared radiation
- Fast response times
- Angle of half sensitivity: $\varphi = \pm 15^\circ$
- Base terminal connected
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912



DESCRIPTION

BPV11 is a silicon NPN phototransistor with high radiant sensitivity in clear, T-1 $\frac{3}{4}$ plastic package with base terminal. It is sensitive to visible and near infrared radiation.

APPLICATIONS

- Detector for industrial electronic circuitry, measurement and control

PRODUCT SUMMARY

COMPONENT	I_{ca} (mA)	φ (deg)	$\lambda_{0.1}$ (nm)
BPV11	10	± 15	450 to 1080

Note

- Test condition see table "Basic Characteristics"

ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
BPV11	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1 $\frac{3}{4}$

Note

- MOQ: minimum order quantity

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

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Collector base voltage		V_{CBO}	80	V
Collector emitter voltage		V_{CEO}	70	V
Emitter base voltage		V_{EBO}	5	V
Collector current		I_C	50	mA
Collector peak current	$t_p/T = 0.5$, $t_p \leq 10$ ms	I_{CM}	100	mA
Power dissipation	$T_{amb} \leq 47^\circ\text{C}$	P_V	150	mW
Junction temperature		T_j	100	$^\circ\text{C}$
Operating temperature range		T_{amb}	- 40 to + 100	$^\circ\text{C}$
Storage temperature range		T_{stg}	- 40 to + 100	$^\circ\text{C}$
Soldering temperature	$t \leq 5$ s, 2 mm from body	T_{sd}	260	$^\circ\text{C}$
Thermal resistance junction/ambient	Connected with Cu wire, 0.14 mm ²	R_{thJA}	350	K/W

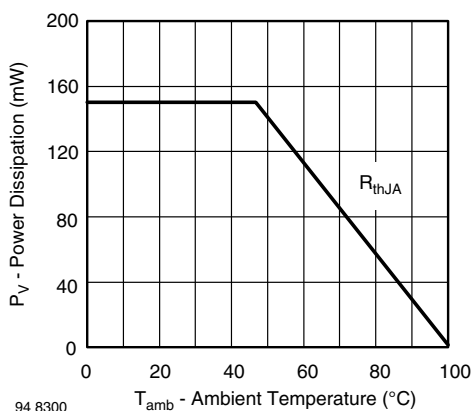


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

BASIC CHARACTERISTICS ($T_{amb} = 25^{\circ}\text{C}$, 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	$V_{CE} = 10\text{ V}, E = 0$	I_{CEO}		1	50	nA
DC current gain	$V_{CE} = 5\text{ V}, I_C = 5\text{ mA}, E = 0$	h_{FE}		450		
Collector emitter capacitance	$V_{CE} = 0\text{ V}, f = 1\text{ MHz}, E = 0$	C_{CEO}		15		pF
Collector base capacitance	$V_{BE} = 0\text{ V}, f = 1\text{ MHz}, E = 0$	C_{CBO}		19		pF
Collector light current	$E_e = 1\text{ mW/cm}^2, \lambda = 950\text{ nm}, V_{CE} = 5\text{ V}$	I_{ca}	3	10		mA
Angle of half sensitivity		ϕ		± 15		deg
Wavelength of peak sensitivity		λ_p		850		nm
Range of spectral bandwidth		$\lambda_{0.1}$		450 to 1080		nm
Collector emitter saturation voltage	$E_e = 1\text{ mW/cm}^2, \lambda = 950\text{ nm}, I_C = 1\text{ mA}$	V_{CEsat}		130	300	mV
Turn-on time	$V_S = 5\text{ V}, I_C = 5\text{ mA}, R_L = 100\ \Omega$	t_{on}		6		μs
Turn-off time	$V_S = 5\text{ V}, I_C = 5\text{ mA}, R_L = 100\ \Omega$	t_{off}		5		μs
Cut-off frequency	$V_S = 5\text{ V}, I_C = 5\text{ mA}, R_L = 100\ \Omega$	f_c		110		kHz

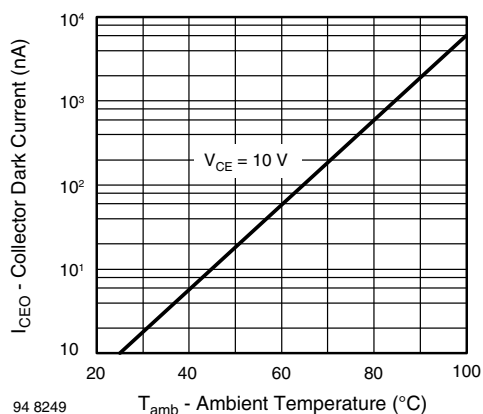
BASIC CHARACTERISTICS ($T_{amb} = 25^{\circ}\text{C}$, unless otherwise specified)

Fig. 2 - Collector Dark Current vs. Ambient Temperature

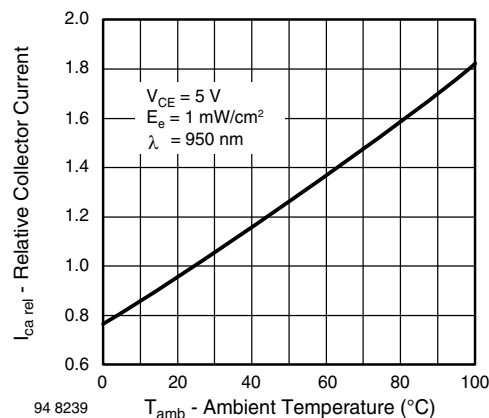


Fig. 3 - Relative Collector Current vs. Ambient Temperature

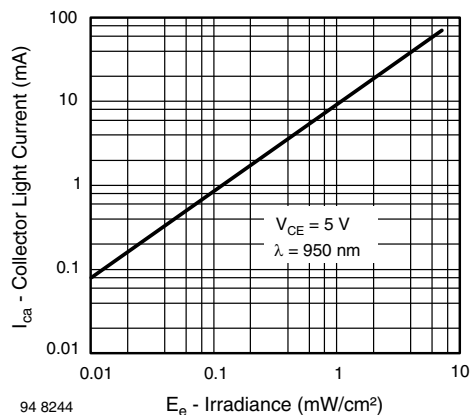


Fig. 4 - Collector Light Current vs. Irradiance

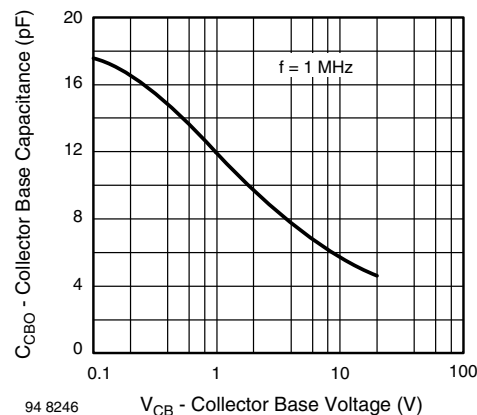


Fig. 7 - Collector Base Capacitance vs. Collector Base Voltage

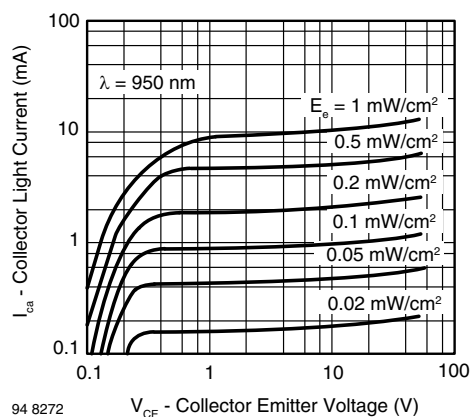


Fig. 5 - Collector Light Current vs. Collector Emitter Voltage

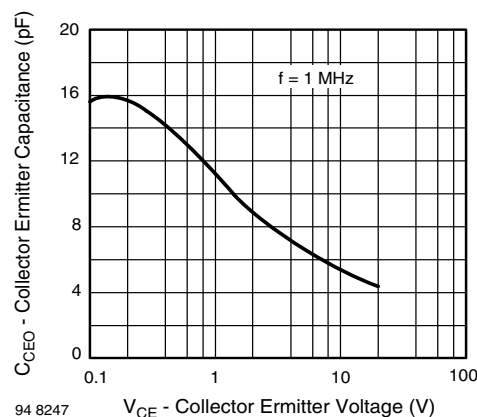


Fig. 8 - Collector Emitter Capacitance vs. Collector Emitter Voltage

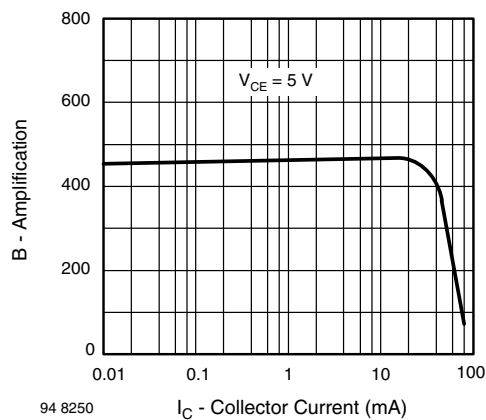


Fig. 6 - Amplification vs. Collector Current

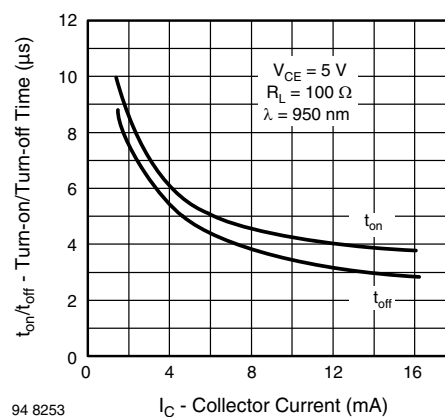


Fig. 9 - Turn-on/Turn-off Time vs. Collector Current

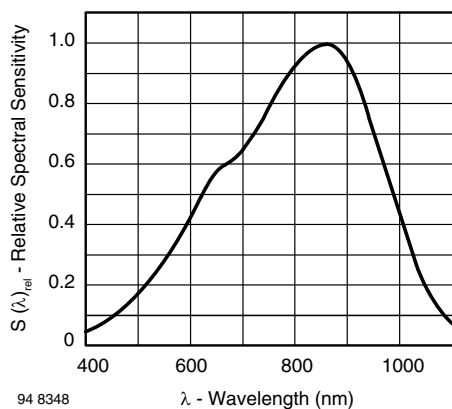


Fig. 10 - Relative Spectral Sensitivity vs. Wavelength

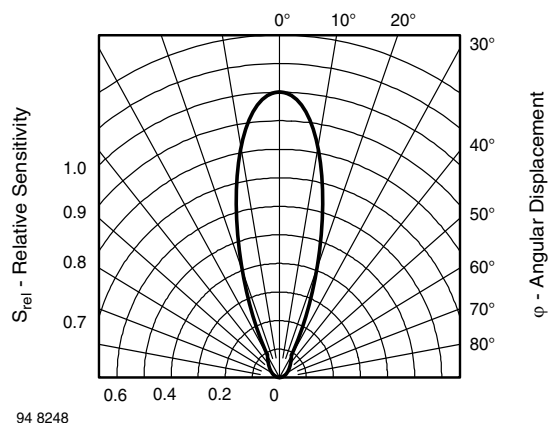
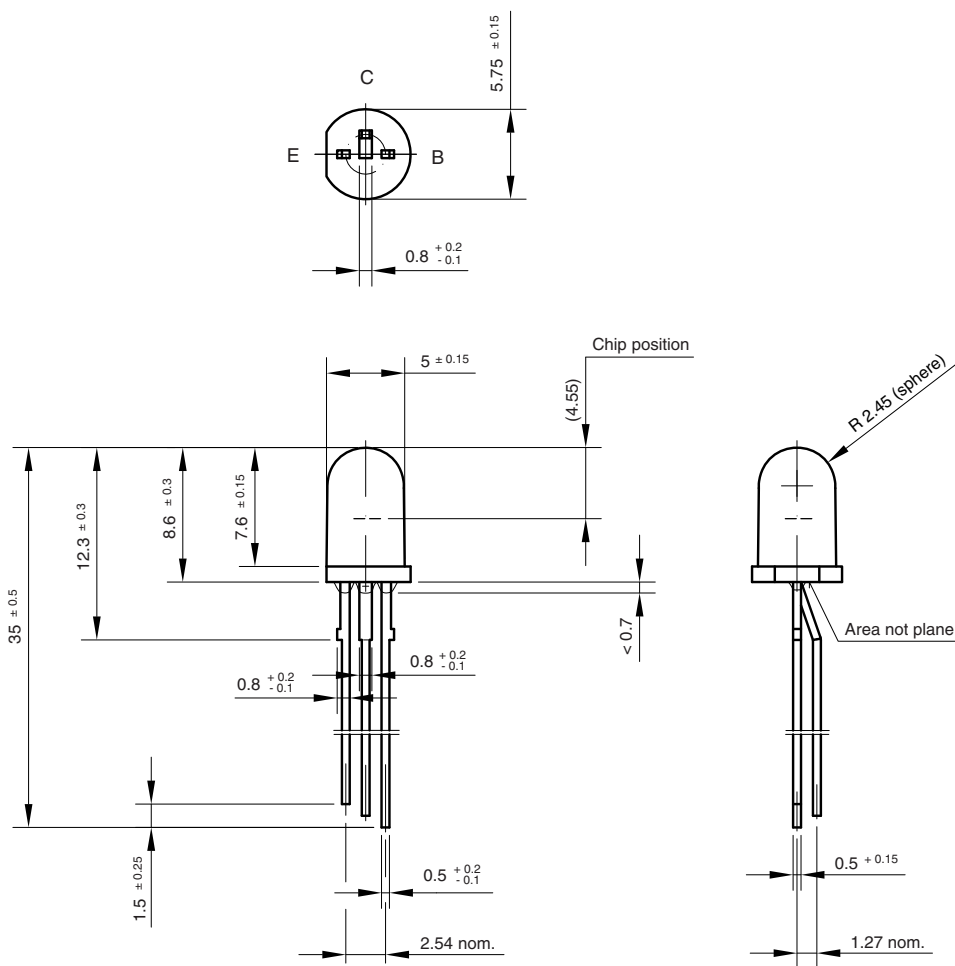


Fig. 11 - Relative Radiant Sensitivity vs. Angular Displacement

PACKAGE DIMENSIONS in millimeters

Drawing-No.: 6.544-5188.01-4

Issue:1; 01.07.96

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