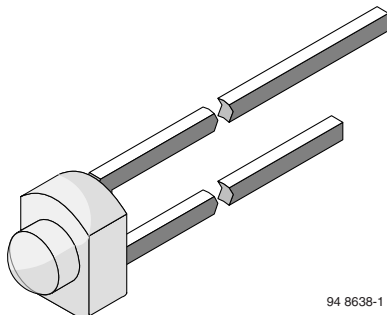


# Silicon NPN Phototransistor



## FEATURES

- Package type: leaded
- Package form: T-3/4
- Dimensions (in mm): Ø 1.8
- High photo sensitivity
- High radiant sensitivity
- Suitable for visible and near infrared radiation
- Fast response times
- Angle of half sensitivity:  $\phi = \pm 12^\circ$
- 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

BPW17N is a silicon NPN phototransistor with high radiant sensitivity in clear, T-3/4 plastic package with lens. It is sensitive to visible and near infrared radiation. On PCB this package size enables assembly of arrays with 2.54 mm pitch.

## PRODUCT SUMMARY

COMPONENT	$I_{ca}$ (mA)	$\phi$ (deg)	$\lambda_{0.1}$ (nm)
BPW17N	1.0	$\pm 12$	450 to 1040

## Note

- Test condition see table "Basic Characteristics"

## ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
BPW17N	Bulk	MOQ: 5000 pcs, 5000 pcs/bulk	T-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 emitter voltage		$V_{CEO}$	32	V
Emitter collector voltage		$V_{ECO}$	5	V
Collector current		$I_C$	50	mA
Collector peak current	$t_p/T = 0.5, t_p \leq 10 \text{ ms}$	$I_{CM}$	100	mA
Power dissipation	$T_{amb} \leq 55^\circ\text{C}$	$P_V$	100	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	$t \leq 3 \text{ s}$	$T_{sd}$	260	$^\circ\text{C}$
Thermal resistance junction/ambient	Connected with Cu wire, $0.14 \text{ mm}^2$	$R_{thJA}$	450	K/W

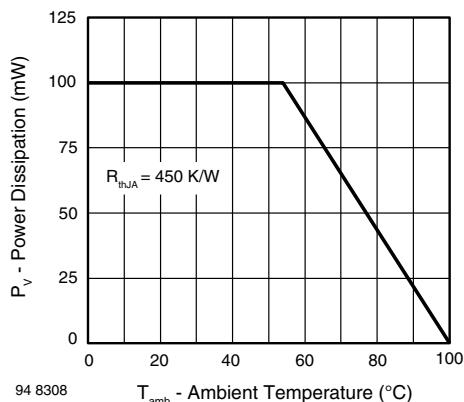


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

BASIC CHARACTERISTICS ( $T_{amb} = 25^{\circ}\text{C}$ , unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Collector emitter breakdown voltage	$I_C = 1\text{ mA}$	$V_{(BR)CEO}$	32			V
Collector emitter dark current	$V_{CE} = 20\text{ V}, E = 0$	$I_{CEO}$		1	200	nA
Collector emitter capacitance	$V_{CE} = 5\text{ V}, f = 1\text{ MHz}, E = 0$	$C_{CEO}$		8		pF
Collector light current	$E_e = 1\text{ mW/cm}^2, \lambda = 950\text{ nm}, V_{CE} = 5\text{ V}$	$I_{ca}$	0.5	1.0		mA
Angle of half sensitivity		$\phi$		$\pm 12$		deg
Wavelength of peak sensitivity		$\lambda_p$		825		nm
Range of spectral bandwidth		$\lambda_{0.1}$		450 to 1040		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	$V_S = 5\text{ V}, I_C = 5\text{ mA}, R_L = 100\ \Omega$	$t_{on}$		4.8		$\mu\text{s}$
Turn-off time	$V_S = 5\text{ V}, I_C = 5\text{ mA}, R_L = 100\ \Omega$	$t_{off}$		5.0		$\mu\text{s}$
Cut-off frequency	$V_S = 5\text{ V}, I_C = 5\text{ mA}, R_L = 100\ \Omega$	$f_c$		120		kHz

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

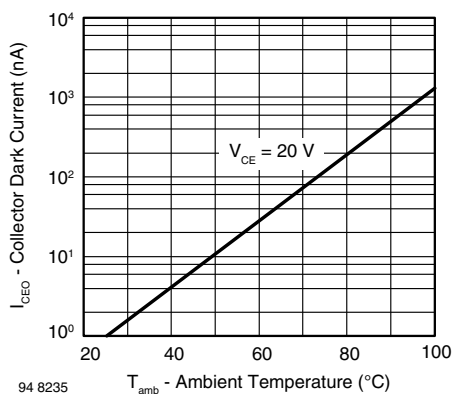


Fig. 1 - Collector Dark Current vs. Ambient Temperature

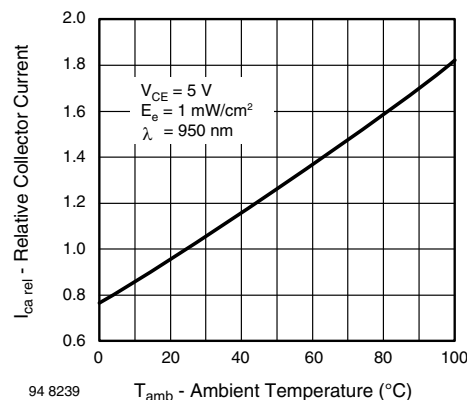


Fig. 2 - Relative Collector Current vs. Ambient Temperature

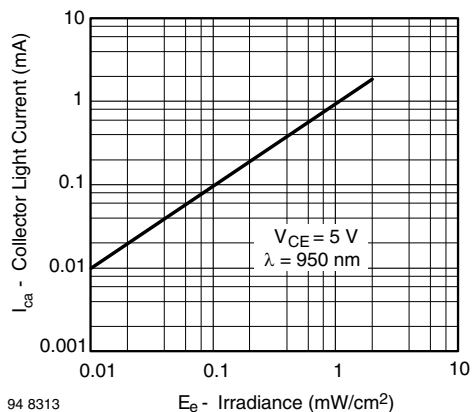


Fig. 3 - Collector Light Current vs. Irradiance

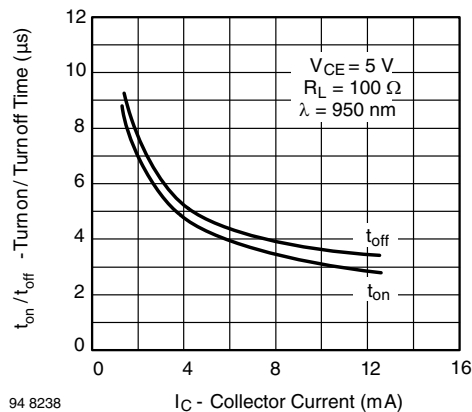


Fig. 6 - Turn-on/Turn-off Time vs. Collector Current

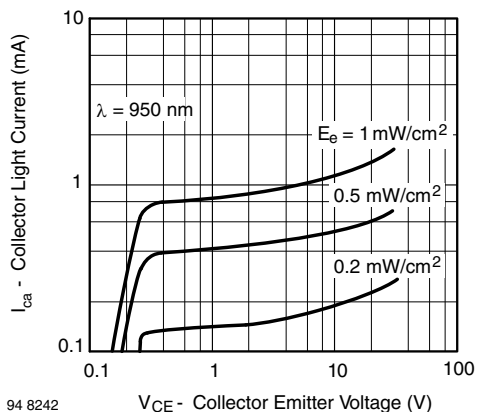


Fig. 4 - Collector Light Current vs. Collector Emitter Voltage

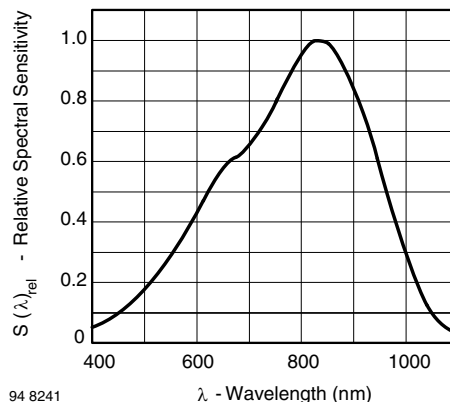


Fig. 7 - Relative Spectral Sensitivity vs. Wavelength

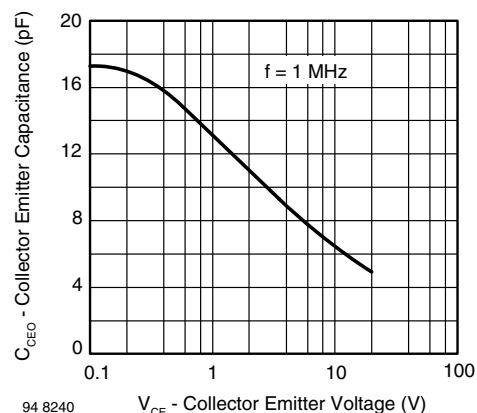


Fig. 5 - Collector Emitter Capacitance vs. Collector Emitter Voltage

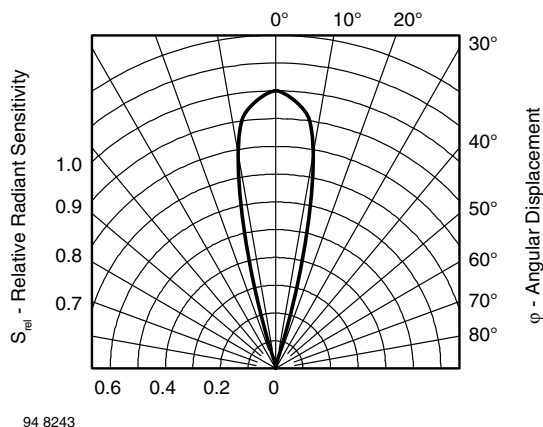
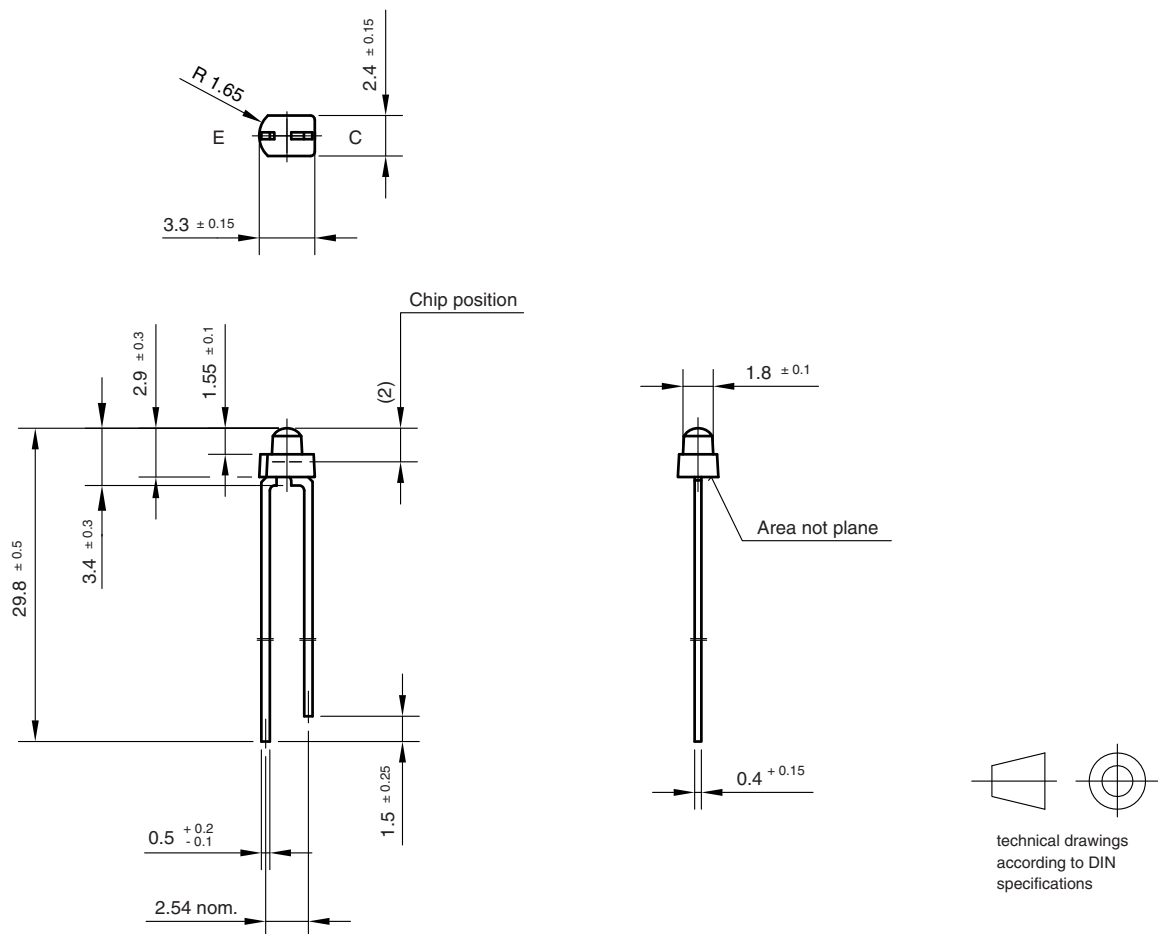


Fig. 8 - Relative Radiant Sensitivity vs. Angular Displacement



**PACKAGE DIMENSIONS** in millimeters



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