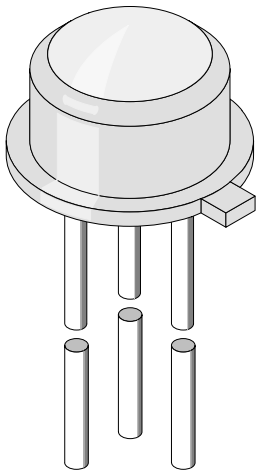
Silicon Darlington Phototransistor

Description

BPX99R is an extra high sensitive monolithic silicon epitaxial planar Darlington phototransistor in a hermetically sealed low profile TO–46 metal case.
The solid metal base allows the user to mount the device on a heatsink and take advantage of the high current capability (500 mA). A glass lens provides a viewing angle of ± 12˚ and makes the device insensible to ambient straylight.
A base terminal is available to enable biasing and sensitivity control.



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Features

- Hermetically sealed case
- Angle of half sensitivity φ = ± 12˚
- Base terminal available
- Collector light current up to 500 mA
- Extra high photo sensitivity
- Suitable for visible and near infrared radiation

Applications

Direct driving of relays, magnetic valves, small motors etc.

Absolute Maximum Ratings

T_{amb} = 25°C

Parameter	Test Conditions	Symbol	Value	Unit
Collector Emitter Voltage		V_{CEO}	40	V
Emitter Base Voltage		V_{EBO}	10	V
Collector Current		I_C	0.5	A
Peak Collector Current	t_p/T = 0.05, t_p ≦ 10 ms	I_{CM}	1	A
Total Power Dissipation	T_{amb} ≦ 25 ˚C	P_{tot}	0.33	W
Total Power Dissipation	T_{case} ≦ 45 ˚C	P_{tot}	1.6	W
Junction Temperature		T_j	125	˚C
Operating Temperature Range		T_{amb}	–55...+125	˚C
Thermal Resistance Junction/Ambient		R_{thJA}	300	K/W
Thermal Resistance Junction/Case		R_{thJC}	50	K/W

Basic Characteristics

T_{amb} = 25°C

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
Collector Emitter Breakdown Voltage	I_C = 1 mA	$V_{(BR)CEO}$	40			V
Collector Dark Current	V_{CE} = 20 V, E = 0	I_{CEO}		10	200	nA
Angle of Half Sensitivity		φ		±12		deg
Wavelength of Peak Sensitivity		λ_p		800		nm
Range of Spectral Bandwidth		$\lambda_{0.5}$		590...950		nm
Collector Emitter Saturation Voltage	E_e=0.3mW/cm^2, λ=950nm, I_C=0.1mA	V_{CEsat}		0.75	1	V
Turn–On Time	V_S=5V, I_C=10mA, R_L=100Ω	t_{on}		40		µs
Turn–Off Time	V_S=5V, I_C=10mA, R_L=100Ω	t_{off}		50		µs

Type Dedicated Characteristics

T_{amb} = 25°C

Parameter	Type	Test Conditions	Symbol	Min	Typ	Max	Unit
Collector Light Current	BPX99R	E_e=0.3 mW/cm^2, λ=950nm, V_{CE}=5V	I_{ca}	4			mA
	BPX99R–2		I_{ca}	4	10		mA
	BPX99R–3		I_{ca}	10	20		mA

Typical Characteristics (T_{amb} = 25°C unless otherwise specified)

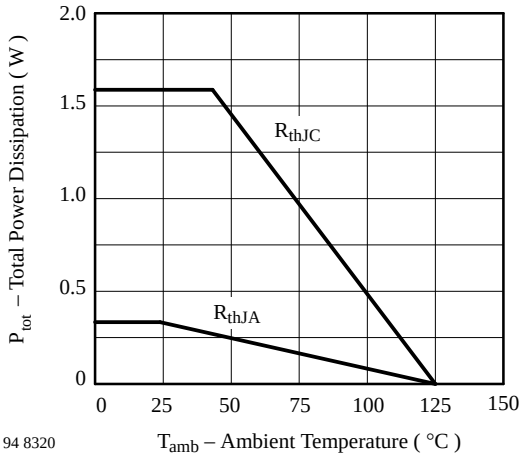


Figure 1 : Total Power Dissipation vs. Ambient Temperature

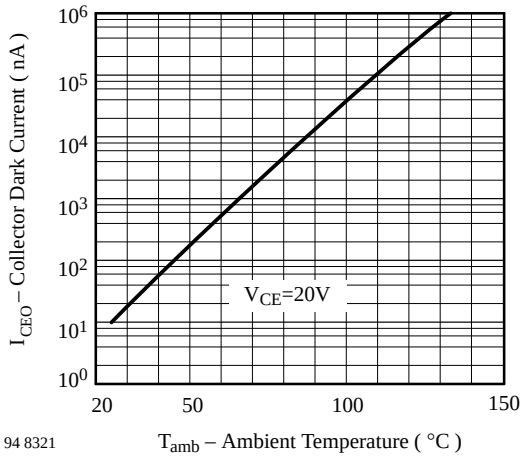


Figure 2 : Collector Dark Current vs. Ambient Temperature

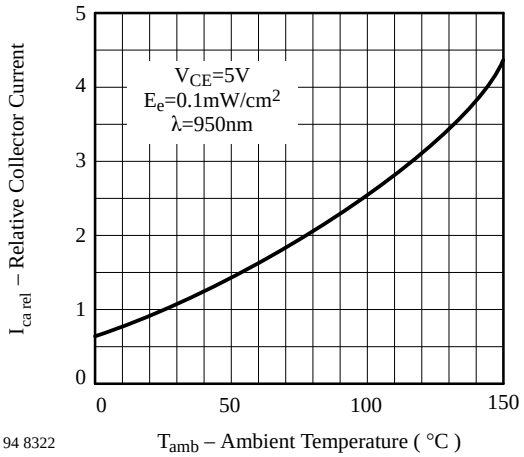


Figure 3 : Relative Collector Current vs. Ambient Temperature

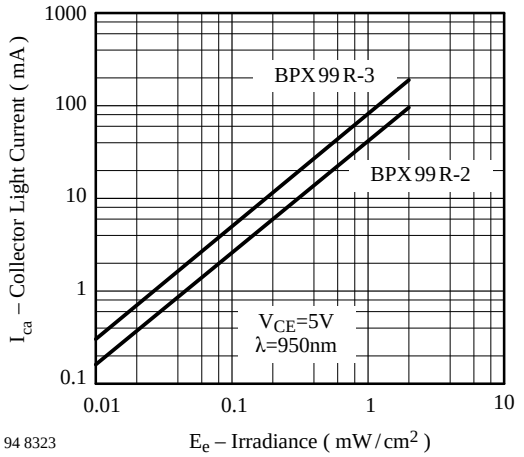


Figure 4 : Collector Light Current vs. Irradiance

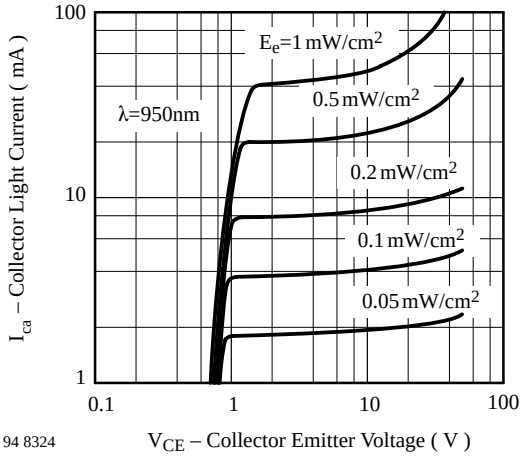


Figure 5 : Collector Light Current vs. Collector Emitter Voltage

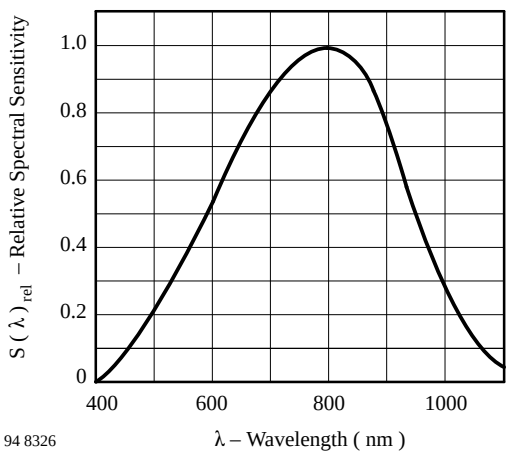


Figure 6 : Relative Spectral Sensitivity vs. Wavelength

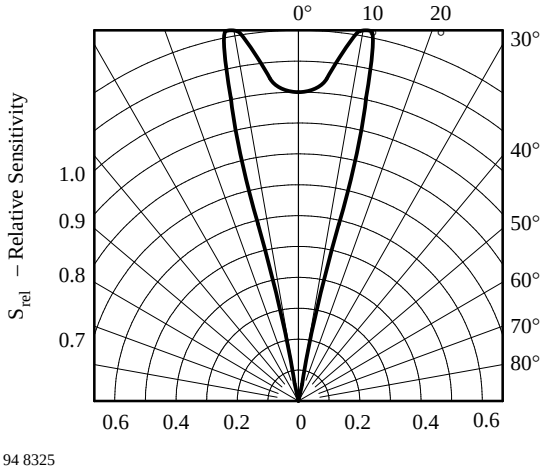
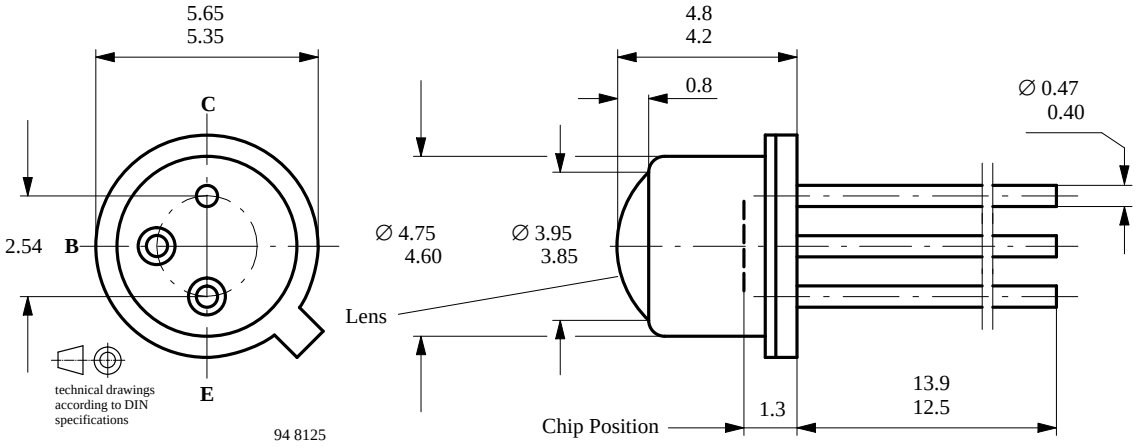


Figure 7 : Relative Radiant Sensitivity vs. Angular Displacement

Dimensions in mm



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