

## WP7113P3C Phototransistor

### DESCRIPTION

- Made with NPN silicon phototransistor chips

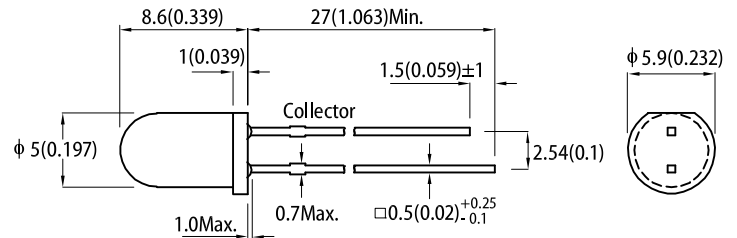
### FEATURES

- Mechanically and spectrally matched to the infrared emitting LED lamp
- Water clear lens
- RoHS compliant

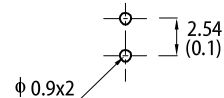
### APPLICATIONS

- Infrared applied systems
- Optoelectronic switches
- Photodetector control circuits
- Sensor technology

### PACKAGE DIMENSIONS



#### Recommended PCB Layout



#### Notes:

- All dimensions are in millimeters (inches).
- Tolerance is  $\pm 0.25(0.01)$  unless otherwise noted.
- Lead spacing is measured where the leads emerge from the package.
- The specifications, characteristics and technical data described in the datasheet are subject to change without prior notice.

### ABSOLUTE MAXIMUM RATINGS at $T_A=25^\circ\text{C}$

Parameter	Max.Ratings	Units
Collector-to-Emitter Voltage	30	V
Emitter-to-Collector Voltage	5	V
Power Dissipation at (or below) $25^\circ\text{C}$ Free Air Temperature	100	mW
Operating Temperature	-40 to +85	$^\circ\text{C}$
Storage Temperature	-40 to +85	$^\circ\text{C}$
Lead Soldering Temperature(>5mm for 5sec)	260	$^\circ\text{C}$

#### Note:

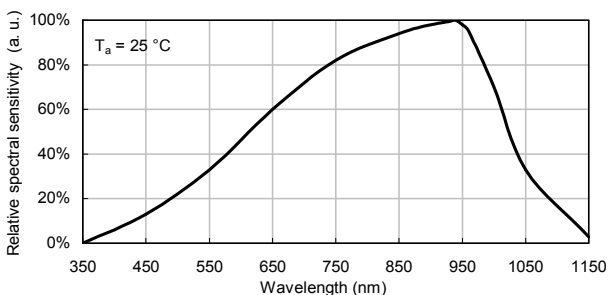
- Relative humidity levels maintained between 40% and 60% in production area are recommended to avoid the build-up of static electricity – Ref JEDEC/JESD625-A and JEDEC/J-STD-033.

### ELECTRICAL / OPTICAL CHARACTERISTICS at $T_A=25^\circ\text{C}$

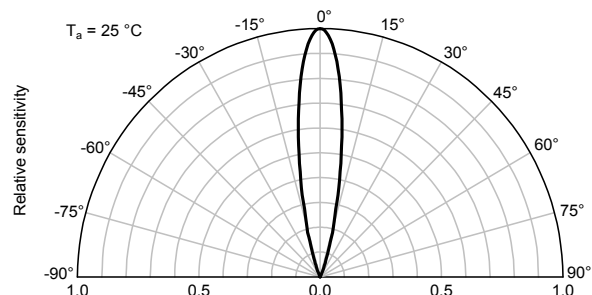
Parameter	Symbol	Min.	Typ.	Max.	Units	Test Conditions
Collector-to-Emitter Breakdown Voltage	$V_{BR\ CE0}$	30	-	-	V	$I_C = 100\mu\text{A}$ $E_e = 0\text{mW}/\text{cm}^2$
Emitter-to-Collector Breakdown Voltage	$V_{BR\ ECO}$	5	-	-	V	$I_E = 100\mu\text{A}$ $E_e = 0\text{mW}/\text{cm}^2$
Collector-to-Emitter Saturation Voltage	$V_{CE(SAT)}$	-	-	0.8	V	$I_C = 2\text{mA}$ $E_e = 20\text{mW}/\text{cm}^2$
Collector Dark Current	$I_{CE0}$	-	-	100	nA	$V_{CE} = 10\text{V}$ $E_e = 0\text{mW}/\text{cm}^2$
Rise Time(10% to 90%)	$T_R$	-	15	-	$\mu\text{S}$	$V_{CE} = 5\text{V}$ $I_C = 1\text{mA}$ $R_L = 1000\Omega$
Fall Time(90% to 10%)	$T_F$	-	15	-	$\mu\text{S}$	
On State Collector Current	$I_{(ON)}$	0.5	2.5	-	mA	$V_{CE} = 5\text{V}$ $E_e = 1\text{mW}/\text{cm}^2$ $\lambda = 940\text{nm}$
Range of spectral bandwidth	$\lambda_{0.1}$	420	-	1120	nm	-
Wavelength of peak sensitivity	$\lambda_p$	-	940	-	nm	-
Angle of half sensitivity	$2\theta_{1/2}$	-	20	-	deg	-

### TECHNICAL DATA

#### RELATIVE SPECTRAL SENSITIVITY vs. WAVELENGTH

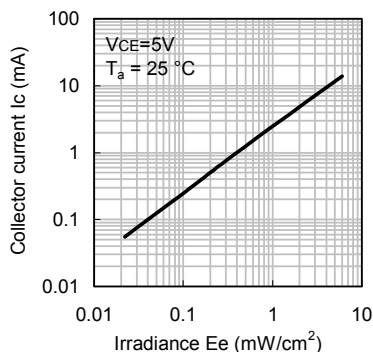


#### RELATIVE RADIANT SENSITIVITY vs. ANGULAR DISPLACEMENT

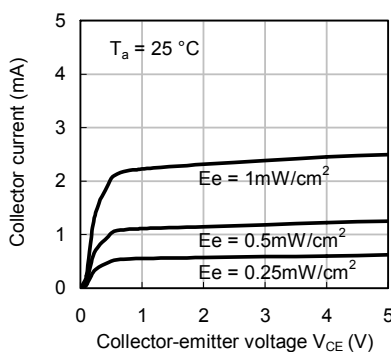


### PHOTOTRANSISTOR

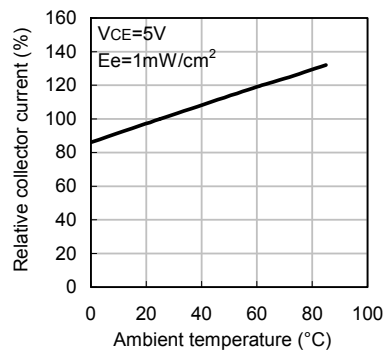
#### Collector Current vs. Irradiance



#### Collector Current vs. Collector-Emitter Voltage



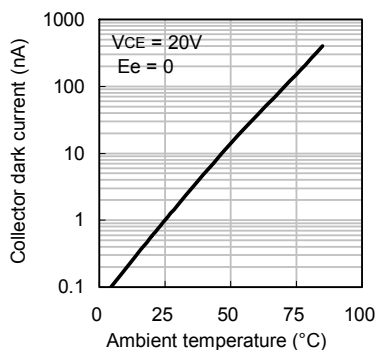
#### Relative Collector Current vs. Ambient Temperature



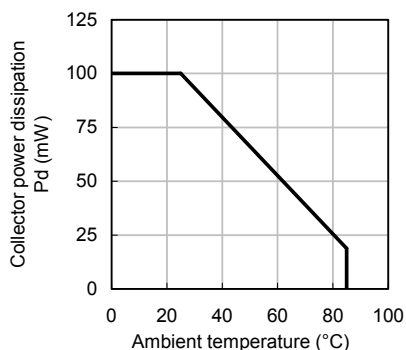
## TECHNICAL DATA

### PHOTOTRANSISTOR

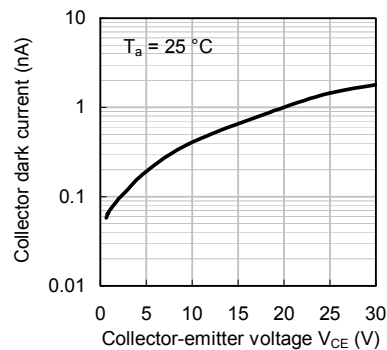
**Collector Dark Current vs. Ambient Temperature**



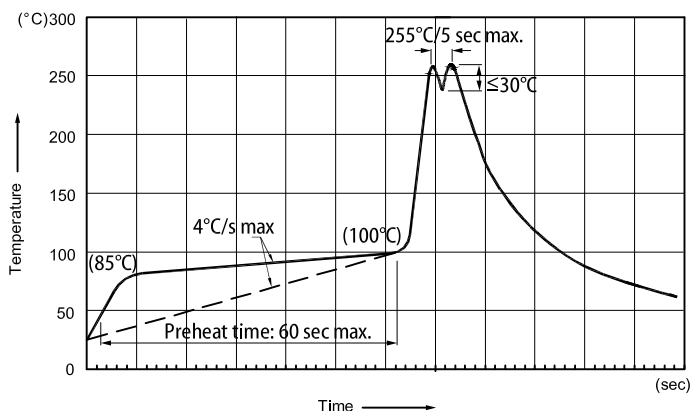
**Collector Power Dissipation vs. Ambient Temperature**



**Collector Dark Current vs. Collector-Emitter Voltage**



### RECOMMENDED WAVE SOLDERING PROFILE



**Notes:**

1. Recommend pre-heat temperature of 105°C or less (as measured with a thermocouple attached to the LED pins) prior to immersion in the solder wave with a maximum solder bath temperature of 260°C
2. Peak wave soldering temperature between 245°C ~ 255°C for 3 sec (5 sec max).
3. Do not apply stress to the epoxy resin while the temperature is above 85°C.
4. Fixtures should not incur stress on the component when mounting and during soldering process.
5. SAC 305 solder alloy is recommended.
6. No more than one wave soldering pass.

### PACKING & LABEL SPECIFICATIONS

