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March 2016

# QSB320TR

## Surface Mount Silicon Infrared Phototransistor

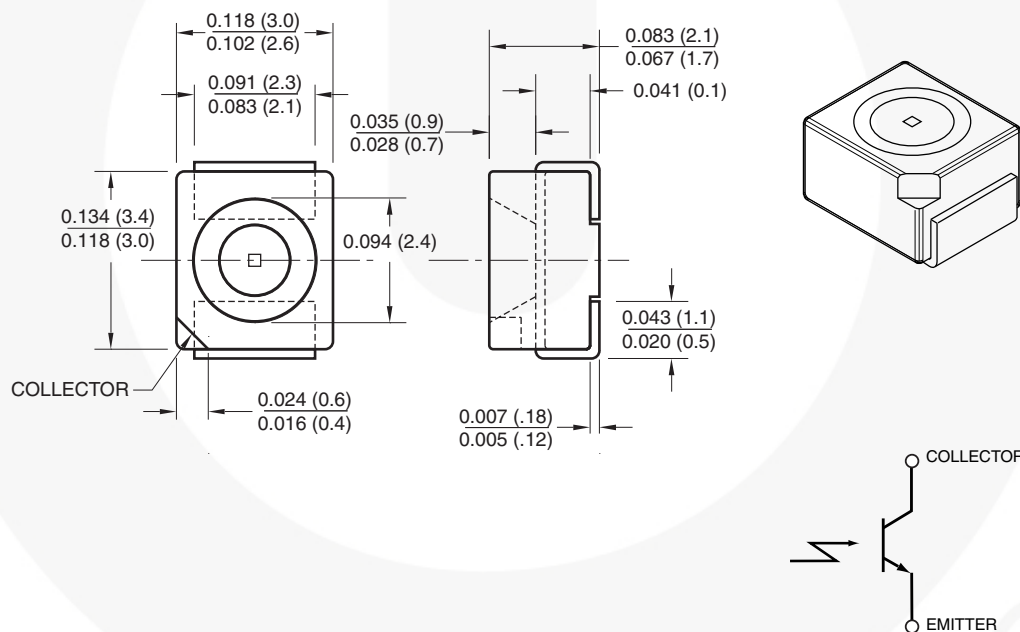
### Features

- Surface Mount PLCC-2 Package
- Wide Reception Angle, 120°
- High Sensitivity
- Phototransistor Output

### Descriptions

QSB320TR is a phototransistor in surface mount PLCC-2 Package.

### Package Dimensions<sup>(1, 2)</sup>



### Notes:

1. Dimensions for all drawings are in inches (mm).
2. Tolerance of  $\pm 0.010$  (0.25) on all non-nominal dimensions unless otherwise specified.

QSB320TR — Surface Mount Silicon Infrared Phototransistor

## Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Value	Unit
$T_{\text{OPR}}$	Operating Temperature	-55 to +100	$^\circ\text{C}$
$T_{\text{STG}}$	Storage Temperature	-55 to +100	$^\circ\text{C}$
$T_{\text{SOL-F}}$	Soldering Temperature (Flow) <sup>(4, 5)</sup>	260 for 10 sec	$^\circ\text{C}$
$V_{\text{CE}}$	Collector Emitter Voltage	35	V
$V_{\text{EC}}$	Emitter Collector Voltage	5	V
$I_{\text{C}}$	Collector Current	15	mA
$P_{\text{D}}$	Power Dissipation <sup>(3)</sup>	165	mW

### Notes:

3. Derate power dissipation linearly 2.2 mW/ $^\circ\text{C}$  above  $25^\circ\text{C}$ .
4. RMA flux is recommended.
5. Methanol or isopropyl alcohols are recommended as cleaning agents.

## Electrical / Optical Characteristics

Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$\lambda_{\text{PS}}$	Peak Sensitivity Wavelength			880		nm
$\lambda_{\text{SR}}$	Wavelength Sensitivity Range		400		1000	nm
$\Theta$	Reception Angle			120		$^\circ$
$I_{\text{D}}$	Collector Emitter Dark Current	$V_{\text{CE}} = 25 \text{ V}, E_e = 0$			200	nA
$BV_{\text{CEO}}$	Collector-Emitter Breakdown	$I_{\text{C}} = 1 \text{ mA}$	30			V
$BV_{\text{ECO}}$	Emitter-Collector Breakdown	$I_{\text{E}} = 100 \mu\text{A}$	5			V
$I_{\text{C(ON)}}$	On-State Collector Current <sup>(6)</sup>	$E_e = 0.1 \text{ mW/cm}^2, V_{\text{CE}} = 5 \text{ V}$	16			$\mu\text{A}$
$V_{\text{CE(SAT)}}$	Saturation Voltage <sup>(6)</sup>	$E_e = 0.5 \text{ mW/cm}^2, I_{\text{C}} = 0.05 \text{ mA}$			0.3	V
$t_{\text{r}}$	Rise Time	$I_{\text{C}} = 1 \text{ mA}, V_{\text{CC}} = 5 \text{ V}, R_{\text{L}} = 100 \Omega$		8		$\mu\text{s}$
$t_{\text{f}}$	Fall Time			8		$\mu\text{s}$

### Note:

6.  $\lambda = 940 \text{ nm}$

Typical Performance Characteristics

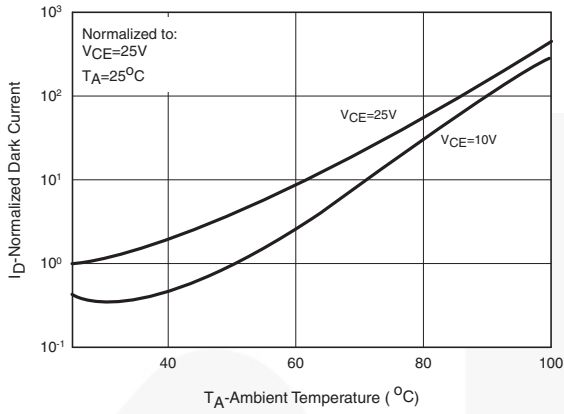


Figure 1. Dark Current vs. Ambient Temperature

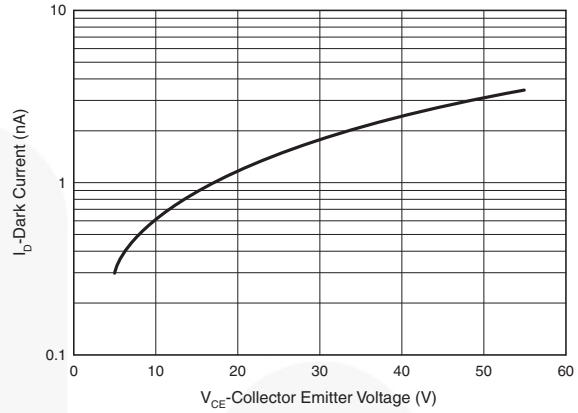


Figure 2. Dark Current vs. Collector Emitter Voltage

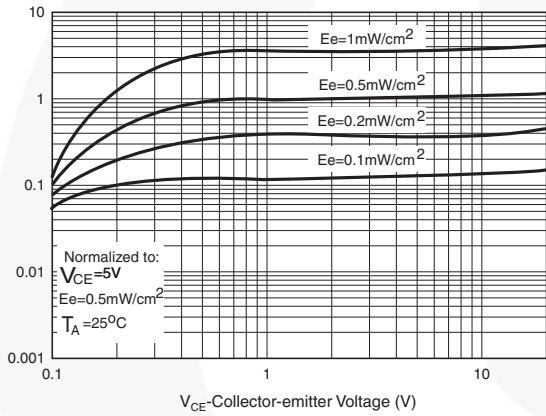


Figure 3. Light Current vs. Collector to Emitter Voltage

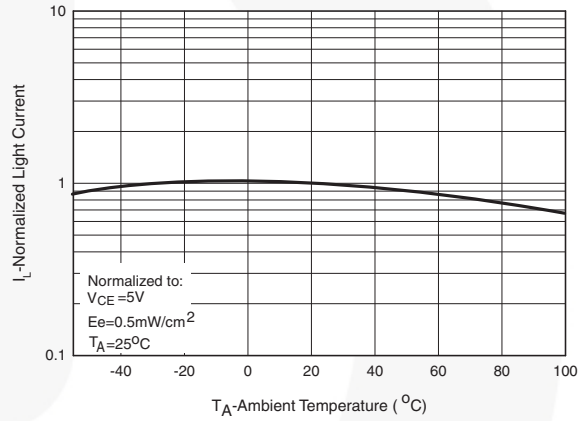



Figure 4. Light Current vs. Collector - Emitter Voltage





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