

# QSE243

## Low Light Rejection Plastic Silicon Infrared PhotoTransistor

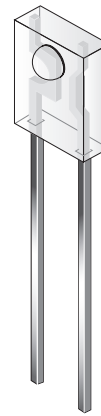
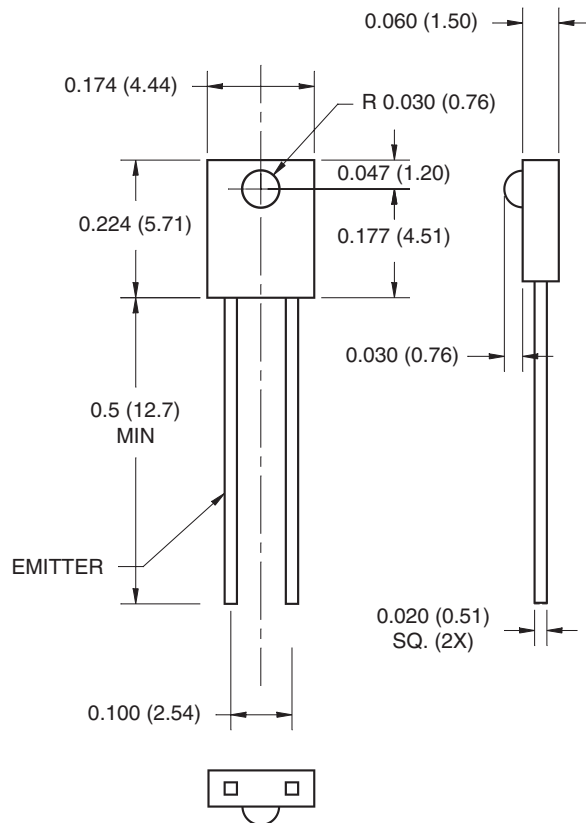
### Features

- NPN Silicon Phototransistor with internal base-emitter resistance
- Package Type: Sidelooker
- Medium Reception Angle, 50°
- Clear Plastic Package
- Matching Emitter: QEE213

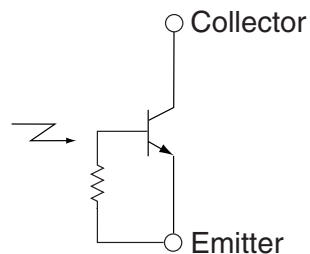
### Description

The QSE243 is a silicon phototransistor with low light level rejection, encapsulated in a medium angle, thin clear plastic sidelooker package.

### Package Dimensions



### Schematic



#### NOTES:

1. Dimensions for all drawings are in inches (mm).
2. Tolerance of  $\pm .010$  (.25) on all non-nominal dimensions unless otherwise specified.

**Absolute Maximum Ratings** ( $T_A = 25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Rating	Unit
Operating Temperature	$T_{\text{OPR}}$	-40 to +100	$^\circ\text{C}$
Storage Temperature	$T_{\text{STG}}$	-40 to +100	$^\circ\text{C}$
Soldering Temperature (Iron) <sup>(2,3,4)</sup>	$T_{\text{SOL-I}}$	240 for 5 sec	$^\circ\text{C}$
Soldering Temperature (Flow) <sup>(2,3)</sup>	$T_{\text{SOL-F}}$	260 for 10 sec	$^\circ\text{C}$
Collector-Emitter Voltage	$V_{\text{CE}}$	30	V
Emitter-Collector Voltage	$V_{\text{EC}}$	5	V
Power Dissipation <sup>(1)</sup>	$P_{\text{D}}$	100	mW

**Electrical/Optical Characteristics** ( $T_A = 25^\circ\text{C}$  unless otherwise specified)

Parameter	Test Conditions	Symbol	Min	Typ	Max	Units
Peak Sensitivity		$\lambda_{\text{PS}}$	—	880	—	nm
Reception Angle		Q	—	$\pm 25$	—	Deg.
Collector Emitter Dark Current	$V_{\text{CE}} = 15\text{ V}, E_e = 0$	$I_{\text{D}}$	—	—	100	nA
Collector Emitter Breakdown	$I_{\text{C}} = 100\ \mu\text{A}$	$BV_{\text{CEO}}$	30	—	—	V
Saturation Voltage	$E_e = 1\ \text{mW}/\text{cm}^2, I_{\text{C}} = 0.1\ \text{mA}$ <sup>(5)</sup>	$V_{\text{CE(SAT)}}$	—	—	0.4	V
Rise Time	$V_{\text{CC}} = 5\text{ V}, R_{\text{L}} = 1000\ \Omega$	$t_{\text{r}}$	—	15	—	$\mu\text{s}$
Fall Time	$I_{\text{C}} = 1\ \text{mA}$	$t_{\text{f}}$	—	15	—	$\mu\text{s}$
Light Current Slope <sup>(6)</sup>	$V_{\text{CE}} = 5\ \text{V}, E_{e1} = 1\ \text{mW}/\text{cm}^2$ <sup>(5) <math>E_{e2} = 0.5\ \text{mW}/\text{cm}^2</math><sup>(5)</sup></sup>	$I_{\text{LS}}$	1.0			$\text{mA}/\text{mW}/\text{cm}^2$
Knee Point <sup>(5,7)</sup>	$V_{\text{CE}} = 5\ \text{V}$	$E_{\text{ek}}$		0.125		$\text{mW}/\text{cm}^2$

**Notes:**

- Derate power dissipation linearly 1.33 mW/ $^\circ\text{C}$  above 25 $^\circ\text{C}$ .
- RMA flux is recommended.
- Methanol or isopropyl alcohols are recommended as cleaning agents.
- Soldering iron 1/16" (1.6 mm) minimum from housing.
- $\lambda = 950\ \text{nm}$  GaAs.
- The slope is defined by  $(I_{\text{C1}} - I_{\text{C2}}) / (E_{e1} - E_{e2})$  where  $I_{\text{C1}}$  is the collector current at  $E_{e1}$  and  $I_{\text{C2}}$  the collector current at  $E_{e2}$ .
- Knee point is defined as being required to increase  $I_{\text{C}}$  to 50  $\mu\text{A}$ .

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