

Plastic Silicon Infrared Phototransistor

QSE113, QSE114

Description

The QSE113/114 is a silicon phototransistor encapsulated in a wide angle, infrared transparent, black plastic sidelooker package.

Features

- NPN Silicon Phototransistor
- Package Type: Sidelooker
- Medium Wide Reception Angle, 50°
- Package Material and Color: Black Epoxy
- Matched Emitter: QEE113
- Daylight Filter
- High Sensitivity
- Blue Dot Marking on the Top Side
- This is a Pb-Free Device

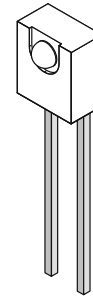
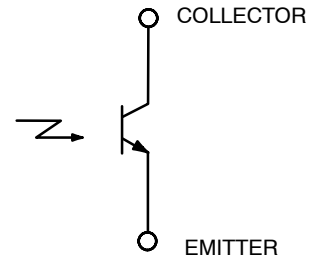
ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
T _{OPR}	Operating Temperature	-40 to +100	°C
T _{STG}	Storage Temperature	-40 to +100	°C
T _{SOL-I}	Soldering Temperature (Iron) (Note 2), (Note 3), (Note 4)	240 for 5 s	°C
T _{SOL-F}	Soldering Temperature (Flow) (Note 2), (Note 3)	260 for 10 s	°C
V _{CE}	Collector-Emitter Voltage	30	V
V _{EC}	Emitter-Collector Voltage	5	V
P _D	Power Dissipation (Note 1)	100	mW

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. Derate power dissipation linearly 1.33 mW/°C above 25°C.
2. RMA flux is recommended.
3. Methanol or isopropyl alcohols are recommended as cleaning agents.
4. Soldering iron 1/16" (1.6 mm) minimum from housing.

SCHEMATIC



SIDELOOKER DETECTOR
CASE 100CN

ORDERING INFORMATION

Device	Package	Shipping
QSE113	SIDELOOKER DETECTOR (Pb-Free)	500 / Bulk Bag
QSE114		

QSE113, QSE114

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
λ_{PS}	Peak Sensitivity Wavelength		–	880	–	nm
Θ	Reception Angle		–	± 25	–	$^\circ$
I_{CEO}	Collector–Emitter Dark Current	$V_{CE} = 10\text{ V}, E_e = 0$	–	–	100	nA
BV_{CEO}	Collector–Emitter Breakdown	$I_C = 1\text{ mA}$	30	–	–	V
BV_{ECO}	Emitter–Collector Breakdown	$I_E = 100\ \mu\text{A}$	5	–	–	V
$I_{C(ON)}$	On–State Collector Current (Note 5) QSD123 QSD124	$E_e = 0.5\text{ mW/cm}^2, V_{CE} = 5\text{ V}$	0.25 1.00	– –	1.50 –	mA
$V_{CE(SAT)}$	Saturation Voltage (Note 5)	$E_e = 0.5\text{ mW/cm}^2, I_C = 0.1\text{ mA}$	–	–	0.4	V
t_r	Rise Time	$I_C = 1\text{ mA}, V_{CC} = 5\text{ V},$ $R_L = 100\ \Omega$	–	8	–	μs
t_f	Fall Time		–	8	–	μs

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

5. $\lambda = 880\text{ nm}$ (AlGaAs).

TYPICAL PERFORMANCE CHARACTERISTICS

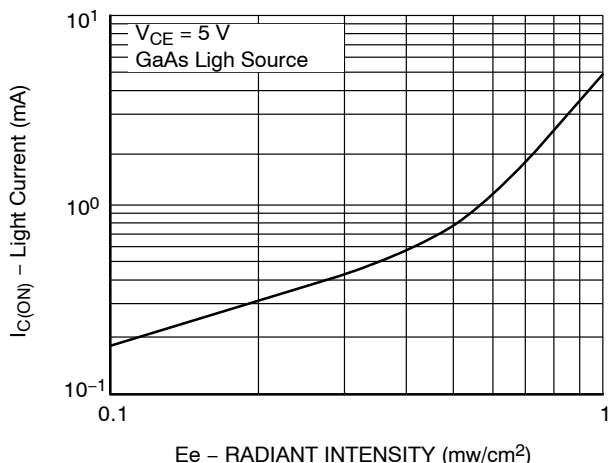


Figure 1. Light Current vs. Radiant Intensity

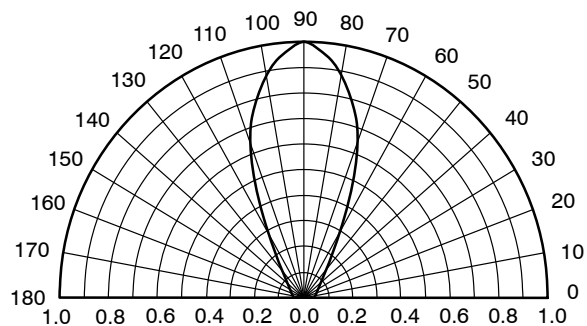


Figure 2. Angular Response Curve

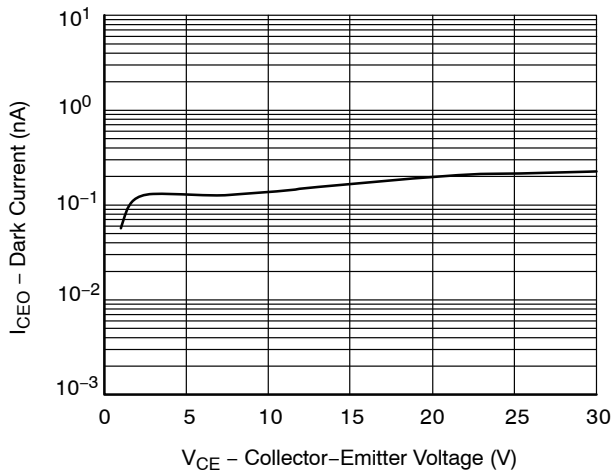


Figure 3. Dark Current vs. Collector - Emitter Voltage

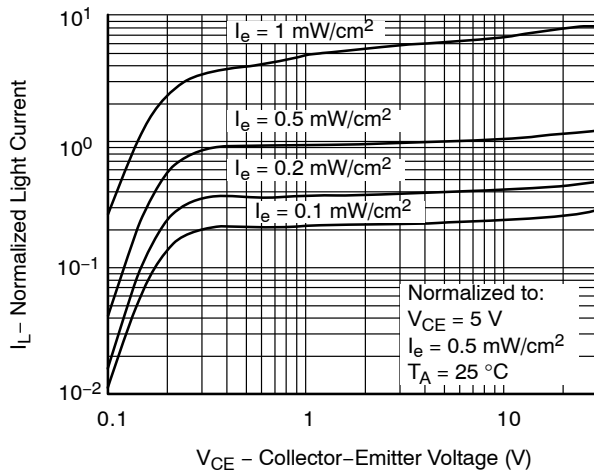


Figure 4. Light Current vs. Collector - Emitter Voltage

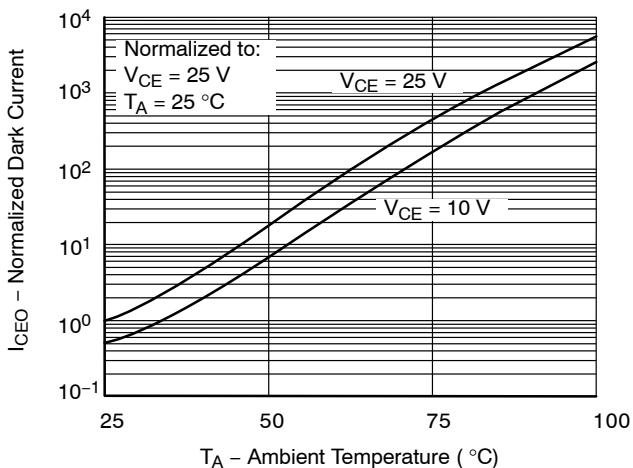
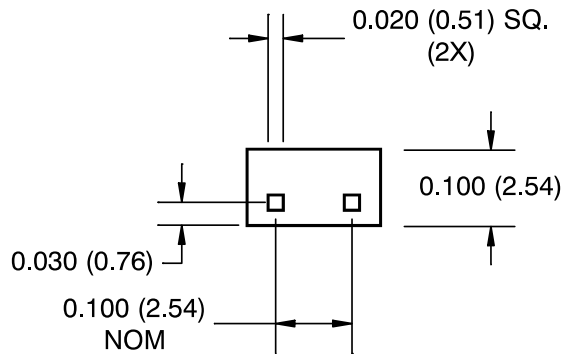
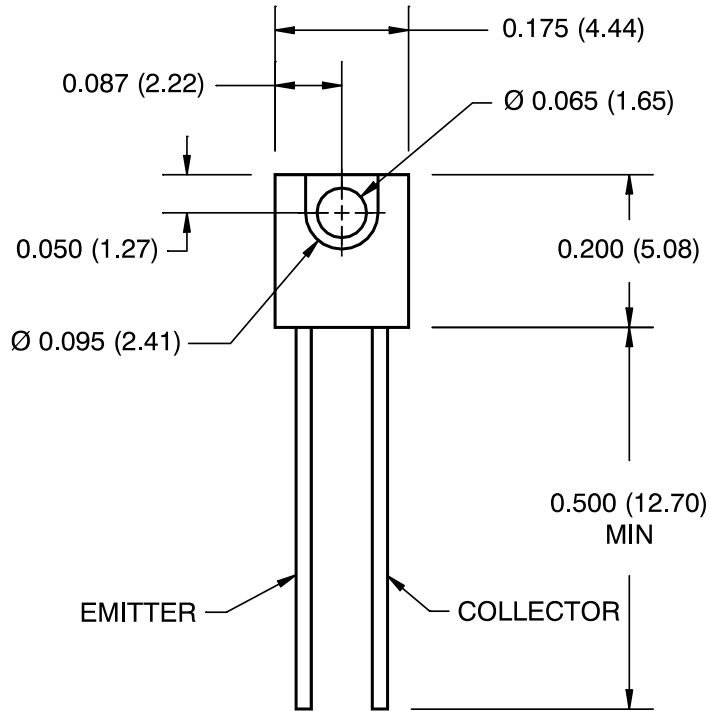


Figure 5. Dark Current vs. Ambient Temperature

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Notes:

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

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