May 2015

QSE113 / QSE114
Plastic Silicon Infrared Phototransistor

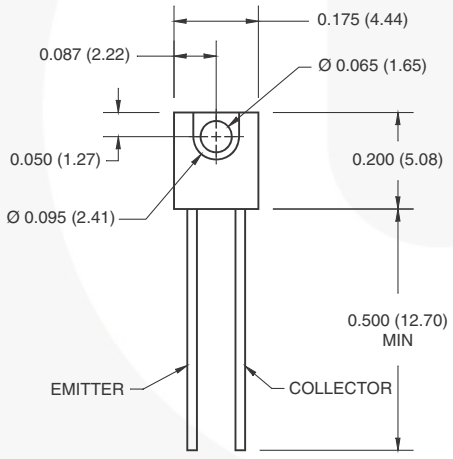
Features

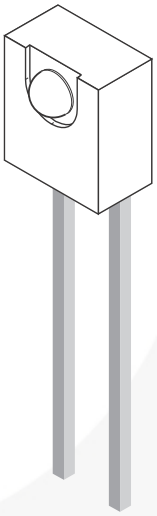
- NPN Silicon Phototransistor
- Package Type: Sidelooker
- Medium Wide Reception Angle, 50°
- Package Material and Color: Black Epoxy
- Matched Emitter: QEE113
- Daylight Filter
- High Sensitivity
- Blue dot marking on the top side

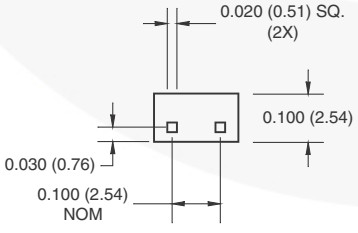
Description

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

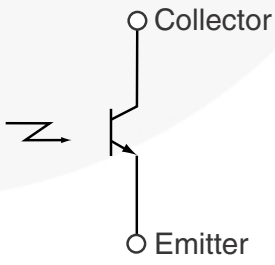
Package Dimensions(1, 2)







Schematic



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.

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°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)(4, 5, 6)	240 for 5 sec	°C
T_{SOL-F}	Soldering Temperature (Flow)(4, 5)	260 for 10 sec	°C
V_{CE}	Collector Emitter Voltage	30	V
V_{EC}	Emitter Collector Voltage	5	V
P_D	Power Dissipation(3)	100	mW

Notes:

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

Electrical / Optical Characteristics

Values are at T_A = 25°C unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
λ_{PS}	Peak Sensitivity			880		nm
Θ	Reception Angle			±25		°
I_{CEO}	Collector Emitter Dark Current	V_{CE} = 10 V, E_e = 0			100	nA
BV_{CEO}	Collector-Emitter Breakdown	I_C = 1 mA	30			V
BV_{ECO}	Emitter-Collector Breakdown	I_E = 100 µA	5			V
$I_{C(ON)}$	On-State Collector Current(7) QSE113	E_e = 0.5 mW/cm^2, V_{CE} = 5 V	0.25		1.50	mA
	On-State Collector Current(7) QSE114		1.00			
$V_{CE(SAT)}$	Saturation Voltage(7)	E_e = 0.5 mW/cm^2, I_C = 0.1 mA			0.4	V
t_r	Rise Time	I_C = 1 mA, V_{CC} = 5 V, R_L = 100 Ω		8		µs
t_f	Fall Time			8		µs

Note:

7. λ = 880 nm (AlGaAs)

Typical Performance Characteristics

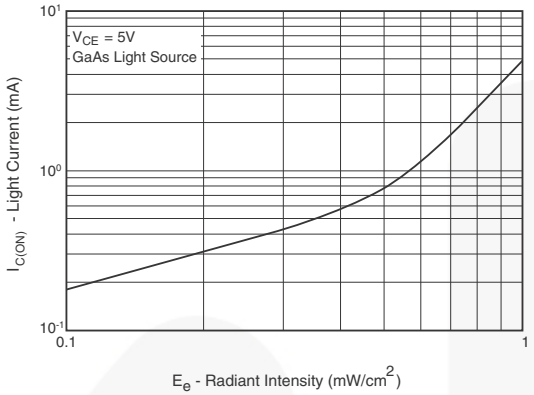


Figure 1. Light Current vs. Radiant Intensity

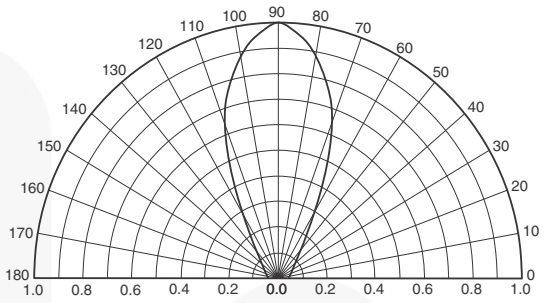


Figure 2. Angular Response Curve

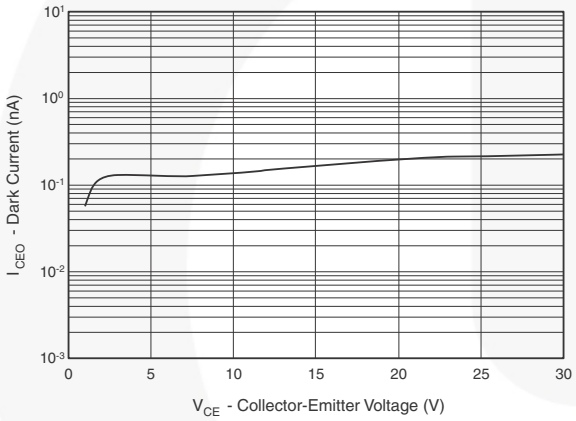


Figure 3. Dark Current vs. Collector - Emitter Voltage

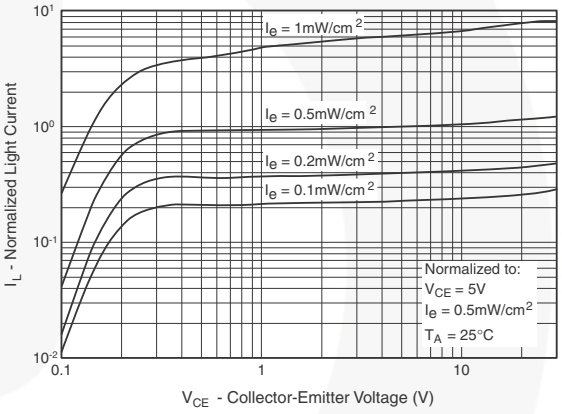


Figure 4. Light Current vs. Collector - Emitter Voltage

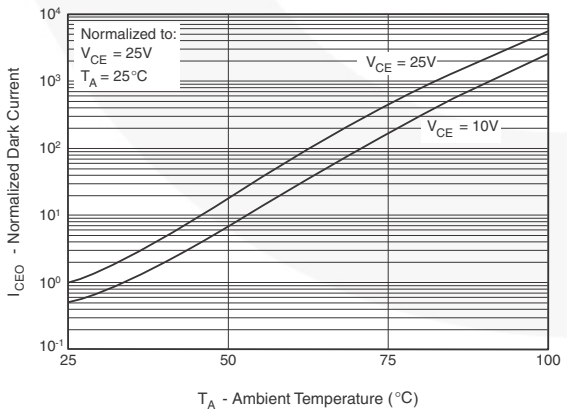


Figure 5. Dark Current vs. Ambient Temperature

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