

QSC112, QSC113, QSC114 Plastic Silicon Infrared Phototransistor

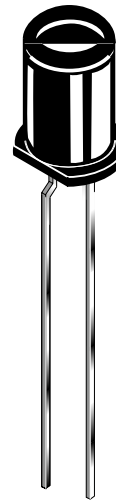
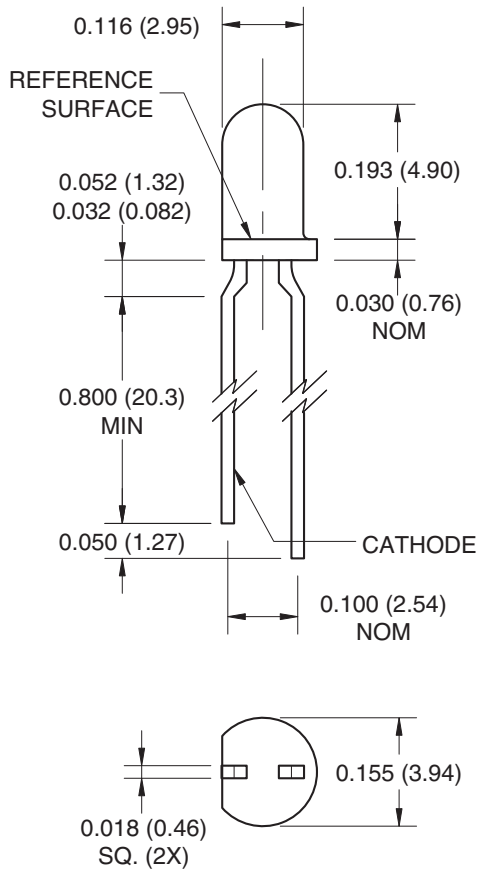
Features

- Tight production distribution
- Steel lead frames for improved reliability in solder mounting
- Good optical-to-mechanical alignment
- Plastic package is infrared transparent black to attenuate visible light
- Can be used with QECXXX LED
- Black plastic body allows easy recognition from LED

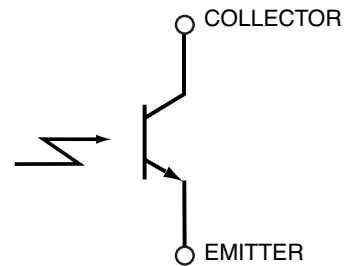
Description

The QSC112/113/114 is a silicon phototransistor encapsulated in an infrared transparent, black T-1 package.

Package Dimensions



Schematic



Notes:

1. Dimensions of all drawings are in inches (mm).
2. Tolerance is ± 0.10 (.25) on all non-nominal dimensions unless otherwise specified.

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

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

1. Derate power dissipation linearly 1.33 mW/ $^\circ\text{C}$ above 25 $^\circ\text{C}$.
2. RMA flux is recommended.
3. Methanol or isopropyl alcohols are recommended as cleaning agents.
4. Soldering iron 1/16" (1.6mm) minimum from housing.
5. $\lambda = 880$ nm, AlGaAs.

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

Parameter	Test Conditions	Symbol	Min	Typ	Max	Units
Peak Sensitivity Wavelength		λ_{PS}	–	880	–	nm
Reception Angle		θ	–	± 8	–	Deg.
Collector-Emitter Dark Current	$V_{CE} = 10$ V, $E_e = 0$	I_{CEO}	–	–	100	nA
Collector-Emitter Breakdown	$I_C = 1$ mA	BV_{CEO}	30	–	–	V
Emitter-Collector Breakdown	$I_E = 100$ μA	BV_{ECO}	5	–	–	V
On-State Collector Current QSC112	$E_e = 0.5$ mW/cm ² , $V_{CE} = 5$ V ⁽⁵⁾	$I_{C(ON)}$	1	–	4	mA
On-State Collector Current QSC113			2.40	–	9.60	
On-State Collector Current QSC114			4.00	–	–	
Saturation Voltage	$E_e = 0.5$ mW/cm ² , $I_C = 0.5$ mA ⁽⁵⁾	$V_{CE(sat)}$	–	–	0.4	V
Rise Time	$V_{CC} = 5$ V, $R_L = 100$ Ω , $I_C = 2$ mA	t_r	–	5.0	–	μs
Fall Time		t_f	–	5.0	–	

Typical Performance Curves

Figure 1. Light Current vs. Radiant Intensity

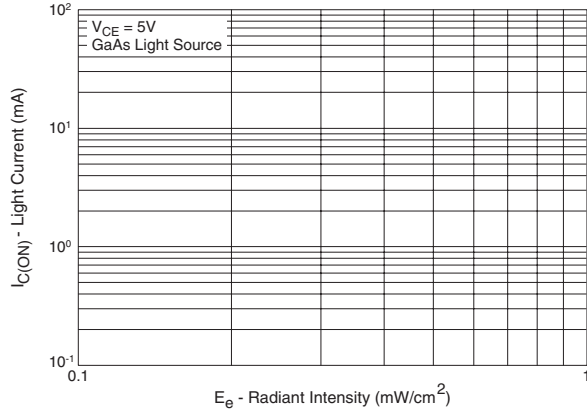


Figure 2. Angular Response Curve

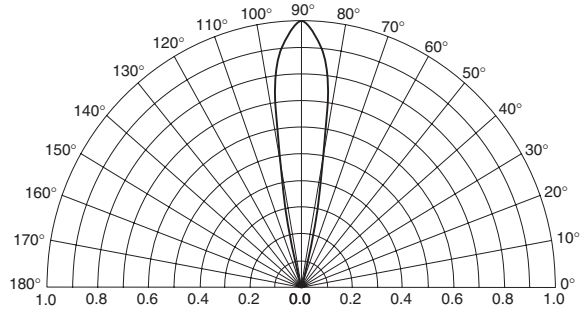


Figure 3. Dark Current vs. Collector - Emitter Voltage

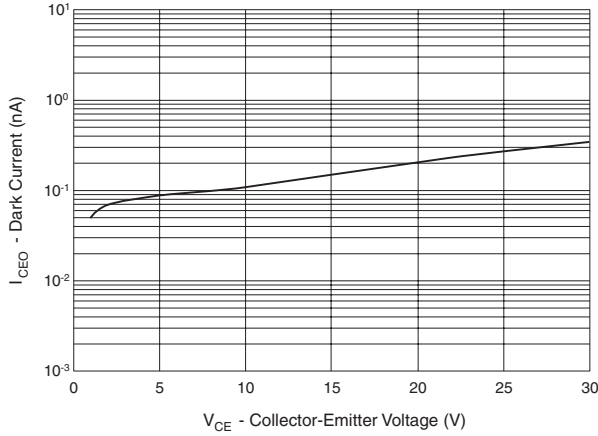


Figure 4. Light Current vs. Collector - Emitter Voltage

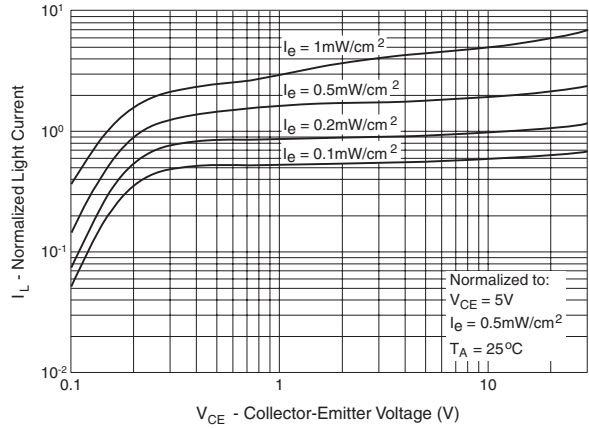
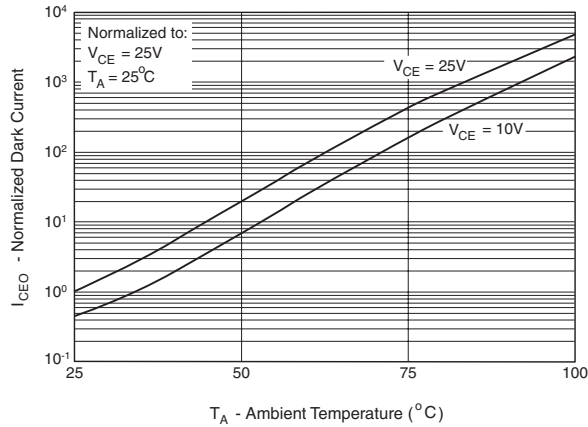


Figure 5. Dark Current vs. Ambient Temperature



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