

QSC112, QSC113, QSC114 Plastic Silicon Infrared Phototransistor

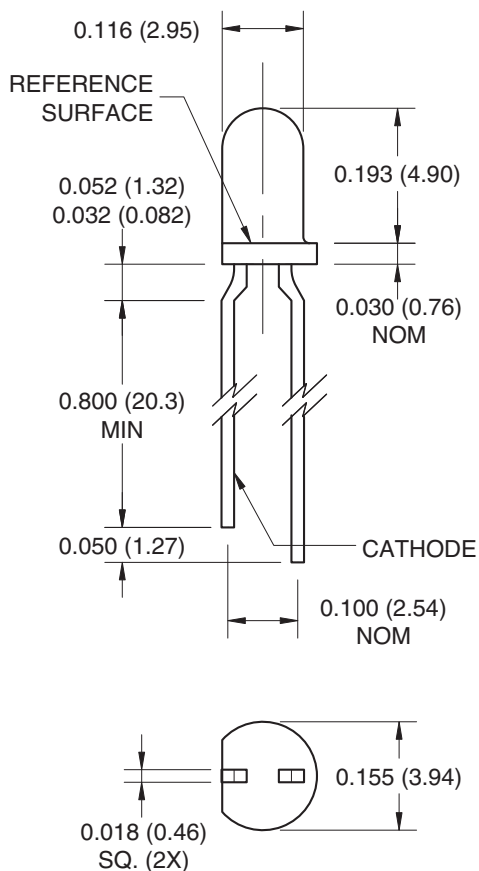
Features

- 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

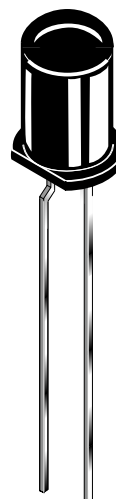
The QSC112/113/114 is a silicon phototransistor encapsulated in an infrared transparent, black T-1 package.

Package Dimensions

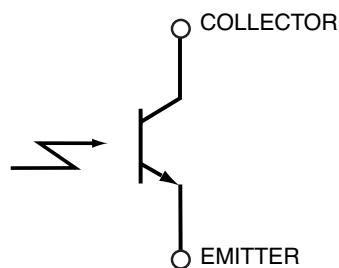


Notes:

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



Schematic



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°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. $\lambda = 880\text{ nm}$, 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	$V_{CE} = 10\text{ V}$, $E_e = 0$	I_{CEO}	—	—	100	nA
Collector-Emitter Breakdown	$I_C = 1\text{ mA}$	BV_{CEO}	30	—	—	V
Emitter-Collector Breakdown	$I_E = 100\text{ }\mu\text{A}$	BV_{ECO}	5	—	—	V
On-State Collector Current QSC112	$E_e = 0.5\text{ mW/cm}^2$, $V_{CE} = 5\text{ V}^{(5)}$	$I_{C(ON)}$	1	—	4	mA
On-State Collector Current QSC113			2.40	—	9.60	
On-State Collector Current QSC114			4.00	—	—	
Saturation Voltage	$E_e = 0.5\text{ mW/cm}^2$, $I_C = 0.5\text{ mA}^{(5)}$	$V_{CE(sat)}$	—	—	0.4	V
Rise Time	$V_{CC} = 5\text{ V}$, $R_L = 100\text{ }\Omega$, $I_C = 2\text{ mA}$	t_r	—	5.0	—	μs
Fall Time		t_f	—	5.0	—	

Typical Performance Curves

Figure 1. Light Current vs. Radiant Intensity

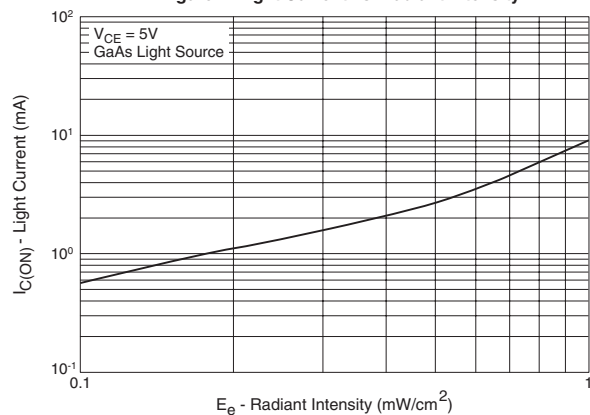


Figure 2. Angular Response Curve

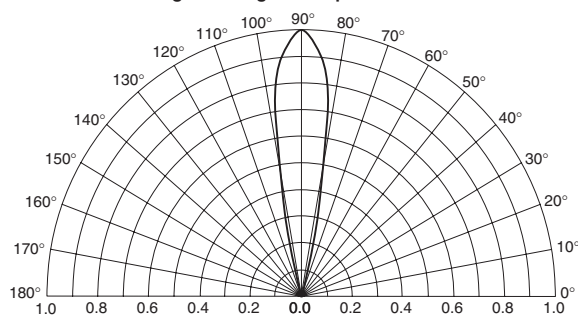


Figure 3. Dark Current vs. Collector - Emitter Voltage

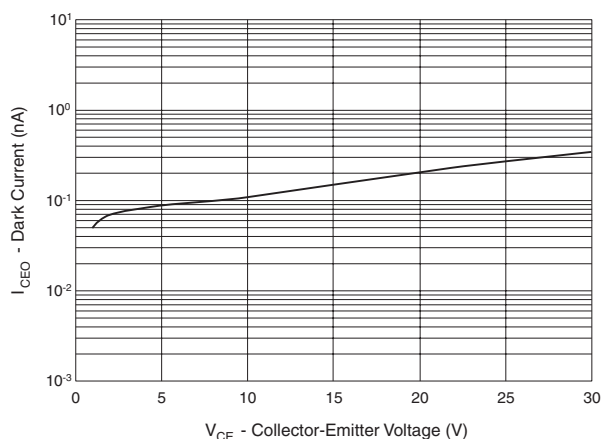


Figure 4. Light Current vs. Collector - Emitter Voltage

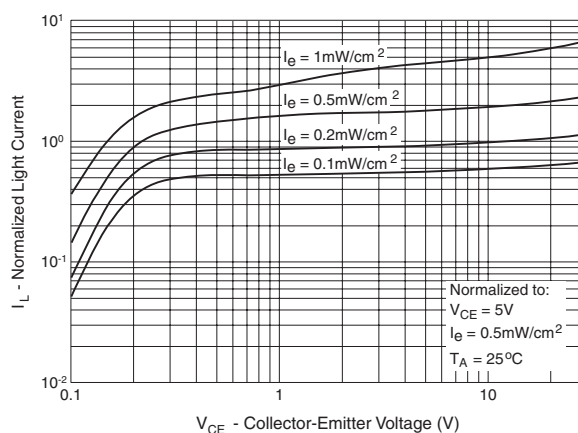
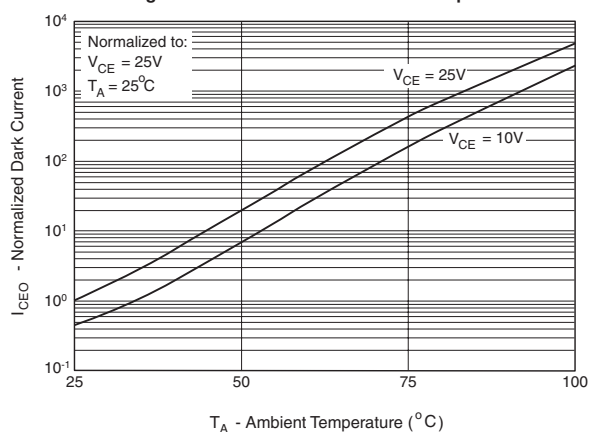


Figure 5. Dark Current vs. Ambient Temperature



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