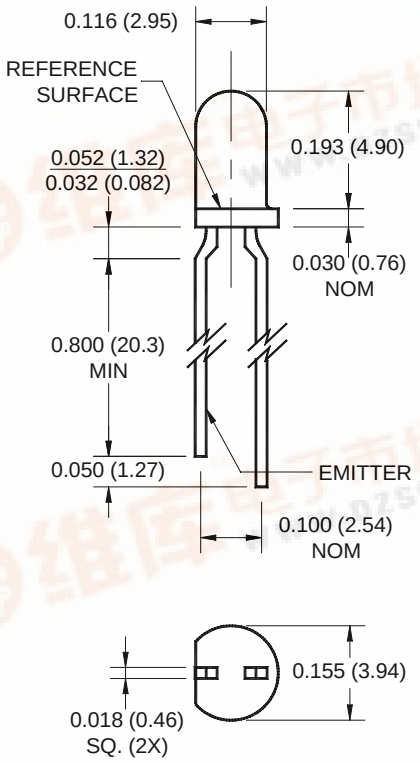
FAIRCHILD SEMICONDUCTOR®

PLASTIC SILICON INFRARED PHOTOTRANSISTOR

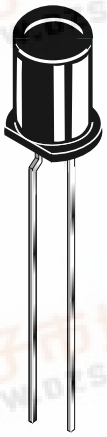
QSC112 QSC113 QSC114

PACKAGE DIMENSIONS

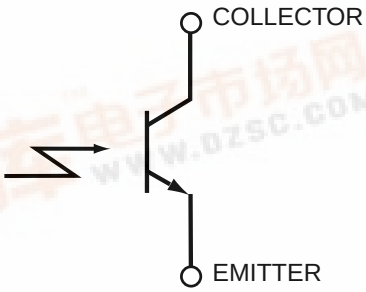


NOTES:

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



SCHEMATIC



DESCRIPTION

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

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.
- Mechanically and spectrally matched to the QECXXX LED.
- Black plastic body allows easy recognition from LED.

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

Parameter	Symbol	Rating	Unit
Operating Temperature	T_{OPR}	-40 to +100	°C
Storage Temperature	T_{STG}	-40 to +100	°C
Soldering Temperature (Iron)(2,3,4)	T_{SOL-I}	240 for 5 sec	°C
Soldering Temperature (Flow)(2,3)	T_{SOL-F}	260 for 10 sec	°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/°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. λ = 880 nm, AlGaAs.

ELECTRICAL / OPTICAL CHARACTERISTICS (T_A = 25°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, Ee = 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 On-State Collector QSC112	Ee = 0.5 mW/cm^2, V_{CE} = 5 V(5)	$I_{C(ON)}$	1	—	4	mA
On-State On-State Collector QSC113			2.40	—	9.60	
On-State On-State Collector QSC114			4.00	—	—	
Saturation Voltage	Ee = 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	—	

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Figure 1. Light Current vs. Radiant Intensity

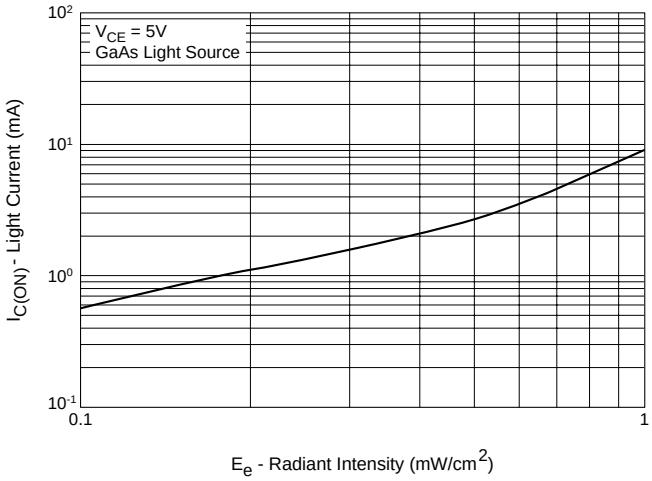


Figure 2. Angular Response Curve

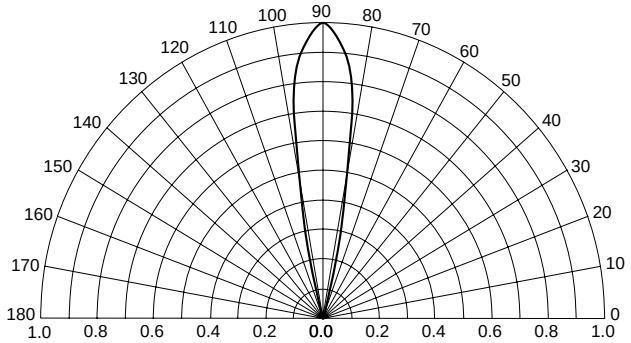


Figure 3. Dark Current vs. Collector - Emitter Voltage

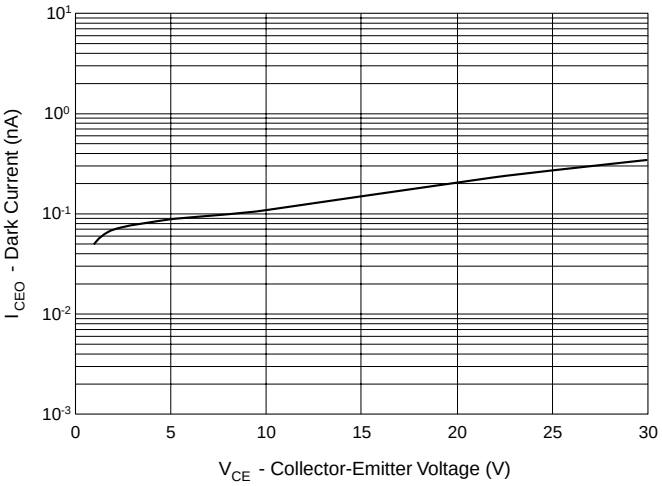


Figure 4. Light Current vs. Collector - Emitter Voltage

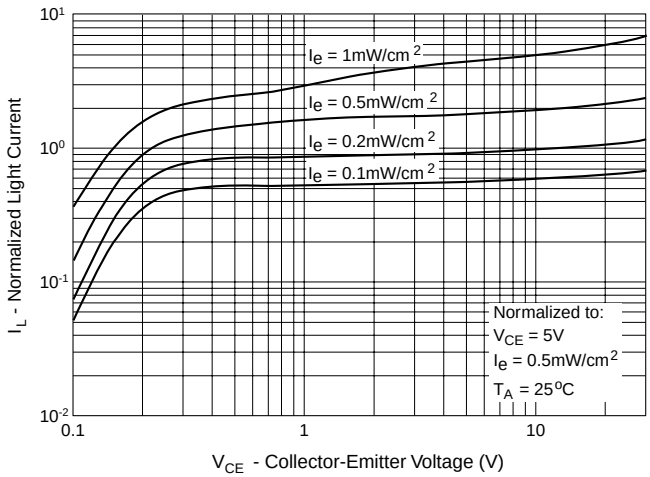
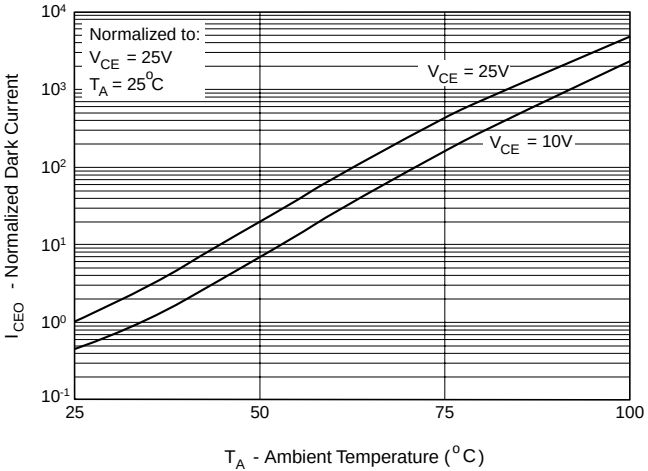


Figure 5. Dark Current vs. Ambient Temperature



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