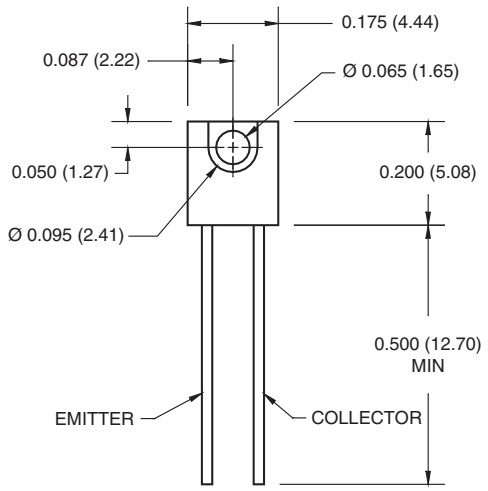
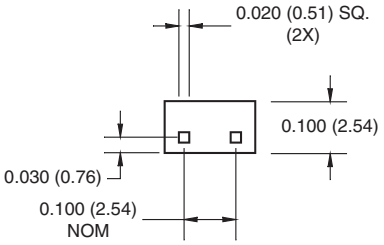
FAIRCHILD
SEMICONDUCTOR®

PLASTIC SILICON INFRARED PHOTOTRANSISTOR

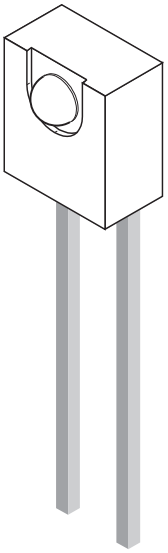
QSE113 QSE114

PACKAGE DIMENSIONS

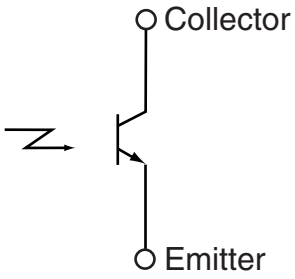




NOTES:
1. Dimensions for all drawings are in inches (mm).
2. Tolerance of ± .010 (.25) on all non-nominal dimensions unless otherwise specified.



SCHEMATIC



DESCRIPTION

The 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

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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

NOTES:
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.
5. λ = 880 nm (AlGaAs).

ELECTRICAL / OPTICAL CHARACTERISTICS (T_A =25°C unless otherwise specified)

Parameter	Test Conditions	Symbol	Min	Typ	Max	Units
Peak Sensitivity		λ_{PS}	—	880	—	nM
Reception Angle		Θ	—	±25	—	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(5) QSE113	E_e = 0.5 mW/cm^2, V_{CE} = 5 V	$I_{C(ON)}$	0.25	—	1.50	mA
On-State Collector Current(5) QSE114	E_e = 0.5 mW/cm^2, V_{CE} = 5 V	$I_{C(ON)}$	1.00	—	—	mA
Saturation Voltage(5)	E_e = 0.5 mW/cm^2, I_C = 0.1 mA	$V_{CE(SAT)}$	—	—	0.4	V
Rise Time	I_C = 1mA, V_{CC} = 5V, R_L = 100Ω	t_r	—	8	—	µs
Fall Time		t_f	—	8	—	µs

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Figure 1. Light Current vs. Radiant Intensity

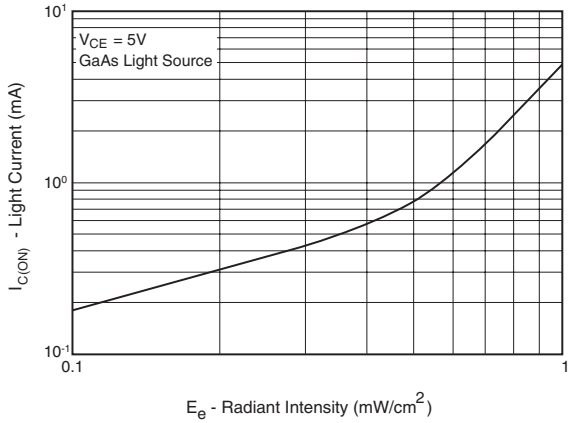


Figure 2. Angular Response Curve

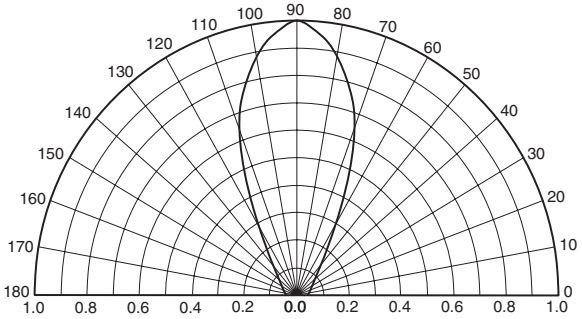


Figure 3. Dark Current vs. Collector - Emitter Voltage

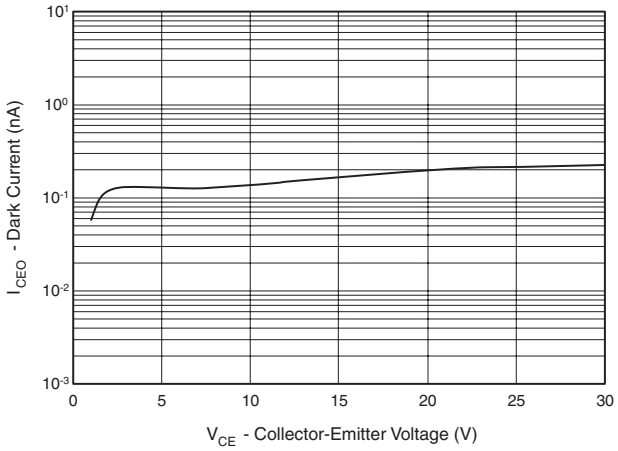


Figure 4. Light Current vs. Collector - Emitter Voltage

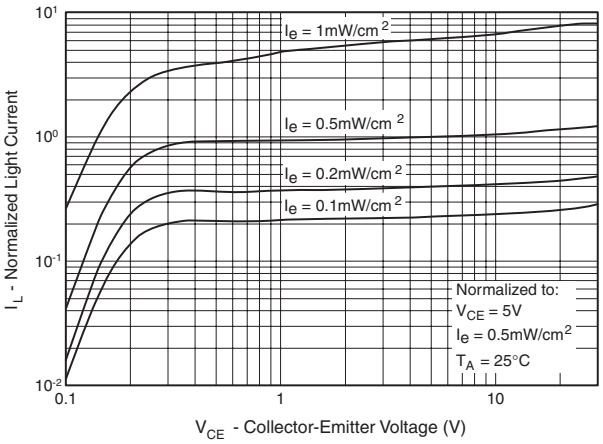
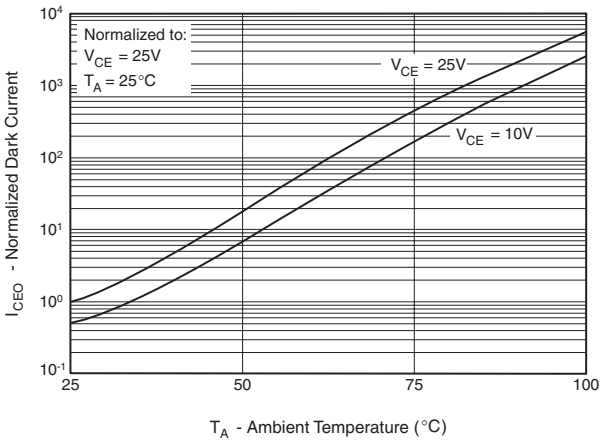


Figure 5. Dark Current vs. Ambient Temperature



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2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.