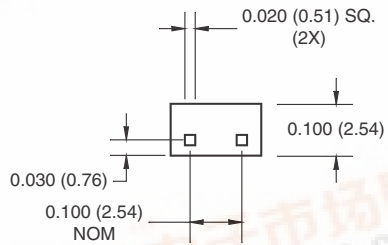
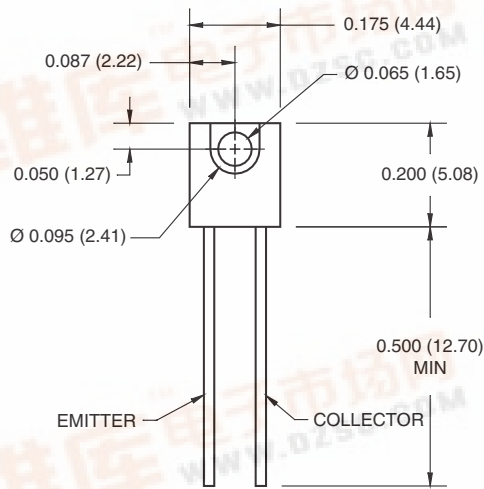


FAIRCHILD
SEMICONDUCTOR®

PLASTIC SILICON INFRARED PHOTOTRANSISTOR

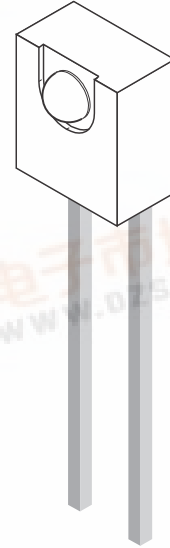
QSE122

PACKAGE DIMENSIONS

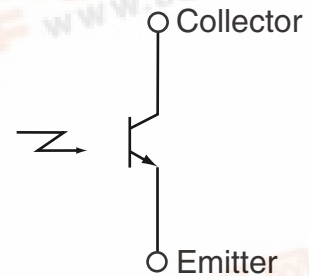


NOTES:

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



SCHEMATIC



DESCRIPTION

The QSE122 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



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Rating	Unit
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

NOTES:

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" (1.6 mm) minimum from housing.
5. $\lambda = 880 \text{ nm}$ (AlGaAs).

ELECTRICAL / OPTICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ 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	$V_{CE} = 10 \text{ V}, E_e = 0$	I_{CEO}	—	—	100	nA
Collector-Emitter Breakdown	$I_C = 1 \text{ mA}$	BV_{CEO}	30	—	—	V
Emitter-Collector Breakdown	$I_E = 100 \mu\text{A}$	BV_{ECO}	5	—	—	V
On-State Collector Current ⁽⁵⁾ QSE122	$E_e = 0.5 \text{ mW/cm}^2, V_{CE} = 5 \text{ V}$	$I_{C(ON)}$	3.0	—	12.0	mA
Saturation Voltage ⁽⁵⁾	$E_e = 0.5 \text{ mW/cm}^2, I_C = 0.1 \text{ mA}$	$V_{CE(SAT)}$	—	—	0.4	V
Rise Time	$I_C = 1 \text{ mA}, V_{CC} = 5 \text{ V}, R_L = 100\Omega$	t_r	—	8	—	μs
Fall Time		t_f	—	8	—	μs

Figure 1. Light Current vs. Radiant Intensity

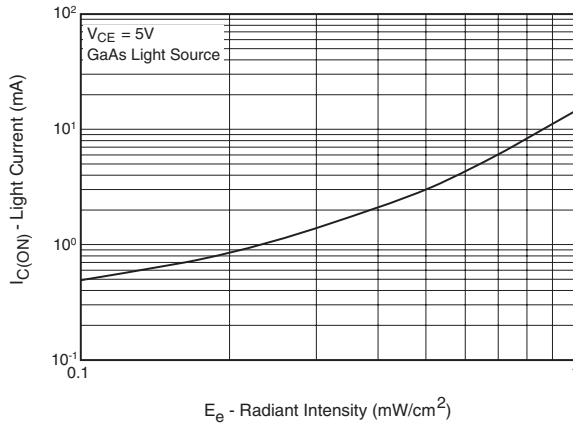


Figure 2. Angular Response Curve

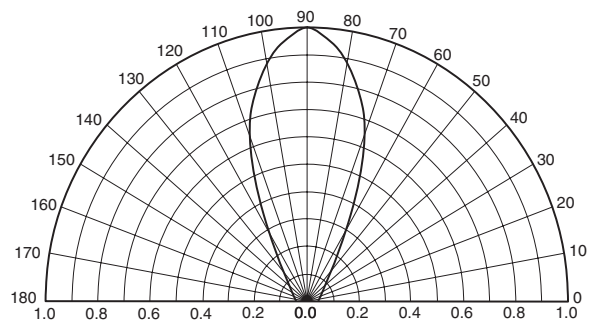


Figure 3. Dark Current vs. Collector - Emitter Voltage

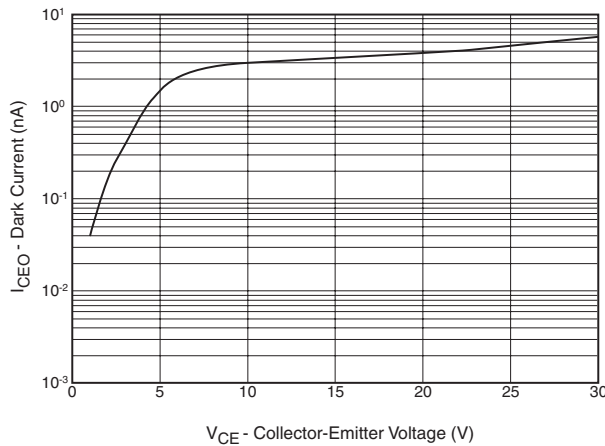


Figure 4. Light Current vs. Collector - Emitter Voltage

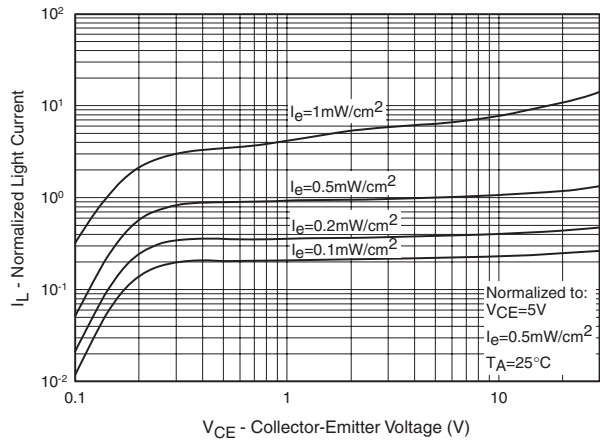
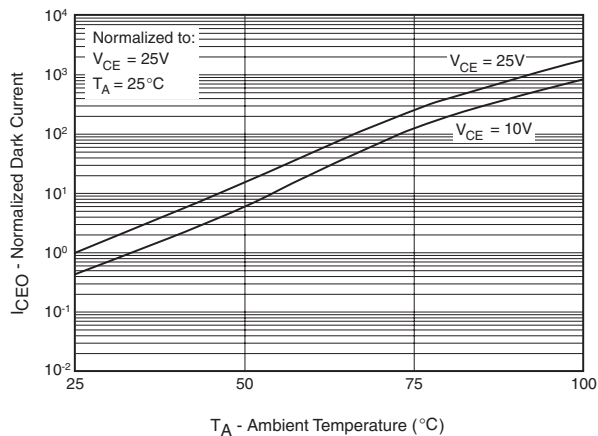


Figure 5. Dark Current vs. Ambient Temperature



DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE PRESIDENT OF FAIRCHILD SEMICONDUCTOR CORPORATION. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
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.