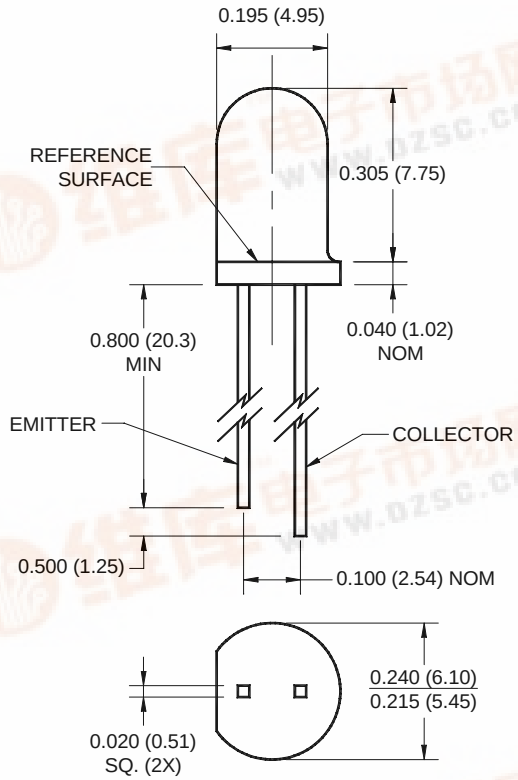
FAIRCHILD
SEMICONDUCTOR®

PLASTIC SILICON INFRARED PHOTOTRANSISTOR

QSD122 QSD123 QSD124

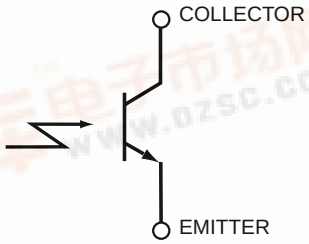
PACKAGE DIMENSIONS



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 QSD122/123/124 is a phototransistor encapsulated in an infrared transparent, black T-1 3/4 package.

FEATURES

- NPN Silicon Phototransistor
- Package Type: T-1 3/4
- Notched Emitter: QED12X/QED22X/QED23X
- Narrow Reception Angle: 24°C
- Daylight Filter
- Package Material and Color: Black Epoxy
- 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

NOTE:
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	—	±12	—	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)						
QSD122	E_e = 0.5 mW/cm², V_{CE} = 5 V	$I_{C\ (ON)}$	1.00	—	6.00	mA
QSD123			4.00	—	16.00	
QSD124			6.00	—	—	
Saturation Voltage(5)	E_e = 0.5 mW/cm², I_C = 0.5 mA	$V_{CE\ (SAT)}$	—	—	0.4	V
Rise Time	V_{CC} = 5 V, R_L = 100 V I_C = 0.2 mA	t_r	—	7	—	µs
Fall Time		t_f	—	7	—	

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Figure 1. Light Current vs. Radiant Intensity

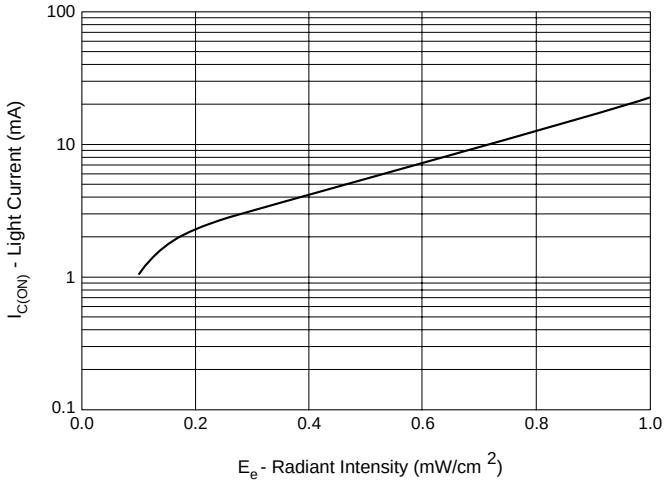


Figure 2. Angular Response Curve

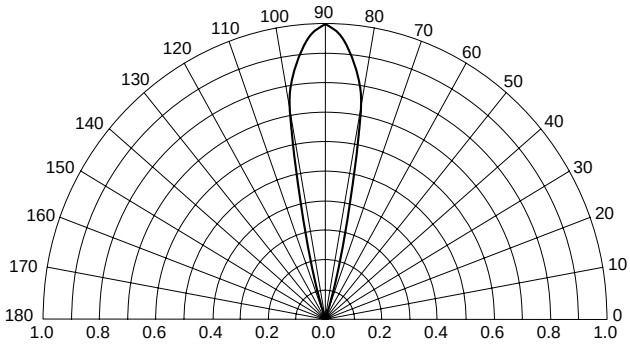


Figure 3. Dark Current vs. Collector - Emitter Voltage

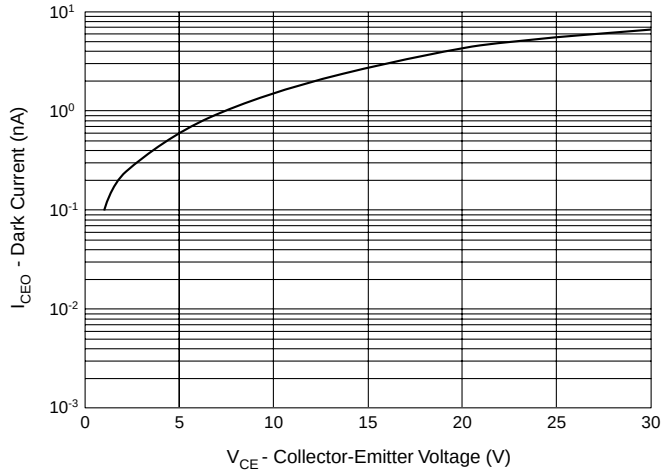


Figure 4. Light Current vs. Collector - Emitter Voltage

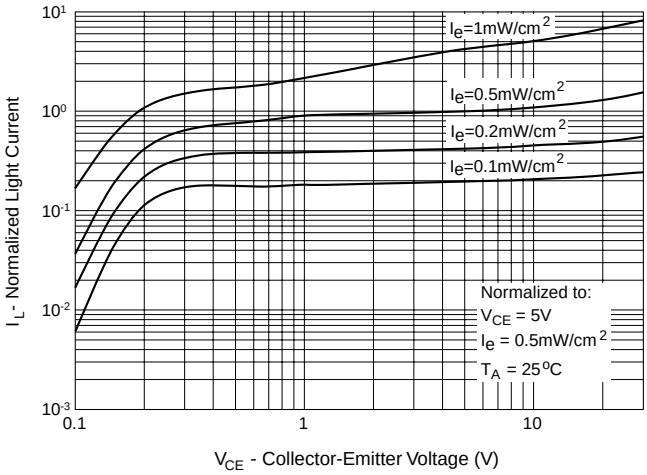
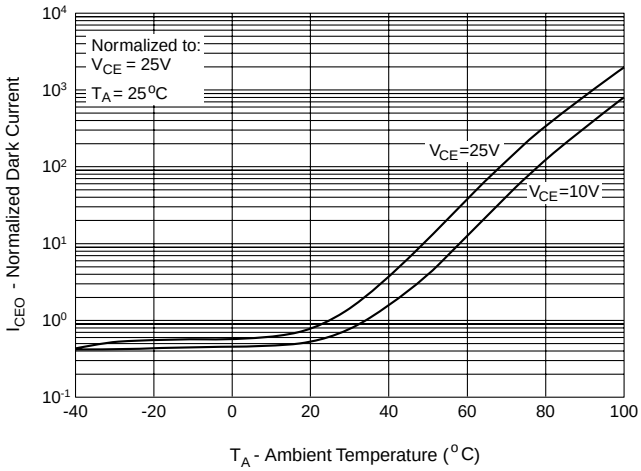


Figure 5. Dark Current vs. Ambient Temperature



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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.