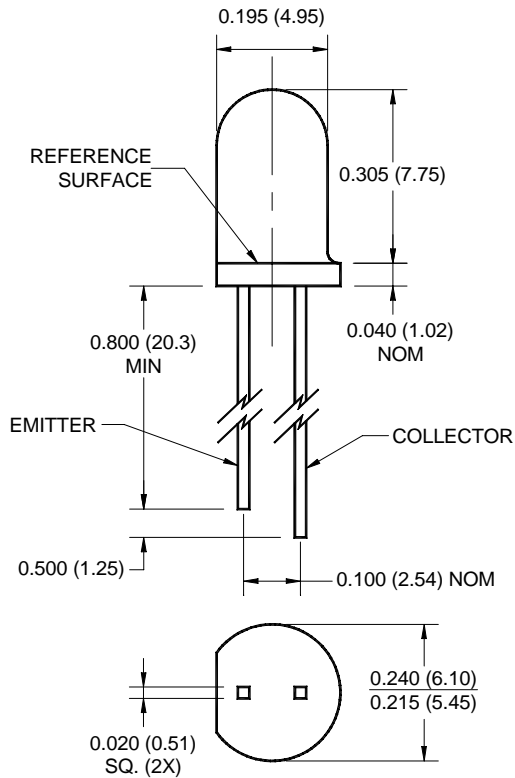


**QSD122**

**QSD123**

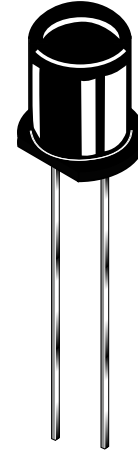
**QSD124**

**PACKAGE DIMENSIONS**

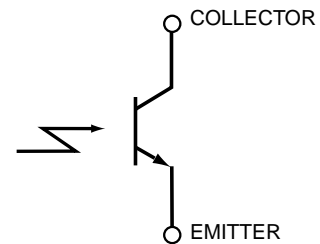


**NOTES:**

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 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

**QSD122      QSD123      QSD124**

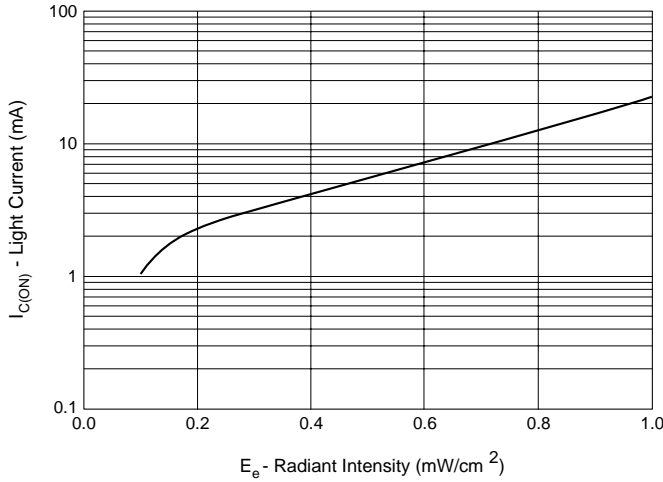
<b>ABSOLUTE MAXIMUM RATINGS</b> ( $T_A = 25^\circ\text{C}$ unless otherwise specified)			
Parameter	Symbol	Rating	Unit
Operating Temperature	$T_{OPR}$	-40 to +100	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-40 to +100	$^\circ\text{C}$
Soldering Temperature (Iron) <sup>(2,3,4)</sup>	$T_{SOL-I}$	240 for 5 sec	$^\circ\text{C}$
Soldering Temperature (Flow) <sup>(2,3)</sup>	$T_{SOL-F}$	260 for 10 sec	$^\circ\text{C}$
Collector-Emitter Voltage	$V_{CE}$	30	V
Emitter-Collector Voltage	$V_{EC}$	5	V
Power Dissipation <sup>(1)</sup>	$P_D$	100	mW

**NOTE:**

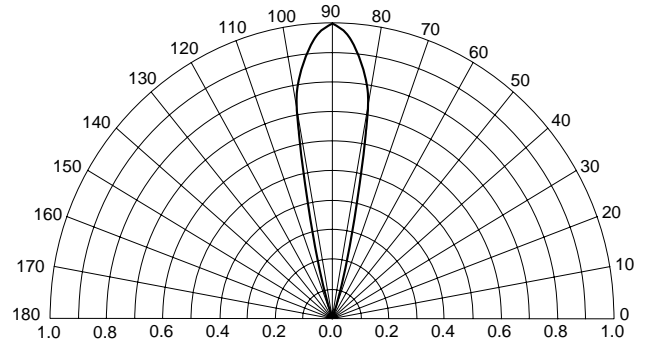
1. Derate power dissipation linearly 1.33 mW/ $^\circ\text{C}$  above 25 $^\circ\text{C}$ .
2. RMA flux is recommended.
3. Methanol or isopropyl alcohols are recommended as cleaning agents.
4. Soldering iron 1/16" (1.6mm) minimum from housing.
5.  $\lambda = 880 \text{ nm}$ , AlGaAs.

<b>ELECTRICAL / OPTICAL CHARACTERISTICS</b> ( $T_A = 25^\circ\text{C}$ )						
PARAMETER	TEST CONDITIONS	SYMBOL	MIN	TYP	MAX	UNITS
Peak Sensitivity Wavelength		$\lambda_{PS}$	—	880	—	nm
Reception Angle		$\Theta$	—	$\pm 12$	—	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 <sup>(5)</sup>	$E_e = 0.5 \text{ mW/cm}^2, V_{CE} = 5 \text{ V}$	$I_{C(ON)}$	1.00	—	6.00	mA
QSD123			4.00	—	16.00	
QSD124			6.00	—	—	
Saturation Voltage <sup>(5)</sup>	$E_e = 0.5 \text{ mW/cm}^2, I_C = 0.5 \text{ mA}$	$V_{CE(SAT)}$	—	—	0.4	V
Rise Time	$V_{CC} = 5 \text{ V}, R_L = 100 \Omega, I_C = 0.2 \text{ mA}$	$t_r$	—	7	—	$\mu\text{s}$
Fall Time		$t_f$	—	7	—	

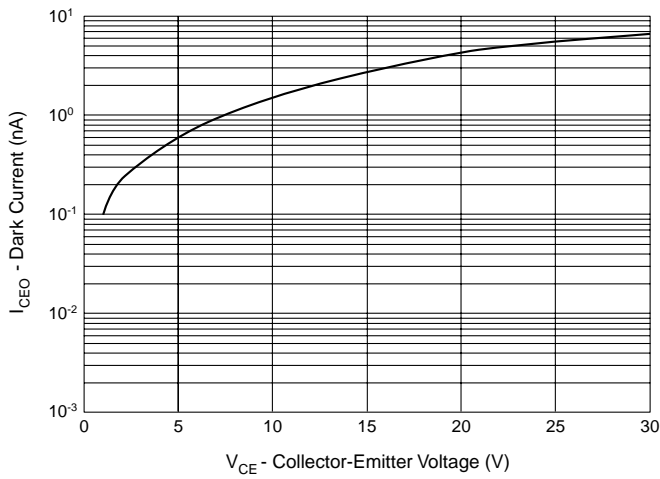
**Figure 1. Light Current vs. Radiant Intensity**



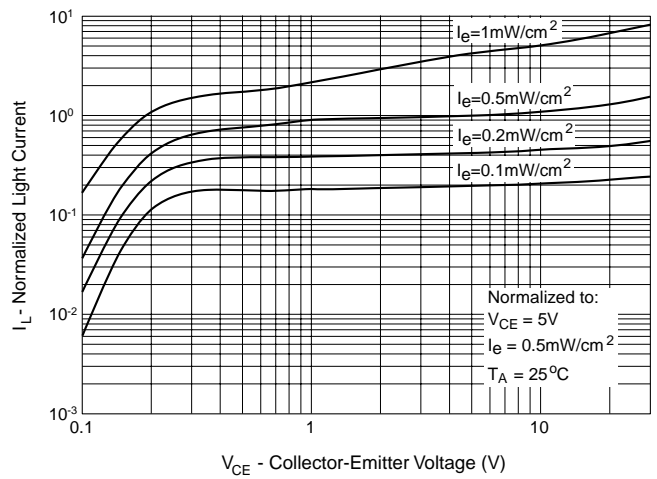
**Figure 2. Angular Response Curve**



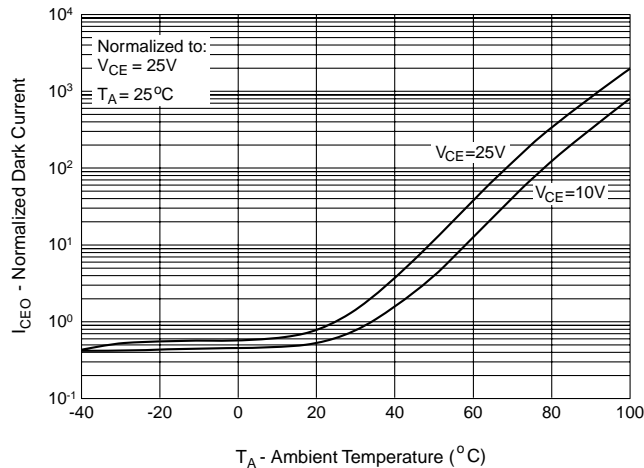
**Figure 3. Dark Current vs. Collector - Emitter Voltage**



**Figure 4. Light Current vs. Collector - Emitter Voltage**



**Figure 5. Dark Current vs. Ambient Temperature**



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