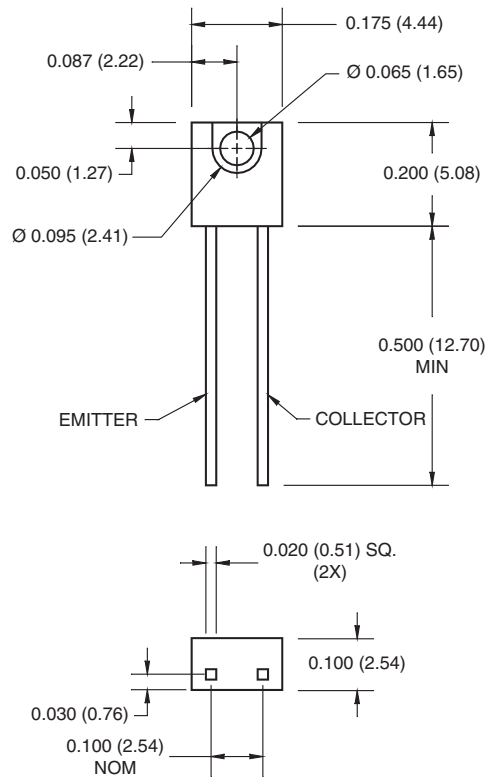
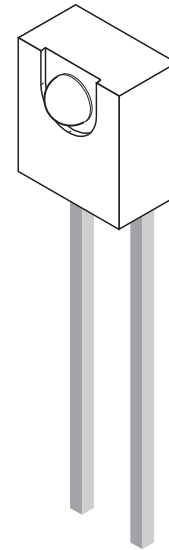


**PACKAGE DIMENSIONS**

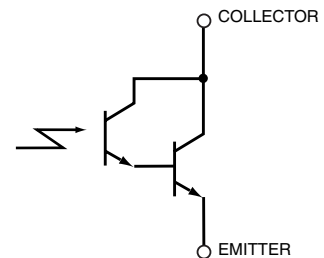


**NOTES:**

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 QSE133 is a silicon photodarlington 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) <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

**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		$\lambda_{PS}$	—	880	—	nM
Reception Angle		$\Theta$	—	$\pm 25$	—	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 <sup>(5)</sup>	$E_e = 0.25 \text{ mW/cm}^2, V_{CE} = 5 \text{ V}$	$I_{C(ON)}$	9.0	—	—	mA
Saturation Voltage <sup>(5)</sup>	$E_e = 0.5 \text{ mW/cm}^2, I_C = 0.4 \text{ mA}$	$V_{CE(SAT)}$	—	—	1.0	V
Rise Time	$I_C = 0.15 \text{ mA}, V_{CC} = 5 \text{ V},$	$t_r$	—	20	—	$\mu\text{s}$
Fall Time	$R_L = 100\Omega$	$t_f$	—	50	—	$\mu\text{s}$

Figure 1. Light Current vs. Radiant Intensity

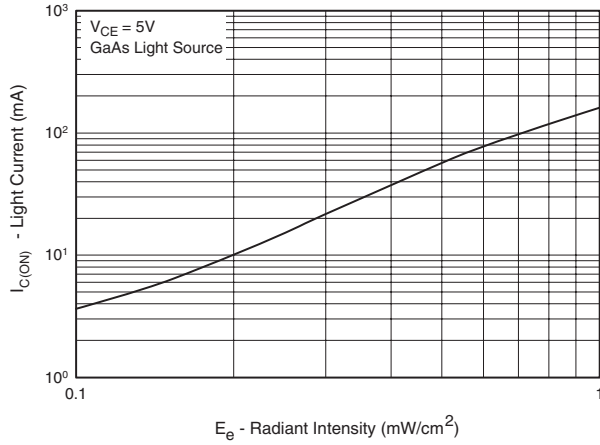


Figure 2. Angular Response Curve

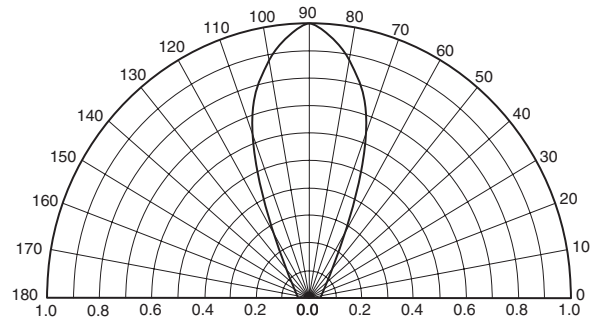


Figure 3. Dark Current vs. Collector - Emitter Voltage

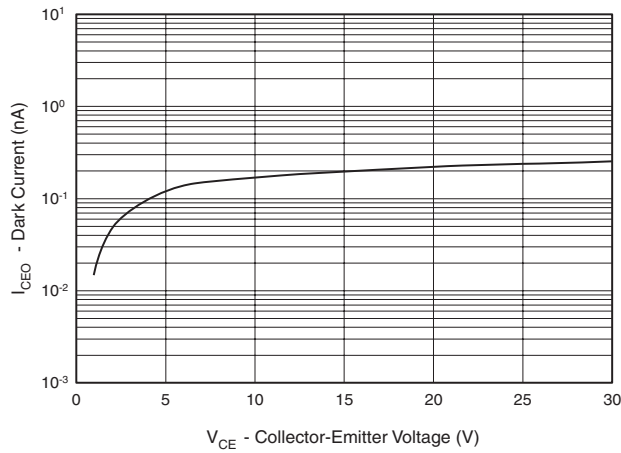


Figure 4. Light Current vs. Collector - Emitter Voltage

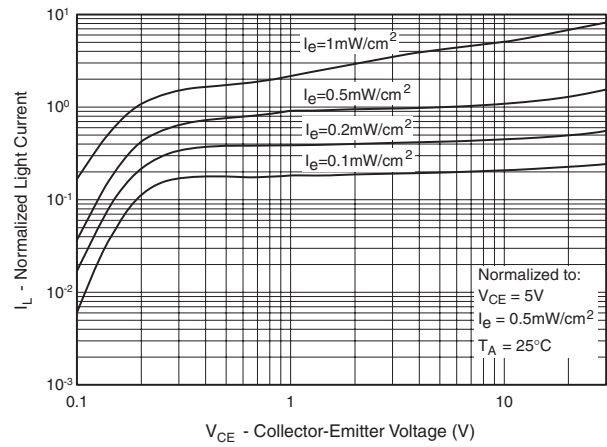
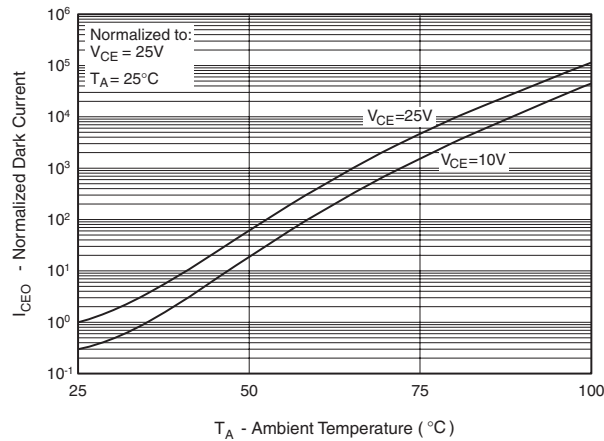


Figure 5. Dark Current vs. Ambient Temperature



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