Plastic Silicon Infrared Phototransistor

QSE113, QSE114

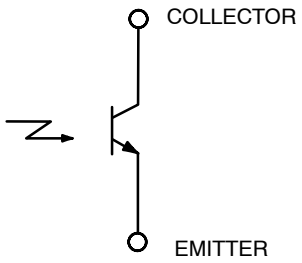
Description

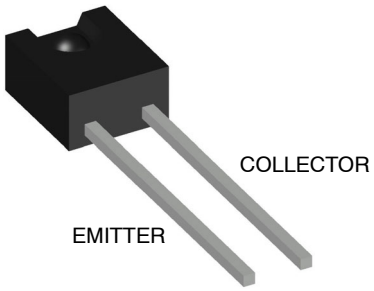
The QSE113/114 is a silicon phototransistor encapsulated in a wide angle, infrared transparent, black plastic sidelooker package.

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
- Blue Dot Marking on the Top Side
- This is a Pb−Free Device

SCHEMATIC





SIDELOOKER DETECTOR
CASE 100CJ

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
T_{OPR}	Operating Temperature	−40 to +100	°C
T_{STG}	Storage Temperature	−40 to +100	°C
T_{SOL-I}	Soldering Temperature (Iron) (Note 2), (Note 3), (Note 4)	240 for 5 s	°C
T_{SOL-F}	Soldering Temperature (Flow) (Note 2), (Note 3)	260 for 10 s	°C
V_{CE}	Collector−Emitter Voltage	30	V
V_{EC}	Emitter−Collector Voltage	5	V
P_D	Power Dissipation (Note 1)	100	mW

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

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.

ORDERING INFORMATION

Device	Package	Shipping
QSE113	SIDELOOKER DETECTOR (Pb−Free)	500 / Bulk Bag
QSE114		

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
λ_{PS}	Peak Sensitivity Wavelength		–	880	–	nm
Θ	Reception Angle		–	±25	–	°
I_{CEO}	Collector−Emitter Dark Current	V_{CE} = 10 V, Ee = 0	–	–	100	nA
BV_{CEO}	Collector−Emitter Breakdown	I_C = 1 mA	30	–	–	V
BV_{ECO}	Emitter−Collector Breakdown	I_E = 100 μA	5	–	–	V
$I_{C(ON)}$	On−State Collector Current (Note 5) QSE113 QSE114	Ee = 0.5 mW/cm^2, V_{CE} = 5 V	 0.25 1.00	 – –	 1.50 –	mA
$V_{CE(SAT)}$	Saturation Voltage (Note 5)	Ee = 0.5 mW/cm^2, I_C = 0.1 mA	–	–	0.4	V
t_r	Rise Time	I_C = 1 mA, V_{CC} = 5 V, R_L = 100 Ω	–	8	–	μs
t_f	Fall Time		–	8	–	μs

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

5. λ = 880 nm (AlGaAs).

TYPICAL PERFORMANCE CHARACTERISTICS

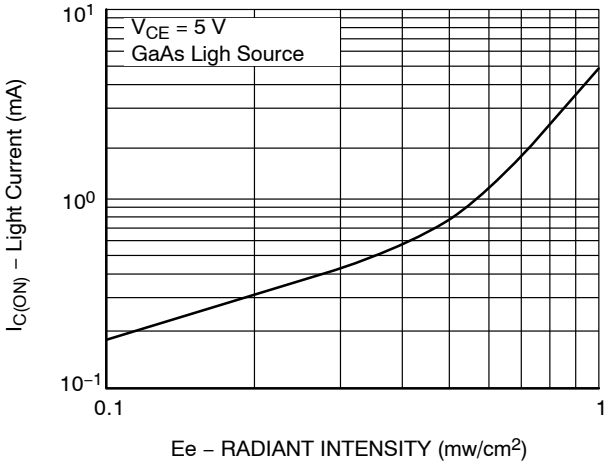


Figure 1. Light Current vs. Radiant Intensity

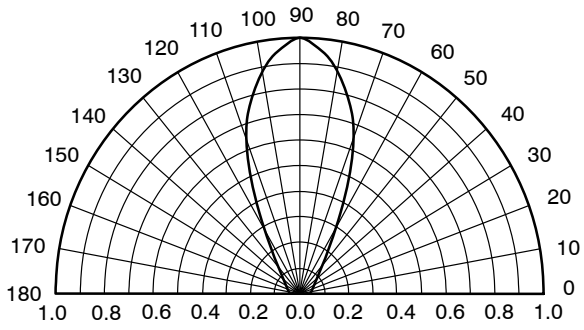


Figure 2. Angular Response Curve

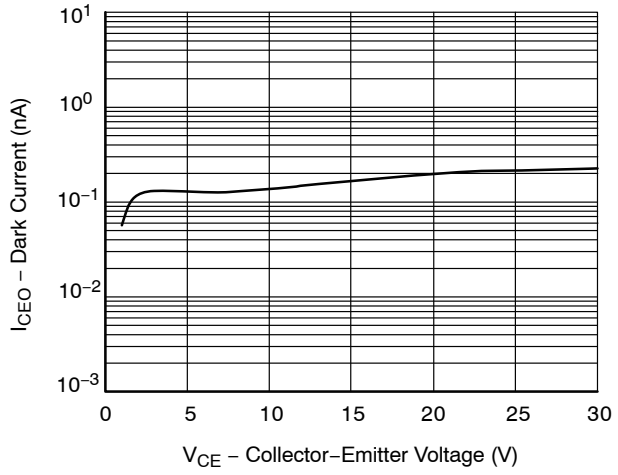


Figure 3. Dark Current vs. Collector – Emitter Voltage

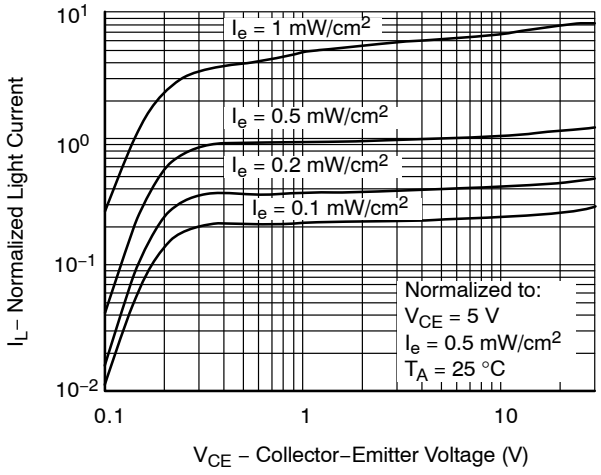


Figure 4. Light Current vs. Collector – Emitter Voltage

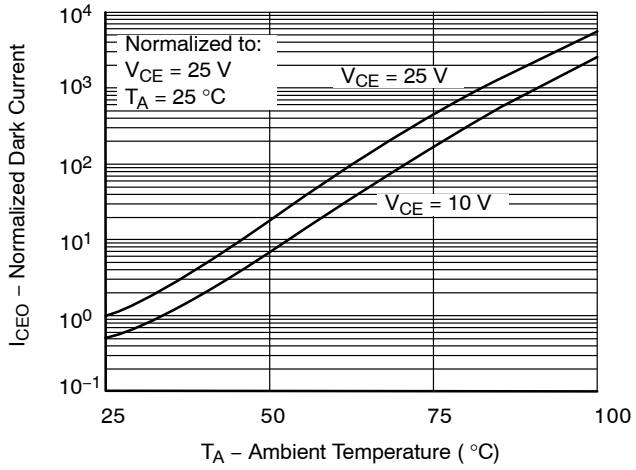
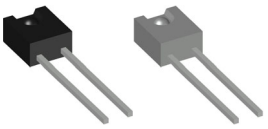
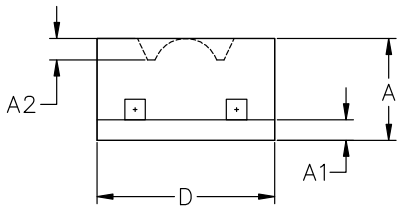


Figure 5. Dark Current vs. Ambient Temperature

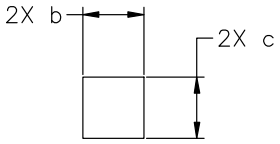


SIDELOOKER 4.44x5.08x2.54, 2.54P
CASE 100CJ
ISSUE A

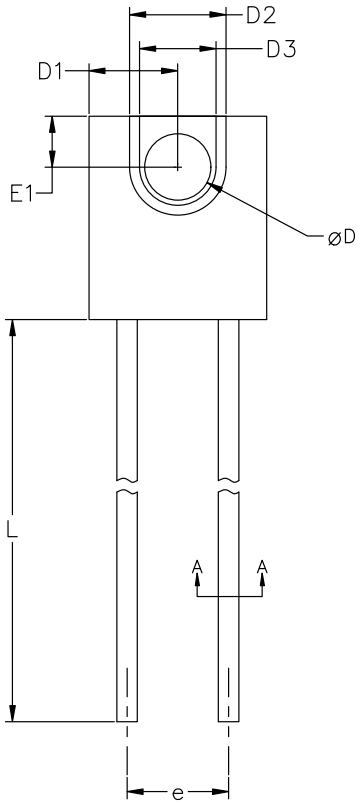
DATE 26 FEB 2024



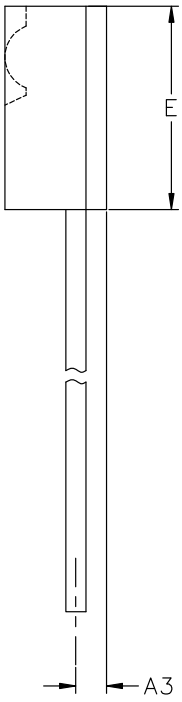
END VIEW



Section "A–A"
Scale 3:1



TOP VIEW



SIDE VIEW

DIMENSION (MILLIMETERS)			
	MIN	NOM	MAX
A	2.41	2.54	2.67
A1	0.38	0.51	0.64
A2	0.48	0.53	0.58
A3	0.64	0.76	0.89
b	0.51	0.57	0.61
c	0.51	0.57	0.61
D	4.32	4.44	4.57
D1	2.16	2.21	2.29
D2	2.29	2.41	2.54
D3	1.78	1.91	2.03
E	4.83	5.08	5.33
E1	1.14	1.27	1.40
e	2.41	2.54	2.67
øD	1.52	1.65	1.78
L	12.70	13.46	---

NOTES:
1. DIMENSIONING AND TOLERANCING AS PER ASMEY14.5M, 2018.
2. CONTROLLING DIMENSION: MILLIMETERS.

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DESCRIPTION:	**SIDELOOKER 4.44x5.08x2.54, 2.54P**	**PAGE 1 OF 1**

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