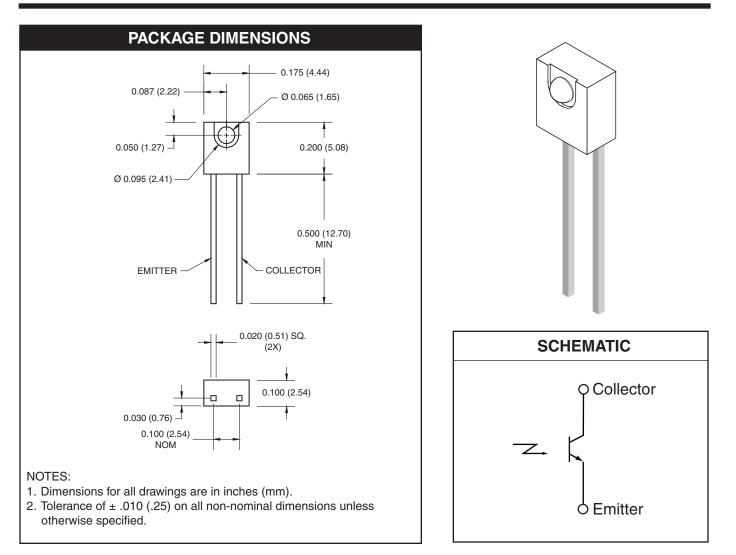


# PLASTIC SILICON INFRARED PHOTOTRANSISTOR

### 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,  $50^\circ$
- · Package material and color: black epoxy
- Matched emitter: QEE113
- Daylight filter
- High sensitivity



SEMICONDUCTOR®

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## QSE113 QSE114

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

### NOTES:

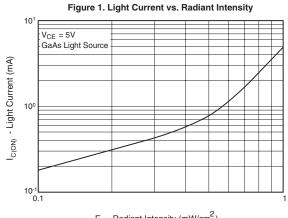
- 1. Derate power dissipation linearly 1.33 mW/°C above 25°C.
- 2. RMA flux is recommended.
- 3. Methanol or isopropyl alcohols are recommended as cleaning agents.
- 4. Soldering iron 1/16" (1.6 mm) minimum from housing.
- 5.  $\lambda = 880$  nm (AlGaAs).

ELECTRICAL / OPTICAL CHARACTERISTICS (T <sub>A</sub> =25°C unless otherwise specified)								
Parameter	Test Conditions	Symbol	Min	Тур	Max	Units		
Peak Sensitivity		λ <sub>PS</sub>	—	880	—	nM		
Reception Angle		Θ	_	±25	_	Deg.		
Collector Emitter Dark Current	V <sub>CE</sub> = 10 V, E <sub>e</sub> = 0	I <sub>CEO</sub>	_	—	100	nA		
Collector-Emitter Breakdown	I <sub>C</sub> = 1 mA	BV <sub>CEO</sub>	30	—	—	V		
Emitter-Collector Breakdown	I <sub>E</sub> = 100 μA	BV <sub>ECO</sub>	5	_	—	V		
On-State Collector Current <sup>(5)</sup> QSE113	$E_{e} = 0.5 \text{ mW/cm}^{2}, V_{CE} = 5 \text{ V}$	I <sub>C(ON)</sub>	0.25	_	1.50	mA		
On-State Collector Current <sup>(5)</sup> QSE114	$E_{e} = 0.5 \text{ mW/cm}^{2}, V_{CE} = 5 \text{ V}$	I <sub>C(ON)</sub>	1.00	_	_	mA		
Saturation Voltage <sup>(5)</sup>	$E_{e} = 0.5 \text{ mW/cm}^{2}, I_{C} = 0.1 \text{ mA}$	V <sub>CE(SAT)</sub>	—	—	0.4	V		
Rise Time	$I_{\rm C} = 1$ mA, $V_{\rm CC} = 5$ V, $R_{\rm L} = 100\Omega$	t <sub>r</sub>	—	8	—	μs		
Fall Time		t <sub>f</sub>	_	8	—	μs		



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#### **QSE113 QSE114**



E<sub>e</sub> - Radiant Intensity (mW/cm<sup>2</sup>)

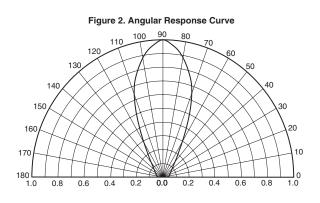


Figure 3. Dark Current vs. Collector - Emitter Voltage

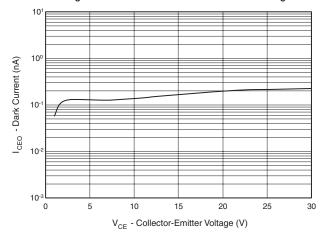
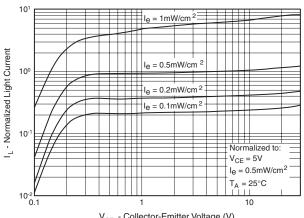
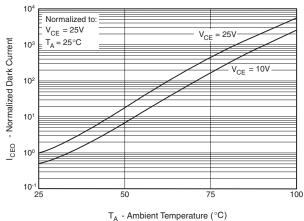
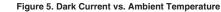


Figure 4. Light Current vs. Collector - Emitter Voltage



V<sub>CE</sub> - Collector-Emitter Voltage (V)







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## QSE113 QSE114

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