DESCRIPTION

The QRB1133/1134 consists of an infrared emitting diode and an NPN silicon phototransistor mounted side by side on a converging optical axis in a black plastic housing. The phototransistor responds to radiation from the emitting diode only when a reflective object passes within its field of view. The area of the optimum response approximates a circle .200” in diameter.

FEATURES

• Phototransistor output
• High Sensitivity
• Low cost plastic housing
• #26 AWG, 24 inch PVC wire termination
• Infrared transparent plastic covers for dust protection

NOTES:

1. Dimensions for all drawings are in inches (mm).
2. Tolerance of ± .010 (.25) on all non-nominal dimensions unless otherwise specified.
### ABSOLUTE MAXIMUM RATINGS \((T_A = 25^\circ C\) unless otherwise specified)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Rating</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>(T_{OPR})</td>
<td>-40 to +85</td>
<td>°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>(T_{STG})</td>
<td>-40 to +85</td>
<td>°C</td>
</tr>
<tr>
<td>Soldering Temperature (Iron)((2,3,4))</td>
<td>(T_{SOL-I})</td>
<td>240 for 5 sec</td>
<td>°C</td>
</tr>
<tr>
<td>Soldering Temperature (Flow)((2,3))</td>
<td>(T_{SOL-F})</td>
<td>260 for 10 sec</td>
<td>°C</td>
</tr>
</tbody>
</table>

### Emitter
- Continuous Forward Current: \(I_F\)
- Reverse Voltage: \(V_R\)
- Power Dissipation\(^{(1)}\): \(P_D\)

### Sensor
- Collector-Emitter Voltage: \(V_{CEO}\)
- Emitter-CollectorVoltage: \(V_{ECO}\)
- Collector Current: \(I_C\)
- Power Dissipation\(^{(1)}\): \(P_D\)

### Notes
1. Derate power dissipation linearly 1.67 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. D is the distance from the assembly face to the reflective surface.
6. Measured using an Eastman Kodak neutral test card with 90% diffused reflecting surface.
7. Cross talk is the photo current measured with current to the input diode and no reflecting surface.

### ELECTRICAL / OPTICAL CHARACTERISTICS \((T_A = 25^\circ C)\)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>TEST CONDITIONS</th>
<th>SYMBOL</th>
<th>MIN</th>
<th>TYP</th>
<th>MAX</th>
<th>UNITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emitter</td>
<td></td>
<td>(I_F)</td>
<td>50</td>
<td>mA</td>
<td></td>
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<tr>
<td>Reverse Voltage</td>
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<td>(V_R)</td>
<td>5</td>
<td>V</td>
<td></td>
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<tr>
<td>Power Dissipation(^{(1)})</td>
<td></td>
<td>(P_D)</td>
<td>100</td>
<td>mW</td>
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<tr>
<td>Sensor</td>
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<td>(V_{CEO})</td>
<td>30</td>
<td>V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emitter-Collector Voltage</td>
<td></td>
<td>(V_{ECO})</td>
<td>50</td>
<td>V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collector Current</td>
<td></td>
<td>(I_C)</td>
<td>20</td>
<td>mA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Dissipation(^{(1)})</td>
<td></td>
<td>(P_D)</td>
<td>100</td>
<td>mW</td>
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Fig. 1 Forward Voltage vs. Forward Current

Fig. 2 Normalized Collector Current vs. Forward Current

Fig. 3 Normalized Collector Current vs. Temperature

Fig. 4 Normalized Collector Dark Current vs. Temperature

Fig. 5 Normalized Collector Current vs. Distance
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