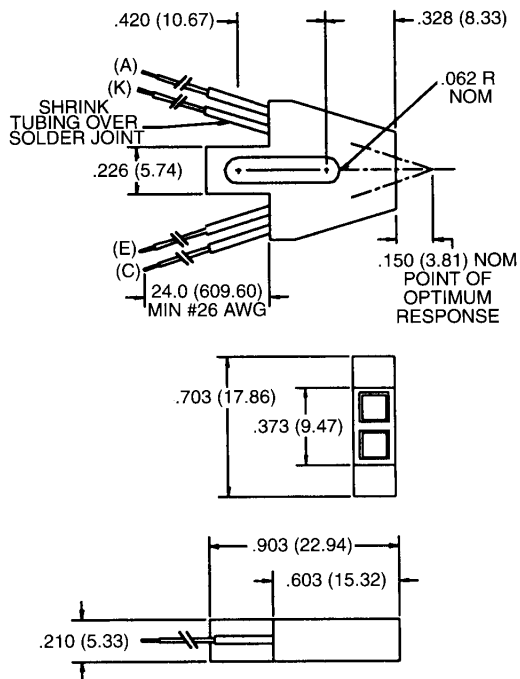




## REFLECTIVE OBJECT SENSORS

### QRB1133/1134

#### PACKAGE DIMENSIONS



#### 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.

ST2177

FUNCTION	WIRE COLOR
(C) COLLECTOR	WHITE
(E) EMITTER	BLUE
(K) CATHODE	GREEN
(A) ANODE	ORANGE

#### NOTES:

1. DIMENSIONS ARE IN INCHES (mm).
2. TOLERANCE IS  $\pm .010"$  (.25)
- UNLESS OTHERWISE SPECIFIED.



## REFLECTIVE OBJECT SENSORS

<b>ABSOLUTE MAXIMUM RATINGS</b> ( $T_A = 25^\circ\text{C}$ Unless Otherwise Specified)	
Storage Temperature .....	$-40^\circ\text{C}$ to $+85^\circ\text{C}$
Operating Temperature .....	$-40^\circ\text{C}$ to $+85^\circ\text{C}$
Soldering:	
Lead Temperature (Iron) .....	$240^\circ\text{C}$ for 5 sec. <sup>(2,3,4)</sup>
Lead Temperature (Flow) .....	$260^\circ\text{C}$ for 10 sec. <sup>(2,3)</sup>
<b>INPUT DIODE</b>	
Continuous Forward Current .....	50 mA
Reverse Voltage .....	5.0 Volts
Power Dissipation .....	100 mW <sup>(1)</sup>
<b>OUTPUT TRANSISTOR</b>	
Collector-Emitter Voltage .....	30 Volts
Emitter-Collector Voltage .....	5.0 Volts
Collector Current .....	40 mA
Power Dissipation .....	100 mW <sup>(1)</sup>

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25^\circ\text{C}$ Unless Otherwise Specified)						
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
<b>INPUT DIODE</b>						
Forward Voltage	$V_F$	—		1.70	V	$I_F = 40\text{ mA}$
Reverse Leakage Current	$I_R$	—		100	$\mu\text{A}$	$V_R = 2.0\text{ V}$
<b>OUTPUT TRANSISTOR</b>						
Emitter-Collector Breakdown	$BV_{ECO}$	5		—	V	$I_E = 100\mu\text{A}$ , $E_e = 0$
Collector-Emitter Breakdown	$BV_{CEO}$	30		—	V	$I_C = 1.0\text{ mA}$ , $E_e = 0$
Collector-Emitter Leakage	$I_{CEO}$	—		100	nA	$V_{CE} = 10.0\text{ V}$ , $E_e = 0$
<b>COUPLED</b>						
On-State Collector Current						
QRB1133	$I_{C(ON)}$	0.20		—	mA	$I_F = 40\text{ mA}$ , $V_{CE} = 5\text{ V}$ , $D = .150''$ <sup>(5,7)</sup>
QRB1134	$I_{C(ON)}$	0.60		3.00	mA	$I_F = 40\text{ mA}$ , $V_{CE} = 5\text{ V}$ , $D = .150''$ <sup>(5,7)</sup>
Crosstalk	$I_{CX}$	—		1.00	$\mu\text{A}$	$I_F = 40\text{ mA}$ , $V_{CE} = 5\text{ V}$ <sup>(6)</sup>
Saturation Voltage	$V_{CE(SAT)}$	—		0.40	V	$I_F = 40\text{ mA}$ , $I_C = 0.1\text{ mA}$ , $D = .150''$ <sup>(5,7)</sup>

<b>NOTES</b>
1. Derate power dissipation linearly 1.67 mW/ $^\circ\text{C}$ above $25^\circ\text{C}$ .
2. RMA flux is recommended.
3. Methanol or Isopropanol alcohols are recommended as cleaning agents.
4. Soldering iron $1/16''$ (1.6mm) from housing
5. D is the distance from the assembly face to the reflective surface.
6. Cross talk is the photocurrent measured with current to the input diode and no reflecting surface.
7. Measured using Eastman Kodak neutral test card with 90% diffused reflecting surface.