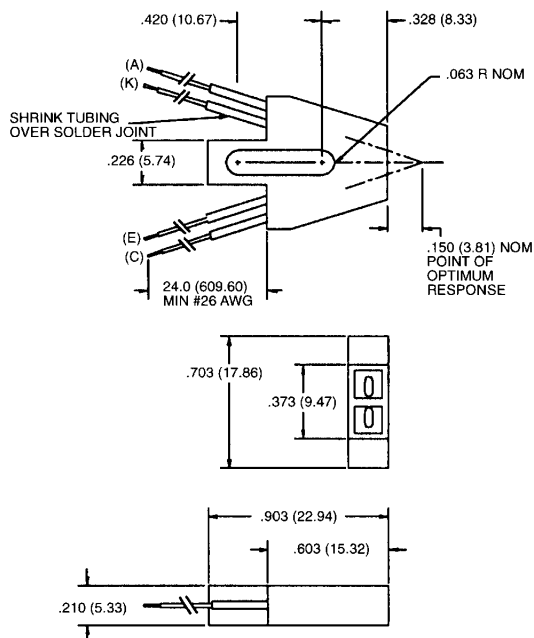




## REFLECTIVE OBJECT SENSOR

**QRC1133**

### PACKAGE DIMENSIONS



**ST1781**

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

### DESCRIPTION

The QRC1133 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 optimum response approximates a circle .200" in diameter.

### FEATURES

- Phototransistor output
- High Sensitivity
- Low cost plastic housing
- #26 AWG, 24 inch PVC wire termination

#### NOTES:

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



## REFLECTIVE OBJECT SENSOR

### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ 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>

#### INPUT DIODE

Continuous Forward Current .....	50 mA
Reverse Voltage .....	5.0 Volts
Power Dissipation .....	100 mW <sup>(1)</sup>

#### OUTPUT TRANSISTOR

Collector-Emitter Voltage .....	30 V
Emitter-Collector Voltage .....	5 V
Collector Current .....	40 mA
Power Dissipation .....	100 mW <sup>(1)</sup>

### ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ )

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	$BV_{CEO}$	5		—	V	$I_E = 100\text{ }\mu\text{A}$
Collector-Emitter Breakdown	$BV_{CED}$	30		—	V	$I_C = 1.0\text{ mA}$
Collector-Emitter Leakage	$I_{CEO}$	—		100	nA	$V_{CE} = 10.0\text{ V}$
<b>COUPLED</b>						
On-State Collector Current	$I_{C(ON)}$	0.20		—	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	$I_F = 40\text{ mA}$ , $I_C = 0.1\text{ mA}$ , $D = .150''$

### NOTES

1. Derate power dissipation linearly 1.67 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 tip  $\frac{1}{16}''$  (1.6 mm) 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.