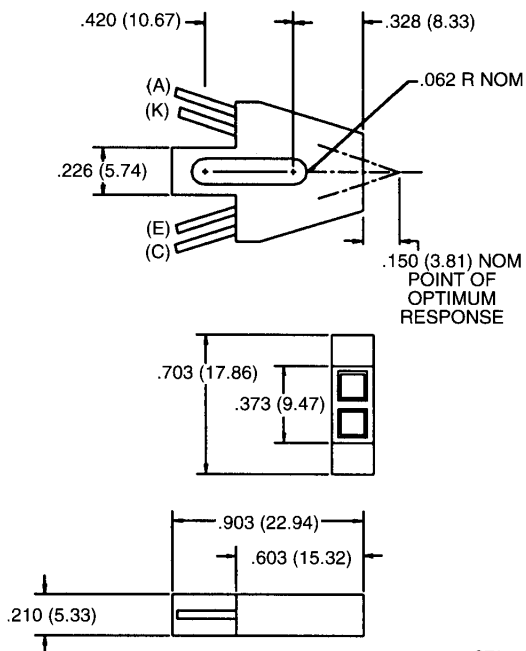




REFLECTIVE OBJECT SENSORS

QRB1113/1114

PACKAGE DIMENSIONS



DESCRIPTION

The QRB1113/1114 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
- IR transparent plastic covers for dust protection.

ST2179

FUNCTION
 (C) COLLECTOR
 (E) EMITTER
 (K) CATHODE
 (A) ANODE

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



REFLECTIVE OBJECT SENSORS

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

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ Unless Otherwise Specified)						
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
INPUT DIODE						
Forward Voltage	V_f	—		1.70	V	$I_f = 40\text{ mA}$
Reverse Leakage Current	I_r	—		100	μA	$V_R = 2.0\text{ V}$
OUTPUT TRANSISTOR						
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	$V_{CE} = 10.0\text{ V}$, $E_e = 0$
COUPLED						
On-State Collector Current						
QRB1113	$I_{C(ON)}$	0.20		—	mA	$I_f = 40\text{ mA}$, $V_{CE} = 5\text{ V}$, $D = .150^{\text{**}}$ ^(5,6)
QRB1114	$I_{C(ON)}$	0.60		3.00	mA	$I_f = 40\text{ mA}$, $V_{CE} = 5\text{ V}$, $D = .150^{\text{**}}$ ^(5,6)
Crosstalk	I_{CX}	—		1.00	μA	$I_f = 40\text{ mA}$, $V_{CE} = 5\text{ V}^{(7)}$
Saturation Voltage	$V_{CE(SAT)}$	—		.4	V	$I_f = 40\text{ mA}$, $I_C = 0.1\text{ mA}$, $D = .150^{\text{**}}$ ^(5,6)

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 1/8" (1.6mm) from housing
5. D is the distance from the assembly face to the reflective surface.
6. Measured using Eastman Kodak neutral test card with 90% diffused reflecting surface.
7. Cross talk is the photocurrent measured with current to the input diode and no reflecting surface.