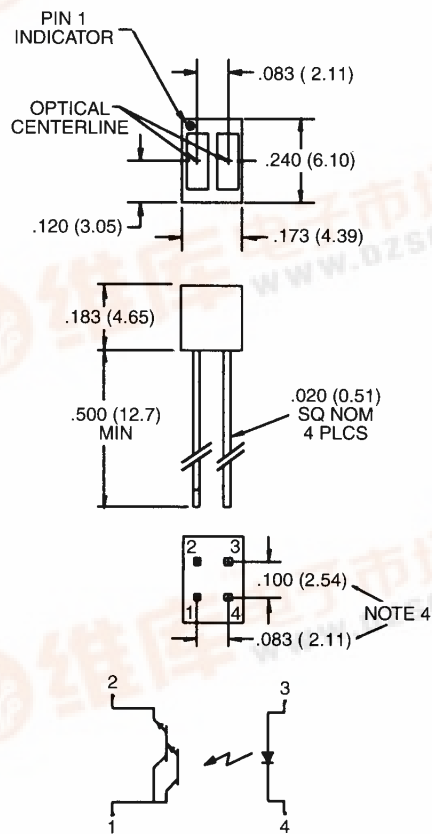




REFLECTIVE OBJECT SENSOR

QRD1313

PACKAGE DIMENSIONS



ST2173

DESCRIPTION

The QRD1313 reflective sensors consists of an infrared emitting diode and an NPN silicon photodarlington mounted side by side in a black plastic housing. The on-axis radiation of the emitter and the on-axis response of the detector are both perpendicular to the face of the QRD1313. The photodarlington responds to radiation emitted from the diode only when a reflective object or surface is in the field of view of the detector.

FEATURES

- Photodarlington output.
- Unfocused for sensing diffused surfaces.
- Low cost plastic housing.
- Designed for paper path and other non-contact surface sensing.

NOTES:

1. PINS 2 AND 4 TYPICALLY .050" SHORTER THAN PINS 1 AND 3
2. DIMENSIONS ARE IN INCHES (mm).
3. TOLERANCE IS $\pm .010$ [.25] UNLESS OTHERWISE SPECIFIED.
4. THESE DIMENSIONS ARE CONTROLLED AT HOUSING SURFACE.

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ Unless Otherwise Specified)

Storage Temperature	-40°C to $+100^\circ\text{C}$
Operating Temperature	-40°C to $+100^\circ\text{C}$
Soldering:	
Lead Temperature (Iron)	240°C for 5 sec. ^(2,3,4)
Lead Temperature (Flow)	260°C for 10 sec. ^(2,4)
INPUT DIODE	
Continuous Forward Current	50 mA
Reverse Voltage	5.0 Volts
Power Dissipation	100 mW ⁽¹⁾
OUTPUT DARLINGTON	
Collector-Emitter Voltage	15 Volts
Emitter-Collector Voltage	5.0 Volts
Power Dissipation	100 mW ⁽¹⁾

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ Unless Otherwise Specified)

(All measurements made under pulse conditions.)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
INPUT DIODE						
Forward Voltage	V _F	—		1.70	V	I _F = 20 mA
Reverse Leakage Current	I _R	—		100	μA	V _R = 2.0 V
OUTPUT DARLINGTON						
Collector-Emitter Breakdown	BV _{CEO}	15.0		—	V	I _C = 100 μA, E _e = 0
Emitter-Collector Breakdown	BV _{CE0}	5.0		—	V	I _E = 100 μA, E _e = 0
Collector-Emitter Leakage	I _{CEO}	—		250	nA	V _{CE} = 5.0 V, E _e = 0
COUPLED						
On-State Collector Current	I _{C(ON)}	10.0		—	mA	I _F = 20 mA, V _{CC} = 5.0V, D = .050" ^(5,7)
Crosstalk	I _{CX}	—		10	μA	I _F = 20 mA, V _{CC} = 5.0V, E _e = 0 ⁽⁶⁾
Saturation Voltage	V _{CE(SAT)}	—		1.10	V	I _F = 20 mA, I _C = 2mA, D = .050" ^(5,7)

NOTES

1. Derate power dissipation linearly 1.33 mW/ $^\circ\text{C}$ above 25°C .
2. RMA flux is recommended.
3. Soldering iron $\frac{1}{16}''$ (1.6mm) minimum from housing.
4. As long as leads are not under any stress or spring tension.
5. D is the distance from the sensor face to the reflective surface.
6. Crosstalk(I_{CX}) is the collector current measured with the indicated current on the input diode and with no reflective surface.
7. Measured using Eastman Kodak neutral white test card with 90% diffused reflecting as a reflecting surface.



REFLECTIVE OBJECT SENSORS

DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE PRESIDENT OF FAIRCHILD SEMICONDUCTOR CORPORATION. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.