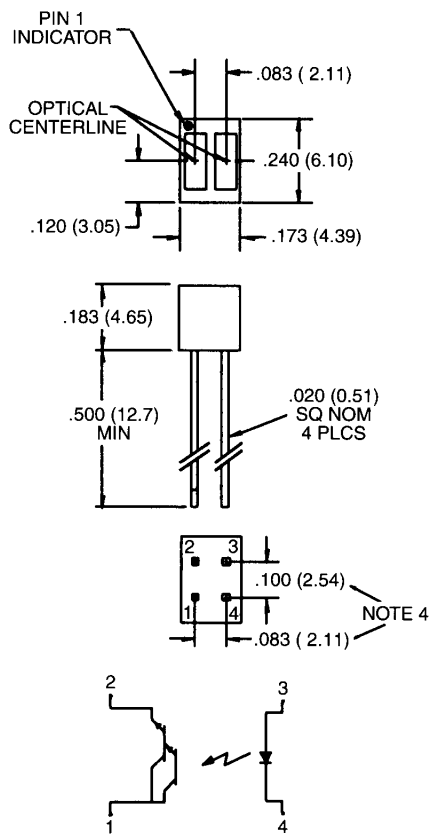


**PACKAGE DIMENSIONS**



ST2173

**NOTES:**

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

**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.

<b>ABSOLUTE MAXIMUM RATINGS</b> (T <sub>A</sub> = 25°C Unless Otherwise Specified)	
Storage Temperature .....	-40°C to + 100°C
Operating Temperature .....	-40°C to + 100°C
Soldering:	
Lead Temperature (Iron) .....	240°C for 5 sec. <sup>(2,3,4)</sup>
Lead Temperature (Flow) .....	260°C for 10 sec. <sup>(2,4)</sup>
<b>INPUT DIODE</b>	
Continuous Forward Current .....	50 mA
Reverse Voltage .....	5.0 Volts
Power Dissipation .....	100 mW <sup>(1)</sup>
<b>OUTPUT DARLINGTON</b>	
Collector-Emitter Voltage .....	15 Volts
Emitter-Collector Voltage .....	5.0 Volts
Power Dissipation .....	100 mW <sup>(1)</sup>

<b>ELECTRICAL CHARACTERISTICS</b> (T <sub>A</sub> = 25°C Unless Otherwise Specified) (All measurements made under pulse conditions.)						
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
<b>INPUT DIODE</b>						
Forward Voltage	V <sub>F</sub>	—		1.70	V	I <sub>F</sub> = 20 mA
Reverse Leakage Current	I <sub>R</sub>	—		100	μA	V <sub>R</sub> = 2.0 V
<b>OUTPUT DARLINGTON</b>						
Collector-Emitter Breakdown	BV <sub>CEO</sub>	15.0		—	V	I <sub>C</sub> = 100 μA, E <sub>e</sub> = 0
Emitter-Collector Breakdown	BV <sub>CE0</sub>	5.0		—	V	I <sub>E</sub> = 100 μA, E <sub>e</sub> = 0
Collector-Emitter Leakage	I <sub>CEO</sub>	—		250	nA	V <sub>CE</sub> = 5.0 V, E <sub>e</sub> = 0
<b>COUPLED</b>						
On-State Collector Current	I <sub>C(ON)</sub>	10.0		—	mA	I <sub>F</sub> = 20 mA, V <sub>CC</sub> = 5.0V, D = .050 <sup>(5,7)</sup>
Crosstalk	I <sub>CX</sub>	—		10	μA	I <sub>F</sub> = 20 mA, V <sub>CC</sub> = 5.0V, E <sub>e</sub> = 0 <sup>(6)</sup>
Saturation Voltage	V <sub>CE(SAT)</sub>	—		1.10	V	I <sub>F</sub> = 20 mA, I <sub>C</sub> = 2mA, D = .050 <sup>(5,7)</sup>

<b>NOTES</b>
1. Derate power dissipation linearly 1.33 mW/°C above 25°C.
2. RMA flux is recommended.
3. Soldering iron 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 <sub>CX</sub> ) 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

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