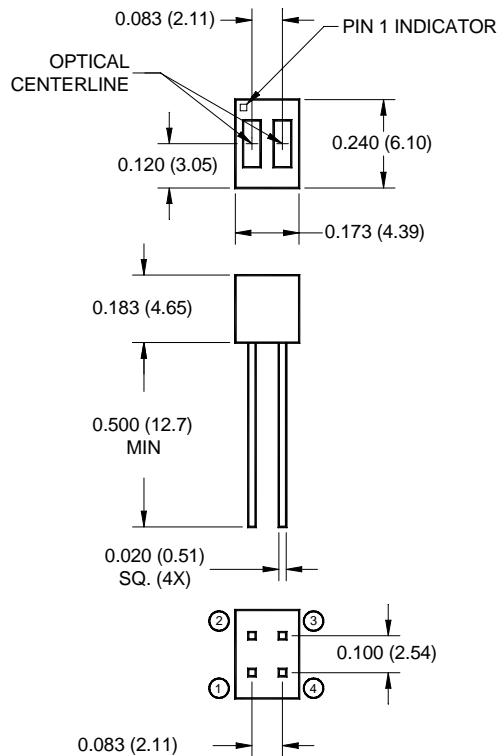


PACKAGE DIMENSIONS



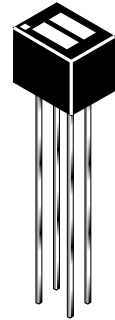
PIN 1 COLLECTOR PIN 3 ANODE
PIN 2 EMITTER PIN 4 CATHODE

NOTES:

1. Dimensions for all drawings are in inches (millimeters).
2. Tolerance of $\pm .010$ (.25) on all non-nominal dimensions unless otherwise specified.
3. Pins 2 and 4 typically .050" shorter than pins 1 and 3.
4. Dimensions controlled at housing surface.

FEATURES

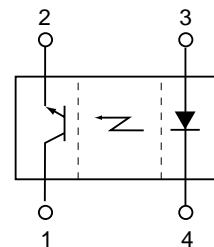
- Phototransistor Output
- No contact surface sensing
- Unfocused for sensing diffused surfaces
- Compact Package
- Daylight filter on sensor



NOTES (Applies to Max Ratings and Characteristics Tables.)

1. Derate power dissipation linearly 1.33 mW/°C above 25°C.
2. RMA flux is recommended.
3. Methanol or isopropyl alcohols are recommended as cleaning agents.
4. Soldering iron 1/16" (1.6mm) from housing.
5. As long as leads are not under any spring tension.
6. D is the distance from the sensor face to the reflective surface.
7. Cross talk (I_{CX}) is the collector current measured with the indicator current on the input diode and with no reflective surface.
8. Measured using an Eastman Kodak neutral white test card with 90% diffused reflecting as a reflective surface.

SCHEMATIC



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

| Parameter | Symbol | Rating | Units |
|-------------------------------------------------|-------------|----------------|-------|
| Operating Temperature | T_{OPR} | -40 to +85 | °C |
| Storage Temperature | T_{STG} | -40 to +85 | °C |
| Lead Temperature (Solder Iron) ^(2,3) | T_{SOL-I} | 240 for 5 sec | °C |
| Lead Temperature (Solder Flow) ^(2,3) | T_{SOL-F} | 260 for 10 sec | °C |
| EMITTER | | | |
| Continuous Forward Current | I_F | 50 | mA |
| Reverse Voltage | V_R | 5 | V |
| Power Dissipation ⁽¹⁾ | P_D | 100 | mW |
| SENSOR | | | |
| Collector-Emitter Voltage | V_{CEO} | 30 | V |
| Emitter-Collector Voltage | V_{ECO} | | V |
| Power Dissipation ⁽¹⁾ | P_D | 100 | mW |

| ELECTRICAL / OPTICAL CHARACTERISTICS (T _A = 25°C) | | | | | | |
|--------------------------------------------------------------|-----------------------------------------------------------------------|-----------------------|-------|------|-----|-------|
| PARAMETER | TEST CONDITIONS | SYMBOL | MIN | TYP | MAX | UNITS |
| EMITTER | | | | | | |
| Forward Voltage | I _F = 20 mA | V _F | — | — | 1.7 | V |
| Reverse Current | V _R = 5 V | I _R | — | — | 100 | μA |
| Peak Emission Wavelength | I _F = 20 mA | λ _{PE} | — | 940 | — | nm |
| SENSOR | | | | | | |
| Collector-Emitter Breakdown | I _C = 1 mA | BV _{CEO} | 30 | — | — | V |
| Emitter-Collector Breakdown | I _E = 0.1 mA | BV _{ECO} | 5 | — | — | V |
| Dark Current | V _{CE} = 10 V, I _F = 0 mA | I _D | — | — | 100 | nA |
| COUPLED | | | | | | |
| QRD1113 Collector Current | I _F = 20 mA, V _{CE} = 5 V D = .050" (6,8) | I _{C(ON)} | 0.300 | — | — | mA |
| QRD1114 Collector Current | I _F = 20 mA, V _{CE} = 5 V D = .050" (6,8) | I _{C(ON)} | 1 | — | — | mA |
| Collector Emitter Saturation Voltage | I _F = 40 mA, I _C = 100 μA D = .050" (6,8) | V _{CE (SAT)} | — | — | 0.4 | V |
| Cross Talk | I _F = 20 mA, V _{CE} = 5 V, E _E = 0 (7) | I _{CX} | — | .200 | 10 | μA |
| Rise Time | V _{CE} = 5 V, R _L = 100 Ω | t _r | — | 10 | — | μs |
| Fall Time | I _{C(ON)} = 5 mA | t _f | — | 50 | — | μs |

TYPICAL PERFORMANCE CURVES

Fig. 1 Forward Voltage vs. Forward Current

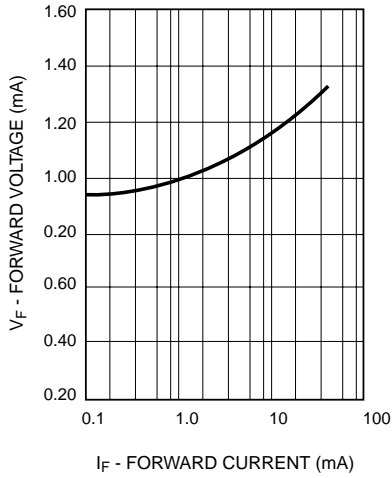


Fig. 2 Normalized Collector Current vs. Forward Current

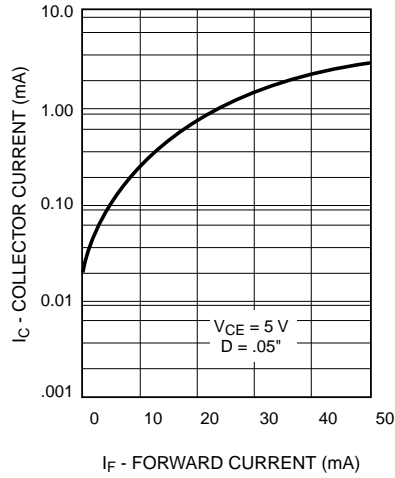


Fig. 3 Normalized Collector Current vs. Temperature

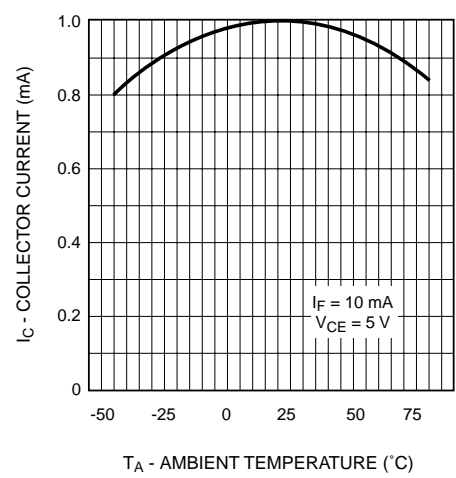


Fig. 4 Normalized Collector Dark Current vs. Temperature

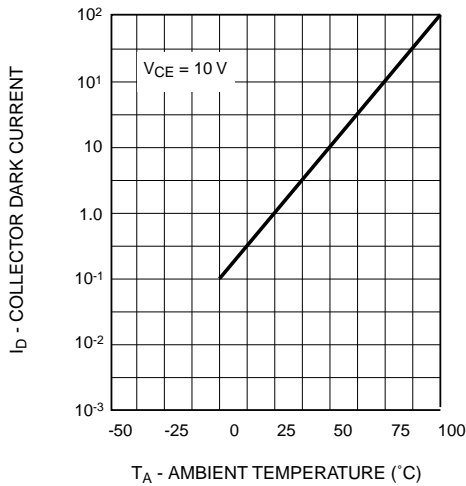
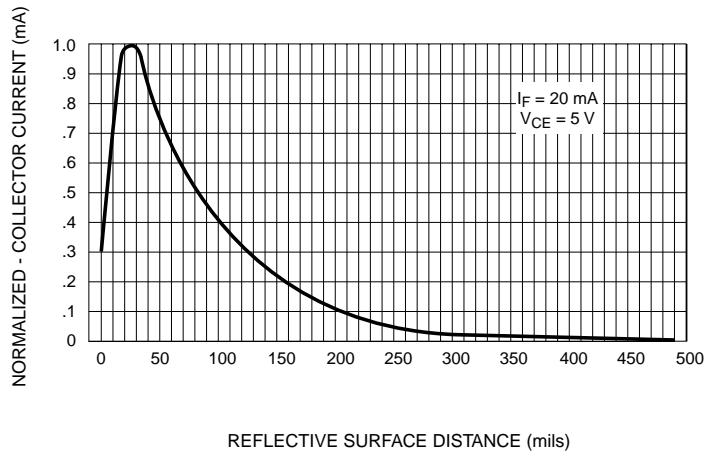


Fig. 5 Normalized Collector Current vs. Distance



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