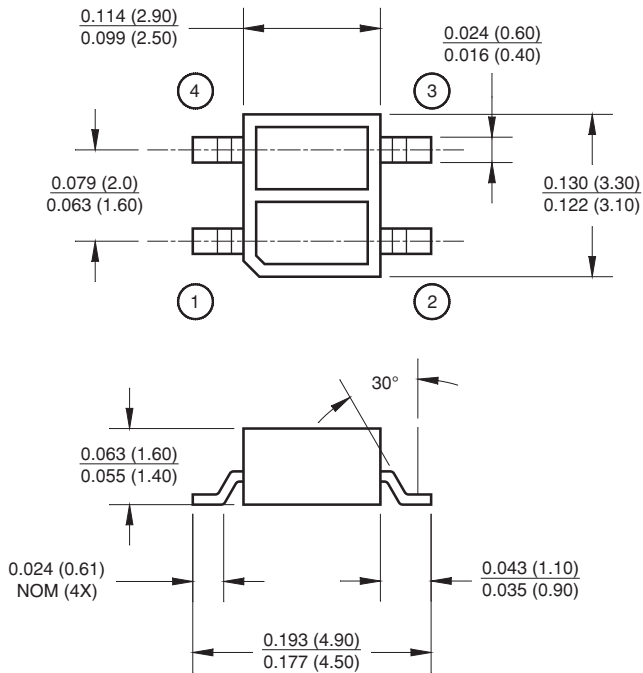


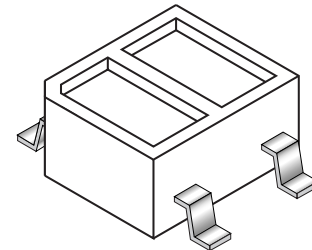
**PACKAGE DIMENSIONS**



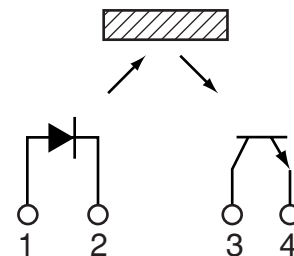
PIN 1 ANODE      PIN 3 COLLECTOR  
PIN 2 CATHODE    PIN 4 EMITTER

**NOTES:**

1. Dimensions for all drawings are in inches (millimeters).
2. Tolerance of  $\pm .010$  (.25) on all non-nominal dimensions



**SCHEMATIC**



**FEATURES**

- Phototransistor output
- Tape and reel packaging
- No contact surface sensing
- Miniature package
- Lead form style: Gull Wing

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

| Parameter                                       | Symbol      | Rating         | Units            |
|---|-------------|----------------|------------------|
| Operating Temperature                           | $T_{OPR}$   | -25 to +85     | $^\circ\text{C}$ |
| Storage Temperature                             | $T_{STG}$   | -30 to +100    | $^\circ\text{C}$ |
| Soldering Temperature (Iron) <sup>(2,3,4)</sup> | $T_{SOL-I}$ | 240 for 5 sec  | $^\circ\text{C}$ |
| Soldering Temperature (Flow) <sup>(2,3)</sup>   | $T_{SOL-F}$ | 260 for 10 sec | $^\circ\text{C}$ |
| <b>EMITTER</b>                                  |             |                |                  |
| Continuous Forward Current                      | $I_F$       | 50             | mA               |
| Reverse Voltage                                 | $V_R$       | 5              | V                |
| Peak Forward Current <sup>(5)</sup>             | $I_{FP}$    | 1              | mA               |
| Power Dissipation <sup>(1)</sup>                | $P_D$       | 75             | mW               |
| <b>SENSOR</b>                                   |             |                |                  |
| Collector-Emitter Voltage                       | $V_{CEO}$   | 30             | V                |
| Emitter-Collector Voltage                       | $V_{ECO}$   | 5              | V                |
| Collector Current                               | $I_C$       | 20             | mA               |
| Power Dissipation <sup>(1)</sup>                | $P_D$       | 50             | mW               |

**ELECTRICAL / OPTICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise specified)

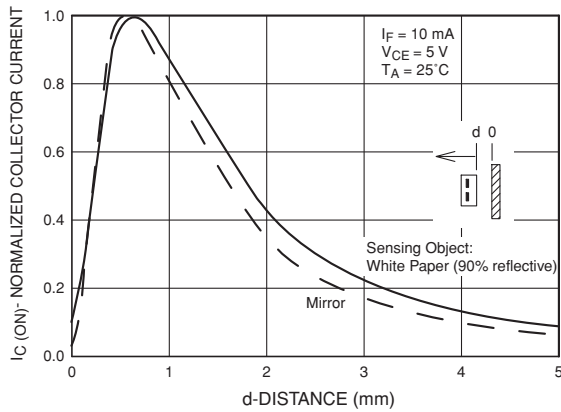
| PARAMETER                      | TEST CONDITIONS  | SYMBOL         | MIN. | TYP. | MAX. | UNITS         |
|--------------------------------|--|----------------|------|------|------|---------------|
| <b>INPUT DIODE</b>             |  |                |      |      |      |               |
| Forward Voltage                | $I_F = 20\text{ mA}$   | $V_F$          | —    | 1.2  | 1.6  | V             |
| Reverse Leakage Current        | $V_R = 5\text{ V}$   | $I_R$          | —    | —    | 10   | $\mu\text{A}$ |
| Peak Emission Wavelength       | $I_F = 20\text{ mA}$   | $\lambda_{PE}$ | —    | 940  | —    | nm            |
| <b>OUTPUT TRANSISTOR</b>       |  |                |      |      |      |               |
| Collector-Emitter Dark Current | $V_{CE} = 20\text{ V}, I_F = 0\text{ mA}$                                  | $I_D$          | —    | —    | 100  | nA            |
| <b>COUPLED</b>                 |  |                |      |      |      |               |
| On-State Collector Current     | $I_F = 20\text{ mA}, V_{CE} = 5\text{ V}$                                  | $I_{C(ON)}$    | 0.15 | 0.40 | —    | mA            |
| Saturation Voltage             |  | $V_{CE(SAT)}$  | —    | —    | 0.3  | V             |
| Rise Time                      | $V_{CC} = 5\text{ V}, I_{C(ON)} = 100\ \mu\text{A}, R_L = 1\text{K}\Omega$ | $t_r$          | —    | 20   | —    | $\mu\text{s}$ |
| Fall Time                      |  | $t_f$          | —    | 20   | —    |               |

**NOTES:**

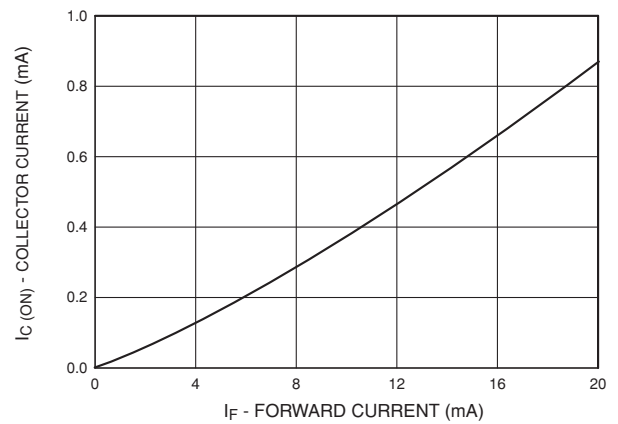
1. Derate power dissipation linearly 1.33 mW/ $^\circ\text{C}$  above 25 $^\circ\text{C}$ .
2. RMA flux is recommended.
3. Methanol or isopropyl alcohols are recommended as cleaning agents.
4. Soldering iron 1/16" (1.6mm) from housing.
5. Pulse conditions:  $t_p = 100\ \mu\text{s}; T = 10\text{ ms}$ .

**TYPICAL PERFORMANCE CURVES**

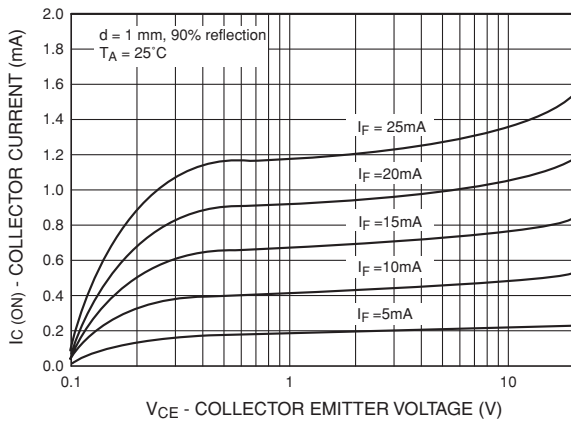
**Fig. 1 Normalized Collector Current vs. Distance between device and reflector**



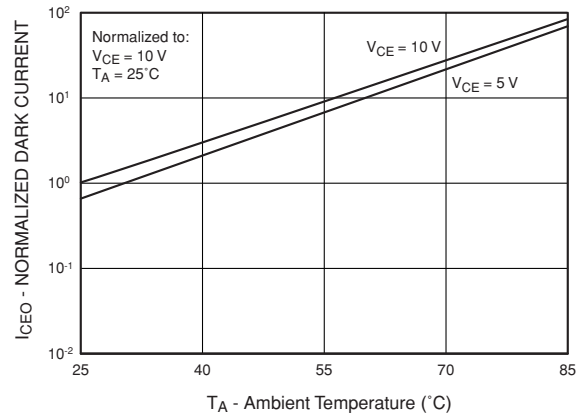
**Fig. 2 Collector Current vs. Forward Current**



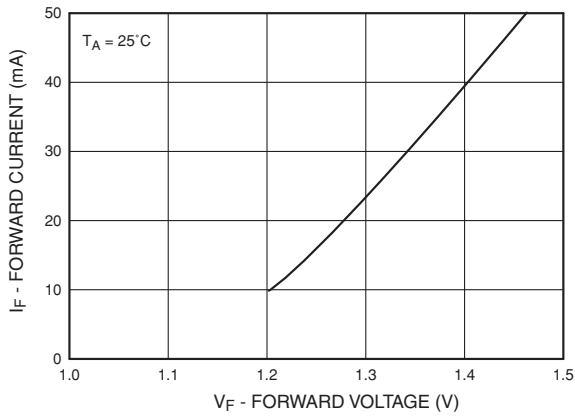
**Fig. 3 Collector Current vs. Collector to Emitter Voltage**



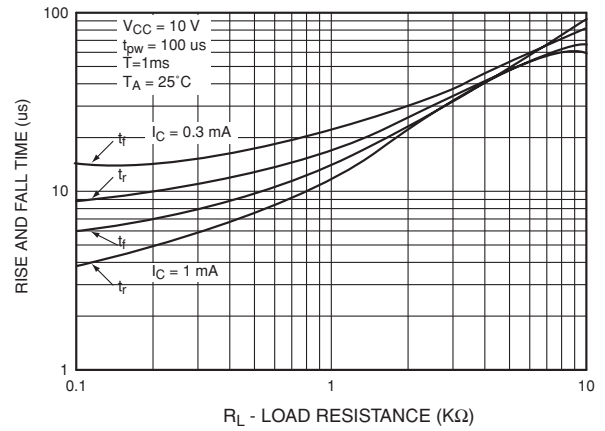
**Fig. 4 Collector Emitter Dark Current (Normalized) vs. Ambient Temperature**



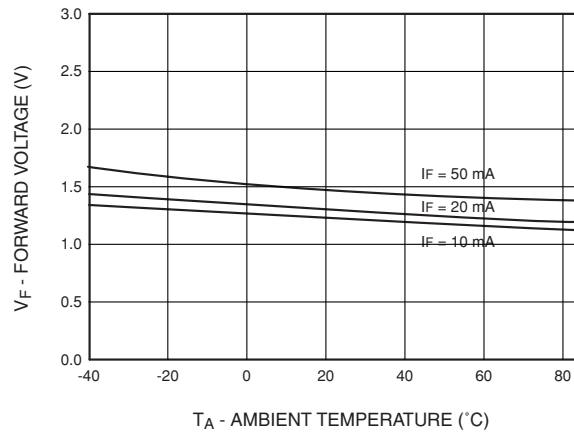
**Fig. 5 Forward Current vs. Forward Voltage**



**Fig. 6 Rise and Fall Time vs. Load Resistance**



**Fig. 7 Forward Voltage vs. Ambient Temperature**



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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.