

DESCRIPTION

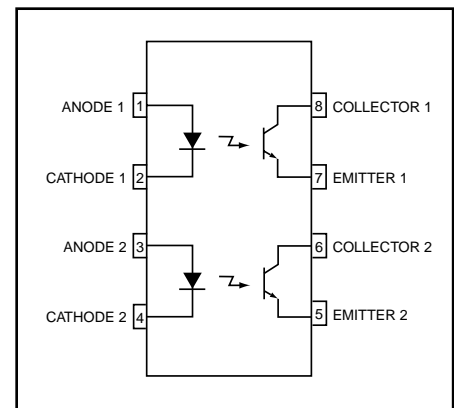
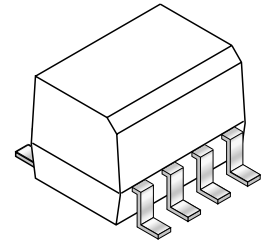
The MOCD207M/MOCD208M consist of two silicon phototransistors optically coupled to two GaAs infrared LEDs. These devices are constructed in a small outline surface mount package which conforms to the standard SOIC-8 footprint.

FEATURES

- Dual Channel Optocoupler
- Convenient Plastic SOIC-8 Surface Mountable Package Style
- Two channels in one compact surface mount package
- Closely Matched Current Transfer Ratios to Minimize Unit-to-Unit Variation
- Minimum $V_{(BR)CEO}$ of 70 Volts Guaranteed
- Standard SOIC-8 Footprint, with 0.050" Lead Spacing
- Compatible with Dual Wave, Vapor Phase and IR Reflow Soldering
- High Input-Output Isolation of 2500 Vac (rms) Guaranteed
- Meets U.L. Regulatory Requirements, File #E90700, Volume 2

APPLICATIONS

- Feedback control circuits
- Interfacing and coupling systems of different potentials and impedances
- General purpose switching circuits
- Monitor and detection circuits



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

| Rating | Symbol | Value | Unit |
|--|------------|-------------|----------------------------|
| EMITTER | | | |
| Forward Current - Continuous | I_F | 60 | mA |
| Forward Current - Peak (PW = 100 μs , 120 pps) | I_F (pk) | 1.0 | A |
| Reverse Voltage | V_R | 6.0 | V |
| LED Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 90 0.8 | mW mW/ $^\circ\text{C}$ |
| DETECTOR | | | |
| Collector-Emitter Voltage | V_{CEO} | 70 | V |
| Collector-Base Voltage | V_{CBO} | 70 | V |
| Emitter-Collector Voltage | V_{ECO} | 7.0 | V |
| Collector Current-Continuous | I_C | 150 | mA |
| Detector Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 150 1.76 | mW mW/ $^\circ\text{C}$ |
| TOTAL DEVICE | | | |
| Input-Output Isolation Voltage ^(1,2) (f = 60 Hz, 1 min. Duration) | V_{ISO} | 2500 | Vac(rms) |
| Total Device Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 250 2.94 | mW mW/ $^\circ\text{C}$ |
| Ambient Operating Temperature Range | T_A | -45 to +100 | $^\circ\text{C}$ |
| Storage Temperature Range | T_{stg} | -45 to +125 | $^\circ\text{C}$ |
| Lead Soldering Temperature (1/16" from case, 10 sec. duration) | T_L | 260 | $^\circ\text{C}$ |

| ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified) ⁽³⁾ | | | | | | | |
|---|--|---------------|---------|-----------|-------|------|---------------|
| Parameter | Test Conditions | Symbol | Device | Min | Typ** | Max | Unit |
| EMITTER | | | | | | | |
| Input Forward Voltage | $I_F = 30\text{ mA}$ | V_F | All | — | 1.25 | 1.55 | V |
| Reverse Leakage Current | $V_R = 6.0\text{ V}$ | I_R | All | — | 0.001 | 100 | μA |
| Capacitance | | C | All | — | 18 | — | pF |
| DETECTOR | | | | | | | |
| Collector-Emitter Dark Current | $V_{CE} = 10\text{ V}, T_A = 25^\circ\text{C}$ | I_{CEO} | All | — | 1.0 | 50 | nA |
| | $V_{CE} = 10\text{ V}, T_A = 100^\circ\text{C}$ | I_{CEO} | All | — | 1.0 | — | μA |
| Collector-Emitter Breakdown Voltage | $I_C = 100\ \mu\text{A}$ | $V_{(BR)CEO}$ | All | 70 | 100 | — | V |
| Emitter-Collector Breakdown Voltage | $I_E = 100\ \mu\text{A}$ | $V_{(BR)ECO}$ | All | 7.0 | 10 | — | V |
| Collector-Emitter Capacitance | $f = 1.0\text{ MHz}, V_{CE} = 0\text{ V}$ | C_{CE} | All | — | 7.0 | — | pF |
| COUPLED | | | | | | | |
| Current Transfer Ratio, Collector to Emitter ⁽⁴⁾ | $I_F = 10\text{ mA}, V_{CE} = 5\text{ V}$ | CTR | MOCD207 | 100 | 150 | 200 | % |
| | | | MOCD208 | 40 | — | 125 | |
| | MOCD207 | | 34 | — | — | | |
| | MOCD208 | | 13 | — | — | | |
| Collector-Emitter Saturation Voltage | $I_C = 2.0\text{ mA}, I_F = 10\text{ mA}$ | $V_{CE(sat)}$ | All | — | — | 0.4 | V |
| Turn-On Time | $I_C = 2.0\text{ mA}, V_{CC} = 10\text{ V}, R_L = 100\ \Omega$ | t_{on} | All | — | 3.0 | — | μs |
| Turn-Off Time | $I_C = 2.0\text{ mA}, V_{CC} = 10\text{ V}, R_L = 100\ \Omega$ | t_{off} | All | — | 2.8 | — | μs |
| Rise Time | $I_C = 2.0\text{ mA}, V_{CC} = 10\text{ V}, R_L = 100\ \Omega$ | t_r | All | — | 1.6 | — | μs |
| Fall Time | $I_C = 2.0\text{ mA}, V_{CC} = 10\text{ V}, R_L = 100\ \Omega$ | t_f | All | — | 2.2 | — | μs |
| Isolation Surge Voltage ^(1,2) | $f = 60\text{ Hz}, t = 1\text{ min.}$ | V_{ISO} | All | 2500 | — | — | Vac(rms) |
| Isolation Resistance ⁽²⁾ | $V_{I-O} = 500\text{ V}$ | R_{ISO} | All | 10^{11} | — | — | Ω |
| Isolation Capacitance ⁽²⁾ | $V_{I-O} = 0\text{ V}, f = 1\text{ MHz}$ | C_{ISO} | All | — | 0.2 | — | pF |

** Typical values at $T_A = 25^\circ\text{C}$

NOTE:

1. Input-Output Isolation Voltage, V_{ISO} , is an internal device dielectric breakdown rating.
2. For this test, Pins 1, 2, 3 and 4 are common and Pins 5, 6, 7 and 8 are common.
3. Always design to the specified minimum/maximum electrical limits (where applicable).
4. Current Transfer Ratio (CTR) = $I_C/I_F \times 100\%$.

Fig. 1 LED Forward Voltage vs. Forward Current

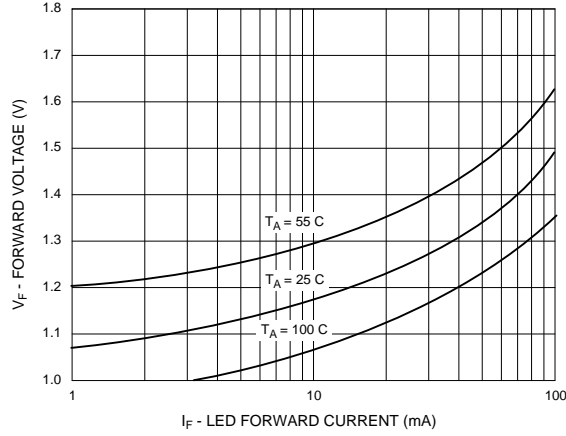


Fig. 2 Output Current vs. Input Current

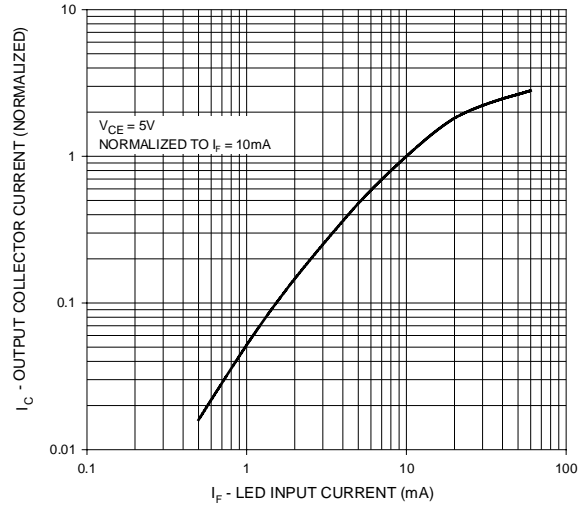


Fig. 3 Output Current vs. Ambient Temperature

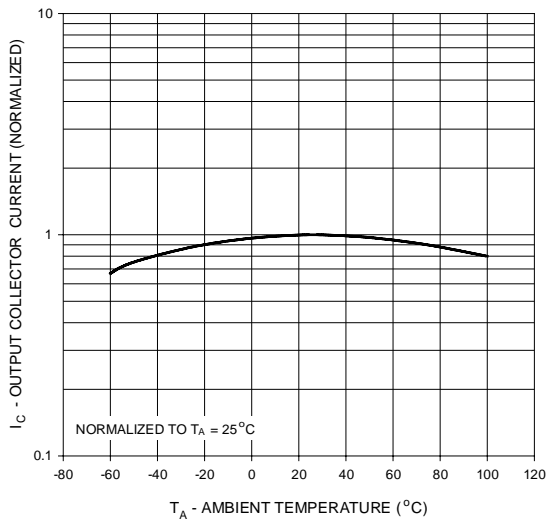


Fig. 4 Output Current vs. Collector - Emitter Voltage

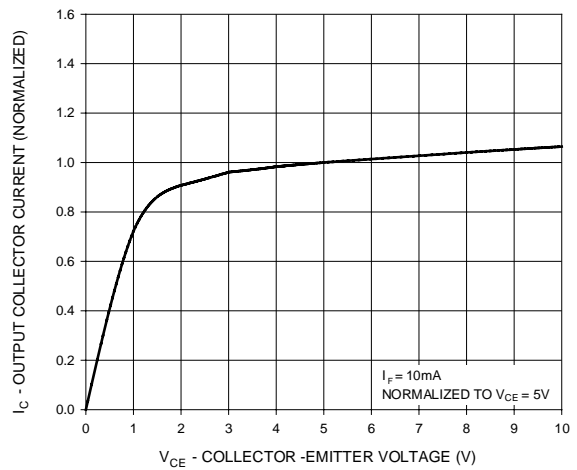
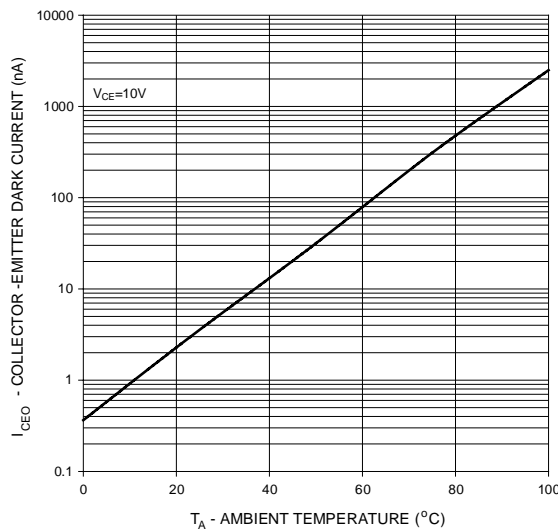
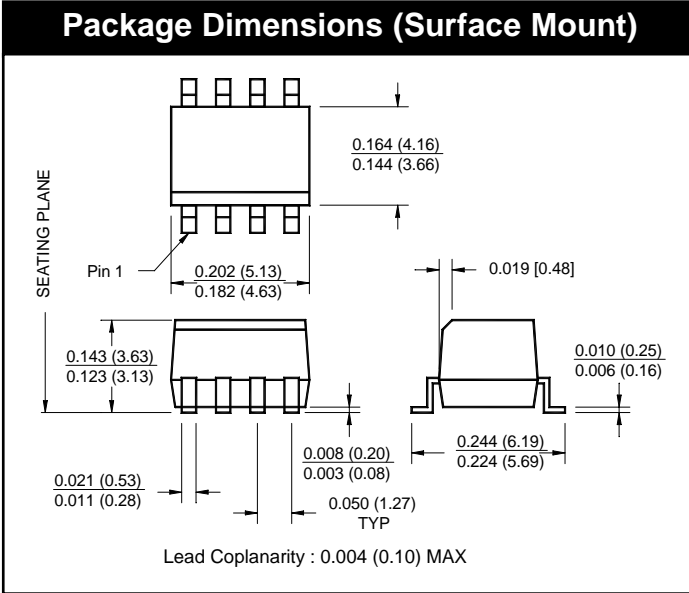


Fig. 5 Dark Current vs. Ambient Temperature



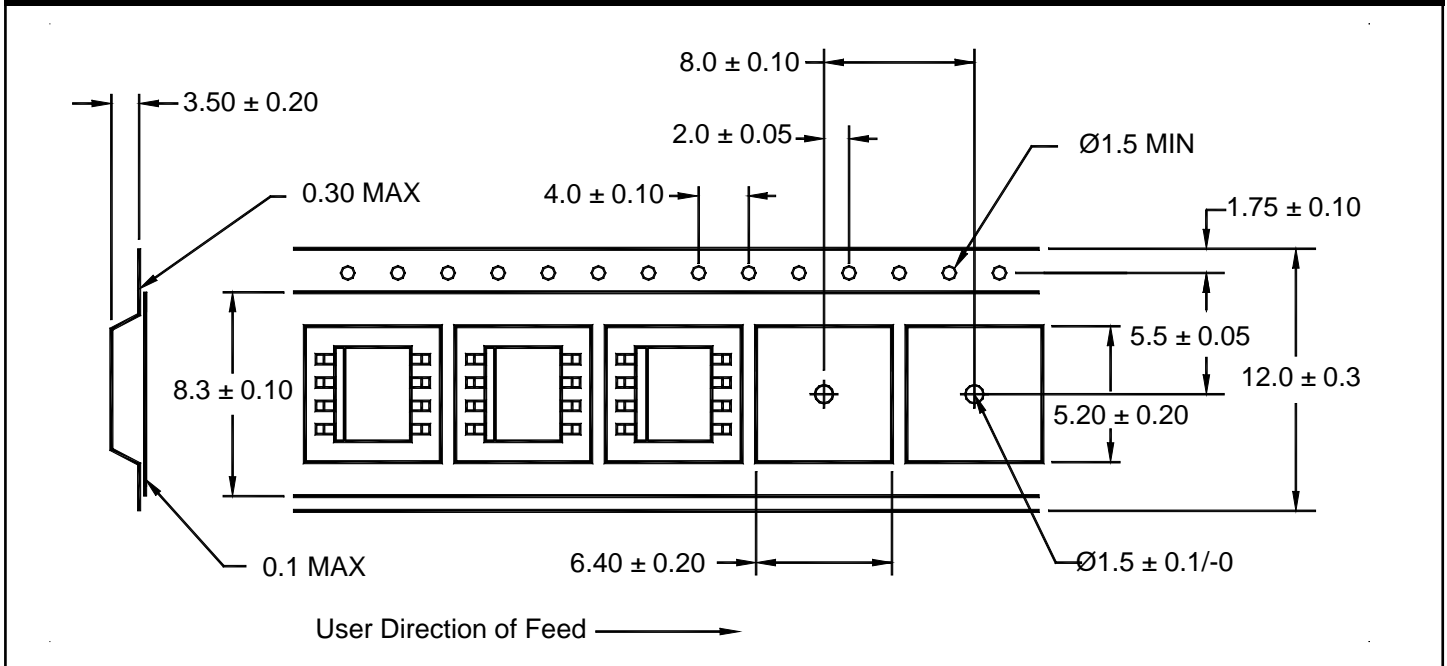
Package Dimensions (Surface Mount)



ORDERING INFORMATION

| Option | Order Entry Identifier | Description |
|--------|------------------------|-------------------------------------|
| R1 | R1 | Tape and reel (500 units per reel) |
| R2 | R2 | Tape and reel (2500 units per reel) |

QT Carrier Tape Specifications ("D" Taping Orientation)



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