

**DESCRIPTION**

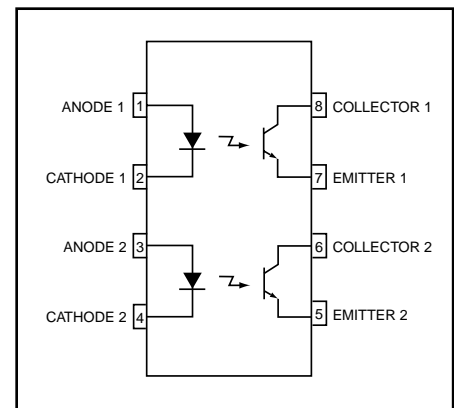
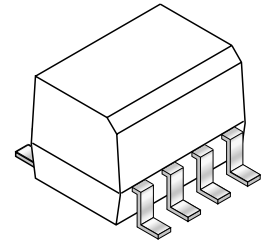
The MOCD207M/MOCD208M consist of two silicon phototransistors optically coupled to two GaAs infrared LEDs. These devices are constructed in a small outline surface mount package which conforms to the standard SOIC-8 footprint.

**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
<b>EMITTER</b>			
Forward Current - Continuous	$I_F$	60	mA
Forward Current - Peak (PW = 100 $\mu\text{s}$ , 120 pps)	$I_F$ (pk)	1.0	A
Reverse Voltage	$V_R$	6.0	V
LED Power Dissipation @ $T_A = 25^\circ\text{C}$	$P_D$	90	mW
Derate above $25^\circ\text{C}$		0.8	mW/ $^\circ\text{C}$
<b>DETECTOR</b>			
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 @ $T_A = 25^\circ\text{C}$	$P_D$	150	mW
Derate above $25^\circ\text{C}$		1.76	mW/ $^\circ\text{C}$
<b>TOTAL DEVICE</b>			
Input-Output Isolation Voltage <sup>(1,2)</sup> (f = 60 Hz, 1 min. Duration)	$V_{ISO}$	2500	Vac(rms)
Total Device Power Dissipation @ $T_A = 25^\circ\text{C}$	$P_D$	250	mW
Derate above $25^\circ\text{C}$		2.94	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	$^\circ\text{C}$

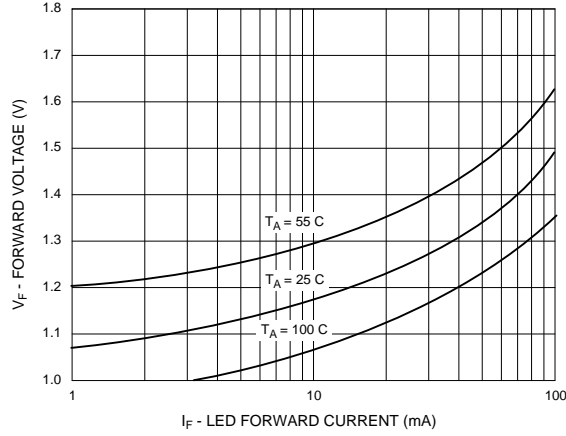
<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25^\circ\text{C}$ unless otherwise specified) <sup>(3)</sup>							
Parameter	Test Conditions	Symbol	Device	Min	Typ**	Max	Unit
<b>EMITTER</b>							
Input Forward Voltage	$I_F = 30\text{ mA}$	$V_F$	All	—	1.25	1.55	V
Reverse Leakage Current	$V_R = 6.0\text{ V}$	$I_R$	All	—	0.001	100	$\mu\text{A}$
Capacitance		C	All	—	18	—	pF
<b>DETECTOR</b>							
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	—	$\mu\text{A}$
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
<b>COUPLED</b>							
Current Transfer Ratio, Collector to Emitter <sup>(4)</sup>	$I_F = 10\text{ mA}, V_{CE} = 5\text{ V}$	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	—	$\mu\text{s}$
Turn-Off Time	$I_C = 2.0\text{ mA}, V_{CC} = 10\text{ V}, R_L = 100\ \Omega$	$t_{off}$	All	—	2.8	—	$\mu\text{s}$
Rise Time	$I_C = 2.0\text{ mA}, V_{CC} = 10\text{ V}, R_L = 100\ \Omega$	$t_r$	All	—	1.6	—	$\mu\text{s}$
Fall Time	$I_C = 2.0\text{ mA}, V_{CC} = 10\text{ V}, R_L = 100\ \Omega$	$t_f$	All	—	2.2	—	$\mu\text{s}$
Isolation Surge Voltage <sup>(1,2)</sup>	$f = 60\text{ Hz}, t = 1\text{ min.}$	$V_{ISO}$	All	2500	—	—	Vac(rms)
Isolation Resistance <sup>(2)</sup>	$V_{I-O} = 500\text{ V}$	$R_{ISO}$	All	$10^{11}$	—	—	$\Omega$
Isolation Capacitance <sup>(2)</sup>	$V_{I-O} = 0\text{ V}, f = 1\text{ MHz}$	$C_{ISO}$	All	—	0.2	—	pF

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

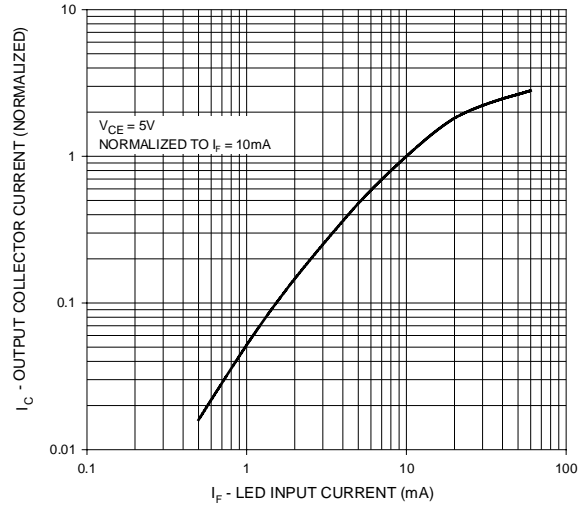
**NOTE:**

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) =  $I_C/I_F \times 100\%$ .

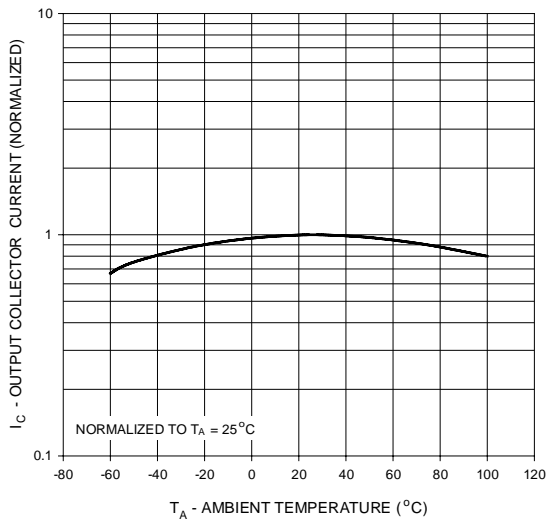
**Fig. 1 LED Forward Voltage vs. Forward Current**



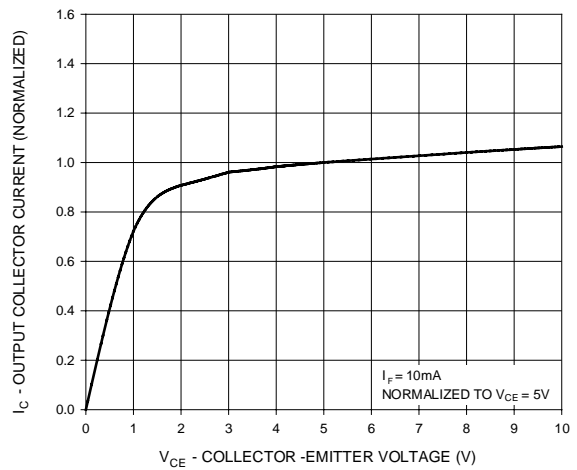
**Fig. 2 Output Current vs. Input Current**



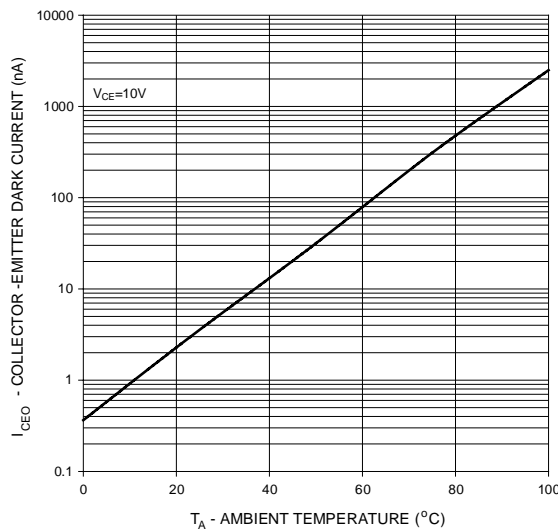
**Fig. 3 Output Current vs. Ambient Temperature**



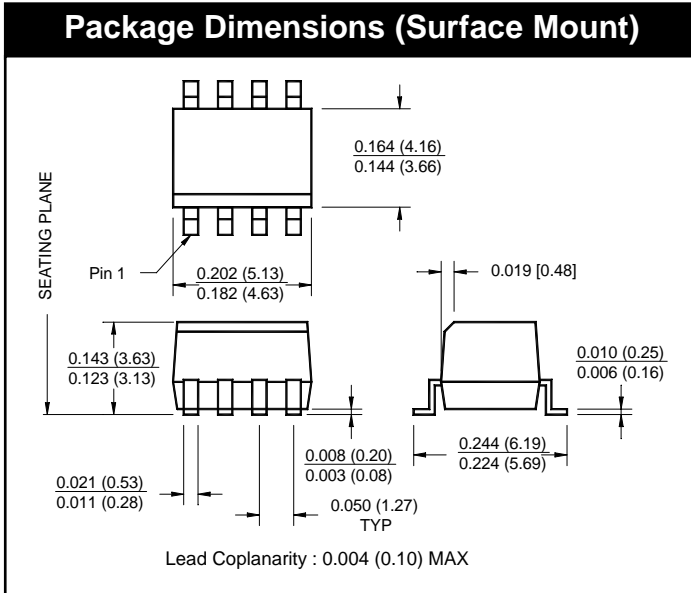
**Fig. 4 Output Current vs. Collector - Emitter Voltage**



**Fig. 5 Dark Current vs. Ambient Temperature**



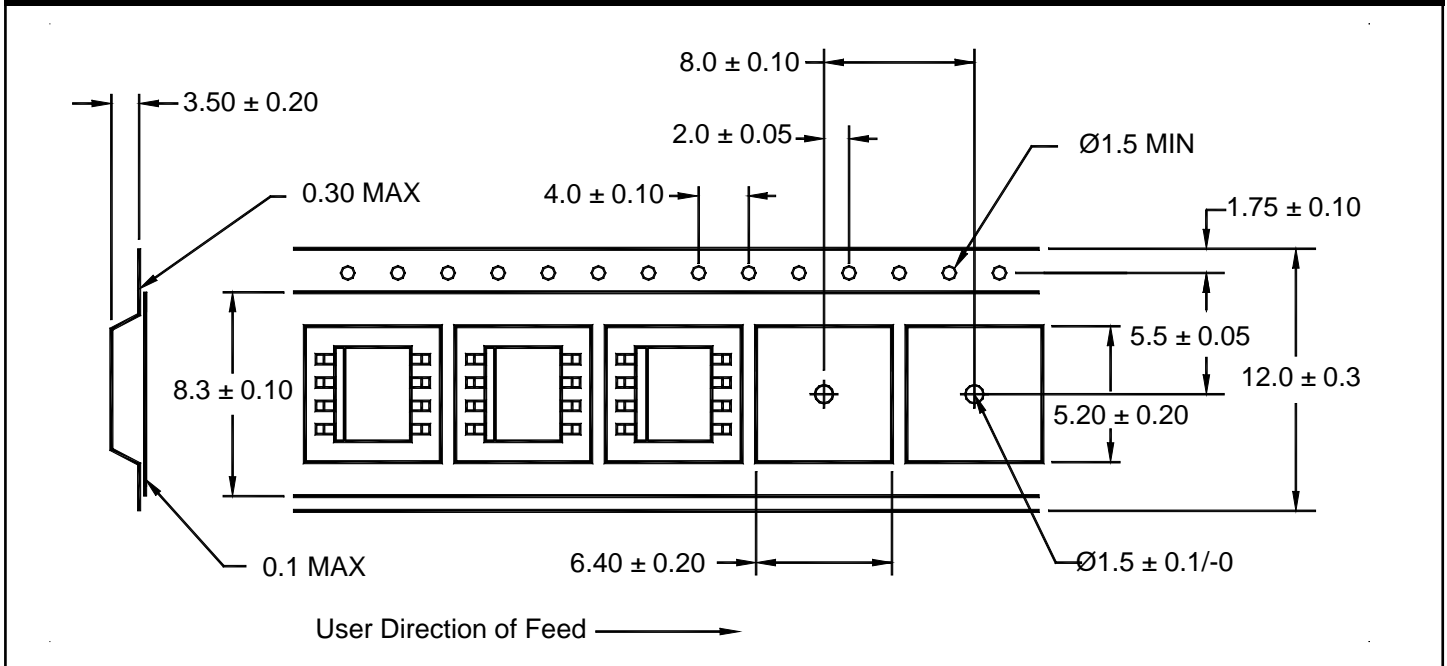
**Package Dimensions (Surface Mount)**



**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)**



**DISCLAIMER**

FAIRCHILD SEMICONDUCTOR RESERVES THE 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 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.