

Rochester Electronics Manufactured Components

Rochester branded components are manufactured using either die/wafers purchased from the original suppliers or Rochester wafers recreated from the original IP. All recreations are done with the approval of the OCM.

Parts are tested using original factory test programs or Rochester developed test solutions to guarantee product meets or exceeds the OCM data sheet.

Quality Overview

- ISO-9001
- AS9120 certification
- Qualified Manufacturers List (QML) MIL-PRF-35835
 - Class Q Military
 - Class V Space Level
- Qualified Suppliers List of Distributors (QSLD)
 - Rochester is a critical supplier to DLA and meets all industry and DLA standards.

Rochester Electronics, LLC is committed to supplying products that satisfy customer expectations for quality and are equal to those originally supplied by industry manufacturers.

The original manufacturer's datasheet accompanying this document reflects the performance and specifications of the Rochester manufactured version of this device. Rochester Electronics guarantees the performance of its semiconductor products to the original OEM specifications. 'Typical' values are for reference purposes only. Certain minimum or maximum ratings may be based on product characterization, design, simulation, or sample testing.



MOCD207M, MOCD208M

Dual Channel Phototransistor Small Outline Surface Mount Optocouplers

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

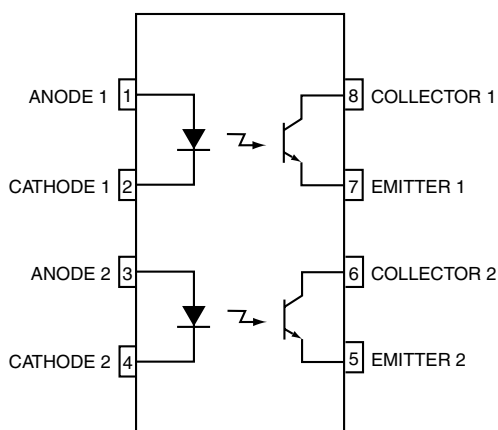
Applications

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

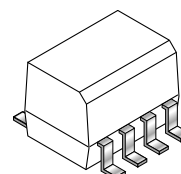
Description

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.

Schematic



Package



Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ Unless otherwise specified)

Symbol	Rating	Value	Unit
EMITTER			
I _F	Forward Current – Continuous	60	mA
I _F (pk)	Forward Current – Peak (PW = 100μs, 120pps)	1.0	A
V _R	Reverse Voltage	6.0	V
P _D	LED Power Dissipation @ T _A = 25°C Derate above 25°C	90 0.8	mW mW/°C
DETECTOR			
V _{CEO}	Collector-Emitter Voltage	70	V
V _{CBO}	Collector-Base Voltage	70	V
V _{ECO}	Emitter-Collector Voltage	7.0	V
I _C	Collector Current-Continuous	150	mA
P _D	Detector Power Dissipation @ T _A = 25°C Derate above 25°C	150 1.76	mW mW/°C
TOTAL DEVICE			
V _{ISO}	Input-Output Isolation Voltage ^(1, 2) (f = 60Hz, 1 min. Duration)	2500	Vac(rms)
P _D	Total Device Power Dissipation @ T _A = 25°C Derate above 25°C	250 2.94	mW mW/°C
T _A	Ambient Operating Temperature Range	-40 to +100	°C
T _{stg}	Storage Temperature Range	-40 to +125	°C
T _L	Lead Soldering Temperature (1/16” from case, 10 sec. duration)	260	°C

Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise specified)⁽³⁾

Symbol	Parameter	Test Conditions	Device	Min.	Typ.*	Max.	Unit
EMITTER							
V_F	Input Forward Voltage	$I_F = 30\text{mA}$	All		1.25	1.55	V
I_R	Reverse Leakage Current	$V_R = 6.0\text{V}$	All		0.001	100	μA
C	Capacitance		All		18		pF
DETECTOR							
I_{CEO}	Collector-Emitter Dark Current	$V_{CE} = 10\text{V}, T_A = 25^\circ\text{C}$	All		1.0	50	nA
I_{CEO}		$V_{CE} = 10\text{V}, T_A = 100^\circ\text{C}$	All		1.0		μA
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	$I_C = 100\mu\text{A}$	All	70	100		V
$V_{(BR)CEO}$	Emitter-Collector Breakdown Voltage	$I_E = 100\mu\text{A}$	All	7.0	10		V
C_{CE}	Collector-Emitter Capacitance	$f = 1.0\text{ MHz}, V_{CE} = 0\text{V}$	All		7.0		pF
COUPLED							
CTR	Current Transfer Ratio, Collector to Emitter ⁽⁴⁾	$I_F = 10\text{mA}, V_{CE} = 5\text{V}$	MOCD207M	100		200	%
			MOCD208M	40		125	
		$I_F = 1\text{mA}, V_{CE} = 5\text{V}$	MOCD207M	34			
			MOCD208M	13			
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 2.0\text{mA}, I_F = 10\text{mA}$	All			0.4	V
t_{on}	Turn-On Time	$I_C = 2.0\text{mA}, V_{CC} = 10\text{V}, R_L = 100\Omega$	All		3.0		μs
t_{off}	Turn-Off Time	$I_C = 2.0\text{mA}, V_{CC} = 10\text{V}, R_L = 100\Omega$	All		2.8		μs
t_r	Rise Time	$I_C = 2.0\text{mA}, V_{CC} = 10\text{V}, R_L = 100\Omega$	All		1.6		μs
t_f	Fall Time	$I_C = 2.0\text{mA}, V_{CC} = 10\text{V}, R_L = 100\Omega$	All		2.2		μs
V_{ISO}	Isolation Surge Voltage ^(1, 2)	$f = 60\text{Hz}, t = 1\text{ min.}, I_{I-O} \leq 2\mu\text{A}$	All	2500			Vac(rms)
R_{ISO}	Isolation Resistance ⁽²⁾	$V_{I-O} = 500\text{V}$	All	10^{11}			Ω
C_{ISO}	Isolation Capacitance ⁽²⁾	$V_{I-O} = 0\text{V}, f = 1\text{MHz}$	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) = $I_C/I_F \times 100\%$.

Typical Performance Curves

Fig. 1 LED Forward Voltage vs. Forward Current

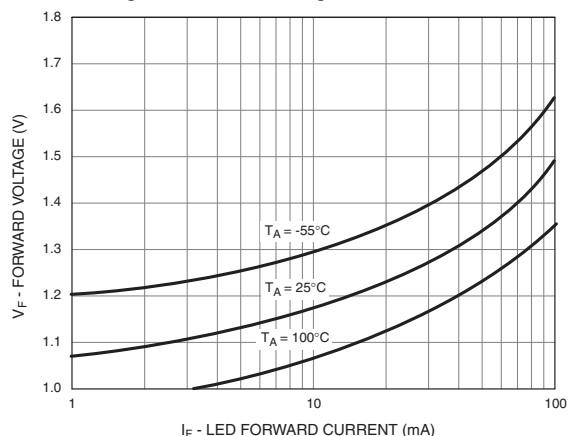


Fig. 2 Output Current vs. Input Current

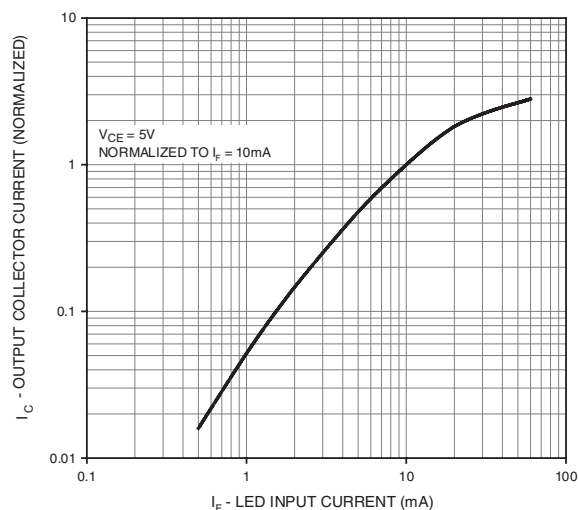


Fig. 3 Output Current vs. Ambient Temperature

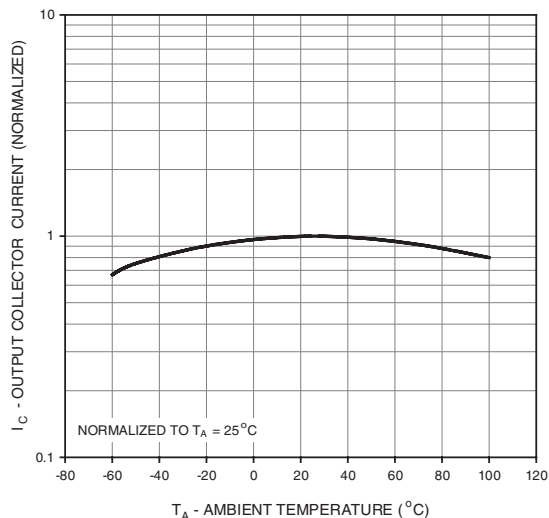


Fig. 4 Output Current vs. Collector - Emitter Voltage

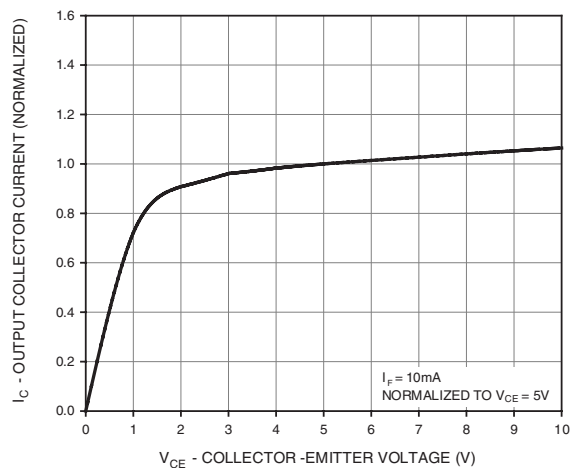
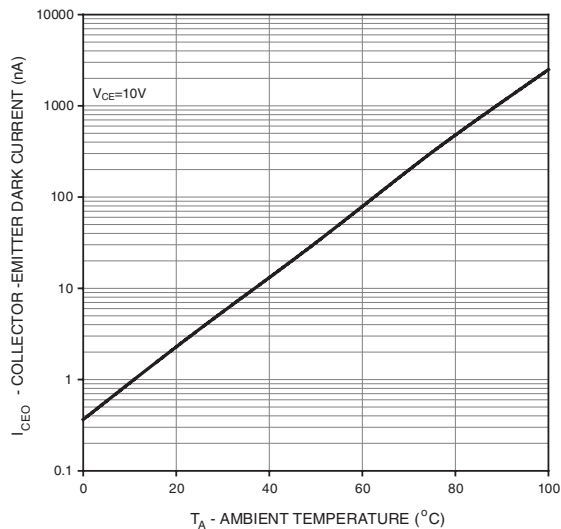
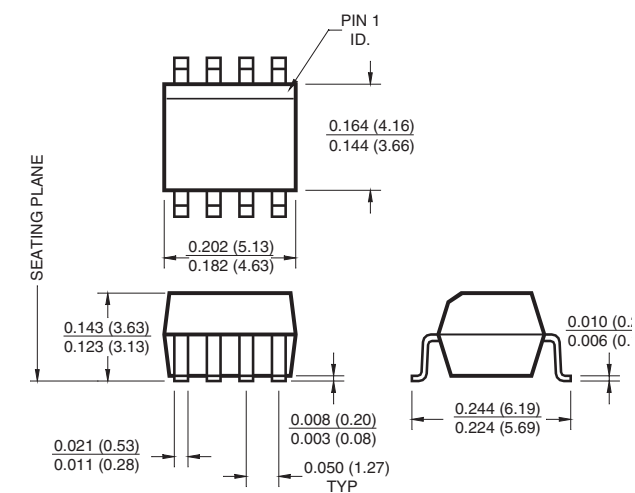


Fig. 5 Dark Current vs. Ambient Temperature



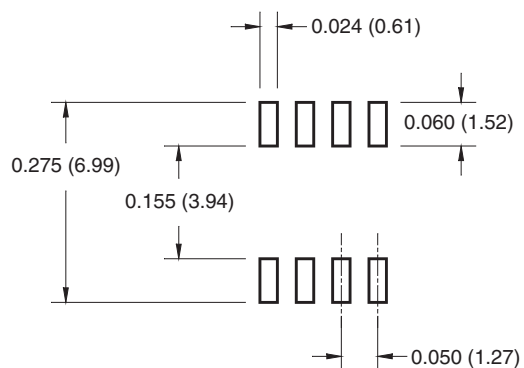
Package Dimensions

Surface Mount



Lead Coplanarity : 0.004 (0.10) MAX

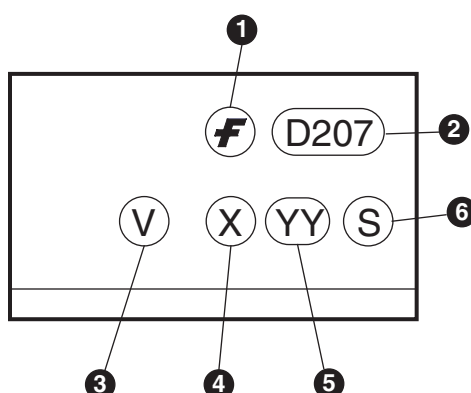
8-Pin Small Outline



Ordering Information

Option	Order Entry Identifier	Description
V	V	VDE Approved
D1	D1	Tape & Reel (500 units per reel), 16mm width carrier tape
D1V	D1V	VDE Approved, Tape & Reel (500 units per reel), 16mm width carrier tape
D2	D2	Tape & Reel (2500 units per reel), 16mm width carrier tape
D2V	D2V	VDE Approved, Tape & Reel (2500 units per reel), 16mm width carrier tape
R1	R1	Tape & Reel (500 units per reel), 12mm width carrier tape
R1V	R1V	VDE Approved, Tape & Reel (500 units per reel), 12mm width carrier tape
R2	R2	Tape & Reel (2500 units per reel), 12mm width carrier tape
R2V	R2V	VDE Approved, Tape & Reel (2500 units per reel), 12mm width carrier tape

Marking Information



Definitions	
1	Fairchild logo
2	Device number
3	VDE mark (Note: Only appears on parts ordered with VDE option – See order entry table)
4	One digit year code, e.g., '3'
5	Two digit work week ranging from '01' to '53'
6	Assembly package code

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PRODUCT STATUS DEFINITIONS

Definition of Terms

Datasheet Identification	Product Status	Definition
Advance Information	Formative or In Design	This datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
Preliminary	First Production	This datasheet contains preliminary data, and supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve design.
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