

Dual Channel Small Outline Optoisolators Transistor Output

These devices consist of two gallium arsenide infrared emitting diodes optically coupled to two monolithic silicon phototransistor detectors, in a surface mountable, small outline, plastic package. They are ideally suited for high density applications and eliminate the need for through-the-board mounting.

- Dual Channel Coupler
- Convenient Plastic SOIC-8 Surface Mountable Package Style
- 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 3000 Vac (rms) Guaranteed
- Meets U.L. Regulatory Requirements, File #E90700, Volume 2

Ordering Information:

- To obtain MOCD207, 208 in tape and reel, add R2 suffix to device numbers as follows:
R2 = 2500 units on 13" reel
- To obtain MOCD207, 208 in quantities of 50 (shipped in sleeves) — no suffix

Marking Information:

- MOCD207 = D207
- MOCD208 = D208

Applications:

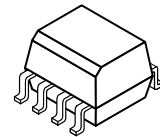
- Feedback Control Circuits
- Interfacing and Coupling Systems of Different Potentials and Impedances
- General Purpose Switching Circuits
- Monitor and Detection Circuits

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

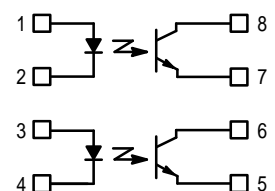
Rating	Symbol	Value	Unit
INPUT LED			
Forward Current — Continuous	I_F	60	mA
Forward Current — Peak (PW = 100 μs , 120 pps)	$I_F(\text{pk})$	1.0	A
Reverse Voltage	V_R	6.0	V
LED Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	90 0.8	mW mW/ $^\circ\text{C}$
OUTPUT TRANSISTOR			
Collector-Emitter 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/ $^\circ\text{C}$

MOCD207 MOCD208

DUAL CHANNEL SMALL OUTLINE OPTOISOLATORS TRANSISTOR OUTPUT



SCHEMATIC



1. ANODE 1
2. CATHODE 1
3. ANODE 2
4. CATHODE 2
5. EMITTER 2
6. COLLECTOR 2
7. EMITTER 1
8. COLLECTOR 1

MAXIMUM RATINGS—continued ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Rating	Symbol	Value	Unit
TOTAL DEVICE			
Input–Output Isolation Voltage ^(1,2) (60 Hz, 1.0 sec. duration)	V_{ISO}	3000	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)	—	260	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)⁽³⁾

Characteristic	Symbol	Min	Typ ⁽³⁾	Max	Unit
INPUT LED					
Forward Voltage ($I_F = 30\text{ mA}$)	V_F	—	1.2	1.55	V
Reverse Leakage Current ($V_R = 6.0\text{ V}$)	I_R	—	0.1	100	μA
Capacitance	C	—	18	—	pF

OUTPUT TRANSISTOR

Collector–Emitter Dark Current ($V_{CE} = 10\text{ V}$, $T_A = 25^\circ\text{C}$) ($V_{CE} = 10\text{ V}$, $T_A = 100^\circ\text{C}$)	I_{CEO1}	—	1.0	50	nA
	I_{CEO2}	—	1.0	—	μA
Collector–Emitter Breakdown Voltage ($I_C = 100\ \mu\text{A}$)	$V_{(BR)CEO}$	70	120	—	V
Emitter–Collector Breakdown Voltage ($I_E = 100\ \mu\text{A}$)	$V_{(BR)ECO}$	7.0	7.8	—	V
Collector–Emitter Capacitance ($f = 1.0\text{ MHz}$, $V_{CE} = 0$)	C_{CE}	—	7.0	—	pF

COUPLED

Output Collector Current ($I_F = 10\text{ mA}$, $V_{CE} = 5\text{ V}$)	MOCD207 MOCD208	I_C (CTR) ⁽⁴⁾	10 (100) 4.0 (40)	15 (150) —	20 (200) 12.5 (125)	mA (%)
Output Collector Current ($I_F = 1\text{ mA}$, $V_{CE} = 5\text{ V}$)	MOCD207 MOCD208	I_C	3.4 1.3	7.0 3.0	— —	mA
Collector–Emitter Saturation Voltage ($I_C = 2.0\text{ mA}$, $I_F = 10\text{ mA}$)		$V_{CE(sat)}$	—	0.15	0.4	V
Turn–On Time ($I_C = 2.0\text{ mA}$, $V_{CC} = 10\text{ V}$, $R_L = 100\ \Omega$)		t_{on}	—	3.0	—	μs
Turn–Off Time ($I_C = 2.0\text{ mA}$, $V_{CC} = 10\text{ V}$, $R_L = 100\ \Omega$)		t_{off}	—	2.8	—	μs
Rise Time ($I_C = 2.0\text{ mA}$, $V_{CC} = 10\text{ V}$, $R_L = 100\ \Omega$)		t_r	—	1.6	—	μs
Fall Time ($I_C = 2.0\text{ mA}$, $V_{CC} = 10\text{ V}$, $R_L = 100\ \Omega$)		t_f	—	2.2	—	μs
Input–Output Isolation Voltage ($f = 60\text{ Hz}$, $t = 1.0\text{ sec}$) ^(1,2)		V_{ISO}	3000	—	—	Vac(rms)
Isolation Resistance ($V_{I-O} = 500\text{ V}$) ⁽²⁾		R_{ISO}	10^{11}	—	—	Ω
Isolation Capacitance ($V_{I-O} = 0$, $f = 1.0\text{ MHz}$) ⁽²⁾		C_{ISO}	—	0.2	—	pF

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 and 7 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 CHARACTERISTICS

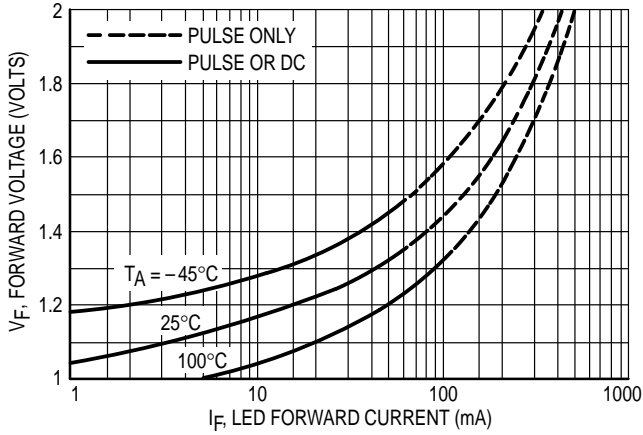


Figure 1. LED Forward Voltage versus Forward Current

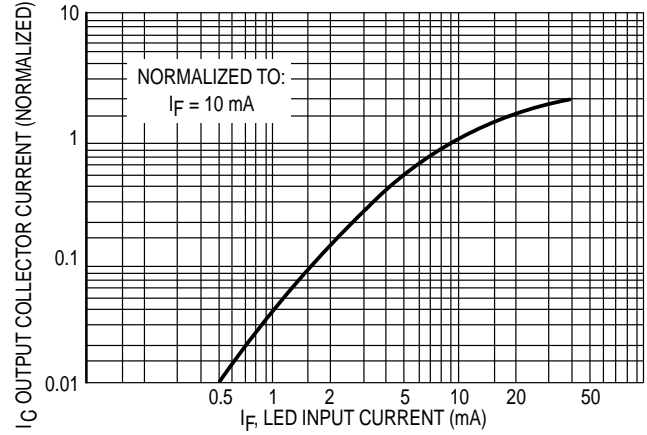


Figure 2. Output Current versus Input Current

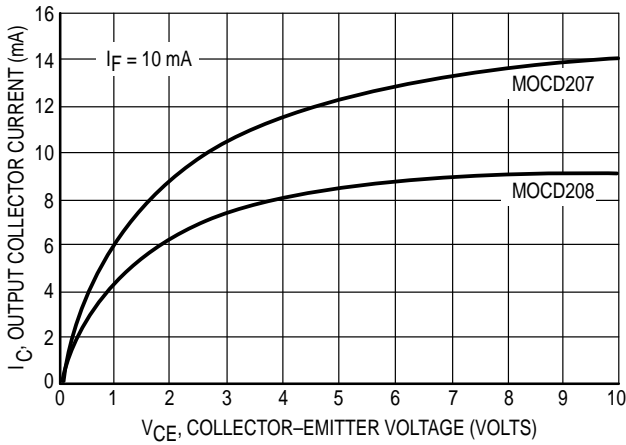


Figure 3. Output Current versus Collector-Emitter Voltage

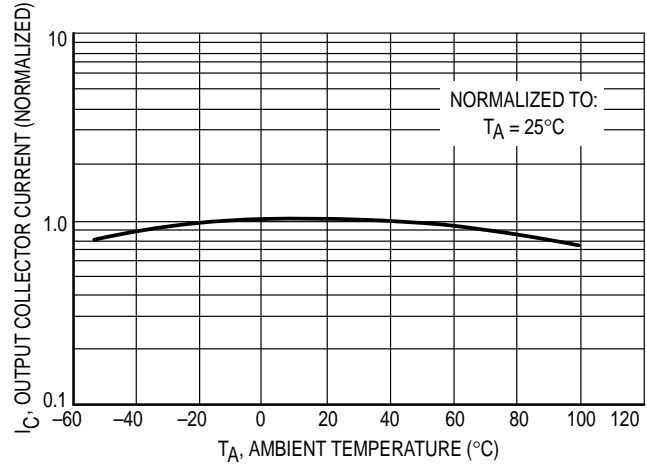


Figure 4. Output Current versus Ambient Temperature

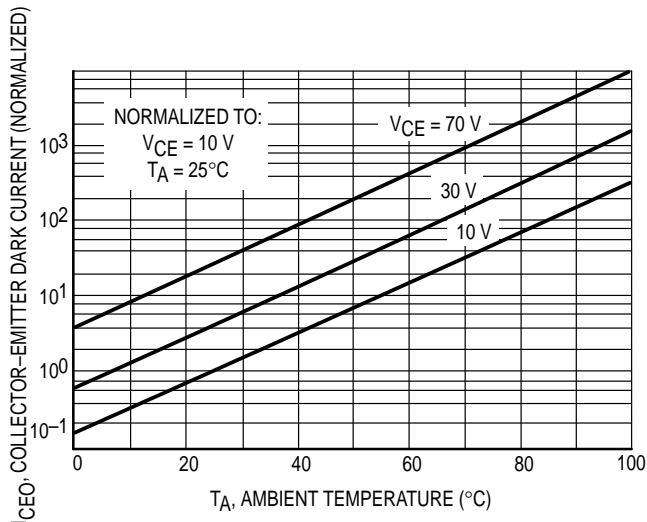


Figure 5. Dark Current versus Ambient Temperature

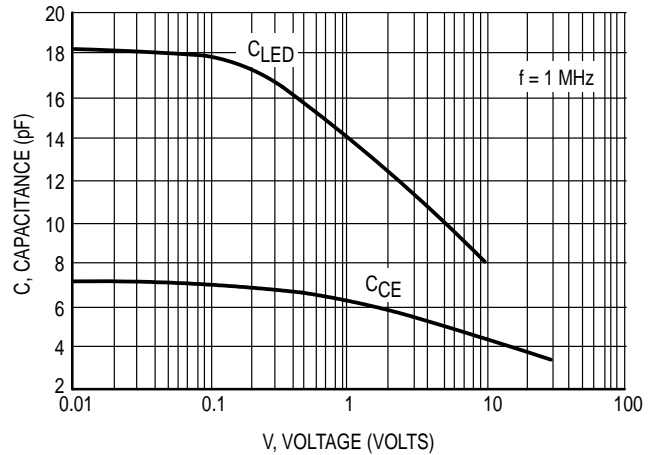
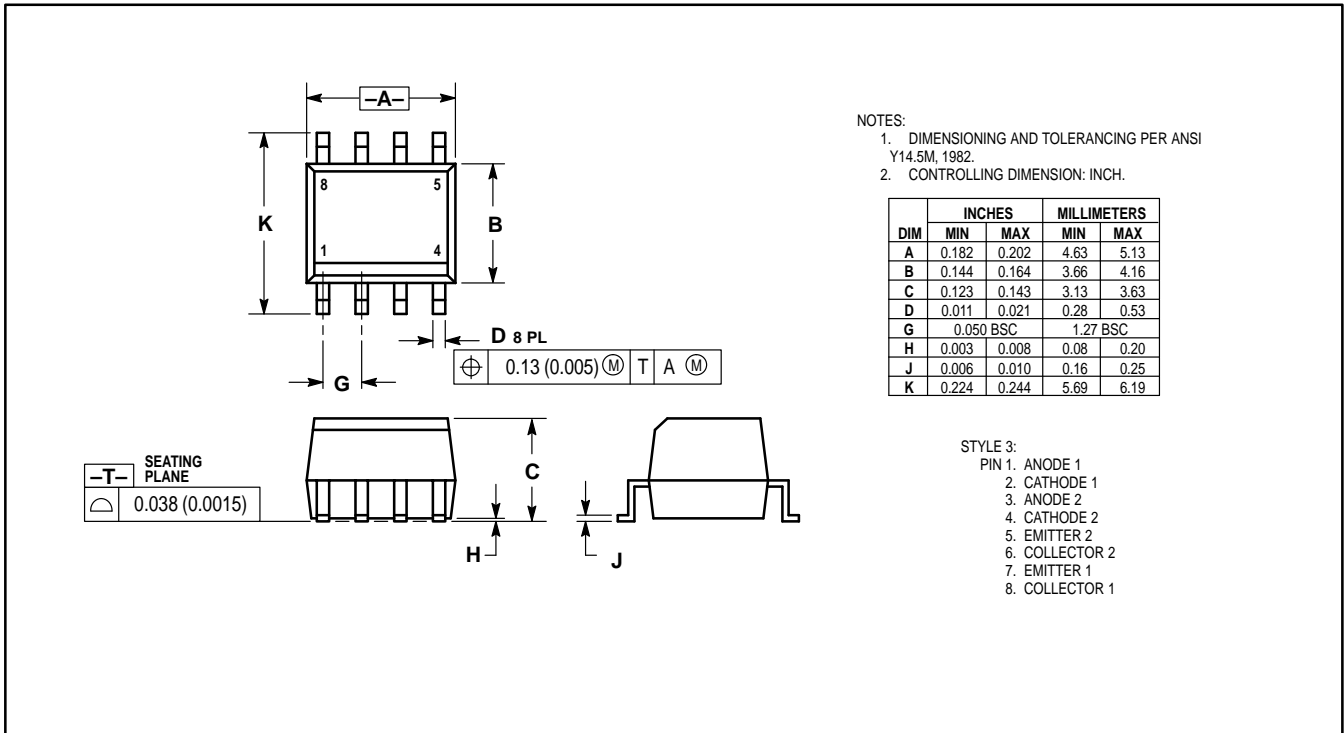


Figure 6. Capacitance versus Voltage

PACKAGE DIMENSIONS



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