FAIRCHILD
SEMICONDUCTOR™

Dual Channel
Small Outline Optoisolators
Transistor Output (Low Input Current)

The MOCD217 device consists of two gallium arsenide infrared emitting diodes optically coupled to two monolithic silicon phototransistor detectors, in a surface mountable, small outline, plastic package. It is ideally suited for high density applications and eliminates the need for through–the–board mounting.

- Dual Channel Coupler
- Convenient Plastic SOIC–8 Surface Mountable Package Style
- Low Input Current (Specified @ 1 mA)
- Minimum $V_{(BR)CEO}$ of 30 Volts Guaranteed
- Standard SOIC–8 Footprint, with 0.050″ Lead Spacing
- Shipped in Tape and Reel, which conforms to EIA Standard RS481A
- 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 MOCD217 in tape and reel, add R2 suffix to device number as follows:
    R2 = 2500 units on 13″ reel
- To obtain MOCD217 in quantities of 50 (shipped in sleeves) — no suffix

Marking Information:

- MOCD217 = D217

MOCD217

**DUAL CHANNEL
SMALL OUTLINE
OPTOISOLATOR
TRANSISTOR OUTPUT**
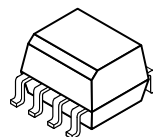
SCHEMATIC
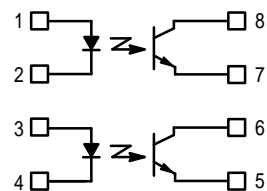
1. ANODE 1
2. CATHODE 1
3. ANODE 2
4. CATHODE 2
5. EMITTER 2
6. COLLECTOR 2
7. EMITTER 1
8. COLLECTOR 1

MAXIMUM RATINGS (T_A = 25°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)	$I_F(pk)$	1.0	A
Reverse Voltage	V_R	6.0	V
LED Power Dissipation @ T_A = 25°C Derate above 25°C	P_D	90 0.8	mW mW/°C
OUTPUT TRANSISTOR			
Collector–Emitter Voltage	V_{CEO}	30	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°C Derate above 25°C	P_D	150 1.76	mW mW/°C

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MAXIMUM RATINGS — continued (T_A = 25°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°C Derate above 25°C	P_D	250 2.94	mW mW/°C
Ambient Operating Temperature Range[3]	T_A	–45 to +100	°C
Storage Temperature Range[3]	T_{stg}	–45 to +125	°C
Lead Soldering Temperature (1/16″ from case, 10 sec. duration)	—	260	°C

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)[4]

Characteristic		Symbol	Min	Typ[4]	Max	Unit
INPUT LED						
Forward Voltage (I_F = 1.0 mA)		V_F	—	1.05	1.3	V
Reverse Leakage Current (V_R = 6.0 V)		I_R	—	0.1	100	μA
Capacitance		C	—	18	—	pF
OUTPUT TRANSISTOR						
Collector–Emitter Dark Current	(V_{CE} = 5.0 V, T_A = 25°C)	$I_{CEO}1$	—	1.0	50	nA
	(V_{CE} = 5.0 V, T_A = 100°C)	$I_{CEO}2$	—	1.0	—	μA
Collector–Emitter Breakdown Voltage (I_C = 100 μA)		$V_{(BR)CEO}$	30	90	—	V
Emitter–Collector Breakdown Voltage (I_E = 100 μA)		$V_{(BR)ECO}$	7.0	7.8	—	V
Collector–Emitter Capacitance (f = 1.0 MHz, V_{CE} = 0)		C_{CE}	—	7.0	—	pF
COUPLED						
Output Collector Current MOCD217 (I_F = 1.0 mA, V_{CE} = 5.0 V)		I_C (CTR)[5]	1.0 (100)	1.3 (130)	—	mA (%)
Collector–Emitter Saturation Voltage (I_C = 100 μA, I_F = 1.0 mA)		$V_{CE(sat)}$	—	0.35	0.4	V
Turn–On Time (I_C = 2.0 mA, V_{CC} = 10 V, R_L = 100 Ω)		t_{on}	—	7.5	—	μs
Turn–Off Time (I_C = 2.0 mA, V_{CC} = 10 V, R_L = 100 Ω)		t_{off}	—	5.7	—	μs
Rise Time (I_C = 2.0 mA, V_{CC} = 10 V, R_L = 100 Ω)		t_r	—	3.2	—	μs
Fall Time (I_C = 2.0 mA, V_{CC} = 10 V, R_L = 100 Ω)		t_f	—	4.7	—	μs
Input–Output Isolation Voltage (f = 60 Hz, t = 1.0 sec.)[1,2]		V_{ISO}	3000	—	—	Vac(rms)
Isolation Resistance (V_{I-O} = 500 V)[2]		R_{ISO}	10^{11}	—	—	Ω
Isolation Capacitance (V_{I-O} = 0, f = 1.0 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, 7 and 8 are common.
3. Refer to Quality and Reliability Section in Opto Data Book for information on test conditions.
4. Always design to the specified minimum/maximum electrical limits (where applicable).
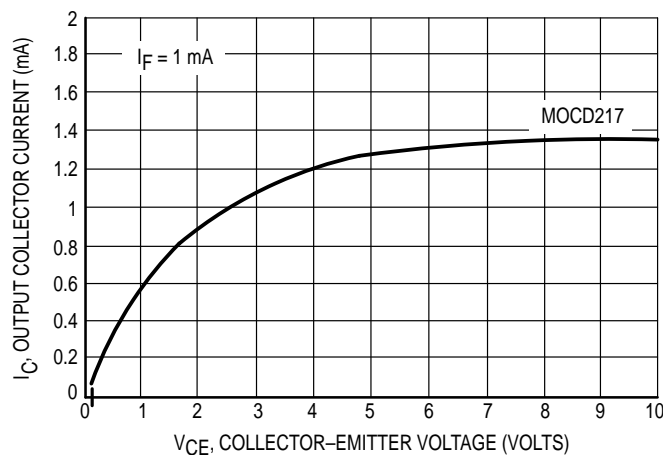5. Current Transfer Ratio (CTR) = I_C/I_F x 100%.
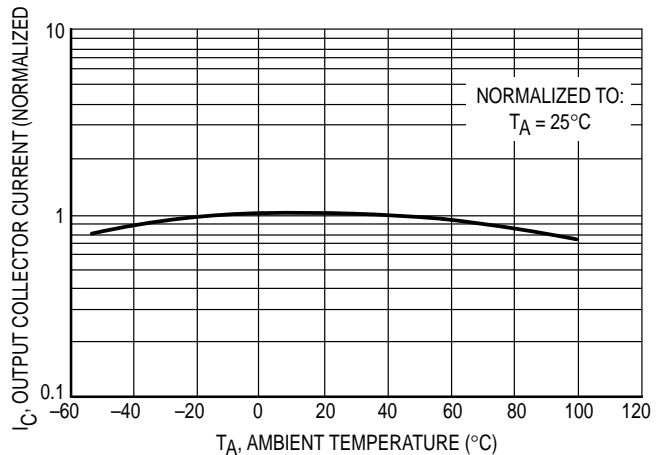
TYPICAL CHARACTERISTICS
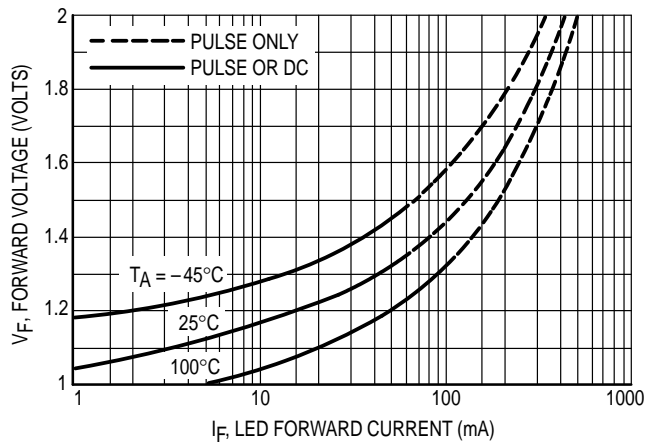
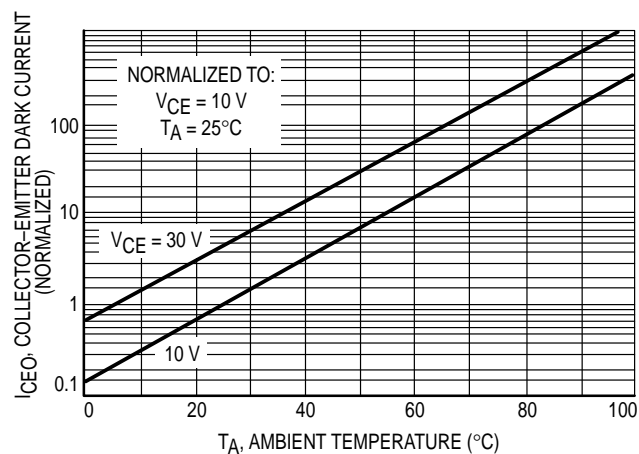**Figure 1. LED Forward Voltage versus Forward Current**
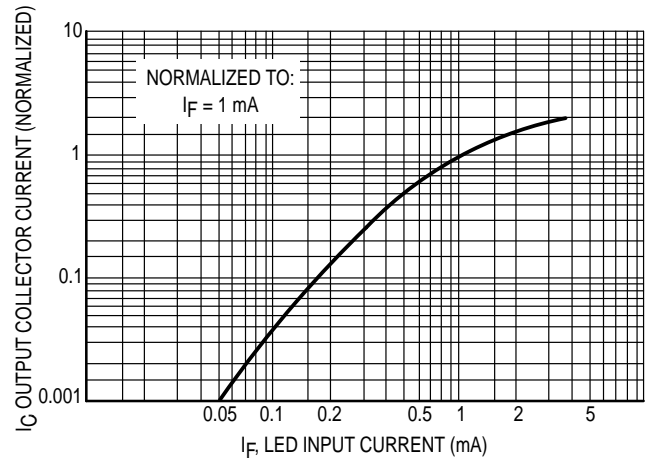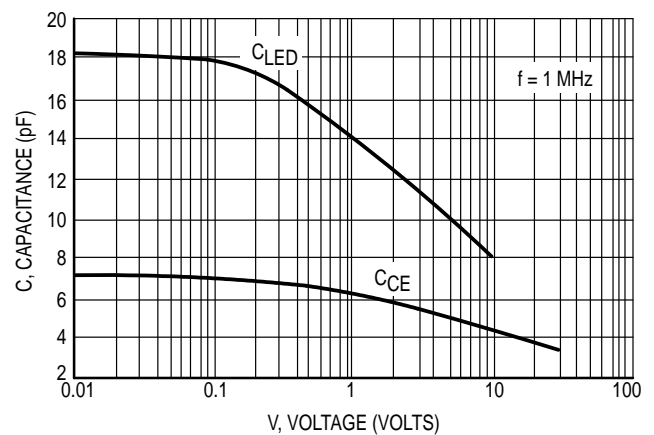
Figure 2. Output Current versus Input Current

**Figure 3. Output Current versus
Collector–Emitter Voltage**

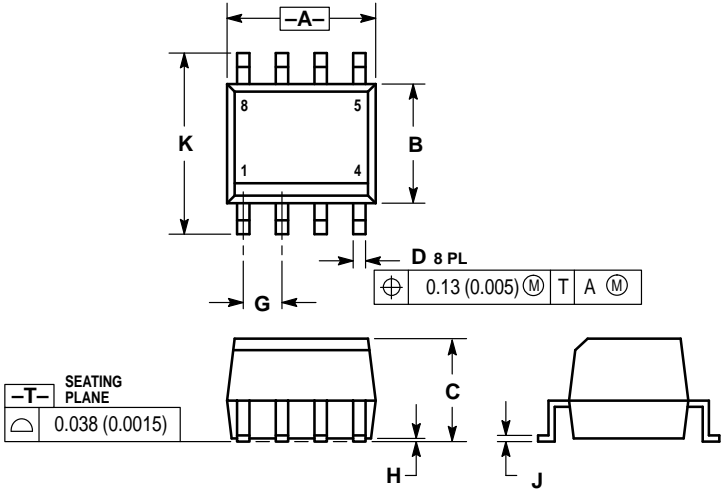**Figure 4. Output Current versus
Ambient Temperature**

Figure 5. Dark Current versus Ambient Temperature

Figure 6. Capacitance versus Voltage

PACKAGE DIMENSIONS

NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.182	0.202	4.63	5.13
B	0.144	0.164	3.66	4.16
C	0.123	0.143	3.13	3.63
D	0.011	0.021	0.28	0.53
G	0.050 BSC		1.27 BSC	
H	0.003	0.008	0.08	0.20
J	0.006	0.010	0.16	0.25
K	0.224	0.244	5.69	6.19

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

0.13 (0.005) Ⓜ T A Ⓜ

D 8 PL

SEATING PLANE
−T−
0.038 (0.0015)

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instructions for use provided in the labeling, can be
reasonably expected to result in a significant injury of the
user.

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reasonably expected to cause the failure of the life support
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MOCD217-M
SO8 Dual Channel Low Input Current Phototransistor Coupler

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General description

The MOCD217 device consists 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
- Low input current (specified @ 1 mA)
- Minimum $V_{(BR)CEO}$ of 30 volts guaranteed
- Standard SOIC-8 footprint, with a 0.050-inch lead spacing
- Shipped in tape and reel, which conforms to EIA standard RS481A
- Compatible with dual wave, vapor phase and IR reflow soldering
- High input - Output isolation of 3000 VAC (RMS) guaranteed
- Underwriters Laboratory (UL) recognized - File #E90700, Volume 2

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Design tools

Ordering information

The following options can be ordered with this part:

Option	Order Entry Identifier	Description
R1	R1	Surface-Mount Lead Bend Tape and Reel (500-pc reel)
R2	R2	Surface-Mount Lead Bend Tape and Reel (2500-pc reel)

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Product status/pricing/packaging

Product	Product status	Pricing*	Package type	Leads	Packing method
MOCD217-M	Full Production	$0.422	SOIC	8	RAIL
MOCD217R1-M	Full Production	$0.431	SOIC	8	TAPE REEL
MOCD217R2-M	Full Production	$0.431	SOIC	8	TAPE REEL

* 1,000 piece Budgetary Pricing

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Safety agency certificates

Cetificate	Agency	
136616 (161 K)	VDE	VDE Pruf-und Zertifizierungsinstitut
E90700, Vol. 2 (254 K)	UL	Underwriters Laboratories Inc.

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4N29A-M replaced by 4N29	4N30-M replaced by 4N30	4N31-M replaced by 4N31
4N32-M replaced by 4N32	4N33-M replaced by 4N33	4N35-M
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MOC213-M	MOC215-M	MOC216-M
MOC217-M	MOC223-M	MOC256-M
MOC3010-M	MOC3011-M	MOC3012-M
MOC3020-M	MOC3021-M	MOC3022-M
MOC3023-M	MOC3031-M	MOC3032-M
MOC3033-M	MOC3041-M	MOC3042-M
MOC3043-M	MOC3051-M	MOC3052-M
MOC3061-M	MOC3062-M	MOC3063-M
MOC3081-M	MOC3081-M	MOC3083-M
MOC3162-M	MOC3163-M	MOC5007-M
MOC5008-M	MOC5009-M	MOC8030-M replaced by MOC8030

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