



Is Now Part of



ON Semiconductor®

To learn more about ON Semiconductor, please visit our website at
www.onsemi.com

Please note: As part of the Fairchild Semiconductor integration, some of the Fairchild orderable part numbers will need to change in order to meet ON Semiconductor's system requirements. Since the ON Semiconductor product management systems do not have the ability to manage part nomenclature that utilizes an underscore (_), the underscore (_) in the Fairchild part numbers will be changed to a dash (-). This document may contain device numbers with an underscore (_). Please check the ON Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.onsemi.com. Please email any questions regarding the system integration to Fairchild_questions@onsemi.com.

ON Semiconductor and the ON Semiconductor logo are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of ON Semiconductor's product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using ON Semiconductor products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by ON Semiconductor. "Typical" parameters which may be provided in ON Semiconductor data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. ON Semiconductor does not convey any license under its patent rights nor the rights of others. ON Semiconductor products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use ON Semiconductor products for any such unintended or unauthorized application, Buyer shall indemnify and hold ON Semiconductor and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that ON Semiconductor was negligent regarding the design or manufacture of the part. ON Semiconductor is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

FODM217 Series

Single Channel, DC Sensing Input, Phototransistor Optocoupler In Half-Pitch Mini-Flat 4-Pin Package

The FODM217 Series single channel, DC sensing input, optocoupler consists of one gallium arsenide (GaAs) infrared light emitting diode optically coupled to one phototransistor, in a compact, half-pitch, mini-flat, 4-pin package. The input-output isolation voltage, V_{ISO} , is rated at 3,750 VAC_{RMS}.

Features

- Current Transfer Ratio Ranges from 80 to 600% at $I_F = 5$ mA, $V_{CE} = 5$ V, $T_A = 25^\circ\text{C}$
 - FODM217A - 80 to 160%
 - FODM217B - 130 to 260%
 - FODM217C - 200 to 400%
 - FODM217D - 300 to 600%
- Safety and Regulatory Approvals:
 - UL1577, 3750 VAC_{RMS} for 1 min
 - DIN EN/IEC60747-5-5, 565 V Peak Working Insulation Voltage
- Applicable to Infrared Ray Reflow, 260°C

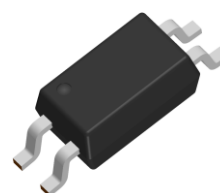
Typical Applications

- Primarily Suited for DC-DC Converters
- For Ground Loop Isolation, Signal to Noise Isolation
- Communications – Adapters, Chargers
- Consumer – Appliances, Set Top Boxes
- Industrial – Power Supplies, Motor Control, Programmable Logic Control



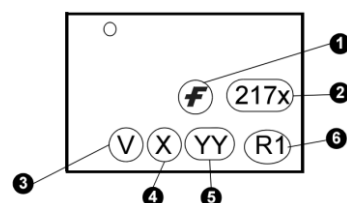
ON Semiconductor®

www.onsemi.com



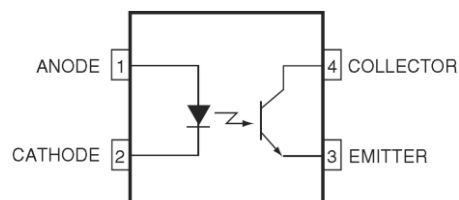
SOP 4 PINS

MARKING DIAGRAM



1. F = Corporate Logo
2. 217x = Device Number
3. V = DIN EN/IEC60747-5-5 Option
4. X = One-Digit Year Code
5. YY = Digit Work Week
6. R1 = Assembly Package Code

PIN CONNECTIONS



ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 9 of this data sheet.

FODM217 Series

SAFETY AND INSULATIONS RATING

As per DIN EN/IEC 60747-5-5, this optocoupler is suitable for "safe electrical insulation" only within the safety limit data. Compliance with the safety ratings shall be ensured by means of protective circuits.

Parameter		Characteristics
Installation Classifications per DIN VDE 0110/1.89 Table 1, For Rated Mains Voltage	< 150 V _{RMS}	I–IV
	< 300 V _{RMS}	I–III
Climatic Classification		55/110/21
Pollution Degree (DIN VDE 0110/1.89)		2
Comparative Tracking Index		175

Symbol	Parameter	Value	Unit
V _{PR}	Input-to-Output Test Voltage, Method A, V _{IORM} × 1.6 = V _{PR} , Type and Sample Test with t _m = 10 s, Partial Discharge < 5 pC	904	V _{peak}
	Input-to-Output Test Voltage, Method B, V _{IORM} × 1.875 = V _{PR} , 100% Production Test with t _m = 1 s, Partial Discharge < 5 pC	1060	V _{peak}
V _{IORM}	Maximum Working Insulation Voltage	565	V _{peak}
V _{IOTM}	Highest Allowable Over-Voltage	4,000	V _{peak}
	External Creepage	≥ 5	mm
	External Clearance	≥ 5	mm
DTI	Distance Through Insulation (Insulation Thickness)	≥ 0.4	mm
T _S	Case Temperature (Note 1)	150	°C
I _{S,INPUT}	Input Current (Note 1)	200	mA
P _{S,OUTPUT}	Output Power (Note 1)	300	mW
R _{IO}	Insulation Resistance at T _S , V _{IO} = 500 V (Note 1)	> 10 ⁹	Ω

1. Safety limit values – maximum values allowed in the event of a failure.

FODM217 Series

ABSOLUTE MAXIMUM RATINGS (Note 2)

$T_A = 25^\circ\text{C}$ unless otherwise specified.

Symbol	Parameter	Value	Units
T_{STG}	Storage Temperature	-55 to +150	$^\circ\text{C}$
T_{OPR}	Operating Temperature	-55 to +110	$^\circ\text{C}$
T_J	Junction Temperature	-55 to +125	$^\circ\text{C}$
T_{SOL}	Lead Solder Temperature (Refer to Reflow Temperature Profile)	260 for 10 sec	$^\circ\text{C}$
Emitter			
$I_{F(\text{average})}$	Continuous Forward Current	50	mA
$I_{F(\text{peak})}$	Peak Forward Current (1 μs pulse, 300 pps)	1	A
V_R	Reverse Input Voltage	6	V
PD_{LED}	Power Dissipation (Note 3)	70	mW
Detector			
$I_{C(\text{average})}$	Continuous Collector Current	50	mA
V_{CEO}	Collector-Emitter Voltage	80	V
V_{ECO}	Emitter-Collector Voltage	7	V
PD_C	Collector Power Dissipation (Note 3)	150	mW

2. Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.
3. Functional operation under these conditions is not implied. Permanent damage may occur if the device is subjected to conditions outside these ratings.

FODM217 Series

ELECTRICAL CHARACTERISTICS

 $T_A = 25^\circ\text{C}$ unless otherwise specified

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
Emitter						
V_F	Forward Voltage	$I_F = 20\text{ mA}$		1.2	1.4	V
I_R	Reverse Current	$V_R = 4\text{ V}$			10	μA
C_T	Terminal Capacitance	$V = 0\text{ V}, f = 1\text{ kHz}$		30	250	pF
Detector						
BV_{CEO}	Collector-Emitter Breakdown Voltage	$I_C = 0.1\text{ mA}, I_F = 0\text{ mA}$	80			V
BV_{ECO}	Emitter-Collector Breakdown Voltage	$I_E = 10\text{ }\mu\text{A}, I_F = 0\text{ mA}$	7			V
I_{CEO}	Collector Dark Current	$V_{CE} = 50\text{ V}, I_F = 0\text{ mA}$			100	nA

TRANSFER CHARACTERISTICS

 $T_A = 25^\circ\text{C}$ unless otherwise specified

Symbol	Parameter	Device	Conditions	Min.	Typ.	Max.	Units
CTR_{CE}	Current Transfer Ratio (collector-emitter)	FODM217A	$I_F = 5\text{ mA}, V_{CE} = 5\text{ V}$	80		160	%
		FODM217B		130		260	
		FODM217C		200		400	
		FODM217D		300		600	
I_C	Collector Current	All	$I_F = 5\text{ mA}, V_{CE} = 5\text{ V}$	4		30	mA
$CTR_{(SAT)}$	Saturated Current Transfer Ratio	All	$I_F = 8\text{ mA}, V_{CE} = 0.4\text{ V}$		60		%
$I_{C(SAT)}$	Collector Current	All	$I_F = 8\text{ mA}, V_{CE} = 0.4\text{ V}$		4.8		mA
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage	All	$I_F = 8\text{ mA}, I_C = 2.4\text{ mA}$			0.4	V

SWITCHING CHARACTERISTICS

 $T_A = 25^\circ\text{C}$ unless otherwise specified

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
t_{ON}	Turn On Time	$I_C = 2\text{ mA}, V_{CE} = 10\text{ V}, R_L = 100\text{ }\Omega$		3		μs
t_{OFF}	Turn Off Time	$I_C = 2\text{ mA}, V_{CE} = 10\text{ V}, R_L = 100\text{ }\Omega$		3		μs
t_R	Output Rise Time (10% -90%)	$I_C = 2\text{ mA}, V_{CE} = 10\text{ V}, R_L = 100\text{ }\Omega$		2		μs
t_F	Output Fall Time (90% -10%)	$I_C = 2\text{ mA}, V_{CE} = 10\text{ V}, R_L = 100\text{ }\Omega$		3		μs

ISOLATION CHARACTERISTICS

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
V_{ISO}	Input-Output Isolation Voltage	Freq = 60 Hz, $t = 1.0\text{ min}, I_{I-O} \leq 10\text{ }\mu\text{A}$ (Note 4,5)	3,750			V_{ACRMS}
R_{ISO}	Isolation Resistance	$V_{I-O} = 500\text{ V}$ (Note 4)	5×10^{10}			Ω
C_{ISO}	Isolation Capacitance	Frequency = 1 MHz		0.6	1.0	pF

4. Device is considered a two terminal device: Pin 1 and 2 are shorted together and Pins 3 and 4 are shorted together.

5. 3,750 V_{ACRMS} for 1 minute duration is equivalent to 4,500 V_{ACRMS} for 1 second duration.

FODM217 Series

TYPICAL CHARACTERISTICS

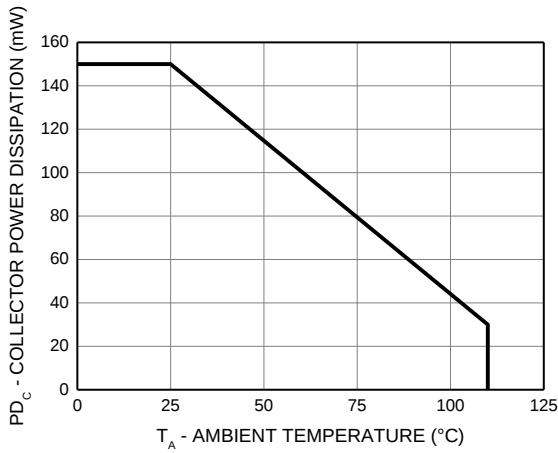


Figure 1. Collector Power Dissipation vs. Ambient Temperature

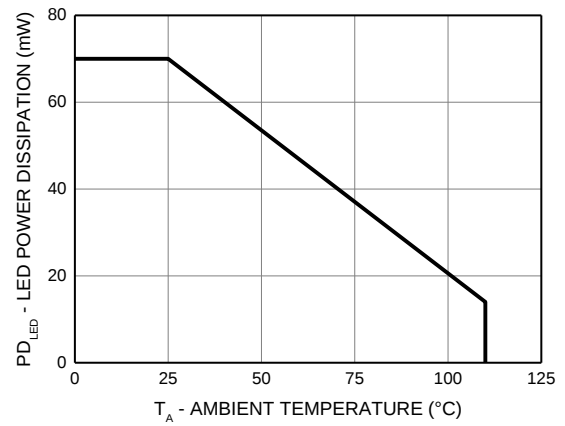


Figure 2. LED Power Dissipation vs. Ambient Temperature

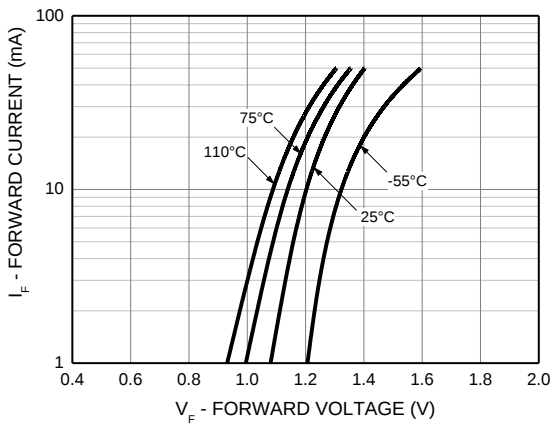


Figure 3. Forward Current vs. Forward Voltage

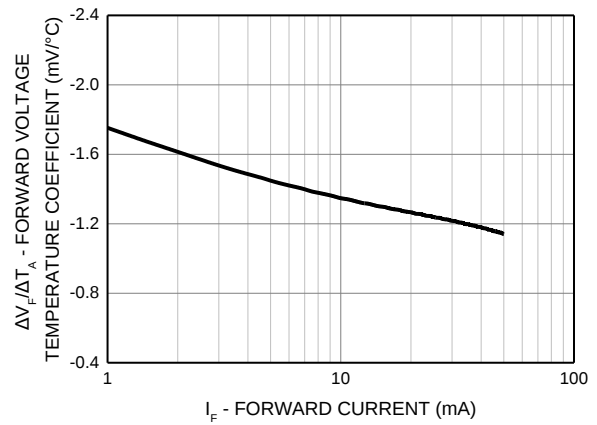


Figure 4. Forward Voltage Temperature Coefficient vs. Forward Current

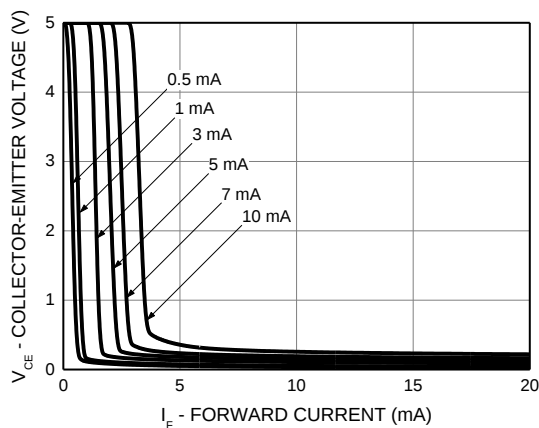


Figure 5. Collector Emitter Voltage vs. Forward Current

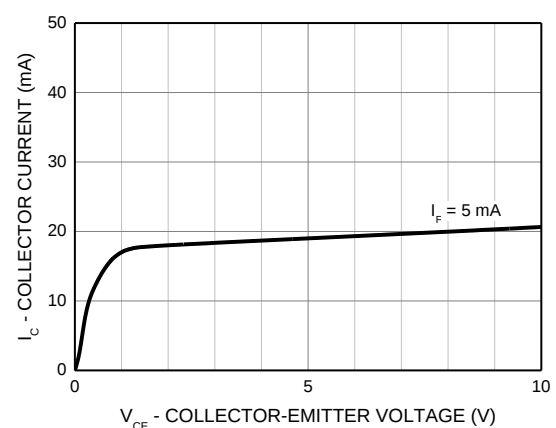


Figure 6. Collector Current vs. Collector-Emitter Voltage

FODM217 Series

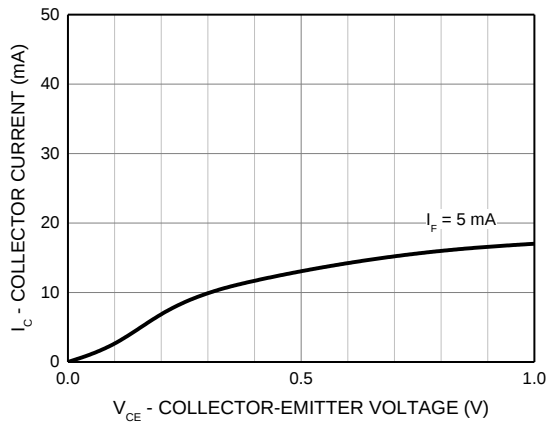


Figure 7. Collector Current vs. Small Collector-Emitter Voltage

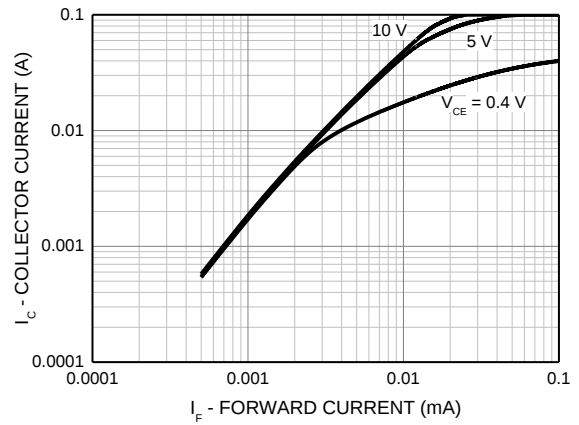


Figure 8. Collector Current vs. Forward Current

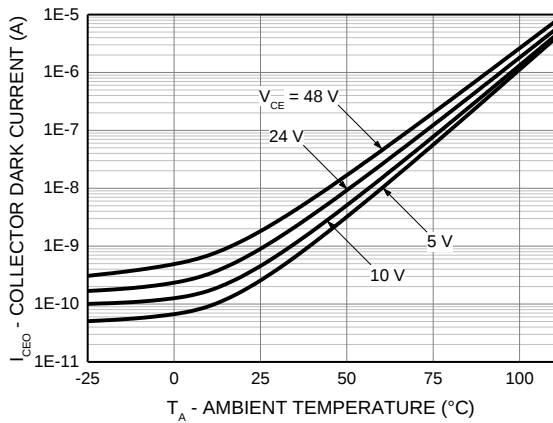


Figure 9. Collector Dark Current vs. Ambient Temperature

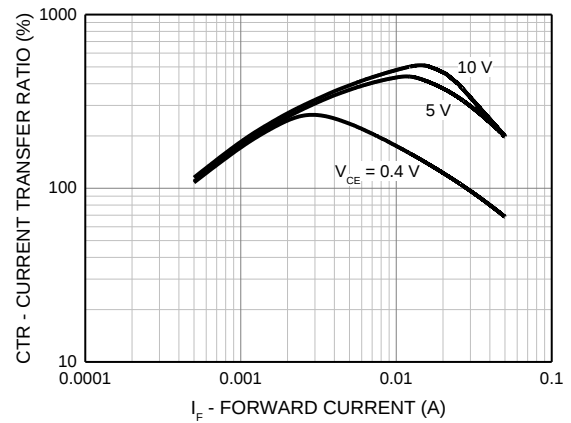


Figure 10. Current Transfer Ratio vs. Forward Current

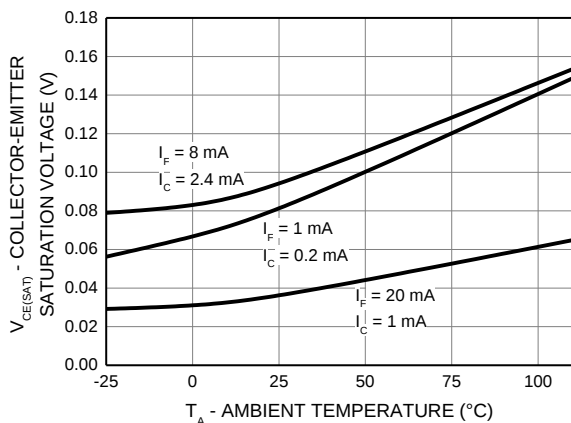


Figure 11. Collector-Emitter Saturation vs. Ambient Temperature

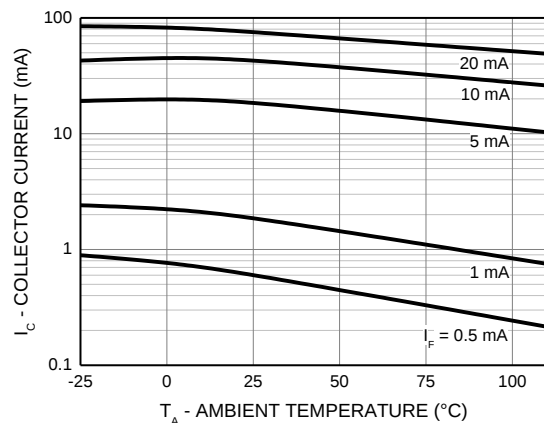


Figure 12. Collector Current vs. Ambient Temperature

FODM217 Series

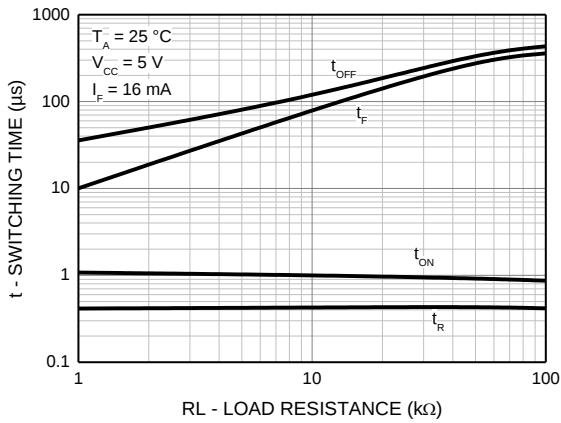


Figure 13. Switching Time vs. Load Resistance

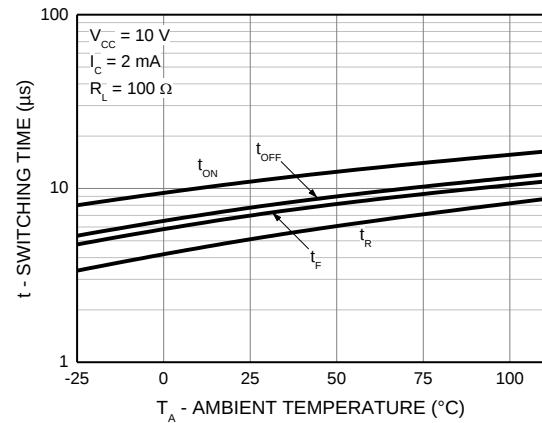


Figure 14. Switching Time vs. Ambient Temperature

TEST CIRCUIT

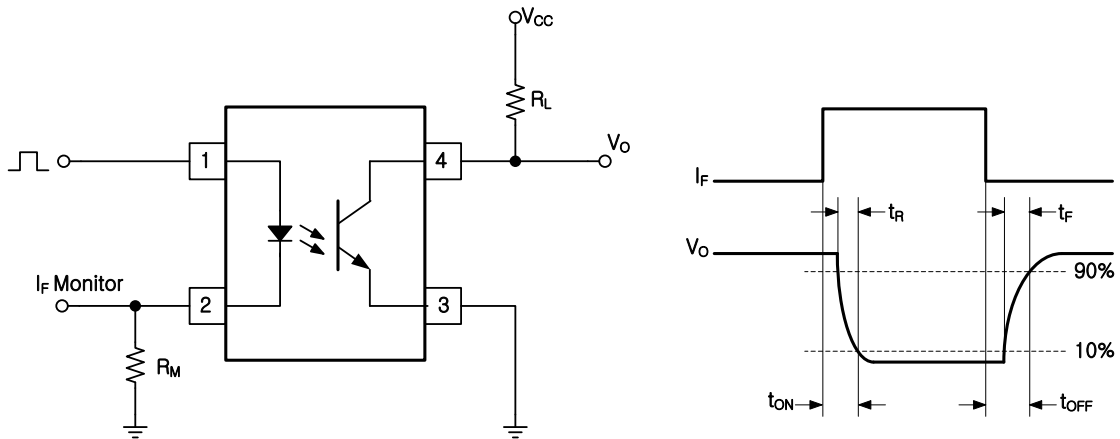
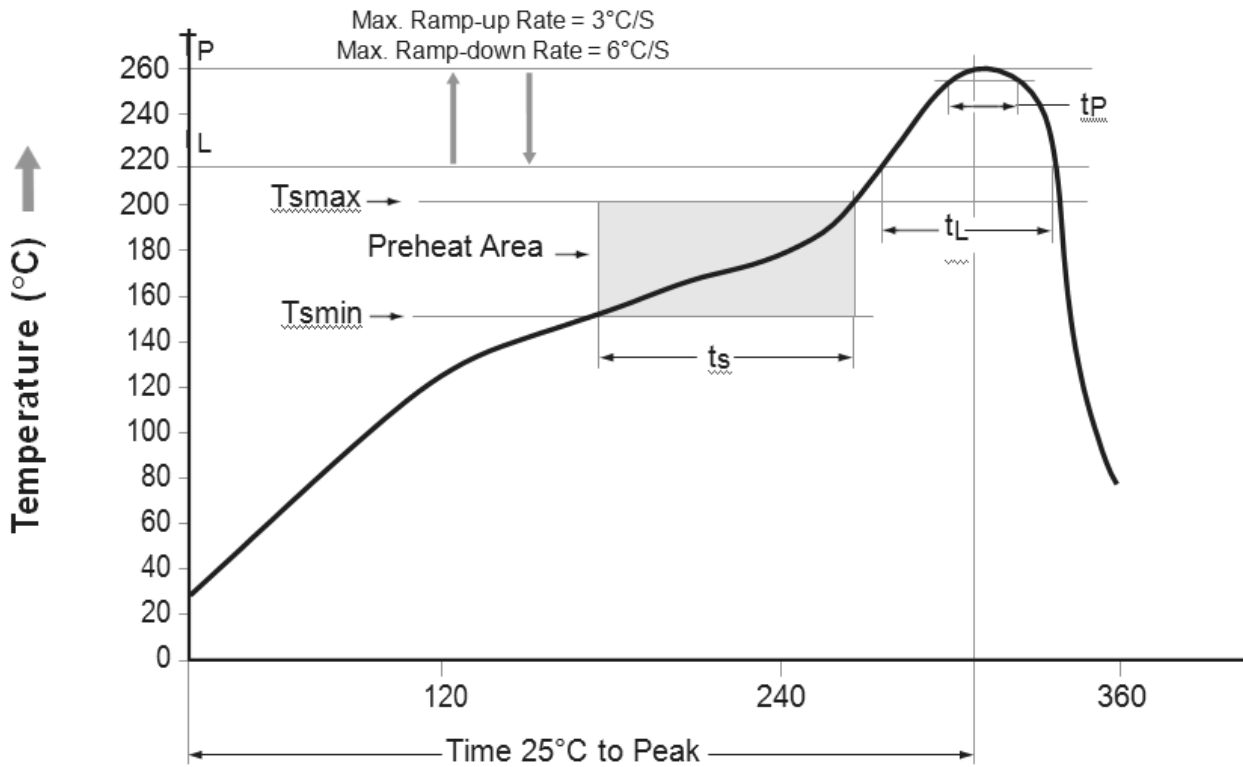


Figure 15. Test Circuit for Switching Time

FODM217 Series

REFLOW PROFILE



Profile Feature	Pb-Free Assembly Profile
Temperature Min. (T_{smin})	150°C
Temperature Max. (T_{smax})	200°C
Time (t_S) from (T_{smin} to T_{smax})	60–120 seconds
Ramp-up Rate (t_L to t_P)	3°C/second max.
Liquidous Temperature (T_L)	217°C
Time (t_L) Maintained Above (T_L)	60–150 seconds
Peak Body Package Temperature	260°C +0°C / -5°C
Time (t_P) within 5°C of 260°C	30 seconds
Ramp-down Rate (T_P to T_L)	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.

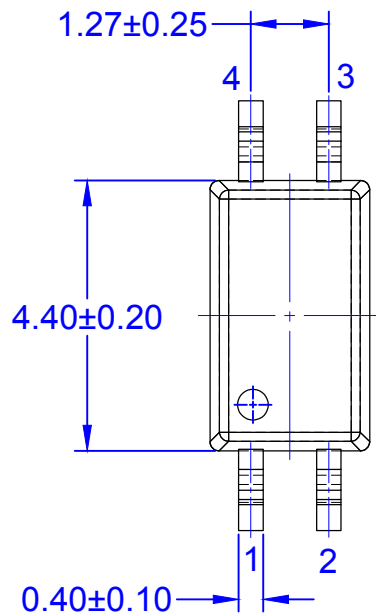
Figure 36. Reflow Profile

FODM217 Series

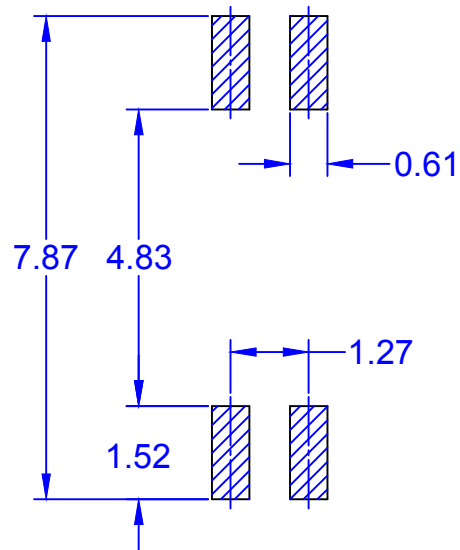
ORDERING INFORMATION (Note 6)

Part Number	Package	Packing Method
FODM217A	SOP 4-Pin	Tube (100 units)
FODM217AR2	SOP 4-Pin	Tape and Reel (3000 units)
FODM217AV	SOP 4-Pin, DIN EN/IEC60747-5-5 Option (pending approval)	Tube (100 units)
FODM217AR2V	SOP 4-Pin, DIN EN/IEC60747-5-5 Option (pending approval)	Tape and Reel (3000 units)

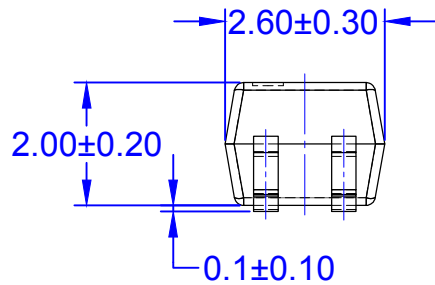
6. The product orderable part number system listed in this table also applies to the FODM217B, FODM217C, and FODM217D products.



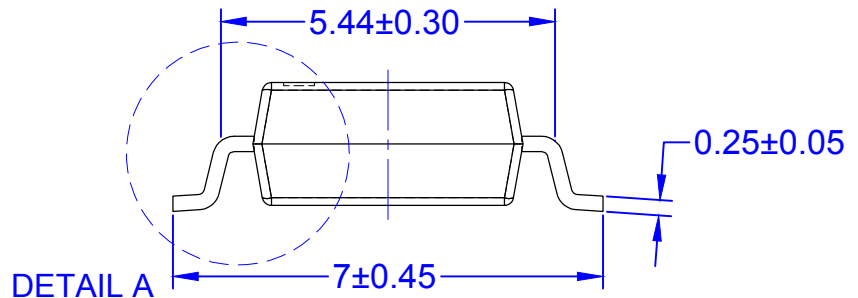
TOP VIEW



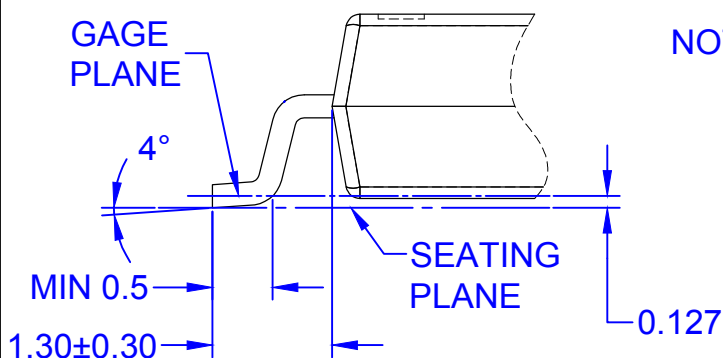
LAND PATTERN RECOMMENDATION



FRONT VIEW



SIDE VIEW



DETAIL A

NOTES:

- A. NO INDUSTRY STANDARD APPLIES TO THIS PACKAGE
- B. ALL DIMENSIONS ARE IN MILLIMETERS
- C. DIMENSIONS DO NOT INCLUDE MOLD FLASH OR BURRS
- D. DRAWING FILENAME: MKT-MFP04DrevA

ON Semiconductor



ON Semiconductor and  are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of ON Semiconductor's product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using ON Semiconductor products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by ON Semiconductor. "Typical" parameters which may be provided in ON Semiconductor data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. ON Semiconductor does not convey any license under its patent rights nor the rights of others. ON Semiconductor products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use ON Semiconductor products for any such unintended or unauthorized application, Buyer shall indemnify and hold ON Semiconductor and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that ON Semiconductor was negligent regarding the design or manufacture of the part. ON Semiconductor is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:

Literature Distribution Center for ON Semiconductor
19521 E. 32nd Pkwy, Aurora, Colorado 80011 USA
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free
USA/Canada
Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910
Japan Customer Focus Center
Phone: 81-3-5817-1050

ON Semiconductor Website: www.onsemi.com

Order Literature: <http://www.onsemi.com/orderlit>

For additional information, please contact your local Sales Representative

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[ON Semiconductor:](#)

[FODM217BR2](#) [FODM217B](#)

Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru

moschip.ru_4

moschip.ru_6

moschip.ru_9