

# MMFT2406T1

## Power MOSFET

### 700 mA, 240 V, N-Channel, SOT-223

This Power MOSFET is designed for high speed, low loss power switching applications such as switching regulators, converters, solenoid and relay drivers. The device is housed in the SOT-223 package which is designed for medium power surface mount applications.

- Silicon Gate for Fast Switching Speeds
- High Voltage – 240 Vdc
- Low Drive Requirement
- The SOT-223 Package can be soldered using wave or reflow. The formed leads absorb thermal stress during soldering, eliminating the possibility of damage to the die.
- Pb-Free Packages are Available

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

Rating	Symbol	Value	Unit
Drain-to-Source Voltage	$V_{DS}$	240	Vdc
Gate-to-Source Voltage – Continuous	$V_{GS}$	$\pm 20$	Vdc
Drain Current	$I_D$	700	mAdc
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ (Note 1) Derate above $25^\circ\text{C}$	$P_D$	1.5 12	W mW/ $^\circ\text{C}$
Operating and Storage Temperature Range	$T_J, T_{stg}$	$-65$ to $150$	$^\circ\text{C}$

#### THERMAL CHARACTERISTICS

Rating	Symbol	Value	Unit
Thermal Resistance – Junction-to-Ambient (surface mounted) (Note 1)	$R_{\theta JA}$	83.3	$^\circ\text{C/W}$
Lead Temperature for Soldering Purposes, 1/16" from case Time in Solder Bath	$T_L$	260 10	$^\circ\text{C}$ Sec

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

1. Device mounted on a glass epoxy printed circuit board 1.575 in x 1.575 in x 0.059 in; mounting pad for the collector lead min. 0.93 sq in.

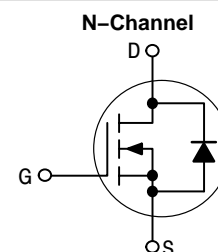


ON Semiconductor®

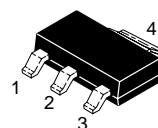
<http://onsemi.com>

700 mA, 240 V

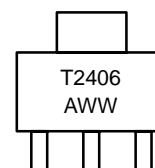
$R_{DS(on)} = 6.0 \Omega$



#### MARKING DIAGRAM

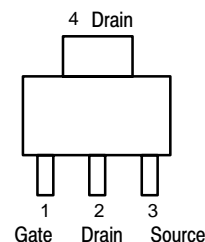


TO-223  
CASE 318E  
STYLE 3



A = Assembly Location  
WW = Work Week

#### PIN ASSIGNMENT



#### ORDERING INFORMATION

Device	Package	Shipping†
MMFT2406T1	SOT-223	1000 Tape & Reel
MMFT2406T1G	SOT-223 (Pb-Free)	1000 Tape & Reel
MMFT2406T3	SOT-223	4000 Tape & Reel
MMFT2406T3G	SOT-223 (Pb-Free)	2500 Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

# MMFT2406T1

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

Characteristics	Symbol	Min	Max	Unit
-----------------	--------	-----	-----	------

### OFF CHARACTERISTICS

Drain-to-Source Breakdown Voltage (V <sub>GS</sub> = 0, I <sub>D</sub> = 100 μA)	V <sub>(BR)DSS</sub>	240	–	Vdc
Zero Gate Voltage Drain Current (V <sub>DS</sub> = 120 V, V <sub>GS</sub> = 0)	I <sub>DSS</sub>	–	10	μAdc
Gate-Body Leakage Current (V <sub>GS</sub> = 15 Vdc, V <sub>DS</sub> = 0)	I <sub>GSS</sub>	–	100	nAdc

### ON CHARACTERISTICS (Note 2)

Gate Threshold Voltage (V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 1.0 mAdc)	V <sub>GS(th)</sub>	0.8	2.0	Vdc
Static Drain-to-Source On-Resistance (V <sub>GS</sub> = 2.5 Vdc, I <sub>D</sub> = 0.1 Adc) (V <sub>GS</sub> = 10 Vdc, I <sub>D</sub> = 0.5 Adc)	R <sub>DS(on)</sub>	– –	10 6.0	Ω
Drain-to-Source On-Voltage (V <sub>GS</sub> = 10 V, I <sub>D</sub> = 0.5 A)	V <sub>DS(on)</sub>	–	3.0	Vdc
Forward Transconductance (V <sub>DS</sub> = 6.0 V, I <sub>D</sub> = 0.5 A)	g <sub>FS</sub>	300	–	mmhos

### DYNAMIC CHARACTERISTICS

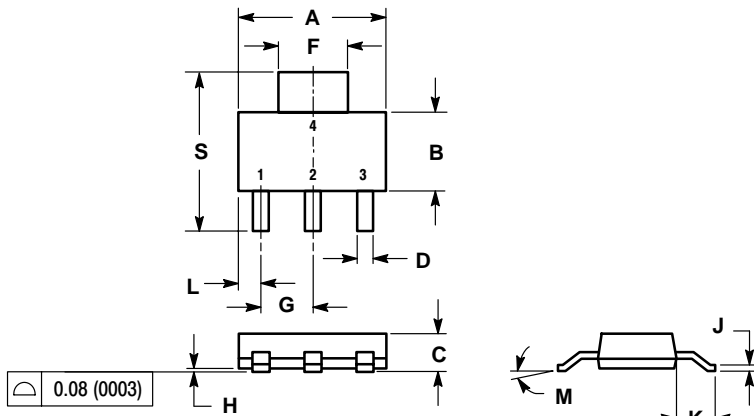
Input Capacitance	(V <sub>DS</sub> = 25 V, V <sub>GS</sub> = 0, f = 1.0 MHz)	C <sub>iss</sub>	–	125	pF
Output Capacitance		C <sub>oss</sub>	–	50	
Transfer Capacitance		C <sub>rss</sub>	–	20	

2. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

# MMFT2406T1

## PACKAGE DIMENSIONS

SOT-223 (TO-261)  
CASE 318E-04  
ISSUE K

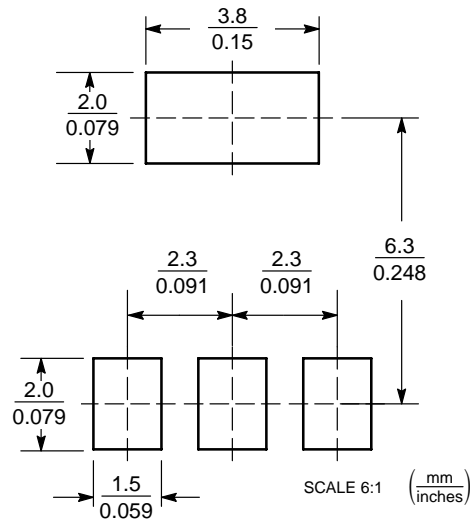


- NOTES:  
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.  
2. CONTROLLING DIMENSION: INCH.


DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.249	0.263	6.30	6.70
B	0.130	0.145	3.30	3.70
C	0.060	0.068	1.50	1.75
D	0.024	0.035	0.60	0.89
F	0.115	0.126	2.90	3.20
G	0.087	0.094	2.20	2.40
H	0.0008	0.0040	0.020	0.100
J	0.009	0.014	0.24	0.35
K	0.060	0.078	1.50	2.00
L	0.033	0.041	0.85	1.05
M	0°	10°	0°	10°
S	0.264	0.287	6.70	7.30

STYLE 3:  
PIN 1. GATE  
2. DRAIN  
3. SOURCE  
4. DRAIN

## SOLDERING FOOTPRINT\*



\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

**ON Semiconductor** and  are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC 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. "Typical" parameters which may be provided in SCILLC 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. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC 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 SCILLC was negligent regarding the design or manufacture of the part. SCILLC 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  
P.O. Box 5163, Denver, Colorado 80217 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](mailto:orderlit@onsemi.com)

**N. American Technical Support:** 800-282-9855 Toll Free  
USA/Canada

**Japan:** ON Semiconductor, Japan Customer Focus Center  
2-9-1 Kamimeguro, Meguro-ku, Tokyo, Japan 153-0051  
**Phone:** 81-3-5773-3850

**ON Semiconductor Website:** <http://onsemi.com>

**Order Literature:** <http://www.onsemi.com/litorder>

For additional information, please contact your  
local Sales Representative.