

Common Drain N-Channel MOSFET MEM2316M6G Series

Description:

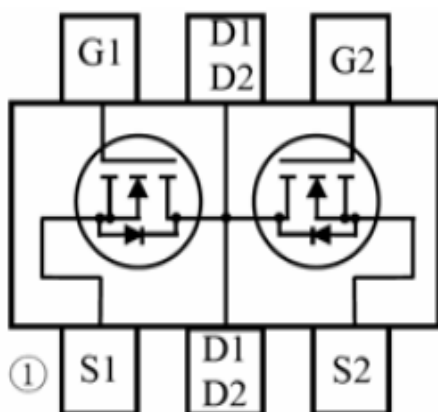
MEM2316M6G Series Dual N-channel enhancement mode field-effect transistor, produced with high cell density DMOS trench technology, which is especially used to minimize on-state resistance.

This device particularly suits low voltage applications, and low power dissipation.

Feature:

- 20V/6A
 $R_{DS(ON)} = 22m\Omega @ V_{GS}=4.5V, I_D=6A$
 $R_{DS(ON)} = 23m\Omega @ V_{GS}=3.85V, I_D=5A$
 $R_{DS(ON)} = 31m\Omega @ V_{GS}=2.5V, I_D=4A$
- High Density Cell Design For Ultra Low On-Resistance
- Surface mount package: SOT-23-6

Pin Configuration:



Typical Application:

- Battery management
- Power management
- Portable equipment
- Low power DC to DC converter.
- Load switch
- LCD adapter

Absolute Maximum Ratings:

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DSS}	20V	V
Gate-Source Voltage	V_{GSS}	± 12	V
Drain Current	I_D	6	A
Total Power Dissipation	P_d	0.5	W
Operating Temperature Range	T_{Opr}	150	$^{\circ}C$
Storage Temperature Range	T_{stg}	-65/150	$^{\circ}C$

Electrical Characteristics:

MEM2316M6G

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250uA	20	22		V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250uA	0.5	0.72	1	V
Gate-Body Leakage	I _{GSS}	V _{DS} =0V, V _{GS} =12V		5	100	nA
		V _{DS} =0V, V _{GS} =-12V		-9	-100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =16V V _{GS} =0V		2.5	1000	nA
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =4.5V,I _D =6A		22	23	mΩ
		V _{GS} =3.85V,I _D =5A		23	25	mΩ
		V _{GS} =2.5V,I _D =4A		31	35	mΩ
Forward Transconductance	g _{FS}	V _{DS} = 5V,I _D = 4.5A		10		S
Drain-Source Diode Forward Current	I _S				1.7	A
Source-drain (diode forward) voltage	V _{SD}	V _{GS} =0V,I _D =1.25A		0.8	1.0	V
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = 8 V, V _{GS} = 0 V, f = 1 MHz		600		pF
Output Capacitance	C _{oss}			330		
Reverse Transfer Capacitance	C _{rss}			140		
Switching Characteristics						
Turn-On Delay Time	td(on)	V _{DD} = 10 V, R _L = 10 Ω I _D =1 A, V _{GEN} = 4.5 V, R _g = 6 Ω		8	20	ns
Rise Time	tr			10	25	
Turn-Off Delay Time	td(off)			35	70	
Fall-Time	tf			30	60	
Total Gate Charge	Qg	V _{DS} = 10 V, V _{GS} = 4.5 V, I _D = 6A		10	15	nC
Gate-Source Charge	Qgs			2.3		
Gate-Drain Charge	Qgd			2.9		

Typical Performance Characteristics:

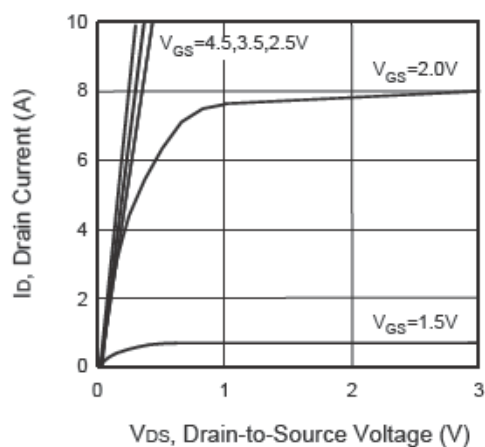


Figure 1. Output Characteristics

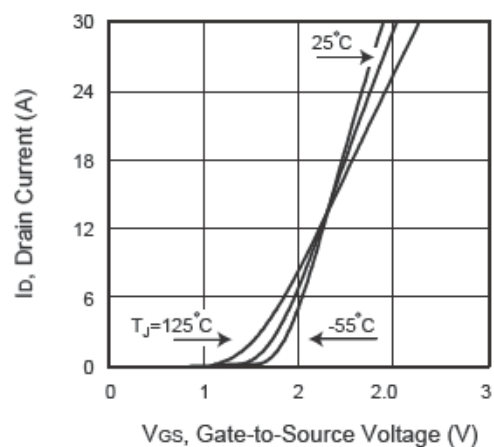


Figure 2. Transfer Characteristics

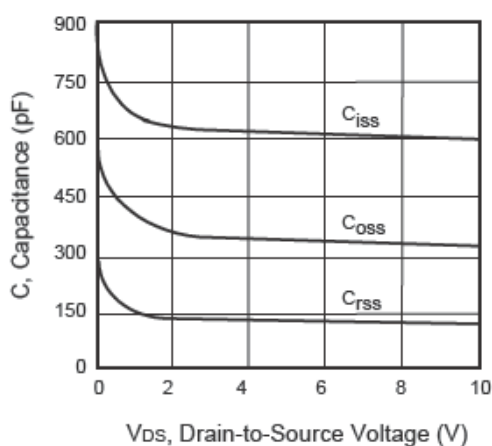


Figure 3. Capacitance

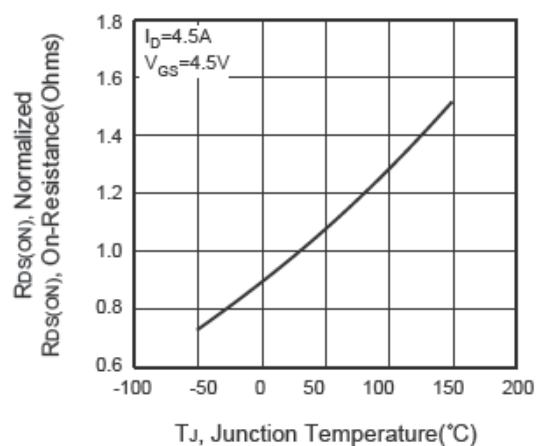


Figure 4. On-Resistance Variation with Temperature

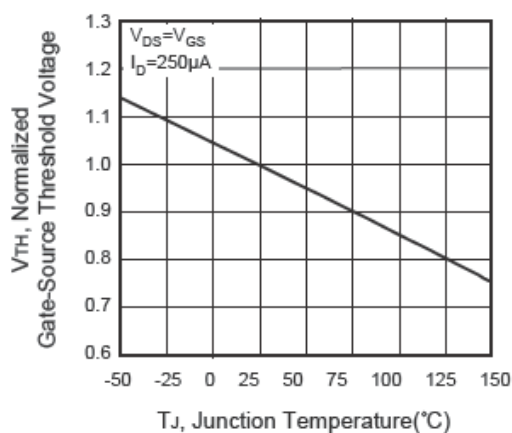


Figure 5. Gate Threshold Variation with Temperature

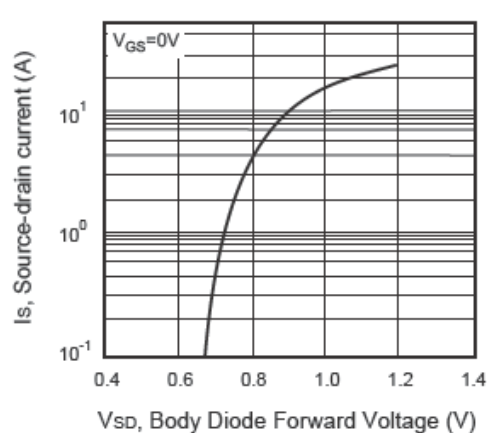


Figure 6. Body Diode Forward Voltage Variation with Source Current

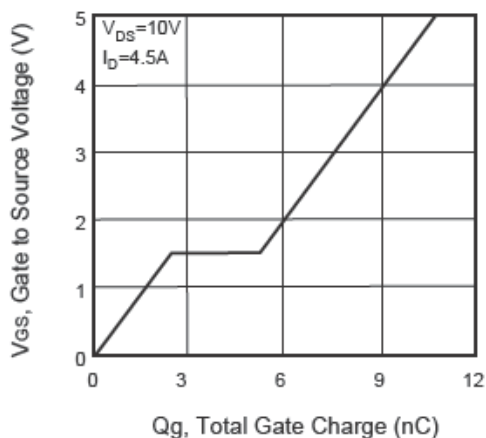


Figure 7. Gate Charge

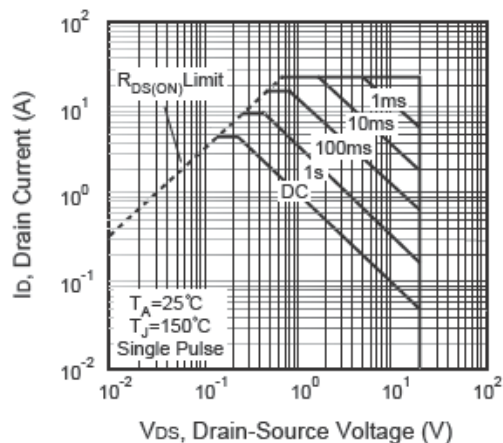


Figure 8. Maximum Safe Operating Area

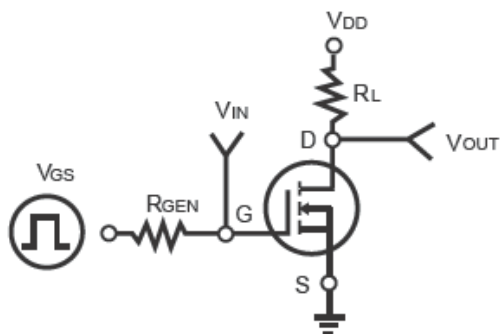


Figure 9. Switching Test Circuit

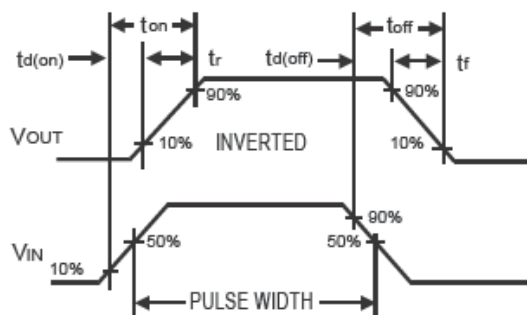


Figure 10. Switching Waveforms

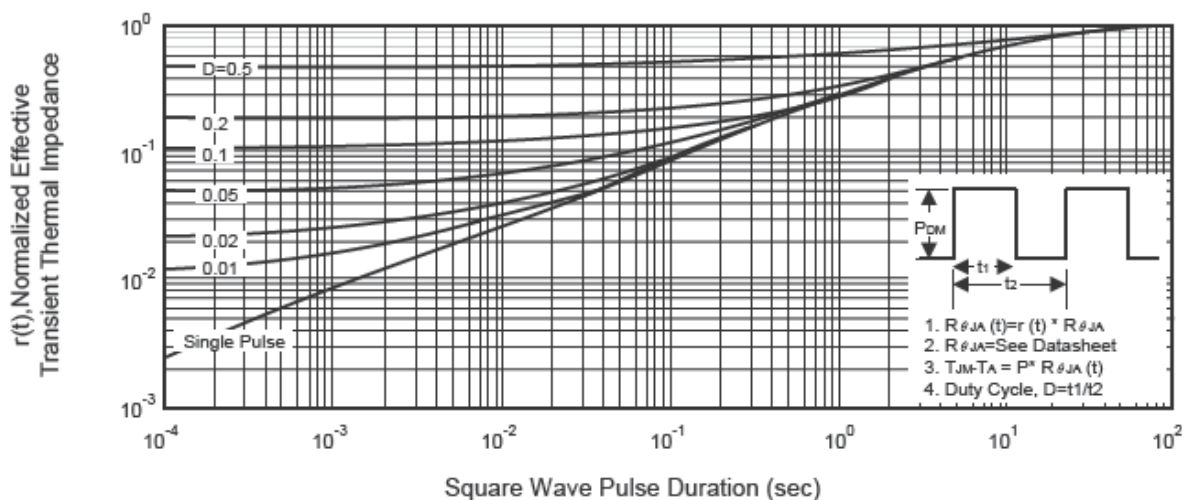
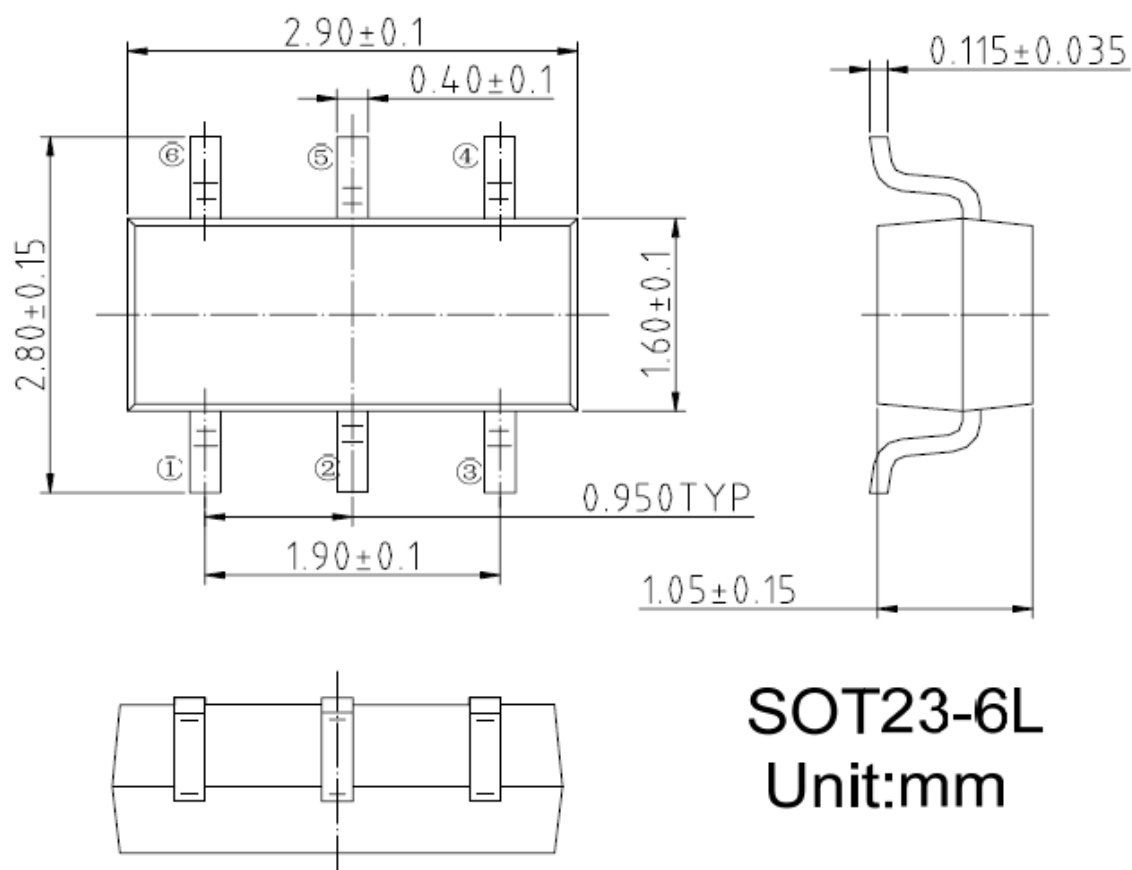


Figure 11. Normalized Thermal Transient Impedance Curve

Package Information:



- The information described herein is subject to change without notice.
- Nanjing Micro One Electronics Inc is not responsible for any problems caused by circuits or diagrams described herein whose related industrial properties, patents, or other rights belong to third parties. The application circuit examples explain typical applications of the products, and do not guarantee the success of any specific mass-production design.
- Use of the information described herein for other purposes and/or reproduction or copying without the express permission of Nanjing Micro One Electronics Inc is strictly prohibited.
- The products described herein cannot be used as part of any device or equipment affecting the human body, such as exercise equipment, medical equipment, security systems, gas equipment, or any apparatus installed in airplanes and other vehicles, without prior written permission of Nanjing Micro One Electronics Inc.
- Although Nanjing Micro One Electronics Inc exerts the greatest possible effort to ensure high quality and reliability, the failure or malfunction of semiconductor products may occur. The user of these products should therefore give thorough consideration to safety design, including redundancy, fire-prevention measures, and malfunction prevention, to prevent any accidents, fires, or community damage that may ensue.