

## Dual N-Channel MOSFET MEM2318 Series

### Description:

#### MEM2318FG Series Dual N-channel

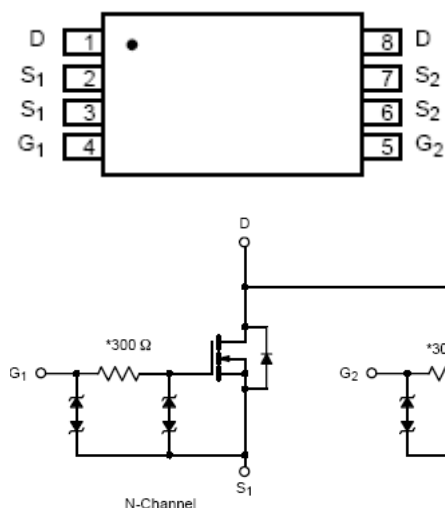
enhancement mode field-effect transistor, produced with high cell density DMOS trench technology, which is especially used to minimize on-state resistance.

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

### Feature:

- 20V/6A  
 $R_{DS(ON)} = 18m\Omega @ V_{GS} = 4.5V, I_D = 6A$   
 $R_{DS(ON)} = 19m\Omega @ V_{GS} = 3.85V, I_D = 5A$
- High Density Cell Design For Ultra Low On-Resistance
- Surface mount package: SOP8
- ESD Protected: 3000 V

### 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	$P_d$	2	W
Operating Temperature Range	$T_{Opr}$	150	°C
Storage Temperature Range	$T_{stg}$	-65/150	°C

## Electrical Characteristics:

### MEM2318

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	20	23		V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> =250uA	0.5	0.72	1	V
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =12V		5	100	nA
		V <sub>DS</sub> =0V, V <sub>GS</sub> =-12V		-7	-100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =16V V <sub>GS</sub> =0V		1.8	1000	nA
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =4.5V,I <sub>D</sub> =6A		18	23	mΩ
		V <sub>GS</sub> =3.85V,I <sub>D</sub> =5A		19	25	mΩ
		V <sub>GS</sub> =2.5V,I <sub>D</sub> =4A			35	mΩ
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =10 V, I <sub>D</sub> = 6A	6	20		S
Source-drain (diode forward) voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V,I <sub>D</sub> =1.5A		0.8	1	V
Dynamic Characteristics						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 8 V, V <sub>GS</sub> = 0 V, f = 1 MHz		1120	1500	pF
Output Capacitance	C <sub>oss</sub>			480	630	
Reverse Transfer Capacitance	C <sub>rss</sub>			110	160	
Switching Characteristics						
Turn-On Delay Time	td(on)	V <sub>DD</sub> = 10 V, RL = 10Ω I <sub>D</sub> =1 A, V <sub>GEN</sub> = 4.5 V, Rg = 6 Ω		25	60	ns
Rise Time	tr			60	140	
Turn-Off Delay Time	td(off)			60	140	
Fall-Time	tf			50	60	
Total Gate Charge	Qg	V <sub>DS</sub> = 10 V, V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 6 A		47	60	nc
Gate-Source Charge	Qgs			6		
Gate-Drain Charge	Qgd			8		

## Typical Performance Characteristics:

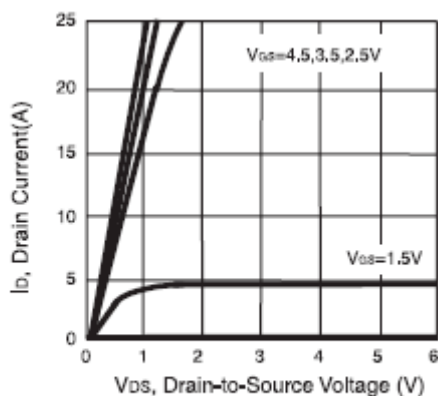


Figure 1. Output Characteristics

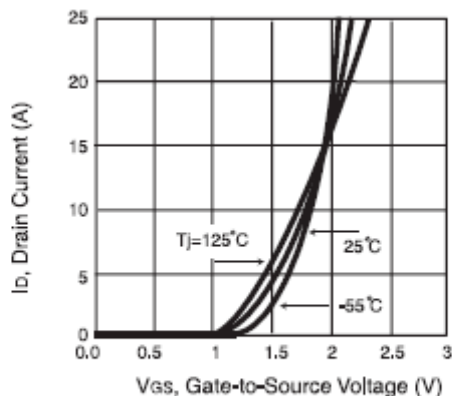


Figure 2. Transfer Characteristics

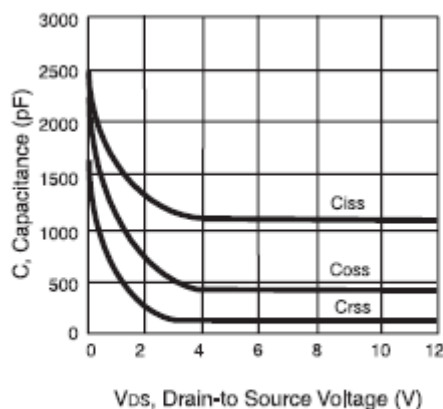


Figure 3. Capacitance

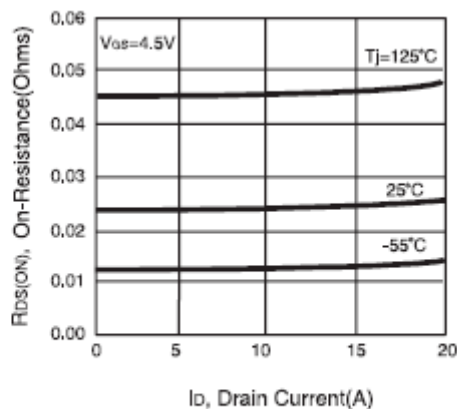


Figure 4. On-Resistance Variation with Drain Current and Temperature

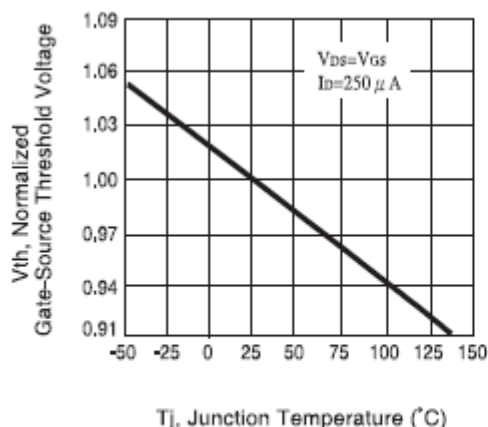


Figure 5. Gate Threshold Variation with Temperature

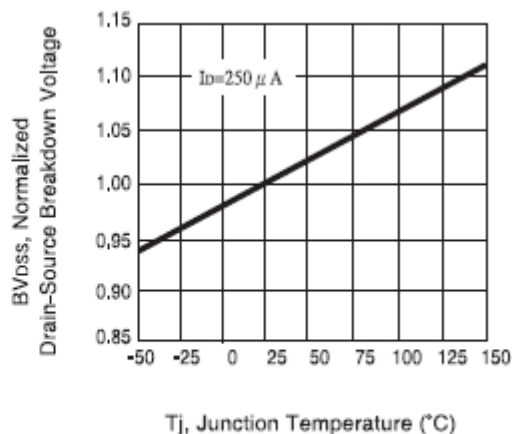
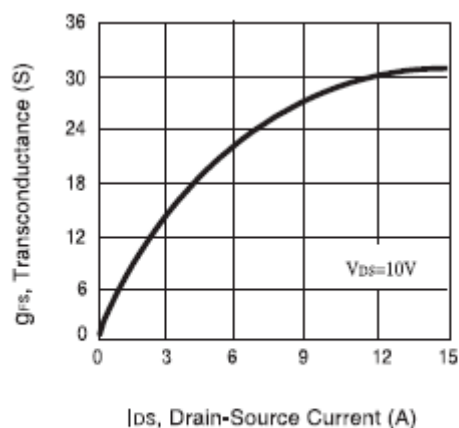
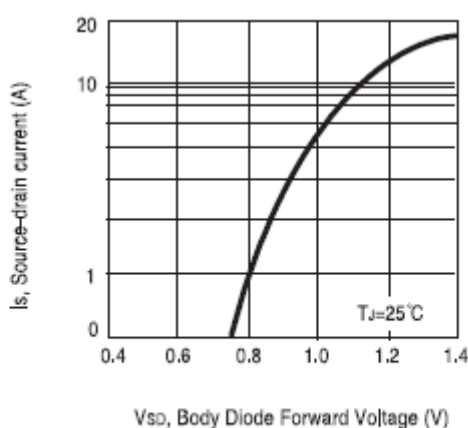


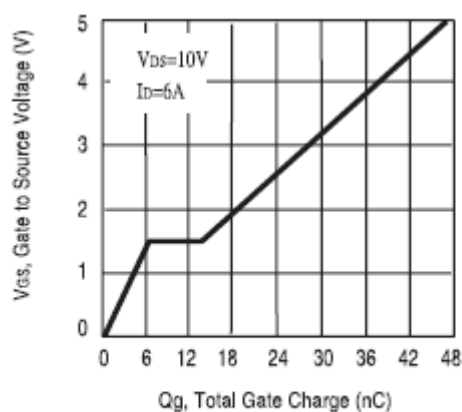
Figure 6. Breakdown Voltage Variation with Temperature



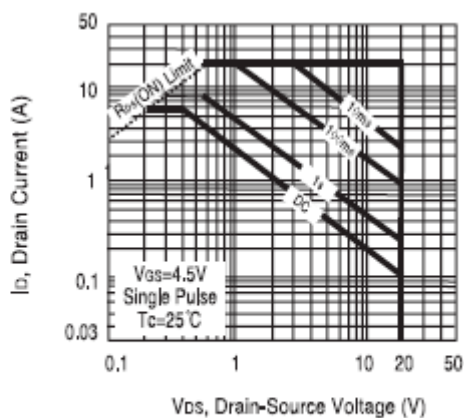
**Figure 7. Transconductance Variation with Drain Current**



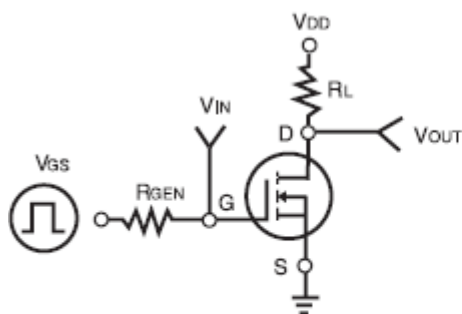
**Figure 8. Body Diode Forward Voltage Variation with Source Current**



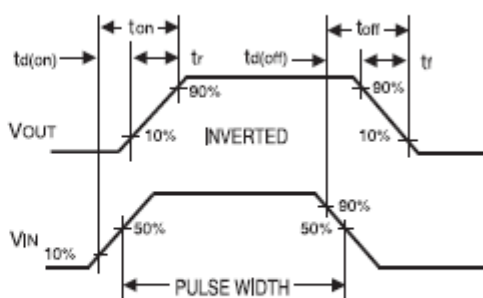
**Figure 9. Gate Charge**



**Figure 10. Maximum Safe Operating Area**



**Figure 11. Switching Test Circuit**



**Figure 12. Switching Waveforms**

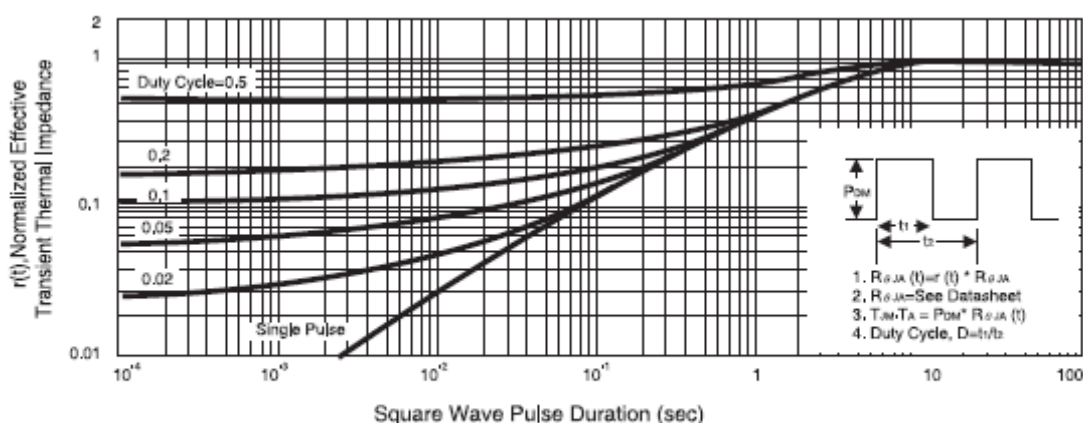
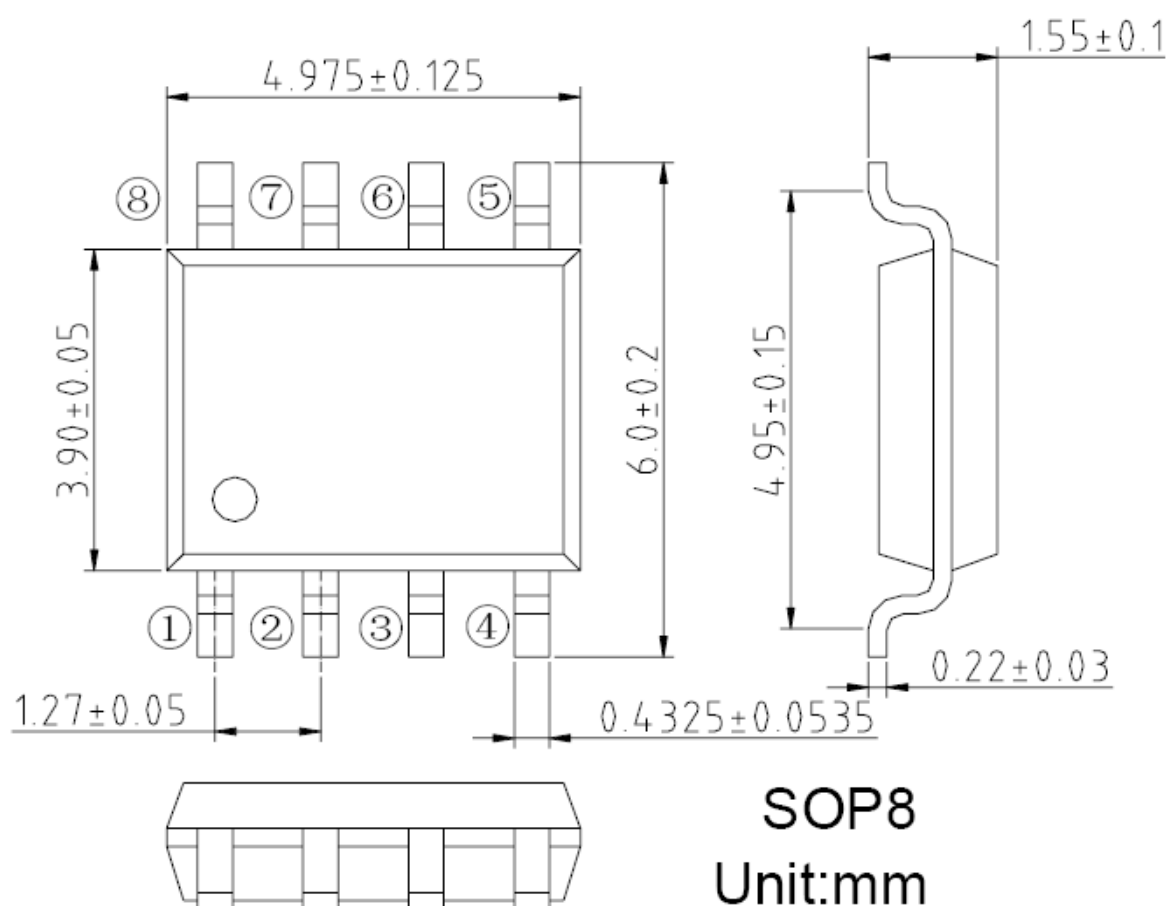


Figure 13. Normalized Thermal Transient Impedance Curve

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