

## N-Channel MOSFET MEM2318M6

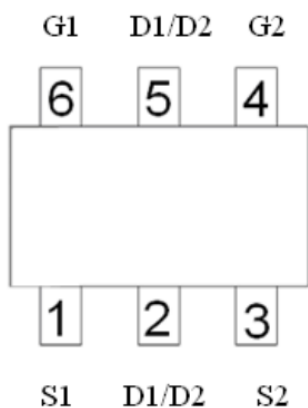
### General Description

MEM2318M6 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.

### Features

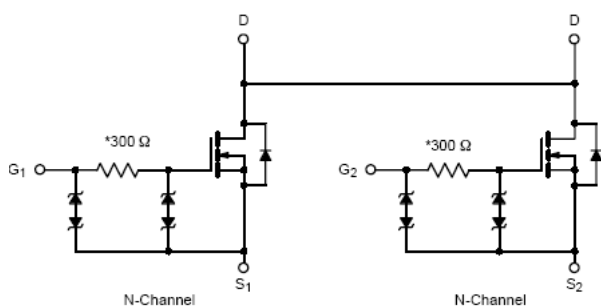
- 20V/6A  
 $R_{DS(ON)} = 16m\Omega @ V_{GS}=4V, I_D=5A$   
 $R_{DS(ON)} = 19m\Omega @ V_{GS}=3V, I_D=4.6A$   
 $R_{DS(ON)} = 21m\Omega @ V_{GS}=2.5V, I_D=4.3A$
- High Density Cell Design For Ultra Low On-Resistance
- Surface mount package: SOT23-6L
- ESD Protected: 3000 V

### 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		$V_{GSS}$	$\pm 12$	V
Drain Current	TA=25°C	$I_D$	6	A
	TA=70°C		3.4	
Total Power Dissipation	TA=25°C	Pd	2	W
	TA=70°C		0.64	
Pulsed Drain Current (10us Pulse Width)		IDM	30	A
Operating Temperature Range		$T_{Opr}$	150	°C
Storage Temperature Range		$T_{stg}$	-65/150	°C

## Thermal Characteristics

Parameter	Symbol	TYP.	MAX.	Unit
Thermal Resistance, Junction-to-Ambient	t $\leq$ 10s	72	83	°C/W
	Steady-State	100	120	

## Electrical Characteristics

MEM2318M6

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	20	24		V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	0.73	1	V
Gate-Body Leakage	$I_{GSS}$	$V_{DS}=0V, V_{GS}=12V$		4.96	10	$\mu A$
		$V_{DS}=0V, V_{GS}=-12V$		-5.22	-10	$\mu A$
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=16V, V_{GS}=0V$		4.91	1000	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=4V, I_D=5A$		16	26.5	m $\Omega$
		$V_{GS}=3V, I_D=4.6A$		19	32	m $\Omega$
		$V_{GS}=2.5V, I_D=4.3A$		21	37	m $\Omega$
Forward Transconductance	$g_{FS}$	$V_{DS}=10V, I_D=6A$	6	20		S
Source-drain (diode forward) voltage	$V_{SD}$	$V_{GS}=0V, I_D=1.5A$		0.7	1	V
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=8V,$ $V_{GS}=0V,$ $f=1MHz$		1120	1500	pF
Output Capacitance	$C_{oss}$			480	630	
Reverse Transfer Capacitance	$C_{rss}$			110	160	
<b>Switching Characteristics</b>						

Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 10\text{ V},$ $R_L = 10\Omega$ $I_D = 1\text{ A},$ $V_{GEN} = 4.5\text{ V},$ $R_g = 6\Omega$	25	60	ns
Rise Time	$t_r$		60	140	
Turn-Off Delay Time	$t_{d(off)}$		60	140	
Fall-Time	$t_f$		50	60	
Total Gate Charge	$Q_g$	$V_{DS} = 10\text{ V},$ $V_{GS} = 4.5\text{ V},$ $I_D = 6\text{ A}$	47	60	nc
Gate-Source Charge	$Q_{gs}$		6		
Gate-Drain Charge	$Q_{gd}$		8		

### Typical Performance Characteristics

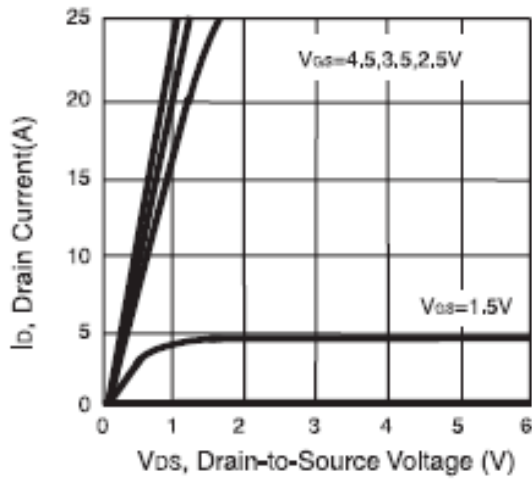


Figure 1. Output Characteristics

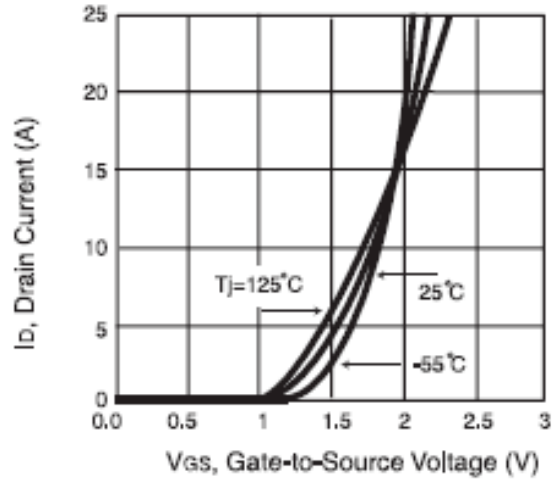


Figure 2. Transfer Characteristics

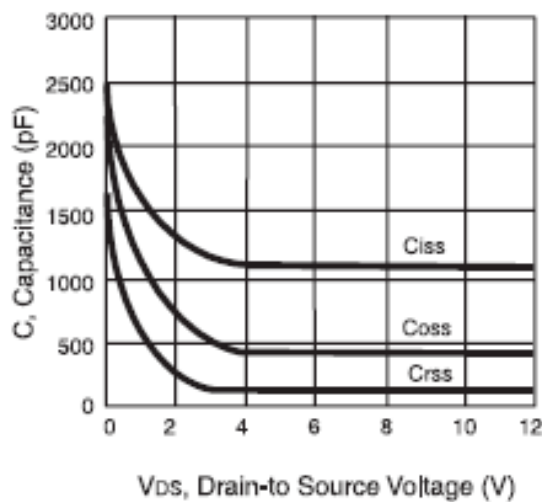


Figure 3. Capacitance

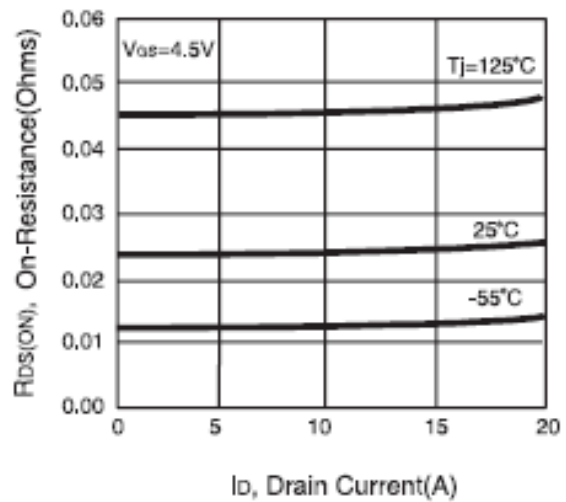


Figure 4. On-Resistance Variation with Drain Current and Temperature

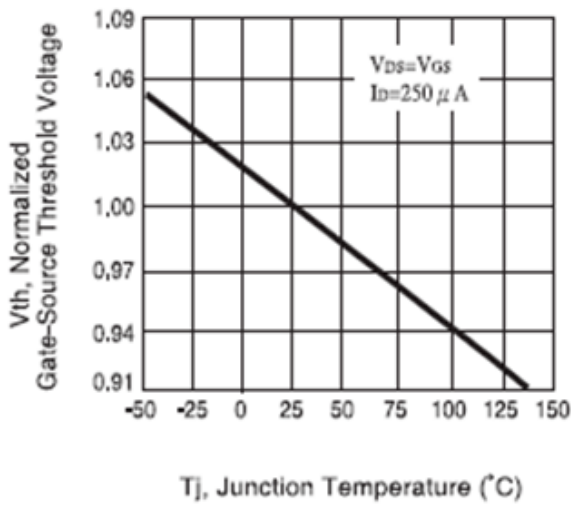


Figure 5. Gate Threshold Variation with Temperature

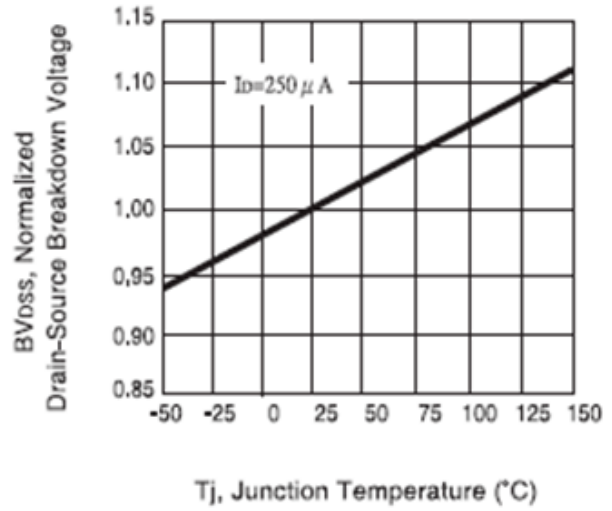


Figure 6. Breakdown Voltage Variation with Temperature

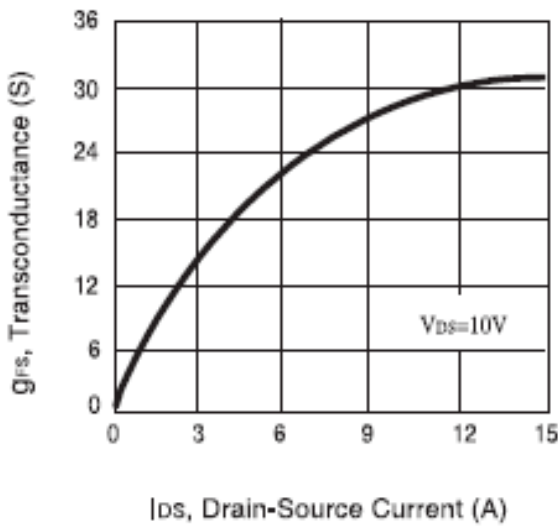


Figure 7. Transconductance Variation with Drain Current

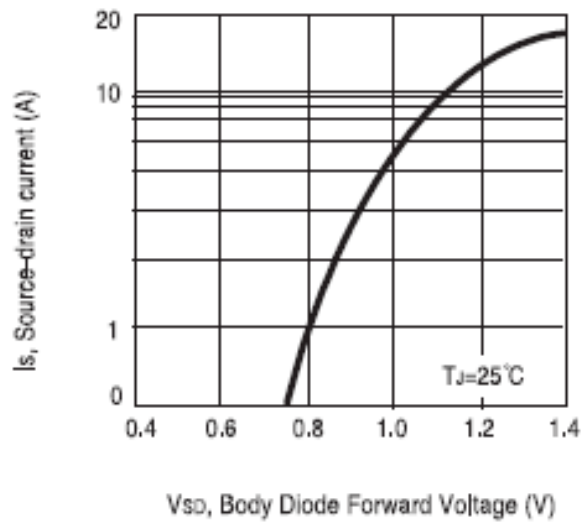


Figure 8. Body Diode Forward Voltage Variation with Source Current

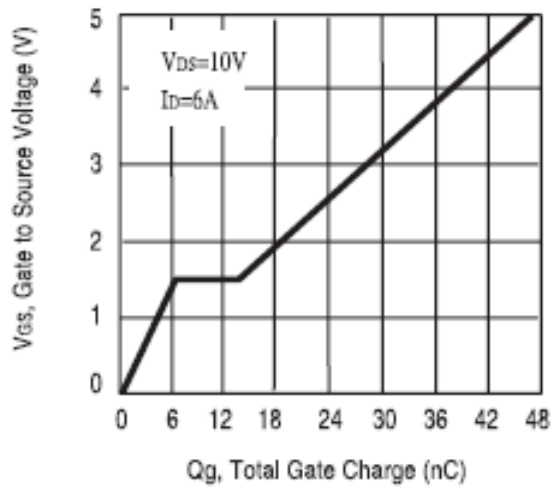


Figure 9. Gate Charge

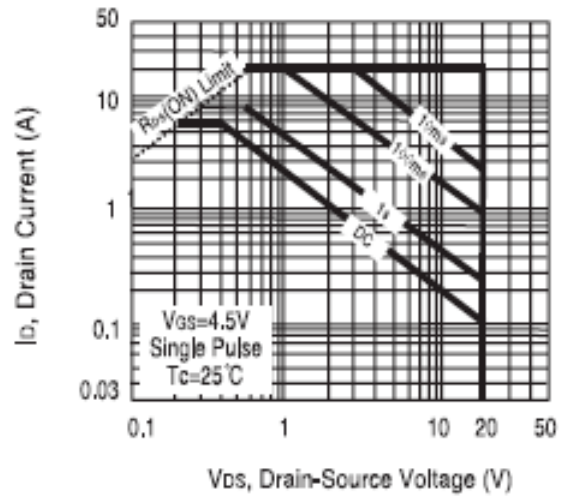


Figure 10. Maximum Safe Operating Area

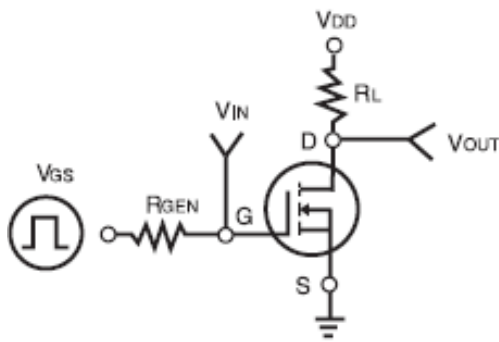


Figure 11. Switching Test Circuit

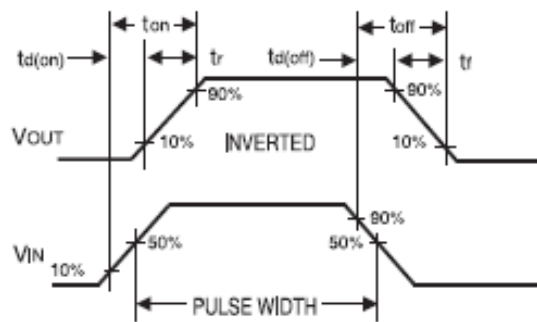


Figure 12. Switching Waveforms

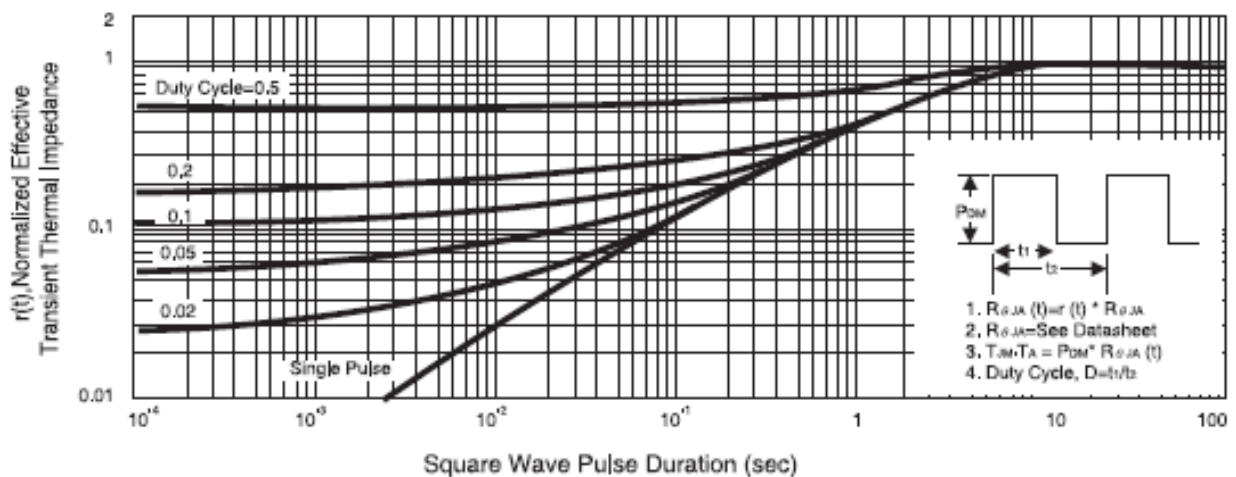
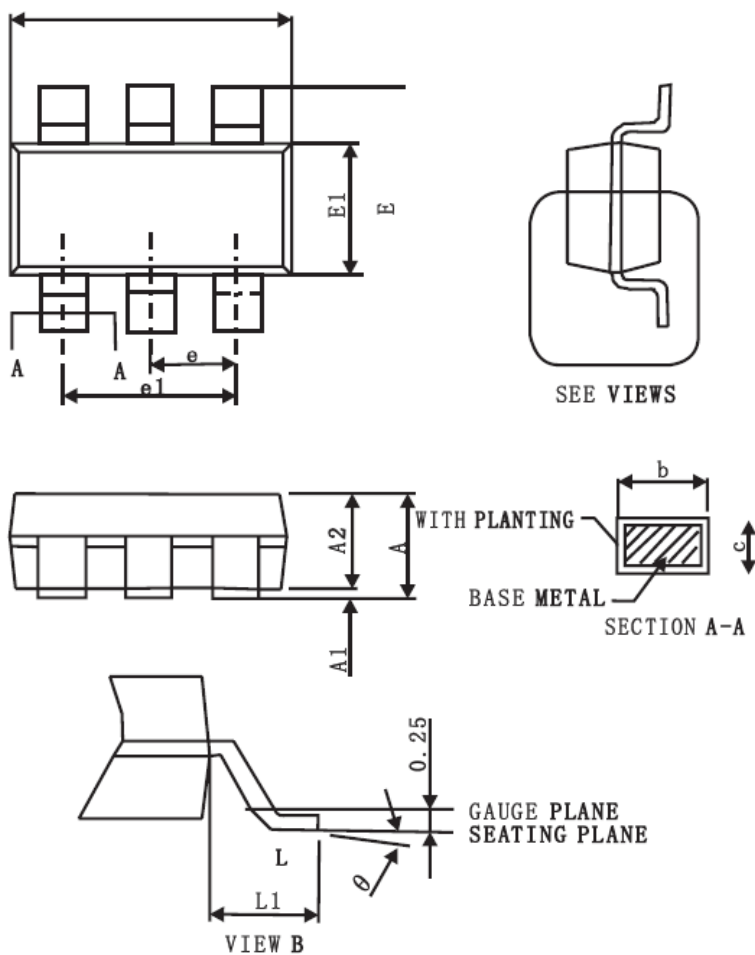


Figure 13. Normalized Thermal Transient Impedance Curve

Package Information

SOT23-6L

SOT-23-6



Symbol	A	A1	A2	b	c	D	E
Spec	1.20±0.25	0.10±0.05	1.10±0.2	0.40±0.1	0.15±0.07	2.90±0.1	2.80±0.2
Symbol	E11	e	e1	L	L1	$\theta$	
Spec	1.60±0.1	0.95BSC	1.90BSC	0.55±0.25	0.60REF	4°±4°	

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