

Common Drain N-Channel MOSFET MEM2308FG Series

Description:

MEM2308FG 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.

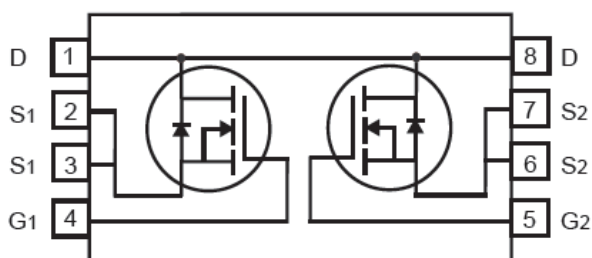
This device particularly suits low voltage applications, and low power dissipation.

Feature:

- 20V/5A
 $R_{DS(ON)} = 21m\Omega @ V_{GS}=3.85V, I_D=5A$
- High Density Cell Design For Ultra Low On-Resistance
- Surface mount package: TSSOP8



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	5	A
Total Power Dissipation	P_d	1.5	W
Operating Temperature Range	T_{Opr}	150	$^{\circ}C$
Storage Temperature Range	T_{stg}	-65/150	$^{\circ}C$

Electrical Characteristics:

MEM2308FG

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			23	mΩ
		V _{GS} =3.85V,I _D =5A		21	25	mΩ
		V _{GS} =2.5V,I _D =4A			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:

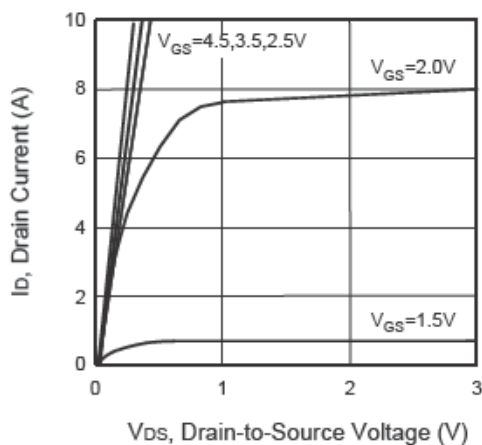


Figure 1. Output Characteristics

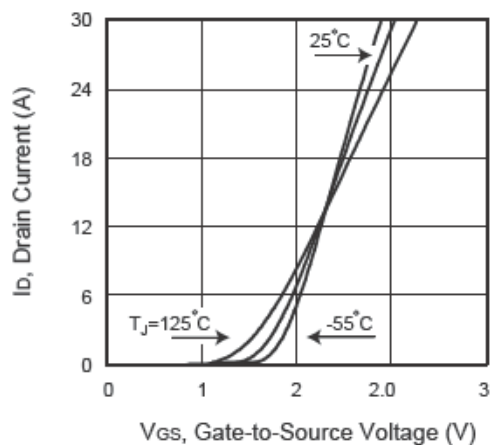


Figure 2. Transfer Characteristics

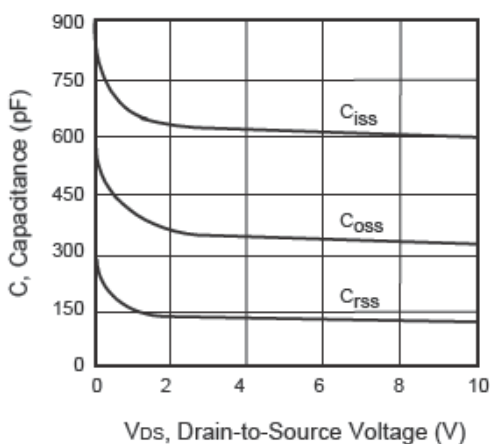


Figure 3. Capacitance

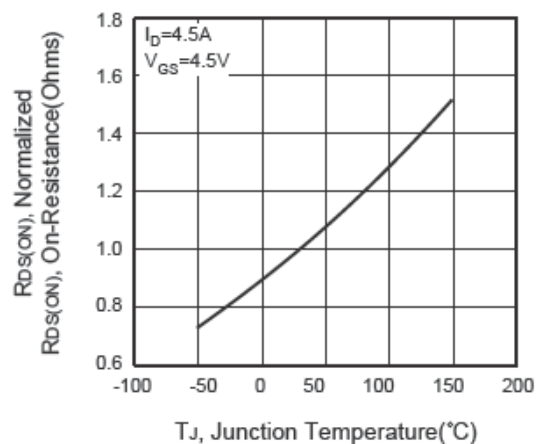


Figure 4. On-Resistance Variation with Temperature

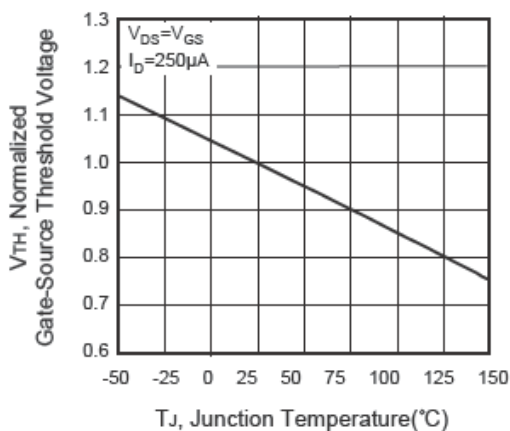


Figure 5. Gate Threshold Variation with Temperature

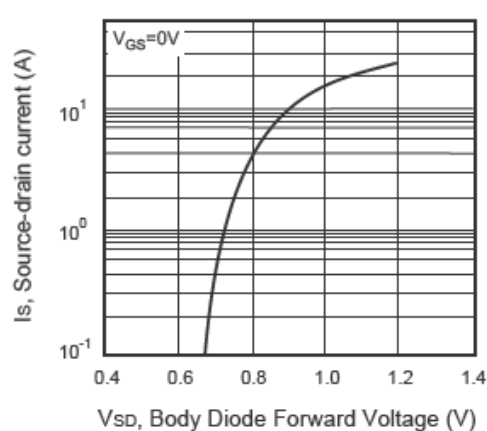


Figure 6. Body Diode Forward Voltage Variation with Source Current

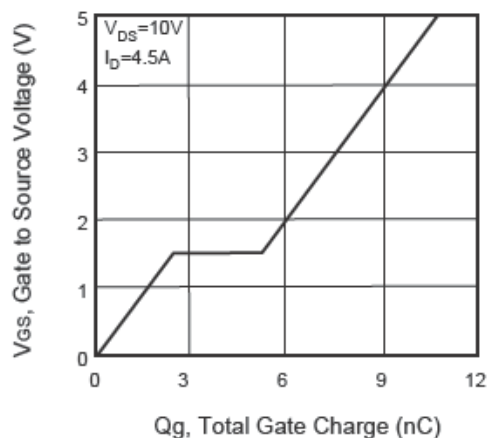


Figure 7. Gate Charge

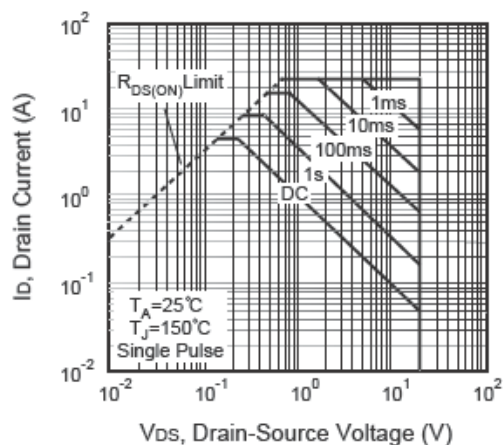


Figure 8. Maximum Safe Operating Area

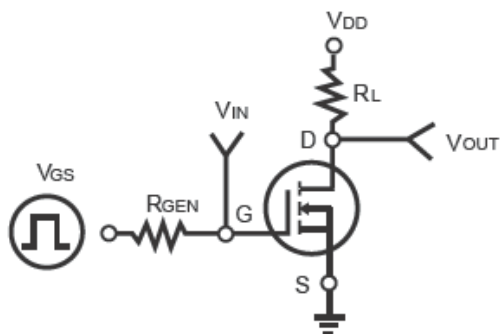


Figure 9. Switching Test Circuit

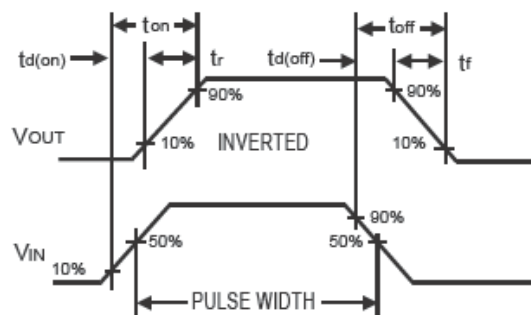


Figure 10. Switching Waveforms

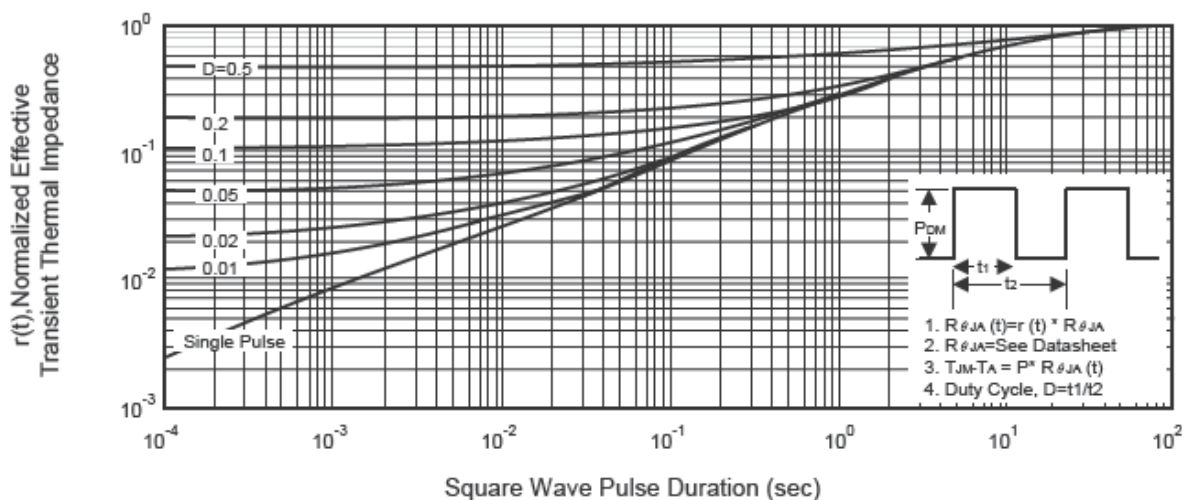
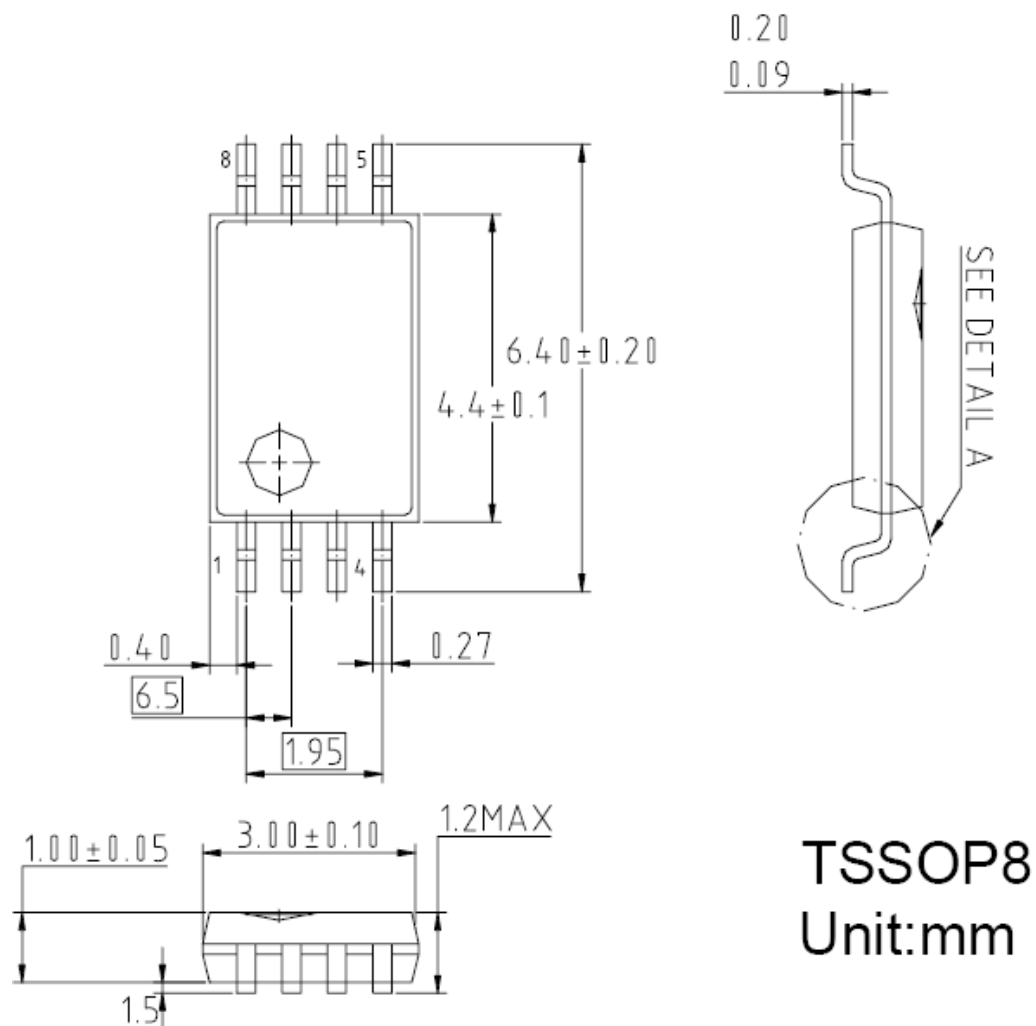


Figure 11. Normalized Thermal Transient Impedance Curve

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