

P-Channel MOSFET MEM2301M3

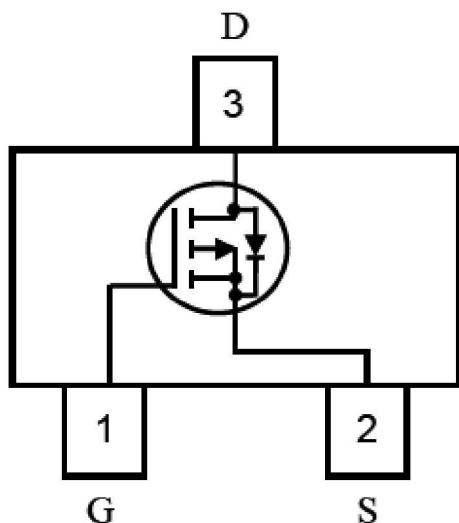
General Description

MEM2301M3G Series P-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, and low power dissipation in a very small outline surface mount package.

Features

- -20V/-2.8A
 $R_{DS(ON)} = 93m\Omega @ V_{GS} = -4.5V, I_D = -2.8A$
 $R_{DS(ON)} = 113m\Omega @ V_{GS} = -2.5V, I_D = -2A$
- High Density Cell Design For Ultra Low On-Resistance
- Subminiature surface mount package: SOT23-3L

Pin Configuration



Typical Application

- Power management
- Load switch
- Battery protection

Absolute Maximum Ratings

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DSS}	-20	V
Gate-Source Voltage		V_{GSS}	± 8	V
Continuous Drain Current	$T_A = 25^\circ C$	I_D	-2.8	A
	$T_A = 70^\circ C$		-1.8	
Pulsed Drain Current ^{1,2}		I_{DM}	-10	A
Total Power Dissipation	$T_A = 25^\circ C$	P_d	0.7	W
	$T_A = 70^\circ C$		0.45	
Operating Temperature Range		T_{Opr}	150	$^\circ C$
Storage Temperature Range		T_{stg}	-65/150	$^\circ C$

Thermal Characteristics

Parameter	Symbol	MAX.	Unit
Thermal Resistance, Junction-to-Ambient ³	R _{θJA}	145	°C/W

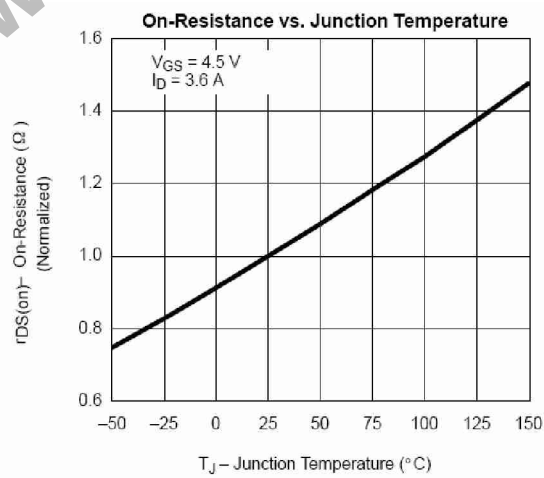
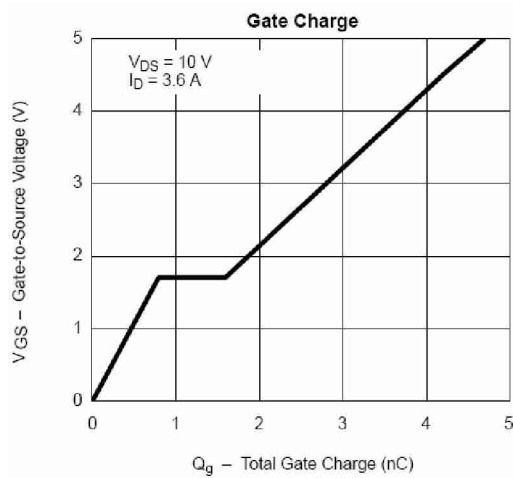
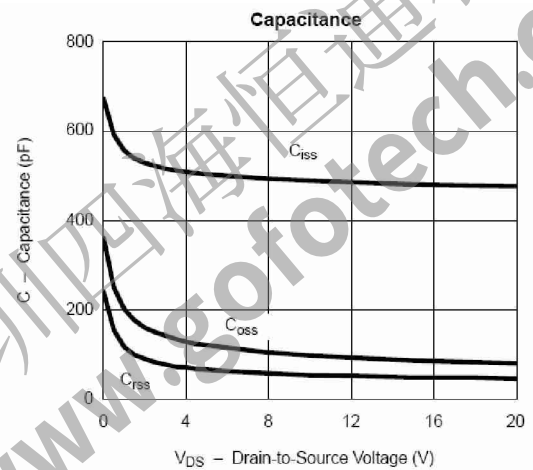
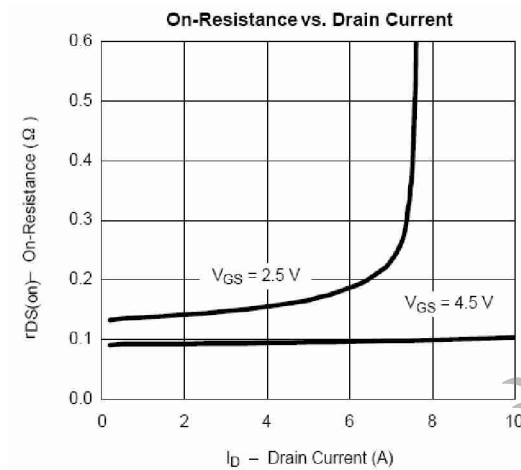
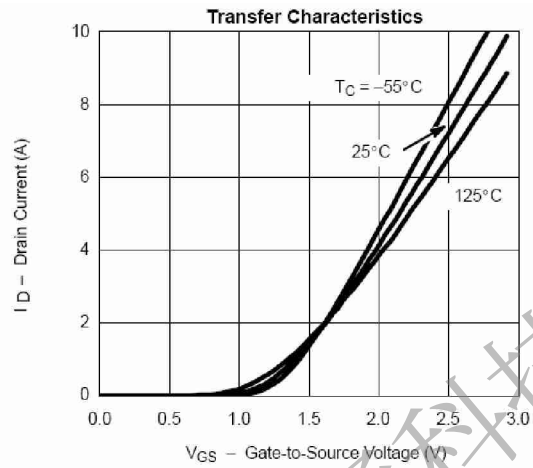
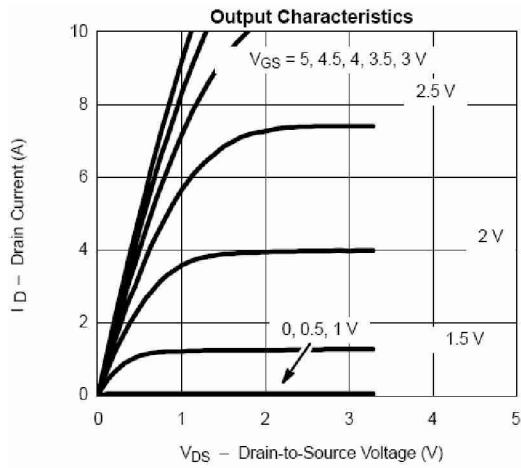
Electrical Characteristics

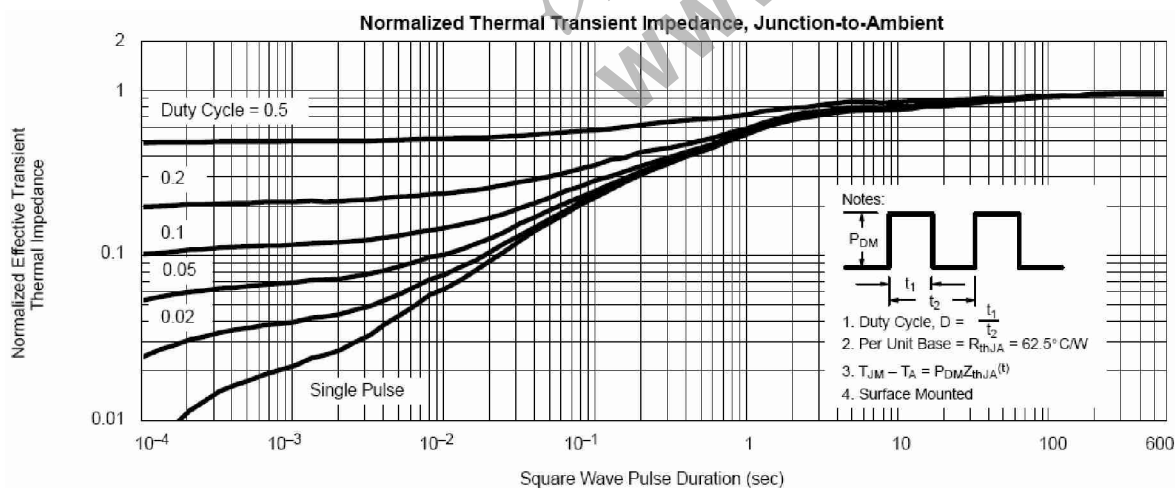
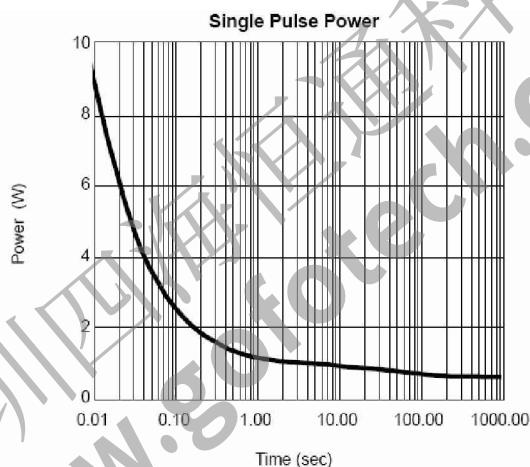
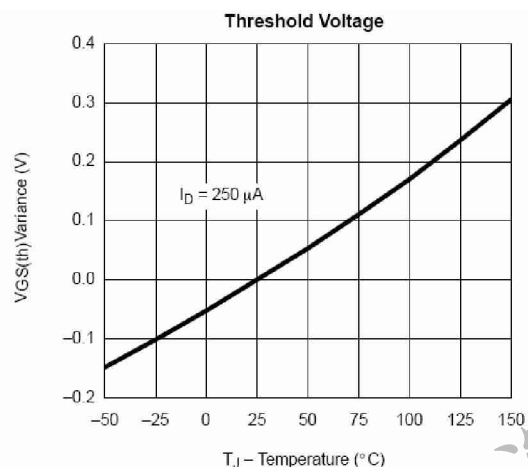
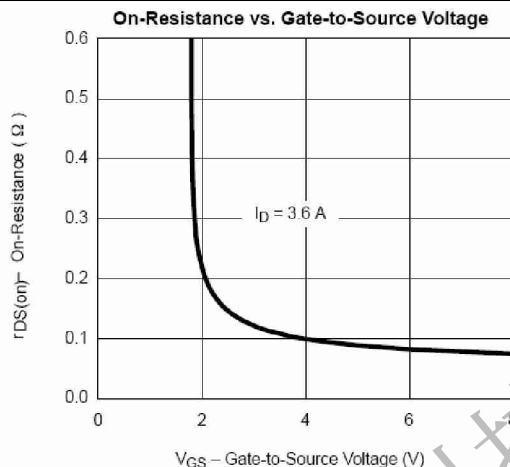
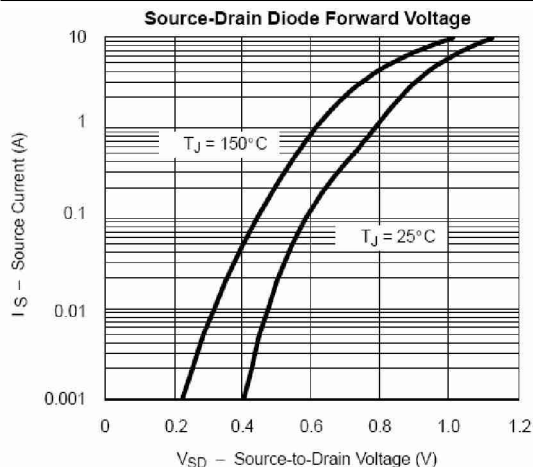
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Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-20	-23		V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.4	0.58	-1	V
Gate-Body Leakage	I_{GSS}	$V_{DS}=0V, V_{GS}=8V$		0.2	100	nA
		$V_{DS}=0V, V_{GS}=-8V$		-0.2	-100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-16V, V_{GS}=0V$		-1.5	-100	nA
Static Drain-Source On-Resistance	$R_{DS(ON)1}$	$V_{GS}=-4.5V, I_D=-2.8A$		93	110	mΩ
	$R_{DS(ON)2}$	$V_{GS}=-2.5V, I_D=-2A$		113	140	mΩ
Forward Transconductance	g_{FS}	$V_{DS} = -5 V, I_D = -2.8 A$		6.5		S
Source-drain (diode forward) voltage	V_{SD}	$V_{GS}=0V, I_D=-1A$			-1.2	V
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS} = -6V,$ $V_{GS} = 0 V,$ $f = 1 MHz$		500		pF
Output Capacitance	C_{oss}			115		
Reverse Transfer Capacitance	C_{rss}			60		
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -6 V,$ $I_D=-1 A,$ $V_{GEN} = -4.5 V,$ $R_g = 6 \Omega$		5	25	ns
Rise Time	t_r			30	60	
Turn-Off Delay Time	$t_{d(off)}$			25	60	
Fall-Time	t_f			10	60	
Total Gate Charge	Q_g	$V_{DS} = -6 V,$ $V_{GS} = -4.5 V,$ $I_D = -2.8A$		4.0	10	nC
Gate-Source Charge	Q_{gs}			0.8		
Gate-Drain Charge	Q_{gd}			0.8		

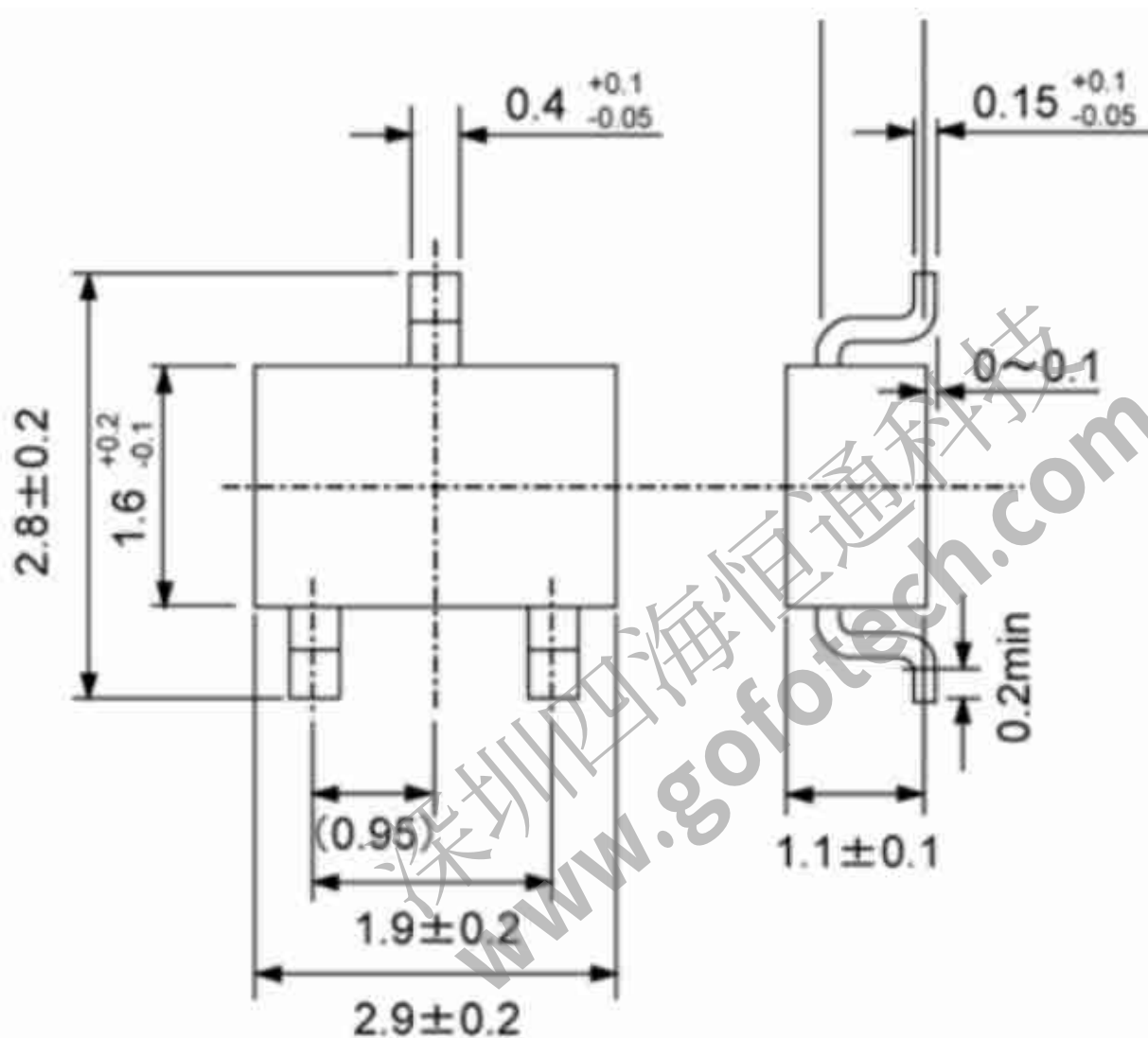
- 1、Pulse width limited by maximum junction temperature.
- 2、Pulse test: PW ≤300 us duty cycle ≤2%.
- 3、Surface Mounted on FR4 Board, t ≤ 5 sec.

Typical Performance Characteristics





Package Information



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