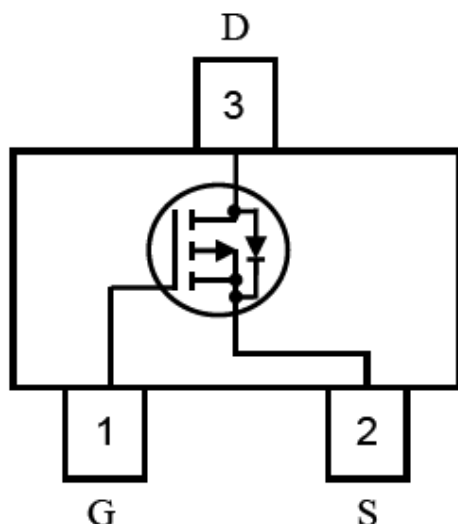


P-Channel MOSFET MEM2301X

General Description

MEM2301XG 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.

Pin Configuration



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

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	I_D	$T_A = 25^\circ C$	-2.8
		$T_A = 70^\circ C$	-1.8
Pulsed Drain Current ^{1,2}	I_{DM}	-10	A
Total Power Dissipation	P_D	$T_A = 25^\circ C$	0.7
		$T_A = 70^\circ C$	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	$R_{\theta JA}$	145	$^{\circ}C/W$

Electrical Characteristics

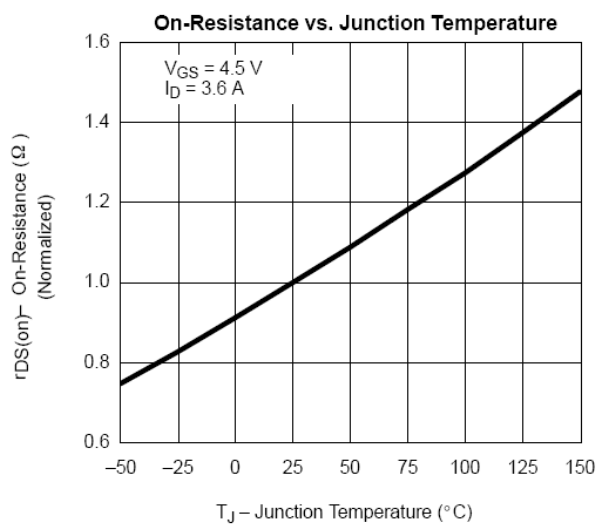
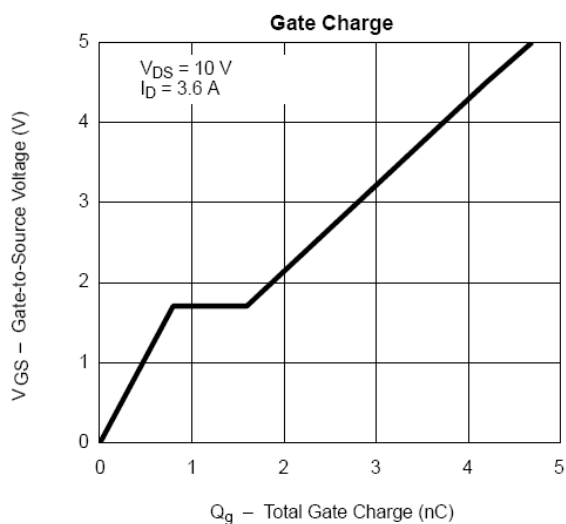
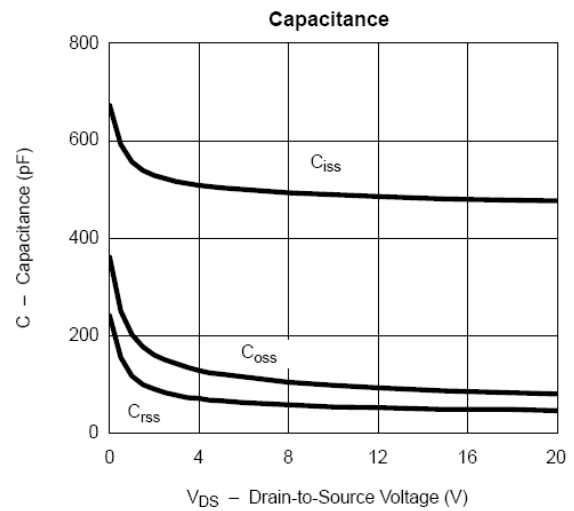
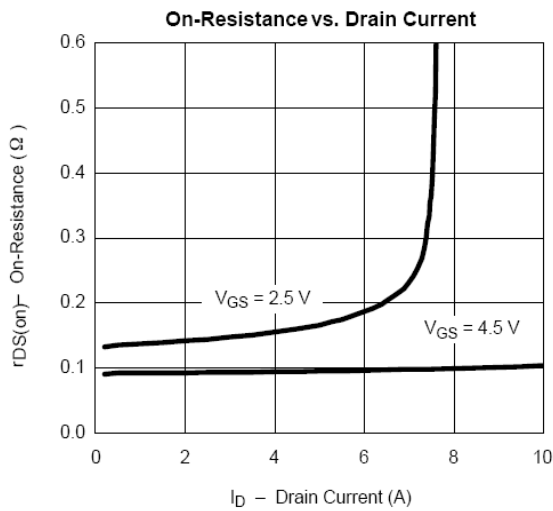
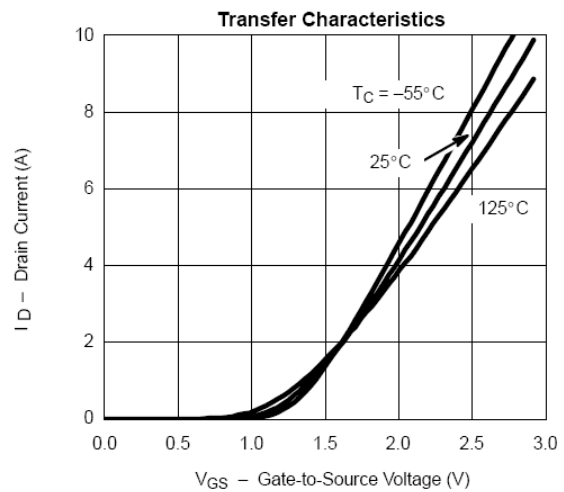
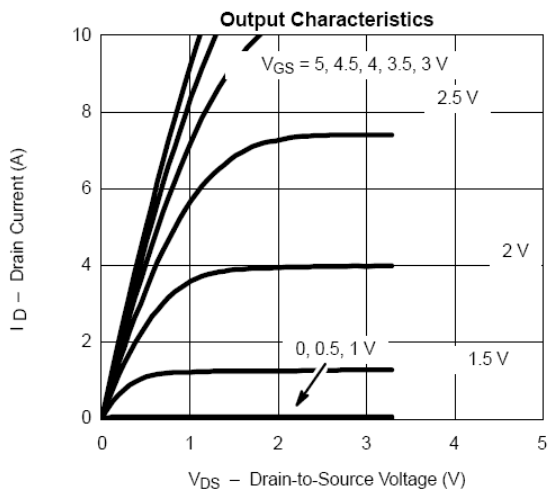
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-20	-23		V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.4	0.58	-1	V
Gate-Body Leakage	I_{GSS}	$V_{DS}=0V, V_{GS}=8V$		0.2	100	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	m Ω
	$R_{DS(ON)2}$	$V_{GS}=-2.5V, I_D=-2A$		113	140	m Ω
Forward Transconductance	g_{FS}	$V_{DS} = -5 V, I_D = -2.8 A$		6.5		S
Source-drain (diode forward) voltage	V_{SD}	$V_{GS}=0V, I_S=-1A$			-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		

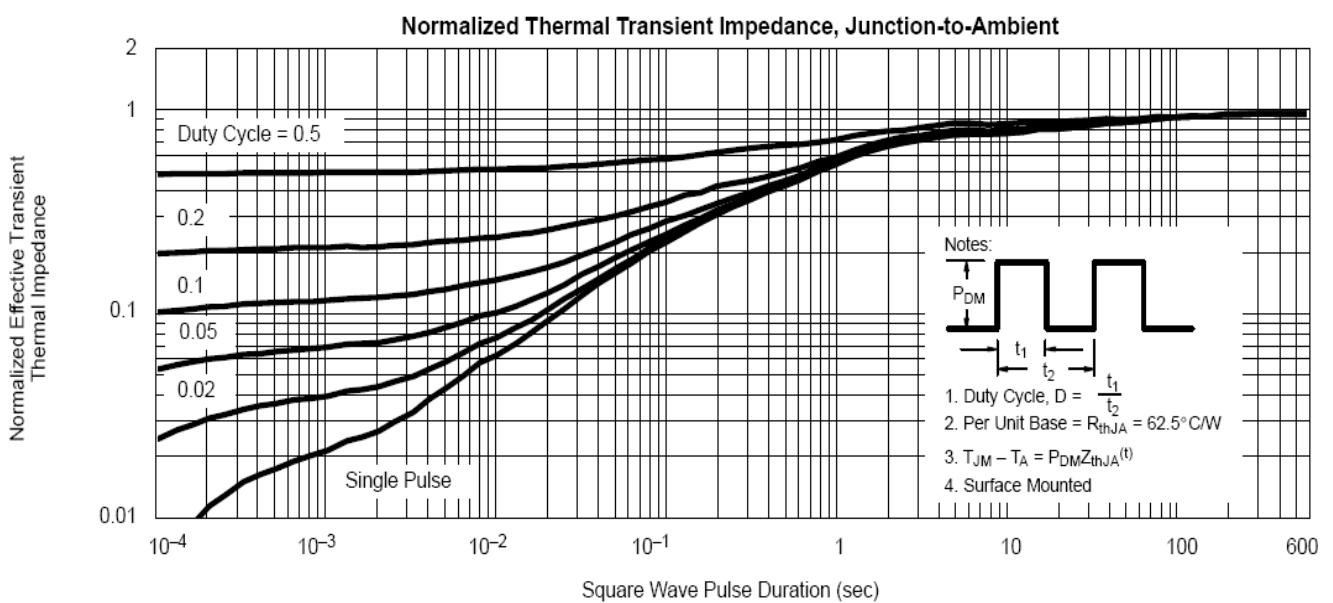
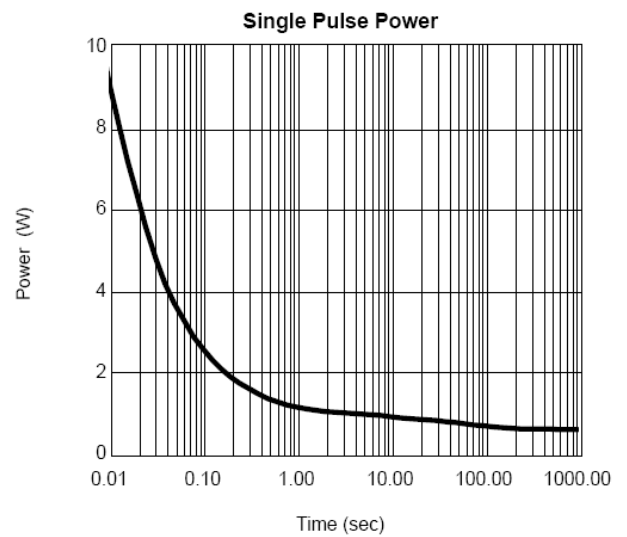
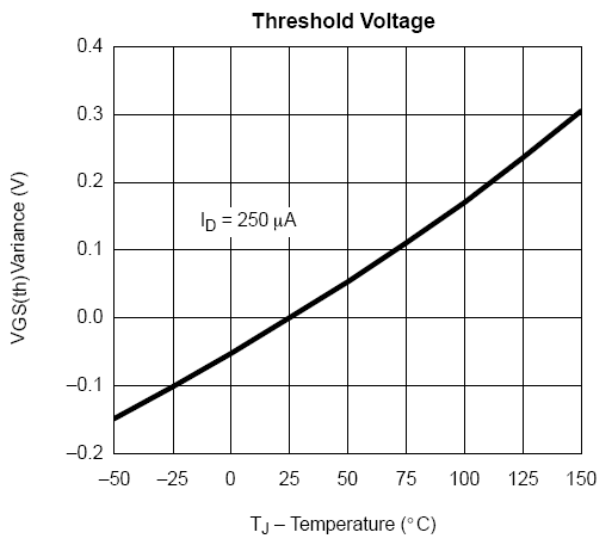
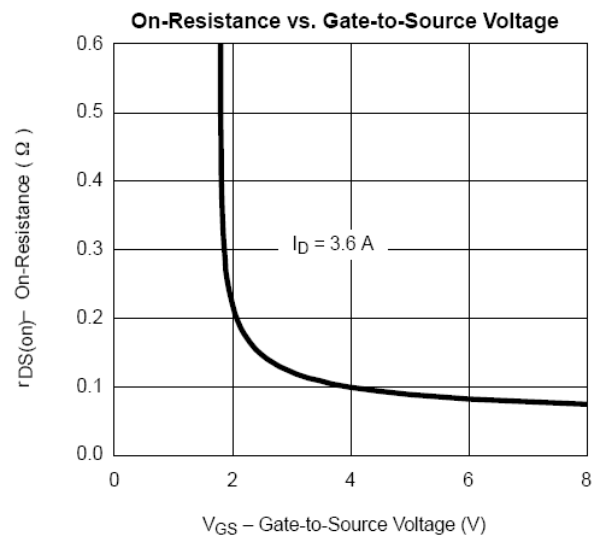
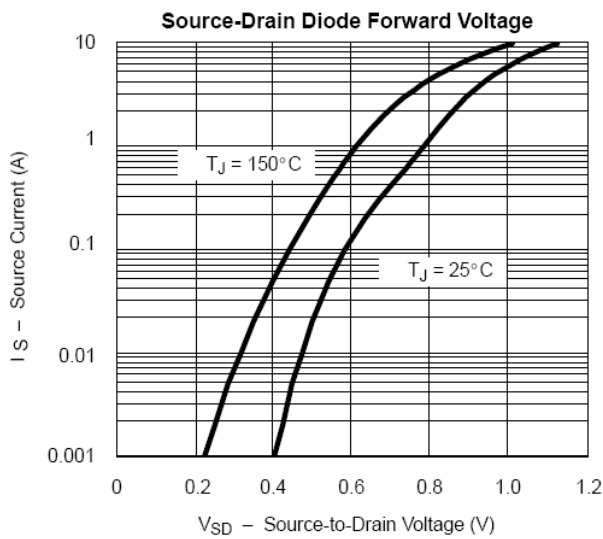
1、Pulse width limited by maximum junction temperature.

2、Pulse test: PW \leq 300 us duty cycle \leq 2%.

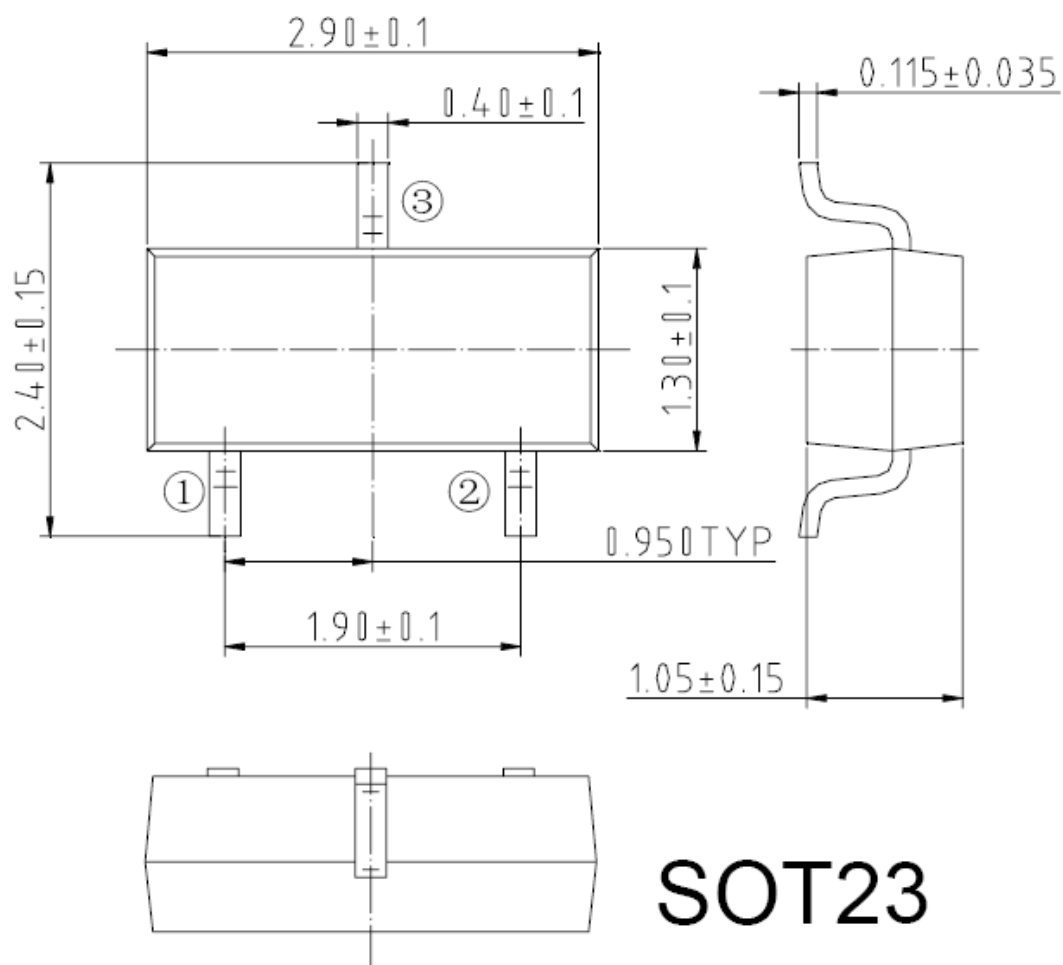
3、Surface Mounted on FR4 Board, t \leq 5 sec.

Typical Performance Characteristics





Package Information



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