

## P-Channel MOSFET MEM2303XG-N

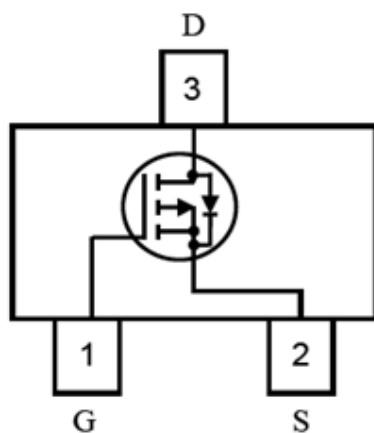
### General Description

MEM2303XG-N Series P-channel enhancement mode field-effect transistor, These miniature surface mount MOSFETs utilize High Cell Density process. Low RDS(ON) assures minimal power loss and conserves energy, making this device ideal for use in power management circuitry. Typical applications are lower voltage application, power management in portable and battery-powered products such as computers, printers, and PCMCIA cards, cellular and cordless telephones.

### Features

- -30V/-2.9A  
RDS(ON), Vgs@-10V, Ids@-2.9A = 92mΩ  
RDS(ON), Vgs@-4.5V, Ids@-1.9A = 115mΩ
- High Density Cell Design For Ultra Low On-Resistance
- Fast switching speed
- High performance trench technology
- Low thermal impedance copper lead frame
- Subminiature surface mount package:SOT23

### Pin Configuration



### Typical Application

- Power management
- Load switch
- Battery protection

### Absolute Maximum Ratings (TA = 25°C unless otherwise noted)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	$V_{DSS}$	-30V	V
Gate-Source Voltage	$V_{GSS}$	±20	V
Drain Current	$I_D$	-2.9	A
Pulsed Drain Current	$I_{DM}$	-11.6	A
Total Power Dissipation	$P_D$	1.25	W
Operating Temperature Range	$T_{Opr}$	-55~150	°C
Storage Temperature Range	$T_{stg}$	-55~150	°C

### Thermal Characteristics

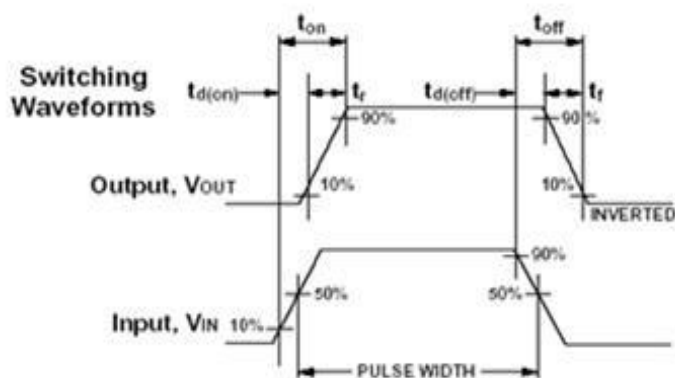
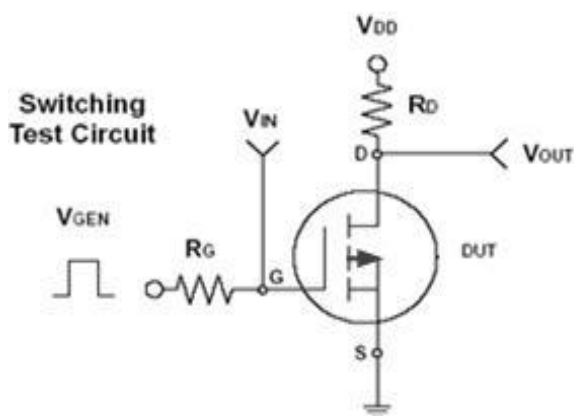
Parameter	Symbol	TYP.	MAX.	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	100		°C/W

## Electrical Characteristics

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1	-1.31	-2.1	V
Gate-Body Leakage	$I_{GSS}$	$V_{DS}=0V, V_{GS}=20V$	-	-	100	nA
		$V_{DS}=0V, V_{GS}=-20V$	-	-	-100	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-30V, V_{GS}=0V$ $T_J=25^\circ C$	-	-	-1	$\mu A$
		$V_{DS}=-24V, V_{GS}=0V$ $T_J=55^\circ C$	-	-	-10	$\mu A$
Static Drain-Source On-Resistance	$R_{DS(ON)1}$	$V_{GS}=-10V, I_D=-2.9A$	-	92	110	m $\Omega$
	$R_{DS(ON)2}$	$V_{GS}=-4.5V, I_D=-1.9A$	-	115	150	m $\Omega$
Maximum Body-Diode Continuous Current	$I_S$		-	-	1.7	A
Source-drain(diode forward) voltage	$V_{SD}$	$V_{GS}=0V, I_S=-1.7A$	-	-0.86	-1.2	V
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{GS}=0V, V_{DS}=-15V,$ $f=1.0MHz$	-	354	-	pF
Output Capacitance	$C_{oss}$		-	31	-	
Reverse Transfer Capacitance	$C_{rss}$		-	20	-	
<b>Switching Characteristics</b>						
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=-10V, V_{DS}=-10V,$ $R_G=6\Omega, I_D=-2.9A$	-	11	-	ns
Rise Time	$t_r$		-	6	-	
Turn-Off Delay Time	$t_{d(off)}$		-	15	-	
Fall-Time	$t_f$		-	4	-	
Total Gate Charge	$Q_g$	$V_{DS} = -15V,$ $V_{GS} = -10 V,$ $I_D = -2.9A$	-	6	-	nC
Gate-Source Charge	$Q_{gs}$		-	1	-	
Gate-Drain Charge	$Q_{gd}$		-	1.5	-	

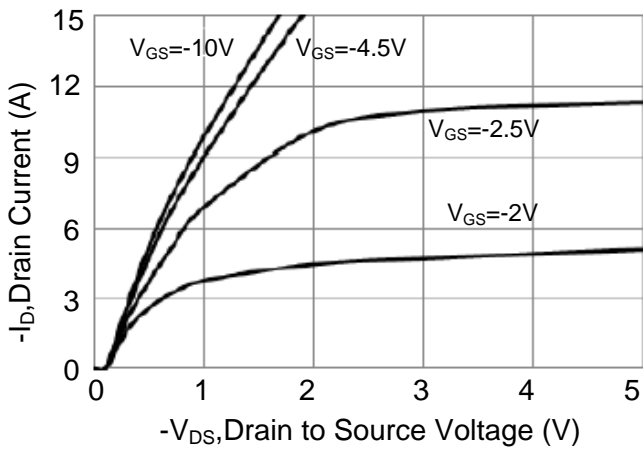
1、Pulse width limited by Max. junction temperature.

2、Pulse width <300 $\mu s$  , duty cycle <0.5%.

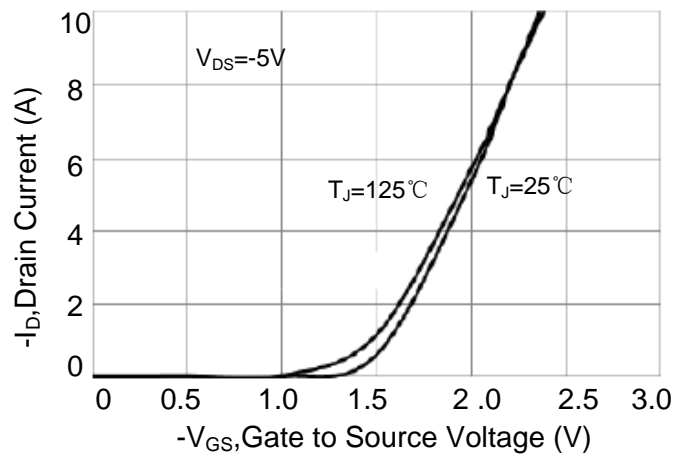


Typical Performance Characteristics

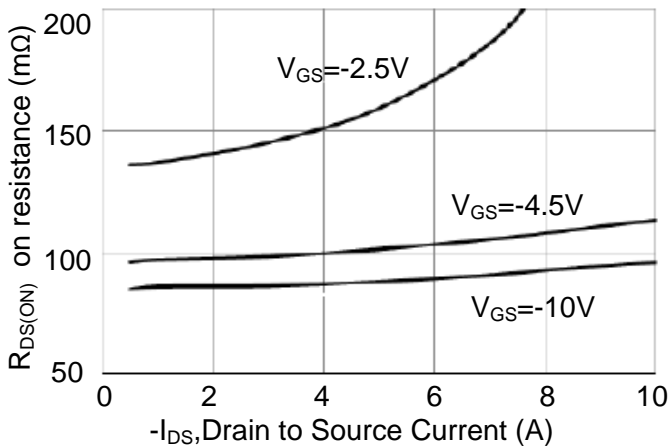
On-state Characteristics



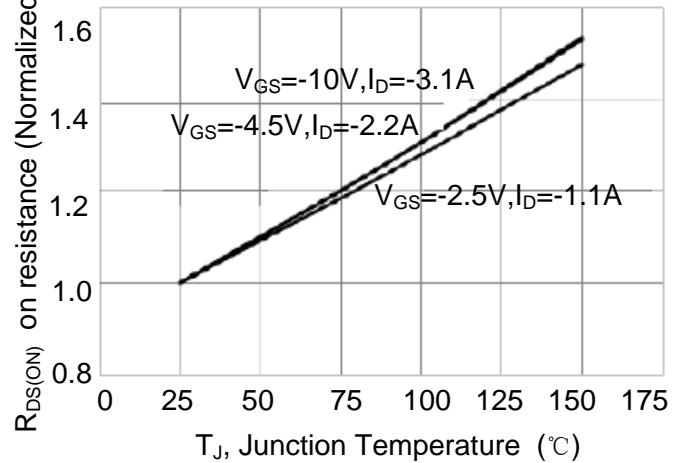
Transfer Characteristics



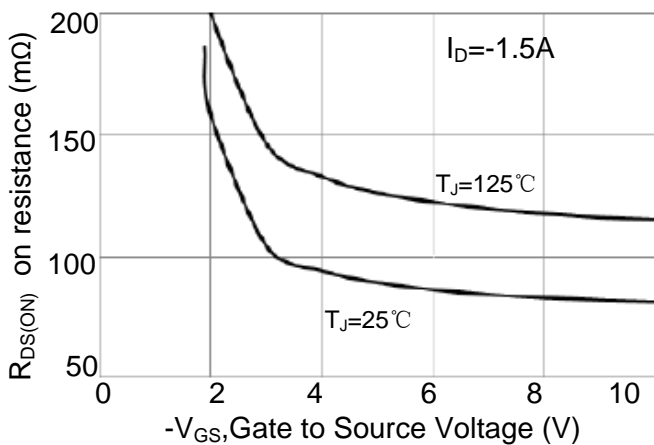
On-Resistance vs. Drain Current



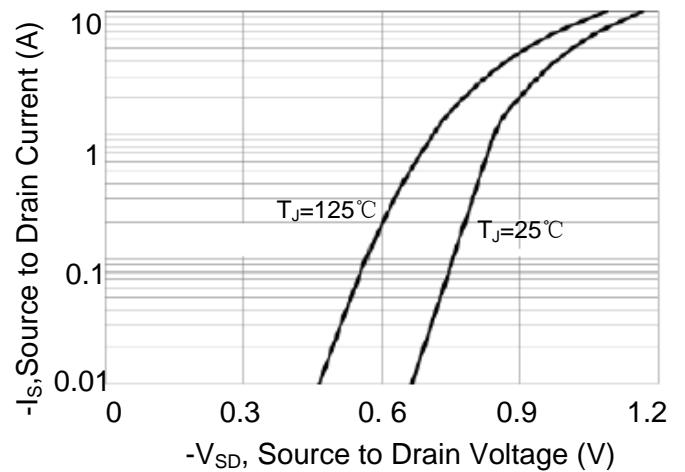
Normalized On-Resistance vs.  $T_J$



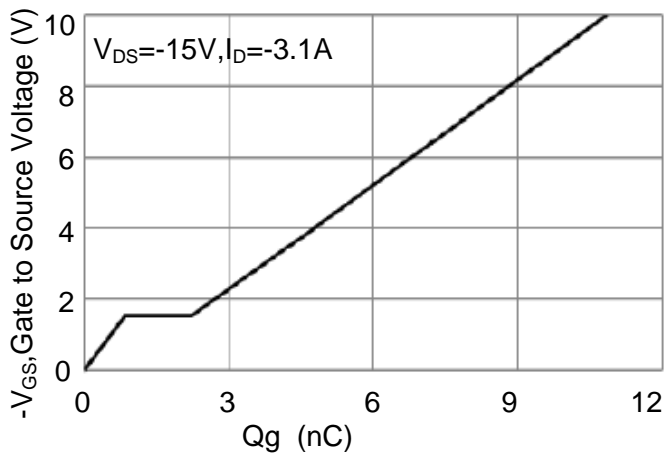
On-Resistance Variation vs.  $V_{GS}$



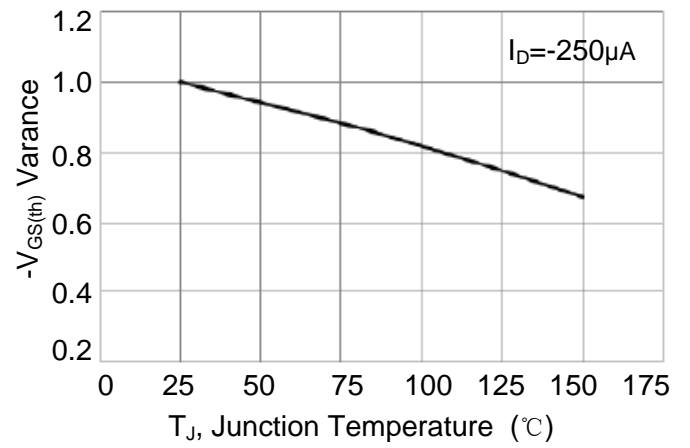
Body Diode Characteristics



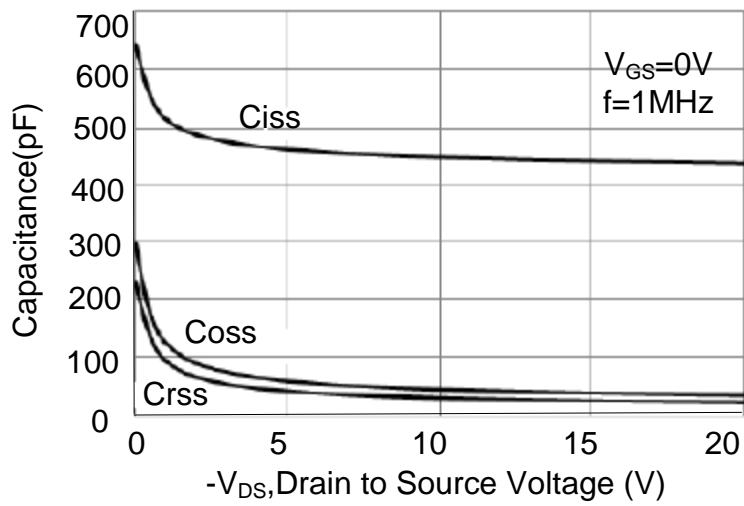
Gate Charge Characteristics



Threshold Voltage Variation with Temperature

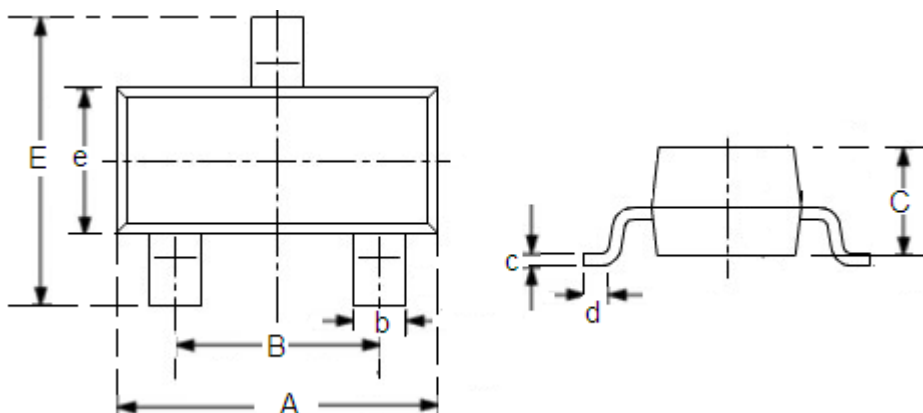


Capacitance vs. Drain-Source Voltage



**Package Information**

Package Type:SOT23 Unit:mm(inch)



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	2.7	3.1	0.1063	0.122
B	1.7	2.1	0.0669	0.0827
b	0.35	0.5	0.0138	0.0197
C	1.0	1.2	0.0394	0.0472
c	0.1	0.25	0.0039	0.0098
d	0.2	-	0.0079	-
E	2.1	2.64	0.0827	0.1039
e	1.2	1.4	0.0472	0.0551

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