

# MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

## MS2N7002M3

Product specification

## Features

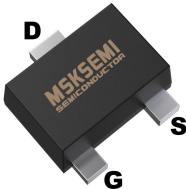
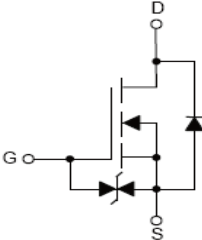

- High Density Cell Design for Low RDS(ON)
- Voltage Controlled Small Signal Switch
- Small Outline Surface Mount Package
- RoHS compliant / Green EMC

## Reference News

- Notebook
- Smartphone
- Battery Protection
- Hand-held Instruments

BVDSS	RDSON	ID
60V	2.2Ω	0.34A

## Reference News

PACKAGE OUTLINE	PIN Configuration	Marking
 <p>SOT-523</p>		

## MAXIMUM RATINGS (Ta=25℃ unless otherwise noted)

Symbol	Parameter	Value	Unit
$V_{DS}$	Drain-Source Voltage	60	V
$V_{GS}$	Gate-Source Voltage	±20	V
$V_{EBO}$	Emitter-Base Voltage	6	V
$I_D$	Drain Current-Continuous	0.34	A
$P_D$	Power Dissipation	0.15	W
$R_{JA}$	Thermal Resistance From Junction To Ambient	833	℃/W
$T_j$	Junction Temperature	150	℃
$T_{stg}$	Storage Temperature	-55~+150	℃

**ELECTRICAL CHARACTERISTICS @ 25°C Unless Otherwise Specified**

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	60			V
V <sub>GS(th)</sub>	Gate-Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.0	1.4	2.5	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =48V, V <sub>GS</sub> =0V			1.0	uA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V			±10	μA
		V <sub>GS</sub> =±10V, V <sub>DS</sub> =0V			±200	nA
		V <sub>GS</sub> =±5V, V <sub>DS</sub> =0V			±100	nA
R <sub>DS(on)</sub>	Drain-Source On-Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =500mA		1.3	4.0	Ω
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =200mA		1.4	4.5	
Q <sub>r</sub>	Recovered Charge	V <sub>GS</sub> =0V, I <sub>S</sub> =300mA, V <sub>R</sub> =25V dI/dt=-100A/μs		30		nC
Dynamic Characteristics						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =10V, V <sub>GS</sub> =0V, f=1MHz			40	pF
C <sub>oss</sub>	Output Capacitance				30	
C <sub>rss</sub>	Reverse Transfer Capacitance				10	
Switching Characteristics						
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DD</sub> =25V, V <sub>GS</sub> =10V, R <sub>L</sub> =250Ω, R <sub>GS</sub> =50K, R <sub>GEN</sub> =25Ω			10	nS
t <sub>d(off)</sub>	Turn-off Delay Time				15	
t <sub>rr</sub>	Reverse Recovery Time	V <sub>GS</sub> =0V, I <sub>S</sub> =300mA, V <sub>R</sub> =25V, dI/dt=-100A/μs		30		
Source-Drain Diode Characteristics						
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> =0V, I <sub>S</sub> =200mA		0.97	1.5	V

## Curve Characteristics

Fig. 1 - Output Characteristics

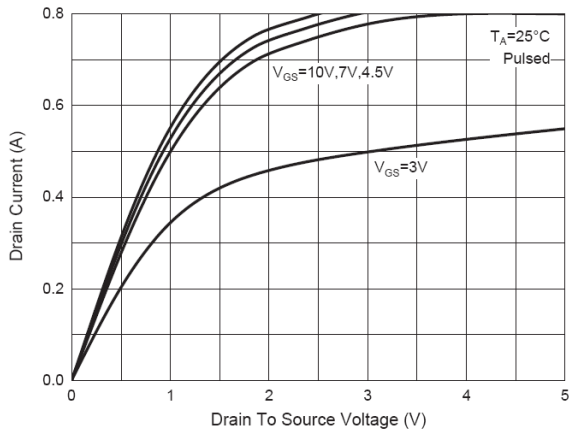


Fig. 2 - Transfer Characteristics

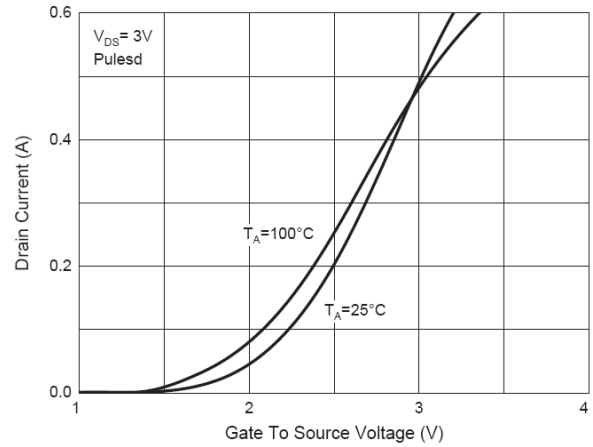


Fig. 3 -  $R_{DS(ON)} - I_D$

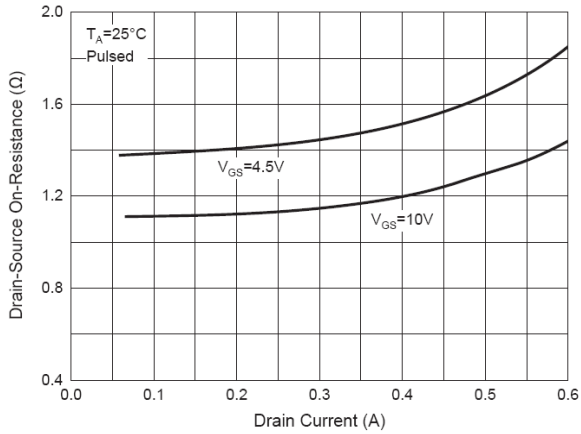


Fig. 4 -  $R_{DS(ON)} - V_{GS}$

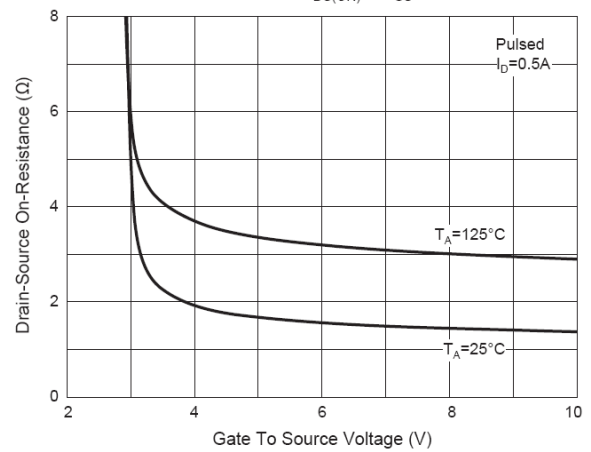


Fig. 5 -  $I_S - V_{SD}$

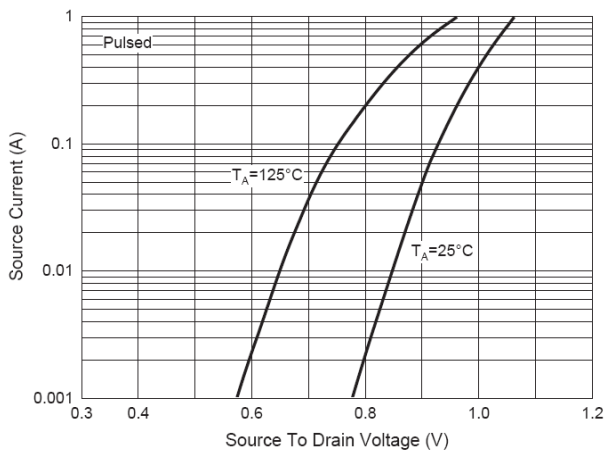
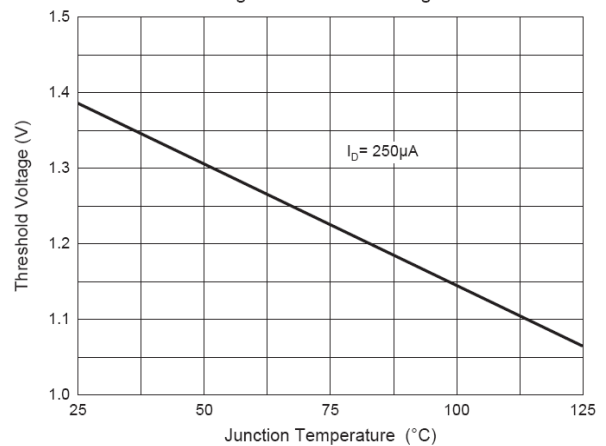
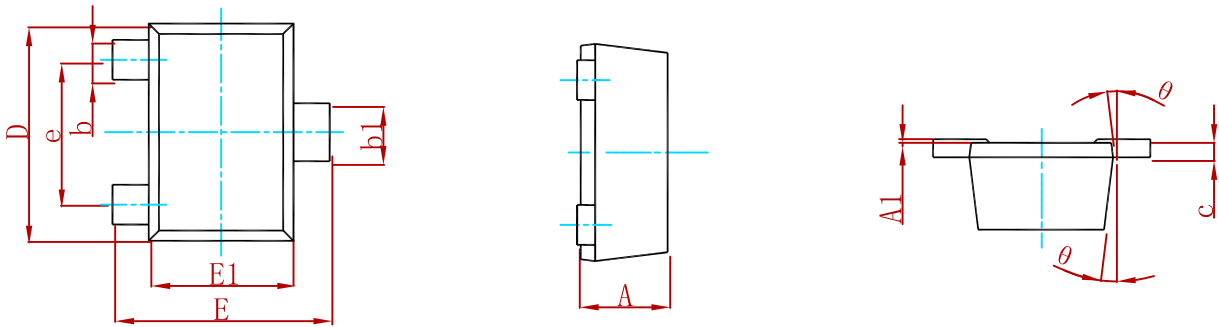


Fig. 6 - Threshold Voltage

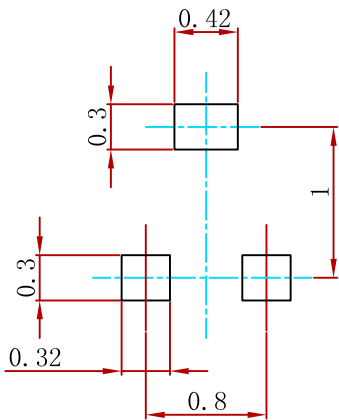


PACKAGE MECHANICAL DATA



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.430	0.500	0.017	0.020
A1	0.000	0.050	0.000	0.002
b	0.170	0.270	0.007	0.011
b1	0.270	0.370	0.011	0.015
c	0.080	0.150	0.003	0.006
D	1.150	1.250	0.045	0.049
E	1.150	1.250	0.045	0.049
E1	0.750	0.850	0.030	0.033
e	0.800TYP.		0.031TYP.	
θ	7° REF.		7° REF.	

Suggested Pad Layout



Note:  
1.Controlling dimension:in millimeters.  
2.General tolerance:± 0.05mm.  
3.The pad layout is for reference purposes only.

REEL SPECIFICATION

P/N	PKG	QTY
MS2N7002M3	SOT-723	8000

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