MSKSEMI 美森科
SEMICONDUCTOR

ESD TVS TSS MOV GDT PLED

5N06S-MS

Product specification

Description

The 5N06S-MS is the high cell density trenched N-ch MOSFETs, which provides excellent RDSON and efficiency for most of the small power switching and load switch applications.

The 5N06S-MS meet the RoHS and Green Product requirement with full function reliability approved.

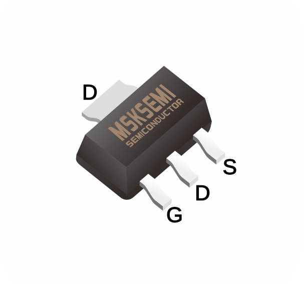
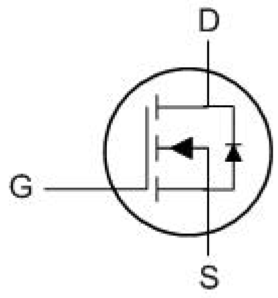
Product Summary

BVDSS	60V
RDSON	80mΩ
ID	5A

FEATURE

- Green Device Available
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

Reference News

PACKAGE OUTLINE	PIN CONFIGURATION	Marking
 1. GATE 2. DRAIN 3. SOURCE		
SOT-223		

Absolute Maximum Ratings (T$_A$=25℃unless otherwise noted)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		60	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_A = 25℃	5	A
		T_A = 100℃	2	A
I_{DM}	Pulsed Drain Current note1		12	A
P_D	Power Dissipation	T_A = 25℃	1.5	W
$R_{θJA}$	Thermal Resistance, Junction to Ambient		83	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +150	℃

Electrical Characteristics (T_J=25℃ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	60	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=60V, V_{GS}=0V,	-	-	1.0	μA
I_{GSS}	Gate to Body Leakage Current	V_{DS}=0V, V_{GS}=±20V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	1.0	1.4	2.0	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note2	V_{GS}=10V, I_D=3A	-	80	100	mΩ
		V_{GS}=4.5V, I_D=2A	-	90	120	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=25V, V_{GS}=0V, f=1.0MHz	-	350	-	pF
C_{oss}	Output Capacitance		-	29	-	pF
C_{rss}	Reverse Transfer Capacitance		-	23	-	pF
Q_g	Total Gate Charge	V_{DS}=30V, I_D=3A, V_{GS}=10V	-	9	-	nC
Q_{gs}	Gate-Source Charge		-	1.5	-	nC
Q_{gd}	Gate-Drain("Miller") Charge		-	2	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=30V,I_D=2A, R_{GEN}=3Ω, V_{GS}=10V	-	5	-	ns
t_r	Turn-on Rise Time		-	7	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	37	-	ns
t_f	Turn-off Fall Time		-	22	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	5	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	12	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S=3A	-	-	1.2	V

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Performance Characteristics

Figure1: Output Characteristics

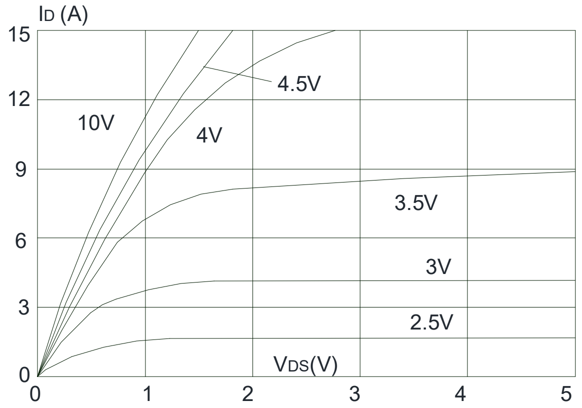


Figure 2: Typical Transfer Characteristics

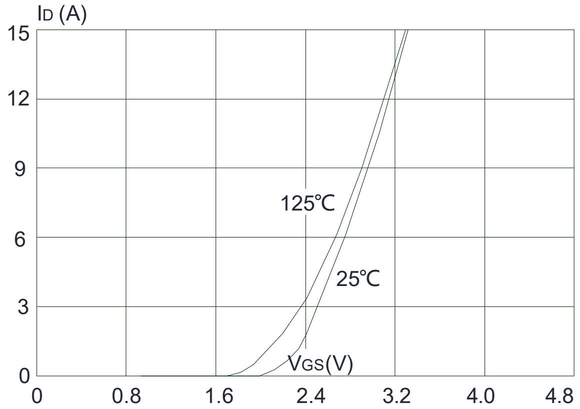


Figure 3: On-resistance vs. Drain Current

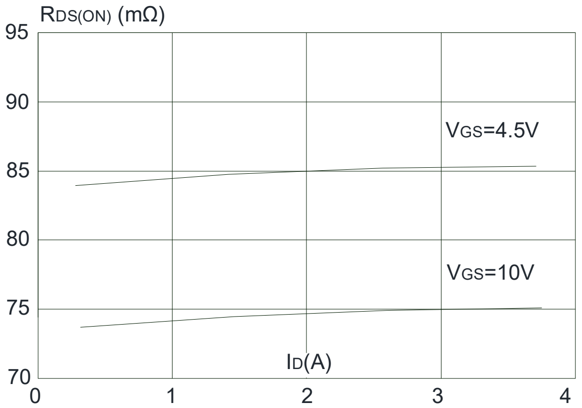


Figure 4: Body Diode Characteristics

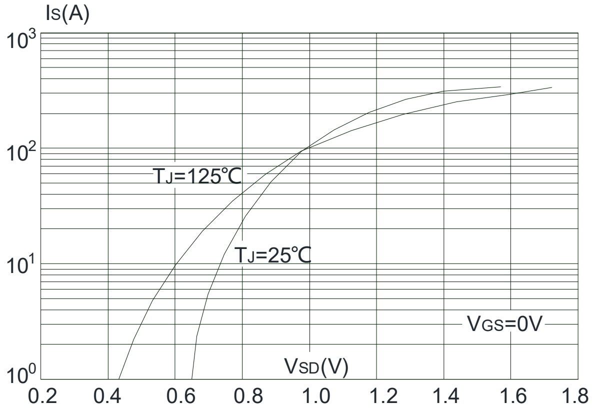


Figure 5: Gate Charge Characteristics

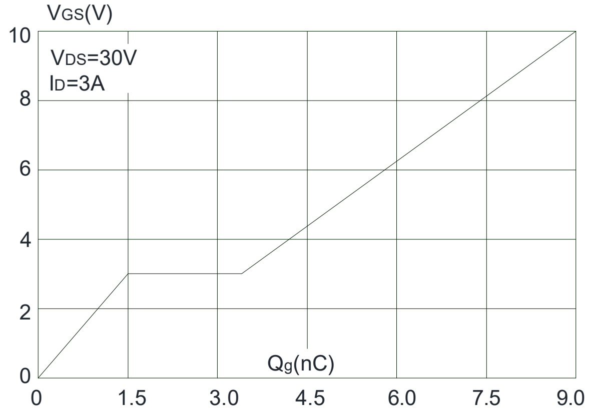


Figure 6: Capacitance Characteristics

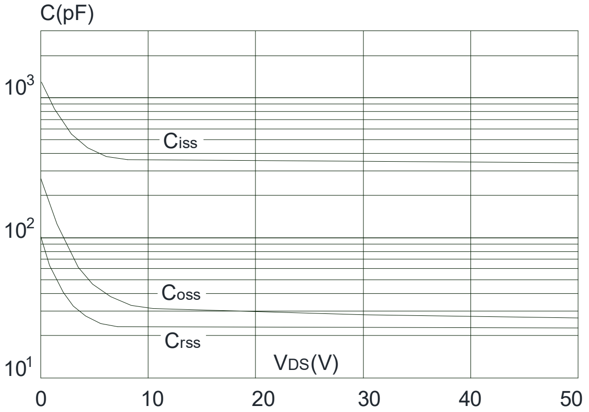


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

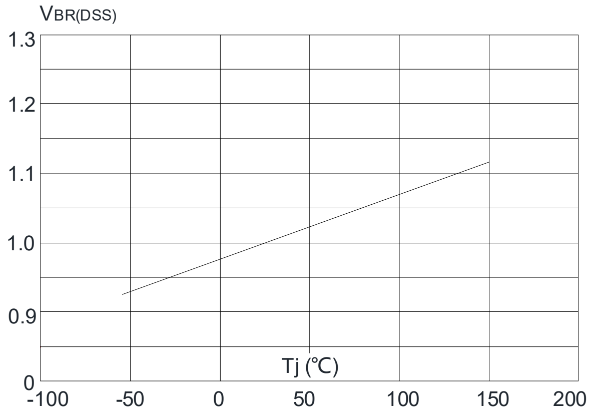


Figure 8: Normalized on Resistance vs. Junction Temperature

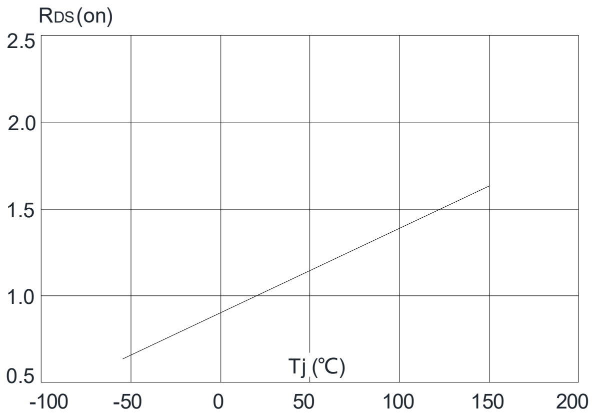


Figure 9: Maximum Safe Operating Area

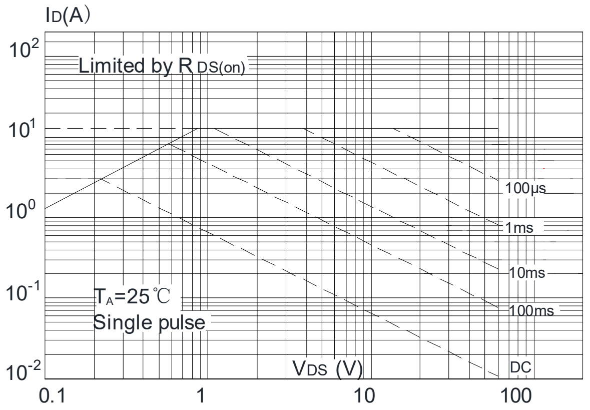


Figure 10: Maximum Continuous Drain Current vs.Ambient Temperature

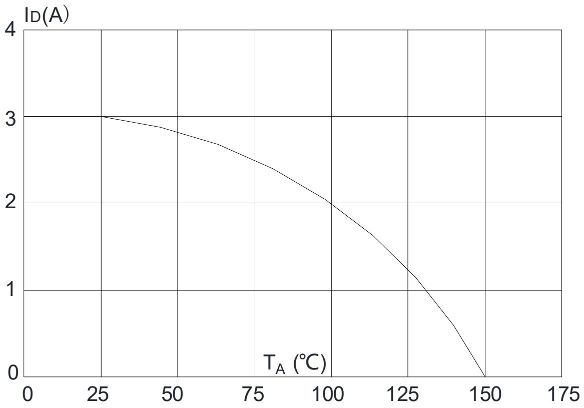
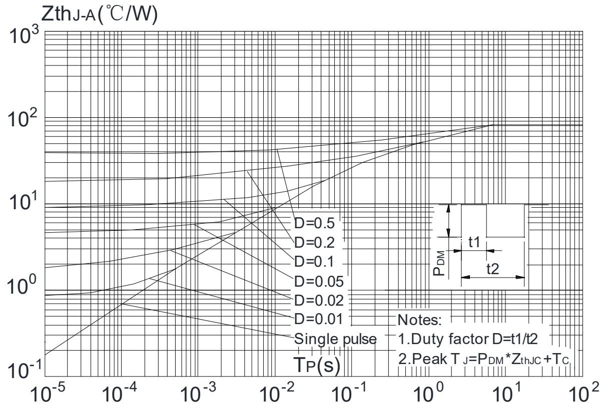
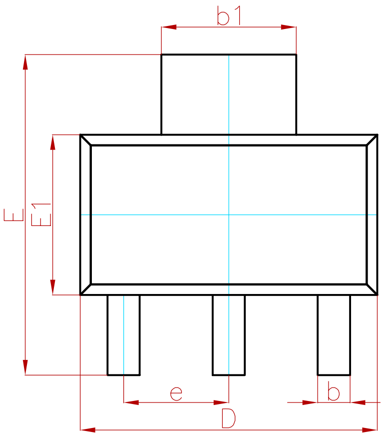


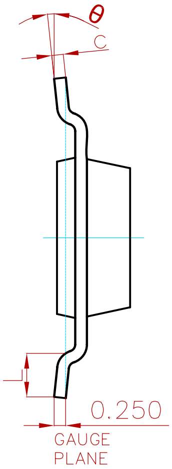
Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

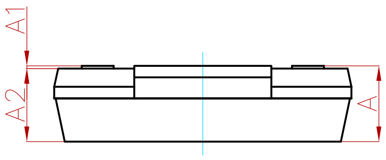


Notes:
1.Duty factor D=t1/t2
2.Peak $T_J=P_{DM}*Z_{thJC}+T_C$

PACKAGE MECHANICAL DATA

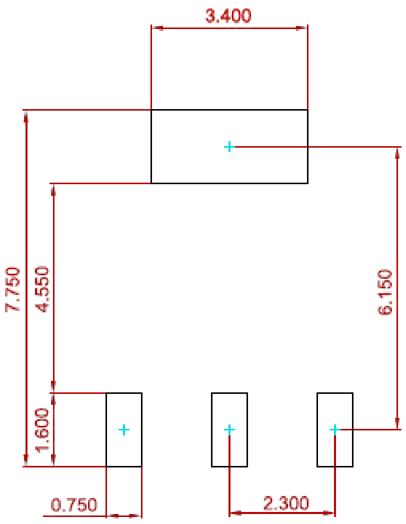






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	——	1.800	——	0.071
A1	0.020	0.100	0.001	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.840	0.026	0.033
b1	2.900	3.100	0.114	0.122
c	0.230	0.350	0.009	0.014
D	6.300	6.700	0.248	0.264
E	6.700	7.300	0.264	0.287
E1	3.300	3.700	0.130	0.146
e	2.300(BSC)		0.091(BSC)	
L	0.750	——	0.030	——
θ	0°	10°	0°	10°

Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.050mm.
3.The pad layout is for reference purposes only.

REEL SPECIFICATION

P/N	PKG	QTY
5N06S-MS	SOT-223	2500

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