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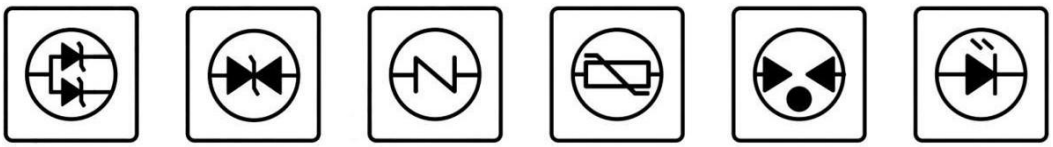
SEMICONDUCTOR



3400N-MS

Product specification

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Description

The 3400N-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 3400N-MS meet the RoHS and Green Product requirement with full function reliability approved.

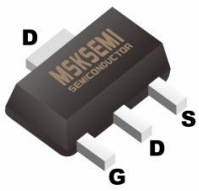
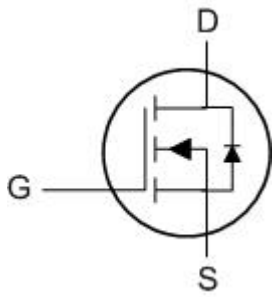
Product Summary

BVDSS	30V
RDSON	15mΩ
ID	7A

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
		MSKSEMI 3400N MS
SOT-89		

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±12	V
I_D@T_A=25°C	Continuous Drain Current, V_{GS} @ 10V[1]	7.0	A
I_D@T_A=70°C	Continuous Drain Current, V_{GS} @ 10V[1]	4.5	A
I_{DM}	Pulsed Drain Current[2]	25.4	A
P_D@T_A=25°C	Total Power Dissipation[3]	2.5	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

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Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient [1]	---	92	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	---	---	℃/W

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	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=30V, V_{GS}=0V,	-	-	1.0	μA
I_{GSS}	Gate to Body Leakage Current	V_{DS}=0V, V_{GS}= ±12V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	0.5	0.9	1.4	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note2	V_{GS}= 10V, I_D=4.2A	-	20	28	mΩ
		V_{GS}=4.5V, I_D=4A	-	25	34	
		V_{GS}=2.5V, I_D= 1A	-	35	50	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}= 15V, V_{GS}=0V, f= 1.0MHz	-	602	-	pF
C_{oss}	Output Capacitance		-	56	-	pF
C_{rss}	Reverse Transfer Capacitance		-	42	-	pF
Q_g	Total Gate Charge	V_{DS}= 15V, I=4A, V_{GS}=4.5V	-	4.8	-	nC
Q_{gs}	Gate-Source Charge		-	1.2	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	1.7	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DS}= 15V, I_D=4A, R_{GEN}=3Ω, V_{GS} =4.5V	-	12	-	ns
t_r	Turn-on Rise Time		-	52	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	17	-	ns
t_f	Turn-off Fall Time		-	10	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	7.0	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	25.2	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS}=0V, I_S=5.8A	-	-	1.2	V

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

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

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Typical Performance Characteristics

Figure1: Output Characteristics

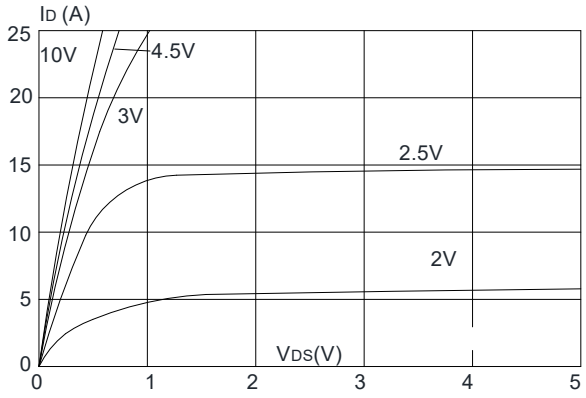

Figure 2: Typical Transfer Characteristics

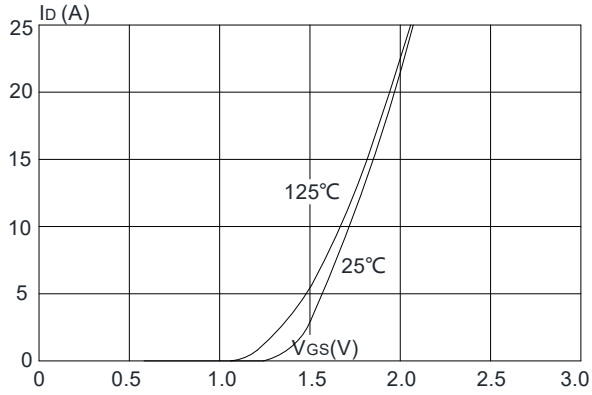

Figure 3: On-resistance vs. Drain Current

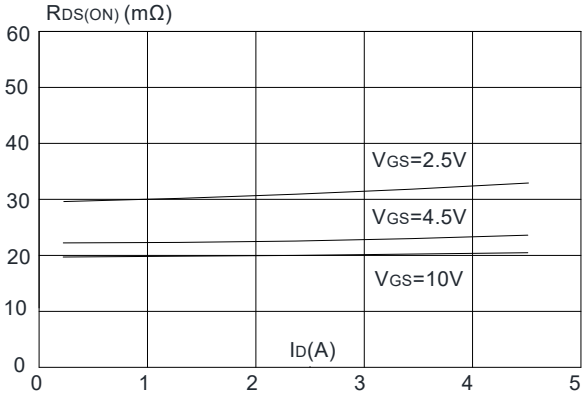

Figure 4: Body Diode Characteristics

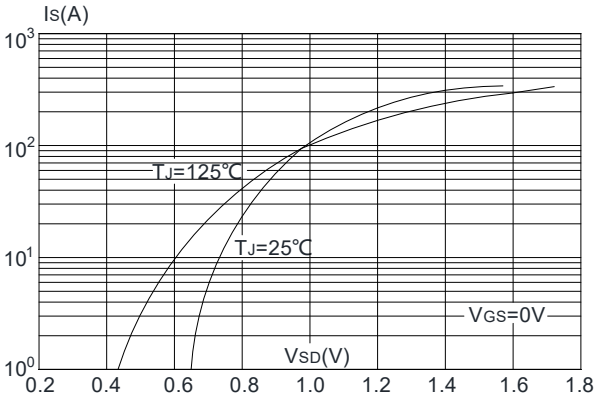

Figure 5: Gate Charge Characteristics

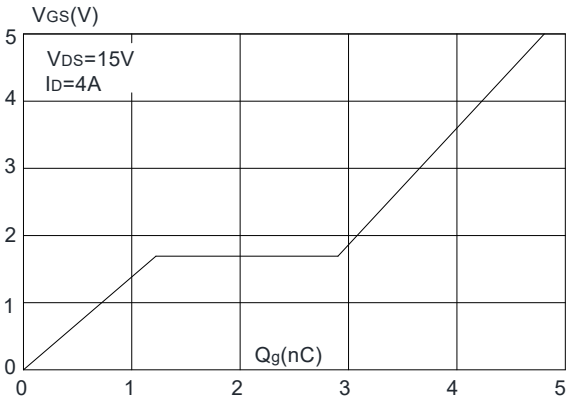

Figure 6: Capacitance Characteristics

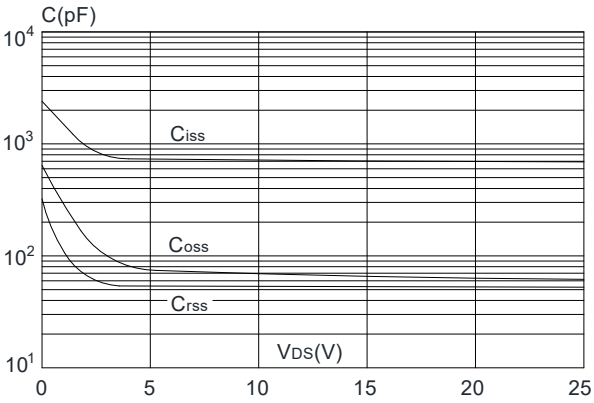

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Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

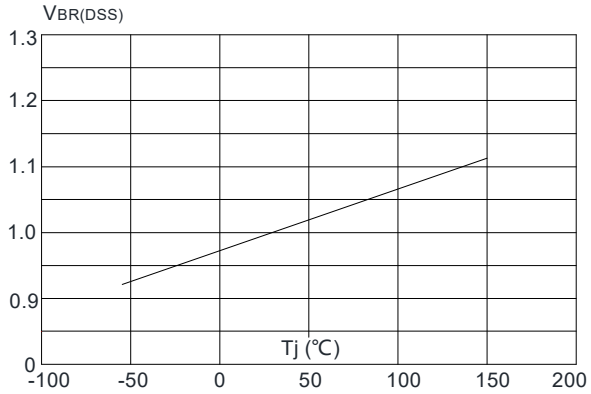


Figure 8: Normalized on Resistance vs. Junction Temperature

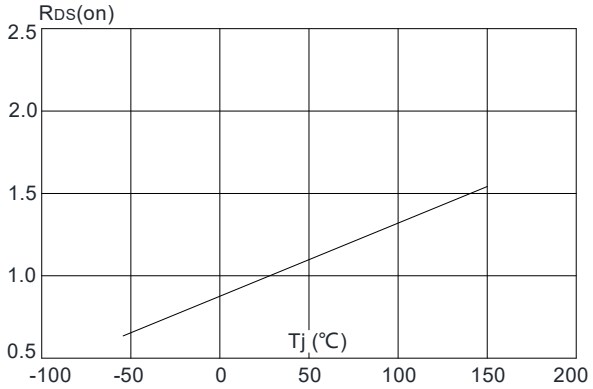


Figure 9: Maximum Safe Operating Area

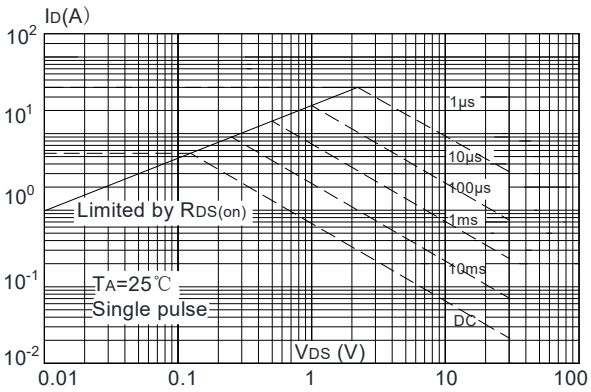


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

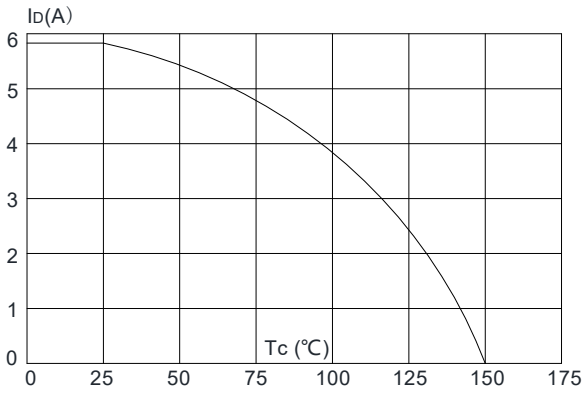
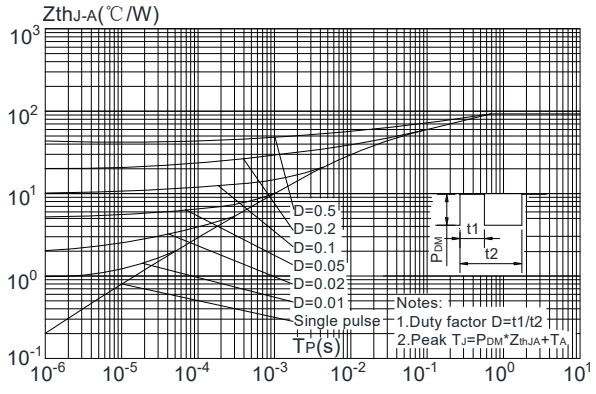


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



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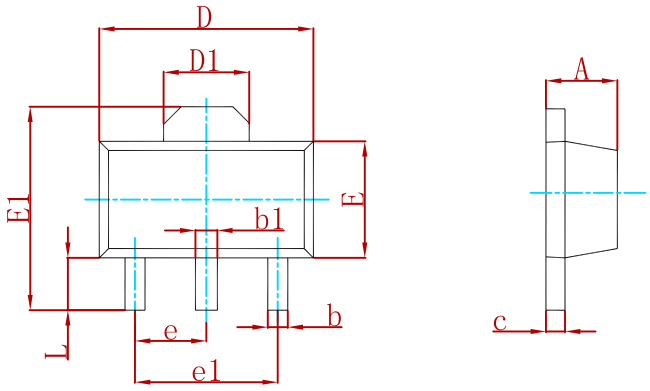
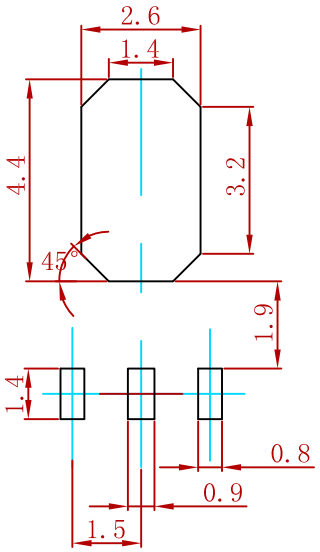
PACKAGE MECHANICAL DATA



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047

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
3400N-MS	SOT-89	1000

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