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SEMICONDUCTOR

ESD TVS TSS MOV GDT PLED

AON7404-MS
Product specification

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Description

The AON7404-MS uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.
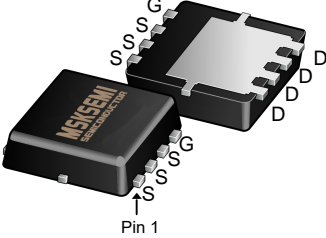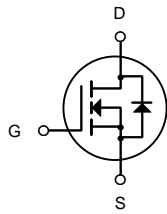
Features

- V_{DS} = 20V I_D =60A
- $R_{DS(ON)}$ < 5mΩ @ V_{GS}=4.5V

Application

- Battery protection
- Load switch
- Uninterruptible power supply

Reference News

DFN3X3-8L	N-Channel MOSFET	Marking
		MSKSEMI N7404 N20

Absolute Maximum Ratings (T_C=25°C unless otherwise specified)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current, V_{GS} @ 10V[1]	I_D@T_C=25℃	60	A
Continuous Drain urrent, V_{GS} @ 10V[1]	I_D@T_C=100℃	33	A
Pulsed Drain Current[2]	I_{DM}	220	A
Single Pulse Avalanche Energy[3]	EAS	46	mJ
Avalanche Current	I_{AS}	25	A
Total Power Dissipation[4]	P_D@T_C=25℃	15	W
Storage Temperature Range	T_{STG}	-55 to 150	℃
Operating Junction Temperature Range	T_J	-55 to 150	℃
Thermal Resistance Junction-ambient [1]	$R_{θJA}$	62	℃/W
Thermal Resistance Junction-Case[1]	$R_{θJC}$	4.5	℃/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	20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=20V, 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	0.4	0.7	1.1	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note3	V_{GS}=4.5V, I_D=30A	-	4.0	5	mΩ
		V_{GS}=2.5V, I_D=20A	-	6.0	9	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=10V, V_{GS}=0V, f = 1.0MHz	-	2500	-	pF
C_{oss}	Output Capacitance		-	407	-	pF
C_{rss}	Reverse Transfer Capacitance		-	386	-	pF
Q_g	Total Gate Charge	V_{DS}=10V, I_D=30A, V_{GS}=4.5V	-	32	-	nC
Q_{gs}	Gate-Source Charge		-	3	-	nC
Q_{gd}	Gate-Drain("Miller") Charge		-	11	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=10V, I_D=30A, R_{GEN}=3Ω, V_{GS} =4.5V	-	17	-	ns
t_r	Turn-on Rise Time		-	49	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	74	-	ns
t_f	Turn-off Fall Time		-	26	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	75	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	300	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S=30A	-	-	1.2	V

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

2. EAS condition: T_J=25℃, V_{DD}=10V, V_G=4.5V, L=0.5mH, R_G=25Ω, I_{AS}=15A

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

Typical Performance Characteristics
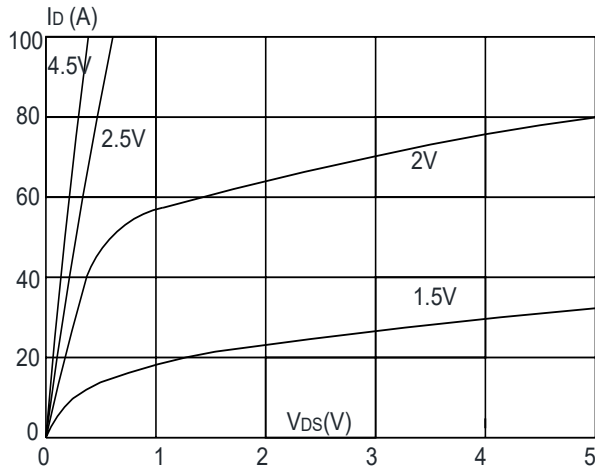
Figure1: Output Characteristics

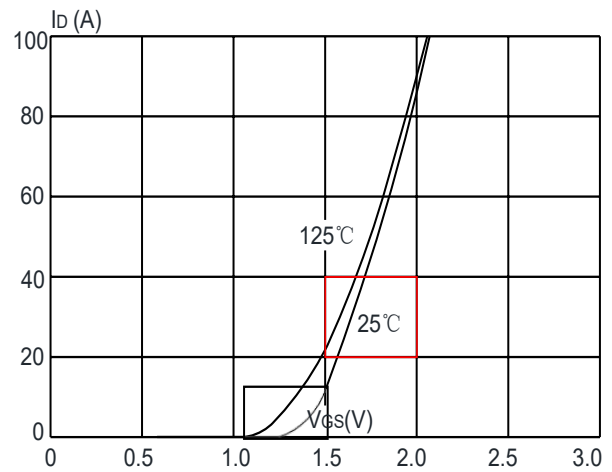**Figure 2:** Typical Transfer Characteristics

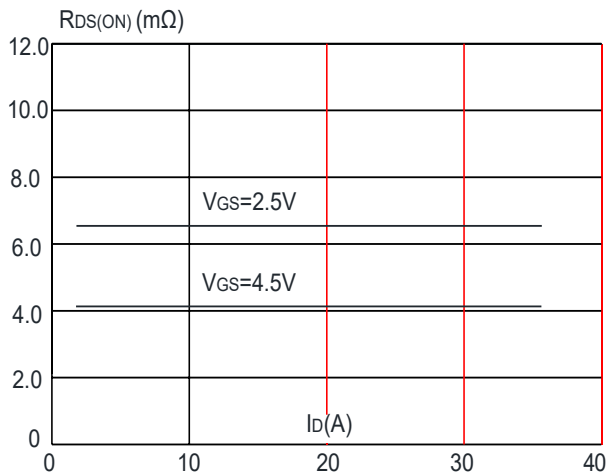**Figure 3:** On-resistance vs. Drain Current

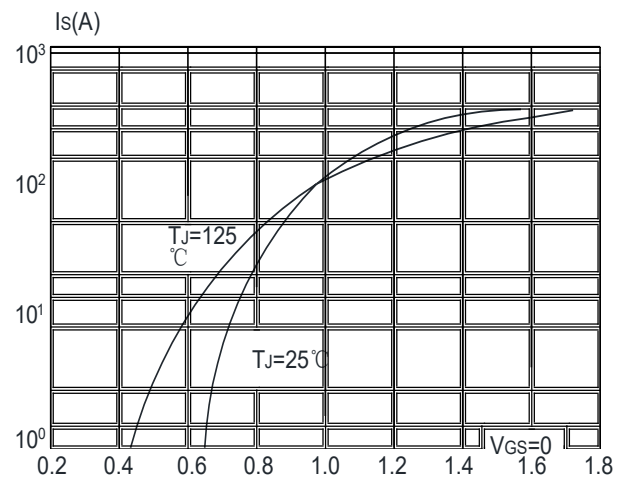**Figure 4:** Body Diode Characteristics

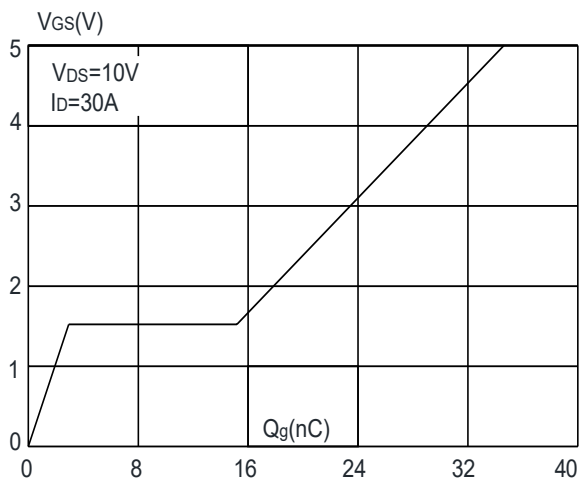**Figure 5:** Gate Charge Characteristics

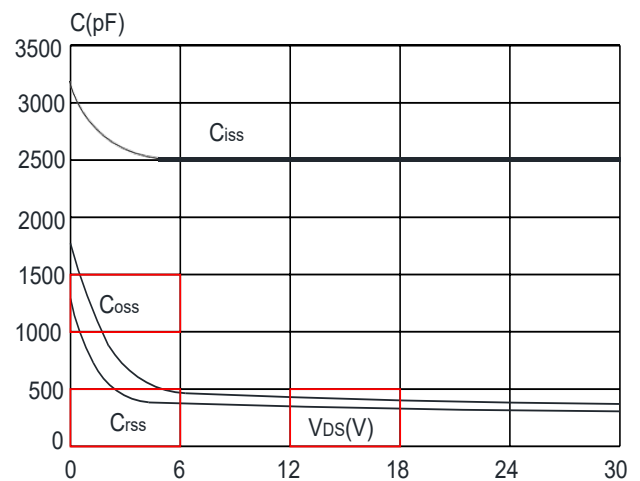**Figure 6:** Capacitance Characteristics

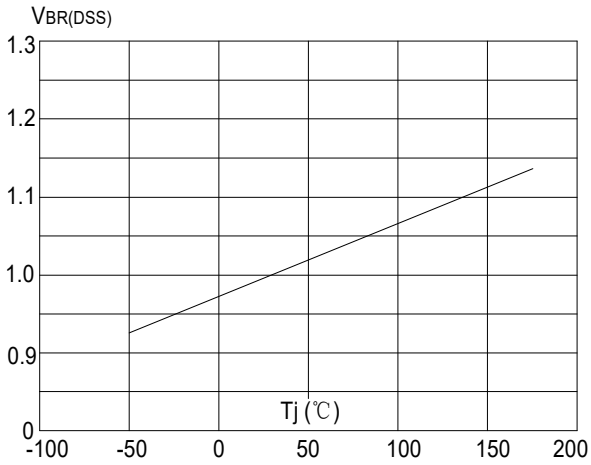**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature

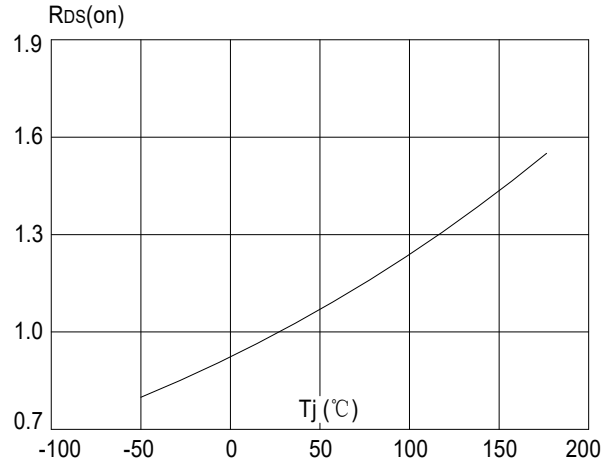**Figure 8:** Normalized on Resistance vs. Junction Temperature
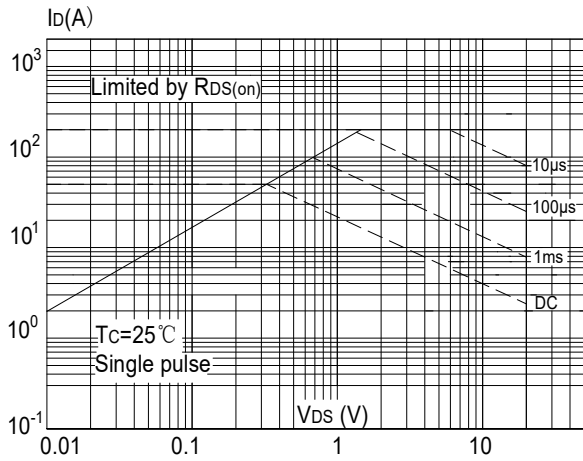

Figure 9: Maximum Safe Operating Area

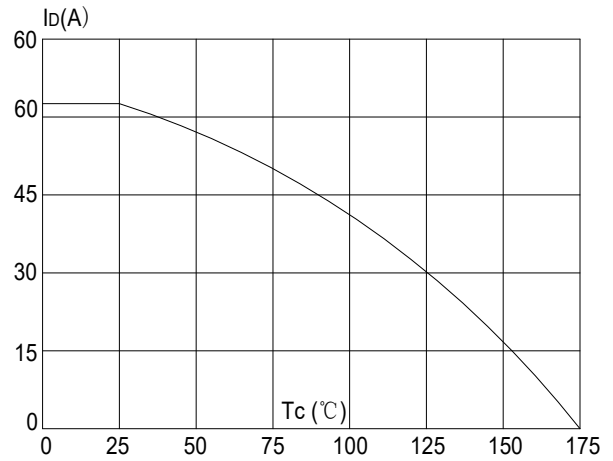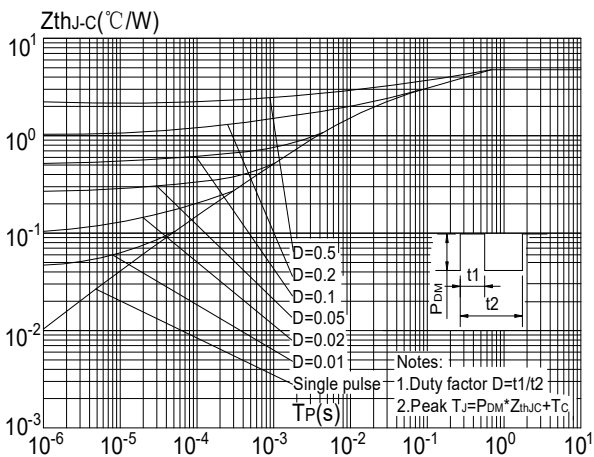**Figure 10:** Maximum Continuous Drain Current vs. Case Temperature

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

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DFN3X3-8L Package Information
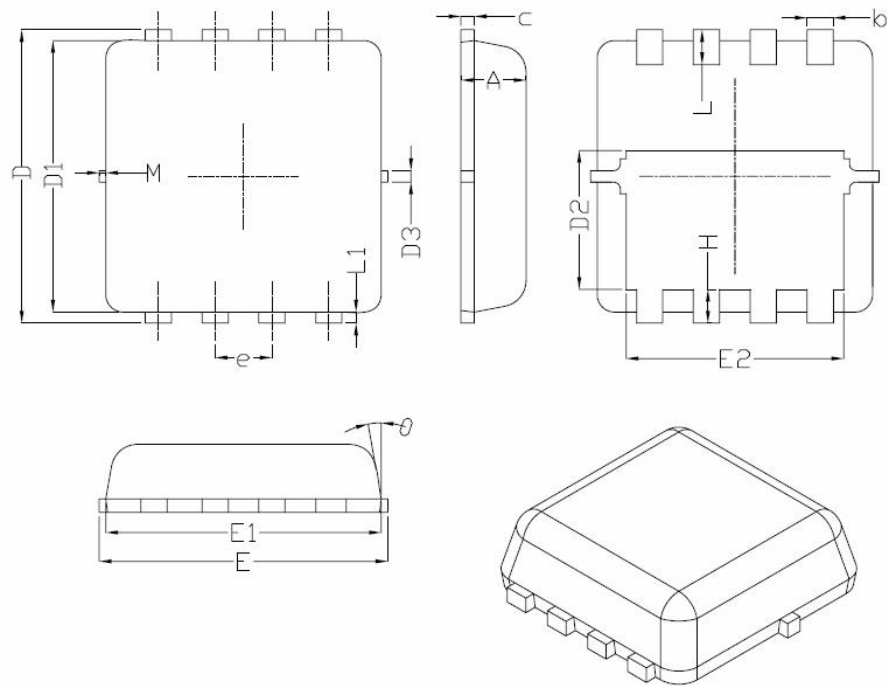
Symbol	Dimensions In Millimeters		
	Min.	Nom.	Max.
A	0.70	0.75	0.80
b	0.25	0.30	0.35
c	0.10	0.15	0.25
D	3.25	3.35	3.45
D1	3.00	3.10	3.20
D2	1.48	1.58	1.68
D3	-	0.13	-
E	3.20	3.30	3.40
E1	3.00	3.15	3.20
E2	2.39	2.49	2.59
e	0.65BSC		
H	0.30	0.39	0.50
L	0.30	0.40	0.50
L1	-	0.13	-
M	*	*	0.15
θ		10°	12°

REEL SPECIFICATION

P/N	PKG	QTY
AON7404-MS	DFN3X3-8L	5000

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