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AON6407-MS

Product specification

Description

The AON6407-MS uses advanced trench technology to provide excellent RDS(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

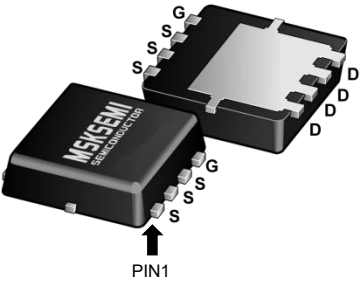
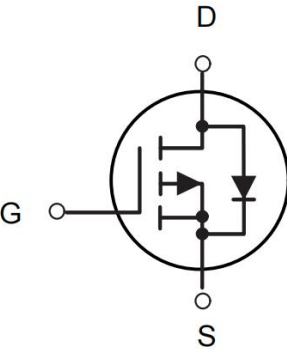

VDS = -30V, ID = -100A

RDS(ON) < 4 mΩ VGS=-10V

Application

- Battery protection
- Load switch
- Uninterruptible power supply

Reference News

PACKAGE OUTLINE	P-Channel MOSFET	Marking
 <p>DFN5X6-8L</p>		

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

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	-30	V
V _{GS}	Gate-Source Voltage	±20	V
I _D @ T _C =25°C	Continuous Drain Current, V _{GS} @ 10V ¹	-100	A
I _D @ T _C =100°C	Continuous Drain Current, V _{GS} @ 10V ¹	-70	A
I _{DM}	Pulsed Drain Current ²	-250	A
EAS	Single Pulse Avalanche Energy ³	80	mJ
I _{AS}	Avalanche Current	-70	A
P _D @ T _C =25°C	Total Power Dissipation ⁴	120	W
T _{STG}	Storage Temperature Range	-55 to 150	°C
T _J	Operating Junction Temperature Range	-55 to 150	°C
R _{θJA}	Thermal Resistance Junction-Ambient ¹	50	°C/ W
R _{θJC}	Thermal Resistance Junction-Case ¹	1.6	°C/ W

Electrical Characteristics (TA=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain- Source Breakdown Voltage	V _{GS} =0V , I _D =-250uA	-30	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =-10V , I _D =-20A	---	3	4.0	mΩ
		V _{GS} =-4.5V , I _D =-15A	---	4.2	6.0	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250uA	-1.2	---	-2.5	V
I _{DSS}	Drain- Source Leakage Current	V _{DS} =-24V , V _{GS} =0V , T _J =25°C	---	---	-1	A
		V _{DS} =-24V , V _{GS} =0V , T _J =55°C	---	---	-5	A
I _{GSS}	Gate- Source Leakage Current	V _{GS} = ±20V , V _{DS} =0V	---	---	± 100	A
R _g	Gate Resistance	V _{DS} =0V , V _{GS} =0V , f=1MHz	---	1.2	---	Ω
Q _g	Total Gate Charge (-10V)	V _{DS} =-15V , V _{GS} =-10V , I _D =-18A	---	60	---	nC
Q _{gs}	Gate- Source Charge		---	9	---	
Q _{gd}	Gate- Drain Charge		---	15	---	
T _{d(on)}	Turn- On Delay Time	V _{DD} =-15V , V _{GS} =-10V , R _G =3.3Ω , I _D =-20A	---	17	---	ns
T _r	Rise Time		---	40	---	
T _{d(off)}	Turn- Off Delay Time		---	55	---	
T _f	Fall Time		---	13	---	
C _{iss}	Input Capacitance	V _{DS} =-25V , V _{GS} =0V , f=1MHz	---	3450	---	pF
C _{oss}	Output Capacitance		---	255	---	
C _{rss}	Reverse Transfer Capacitance		---	140	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current ^{1,5}	V _G =V _D =0V , Force Current	---	---	-100	A
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V , I _S =-1A , T _J =25°C	---	---	-1.2	V
t _{rr}	Reverse Recovery Time	I _F =-20A , di/dt=100A/μs ,	---	22	---	S
Q _{rr}	Reverse Recovery Charge	T _J =25°C	---	72	---	°C

Note :

- 1.The data tested by surface mounted on a 1 inch 2FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%
- 3.The EAS data shows Max. rating . The test condition is V_{DD}=-50V,V_{GS}=-10V,L=0.1mH,I_{AS}=-40A
- 4.The power dissipation is limited by 150°C junction temperature
- 5.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation
- 6.The maximum current rating is package limited.

Typical Characteristics

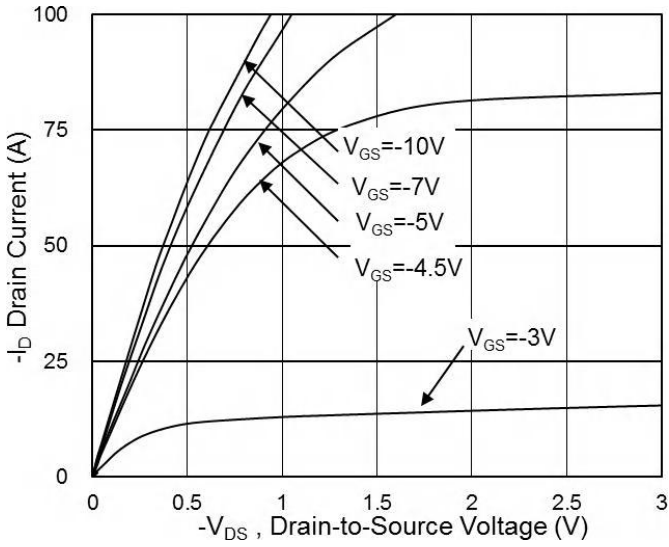


Figure 1: Switching Test Circuit

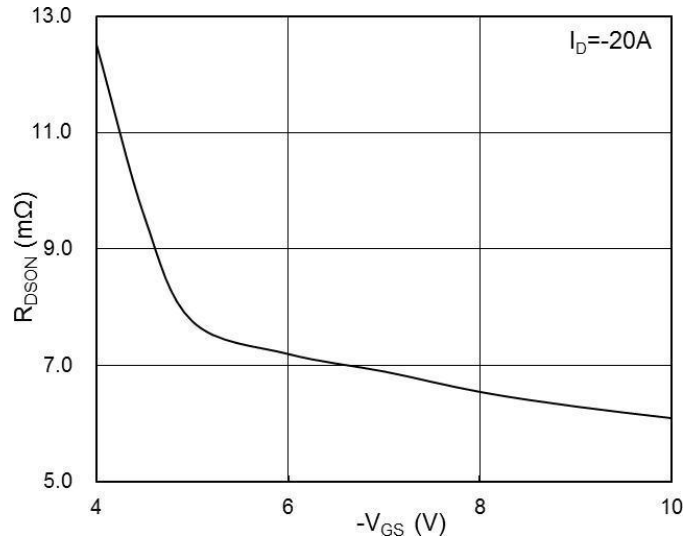


Fig.2 On-Resistance vs G-S Voltage

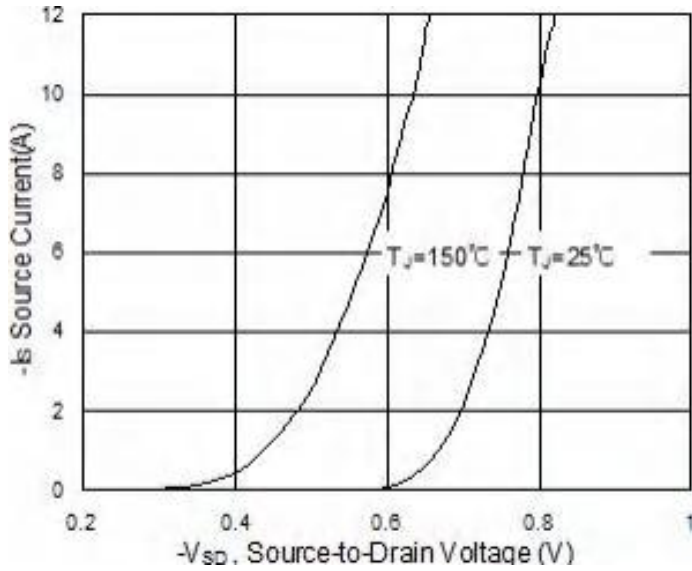


Fig. 3 Source Drain Forward Characteristics

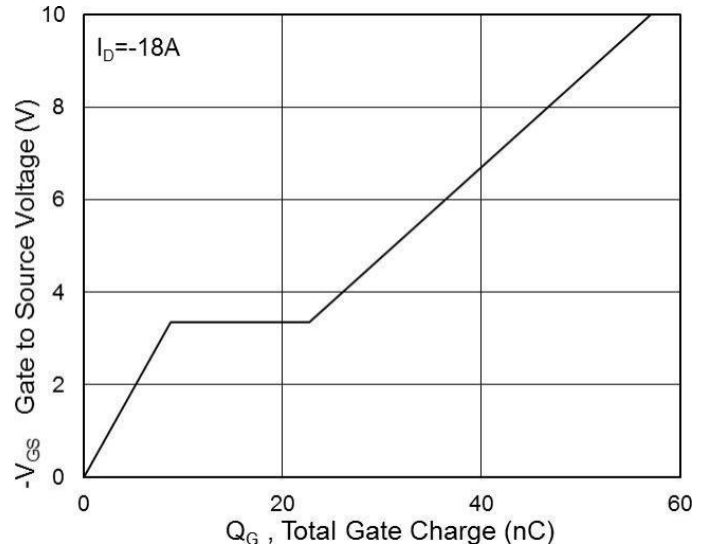


Fig.4 Gate-Charge Characteristics

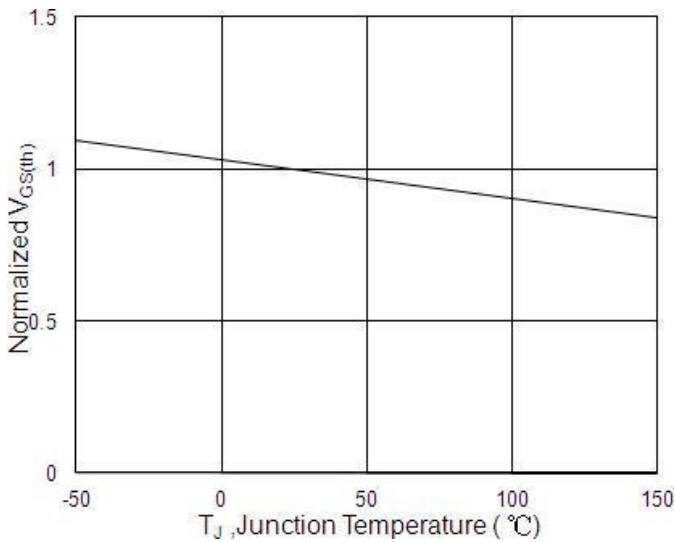


Fig.5 Normalized $-V_{GS(th)}$ vs T_J

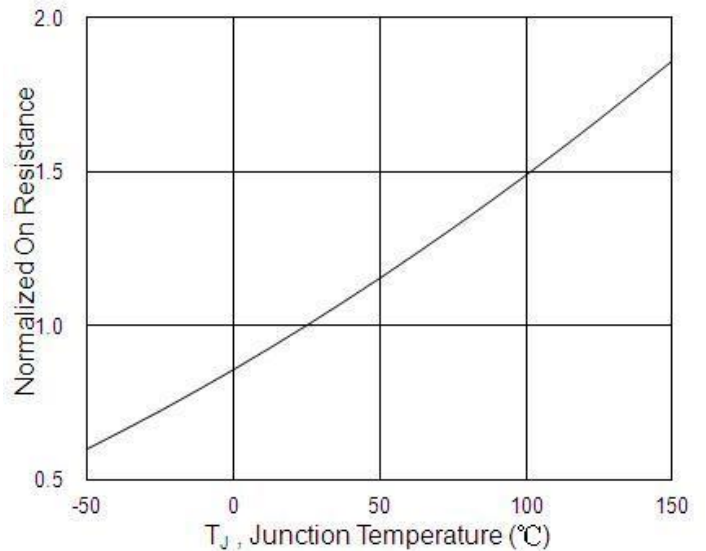


Fig.6 Normalized $R_{DS(on)}$ vs T_J

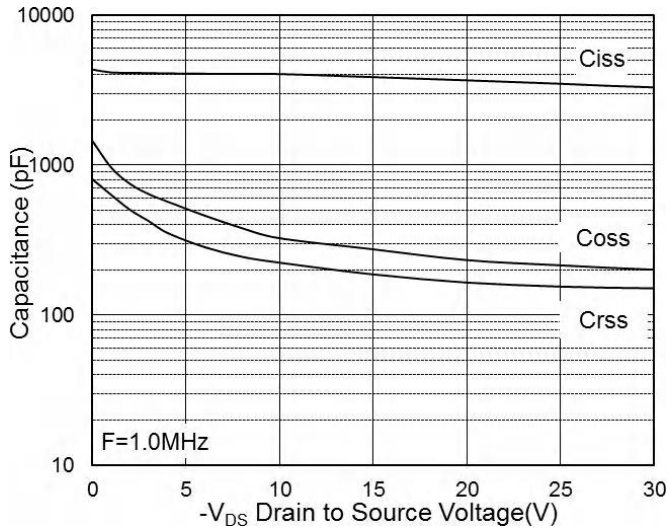


Fig.7 Capacitance

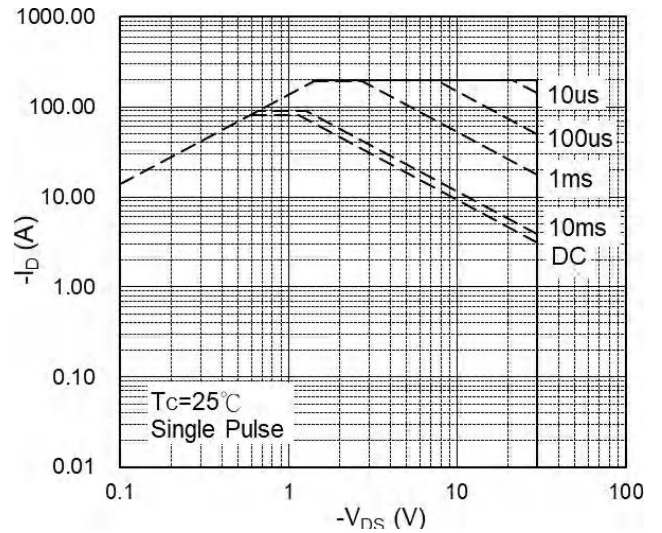


Fig.8 Safe Operating Area

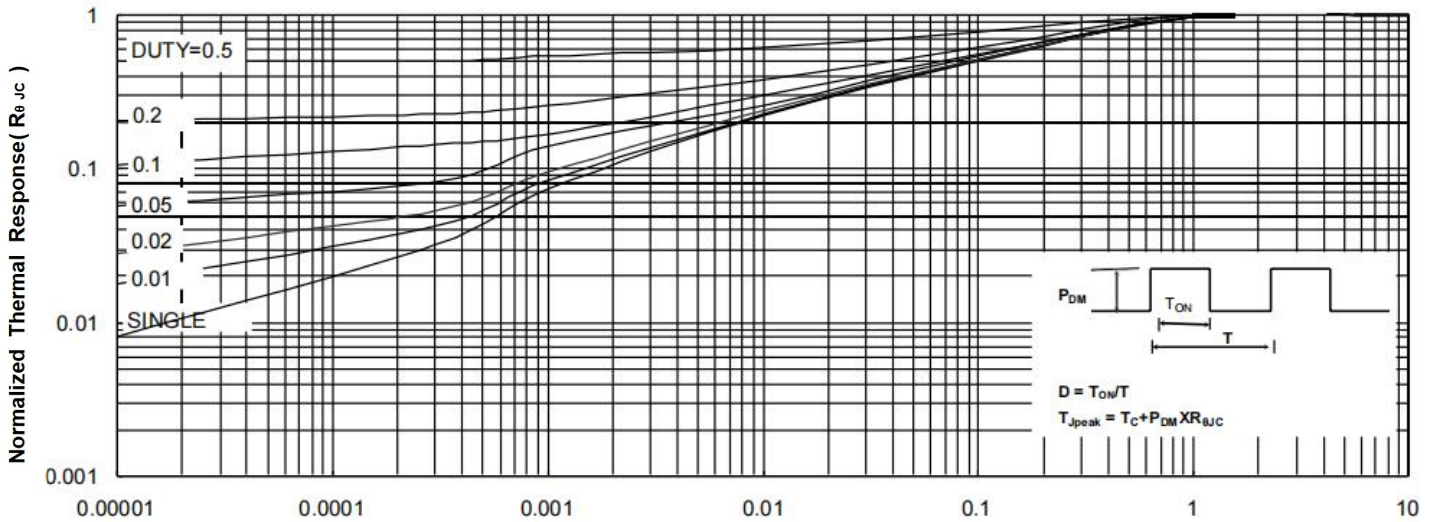


Fig.9 Normalized Maximum Transient Thermal Impedance

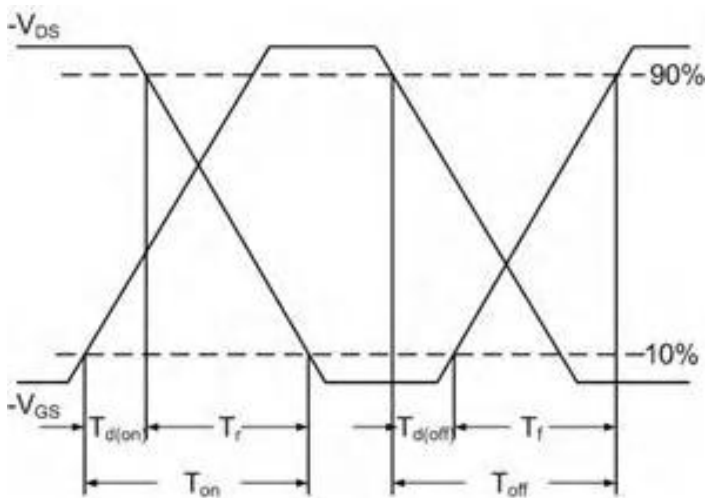


Fig.10 Switching Time Waveform

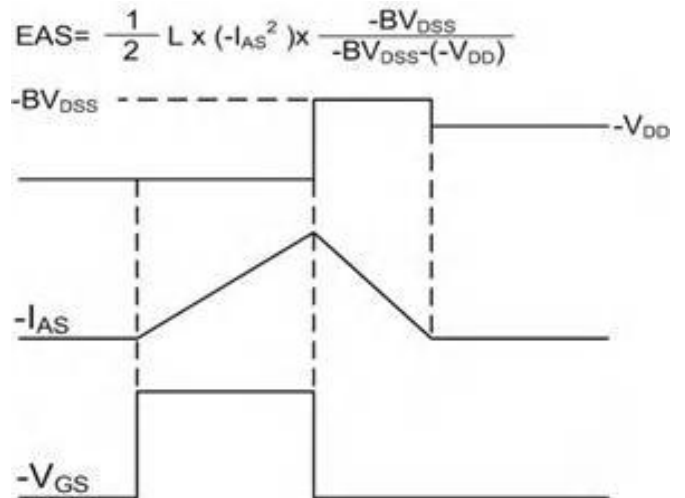
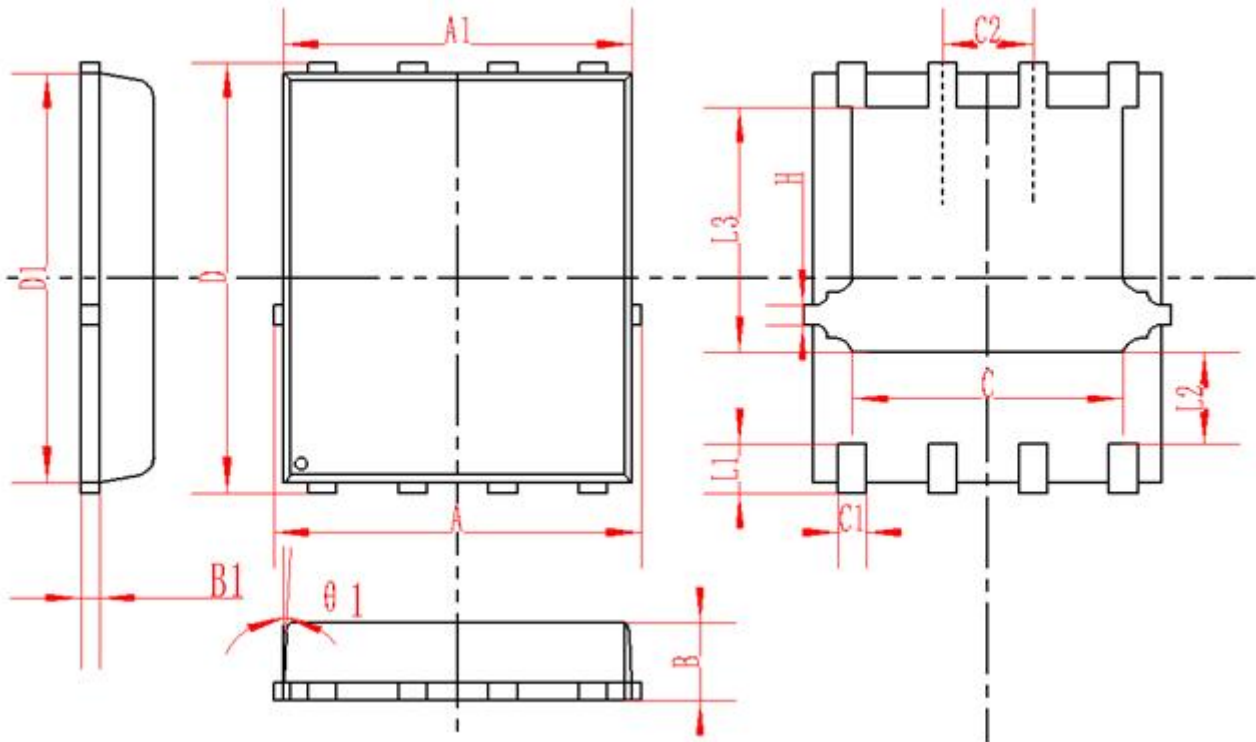


Fig.11 Unclamped Inductive Switching Waveform

DFN5X6-8L Package Information



SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	4.95	5	5.05	0.195	0.197	0.199
A1	4.82	4.9	4.98	0.190	0.193	0.196
D	5.98	6	6.02	0.235	0.236	0.237
D1	5.67	5.75	5.83	0.223	0.226	0.230
B	0.9	0.95	1	0.035	0.037	0.039
B1	0.254REF			0.010REF		
C	3.95	4	4.05	0.156	0.157	0.159
C1	0.35	0.4	0.45	0.014	0.016	0.018
C2	1.27TYP			0.5TYP		
$\theta 1$	8°	10°	12°	8°	10°	12°
L1	0.63	0.64	0.65	0.025	0.025	0.026
L2	1.2	1.3	1.4	0.047	0.051	0.055
L3	3.415	3.42	3.425	0.134	0.135	0.135
H	0.24	0.25	0.26	0.009	0.010	0.010

REEL SPECIFICATION

P/N	PKG	QTY
AON6407-MS	DFN5X6-8L	5000

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