

# MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

## AO6800-MS

Product specification

## Features

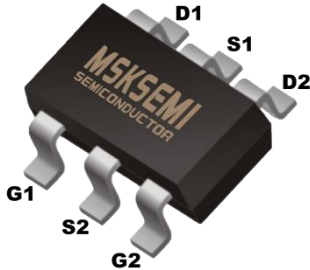
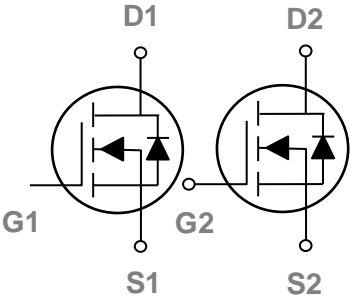

- 30V, 4.0A,  $R_{DS(ON)} = 30m\Omega$  @  $V_{GS} = 10V$
- Improved dv/dt capability
- Fast switching
- Green Device Available

## Applications

- MB / VGA / Vcore
- POL Applications
- SMPS 2<sup>nd</sup> SR

BVDSS	RDSON	ID
30V	30m $\Omega$	4.0A

## Reference News

PACKAGE OUTLINE	PIN Configuration	Marking
 <p>SOT-23-6L</p>		

## Absolute Maximum Ratings $T_c=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	30	V
$V_{GS}$	Gate-Source Voltage	$\pm 12$	V
$I_D$	Drain Current - Continuous ( $T_A=25^\circ\text{C}$ )	4.0	A
	Drain Current - Continuous ( $T_A=70^\circ\text{C}$ )	3.0	A
$I_{DM}$	Drain Current - Pulsed <sup>1</sup>	20	A
$P_D$	Power Dissipation ( $T_A=25^\circ\text{C}$ )	1.25	W
	Power Dissipation - Derate above $25^\circ\text{C}$	0.01	W/ $^\circ\text{C}$
$T_{STG}$	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
$T_J$	Operating Junction Temperature Range	-55 to 125	$^\circ\text{C}$

## Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to ambient	---	100	$^\circ\text{C/W}$

## N-CH Electrical Characteristics (T<sub>J</sub>=25 °C,unless otherwise)

### Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V , I <sub>D</sub> =250uA	30	---	---	V
ΔBV <sub>DSS</sub> /ΔT <sub>J</sub>	BV <sub>DSS</sub> Temperature Coefficient	Reference to 25°C , I <sub>D</sub> =1mA	---	0.02	---	V/°C
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =30V , V <sub>GS</sub> =0V , T <sub>J</sub> =25°C	---	---	1	uA
		V <sub>DS</sub> =24V , V <sub>GS</sub> =0V , T <sub>J</sub> =125°C	---	---	10	uA
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>GS</sub> = ±12V , V <sub>DS</sub> =0V	---	---	±100	nA

### On Characteristics

R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance <sup>3</sup>	V <sub>GS</sub> =10V , I <sub>D</sub> =3A	---	30	45	mΩ
		V <sub>GS</sub> =4.5V , I <sub>D</sub> =2A	---	40	55	mΩ
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250uA	0.5	1.0	1.5	V
ΔV <sub>GS(th)</sub>	V <sub>GS(th)</sub> Temperature Coefficient		---	-3.2	---	mV/°C
gfs	Forward Transconductance	V <sub>DS</sub> =10V , I <sub>D</sub> =3A	---	4	---	S

### Dynamic and switching Characteristics

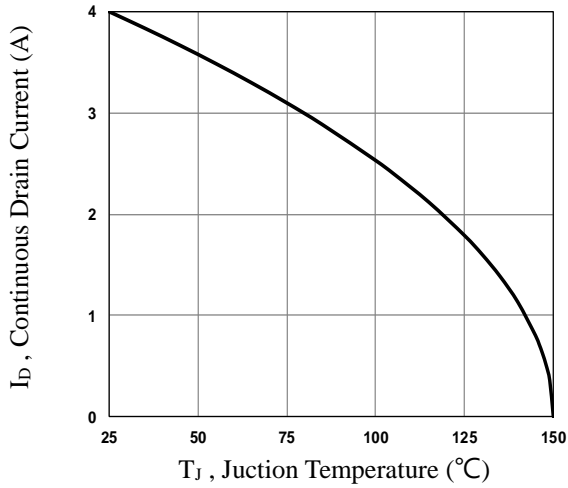
Q <sub>g</sub>	Total Gate Charge <sup>2, 3</sup>	V <sub>DS</sub> =24V , V <sub>GS</sub> =10V , I <sub>D</sub> =3A	---	5.1	---	nC
Q <sub>gs</sub>	Gate-Source Charge <sup>2, 3</sup>		---	0.4	---	
Q <sub>gd</sub>	Gate-Drain Charge <sup>2, 3</sup>		---	2.2	---	
T <sub>d(on)</sub>	Turn-On Delay Time <sup>2, 3</sup>	V <sub>DD</sub> =15V , V <sub>GS</sub> =10V , R <sub>G</sub> =6Ω I <sub>D</sub> =1A	---	2.6	---	ns
T <sub>r</sub>	Rise Time <sup>2, 3</sup>		---	8.8	---	
T <sub>d(off)</sub>	Turn-Off Delay Time <sup>2, 3</sup>		---	18.4	---	
T <sub>f</sub>	Fall Time <sup>2, 3</sup>		---	5.1	---	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =25V , V <sub>GS</sub> =0V , F=1MHz	---	333	---	pF
C <sub>oss</sub>	Output Capacitance		---	52	---	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	43	---	
R <sub>g</sub>	Gate resistance	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1MHz	---	0.95	---	Ω

### Drain-Source Diode Characteristics and Maximum Ratings

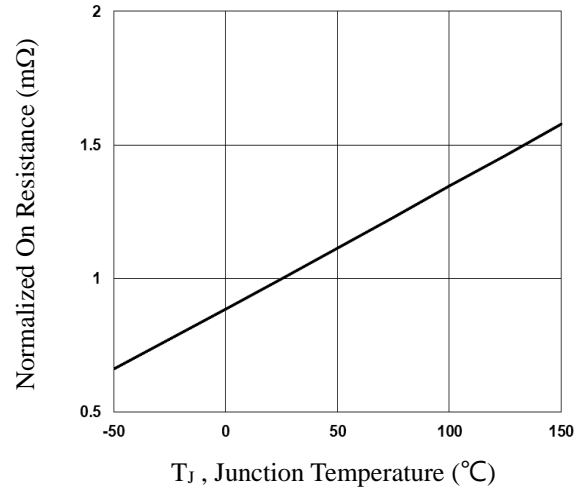
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I <sub>S</sub>	Continuous Source Current	V <sub>G</sub> =V <sub>D</sub> =0V , Force Current	---	---	4	A
I <sub>SM</sub>	Pulsed Source Current <sup>3</sup>		---	---	8	A
V <sub>SD</sub>	Diode Forward Voltage <sup>3</sup>	V <sub>GS</sub> =0V , I <sub>S</sub> =1A , T <sub>J</sub> =25°C	---	---	1.3	V

Note :

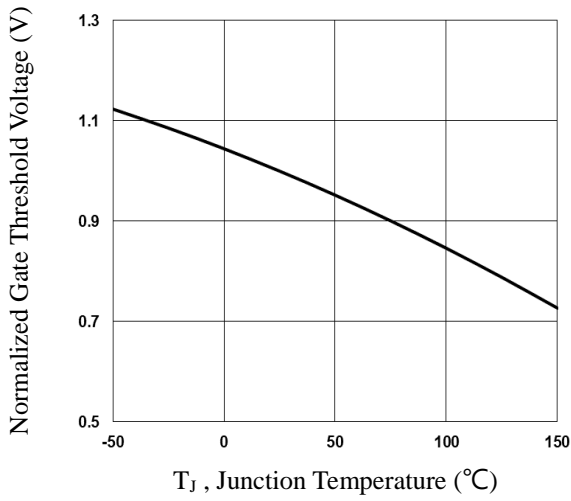
1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
3. Essentially independent of operating temperature.



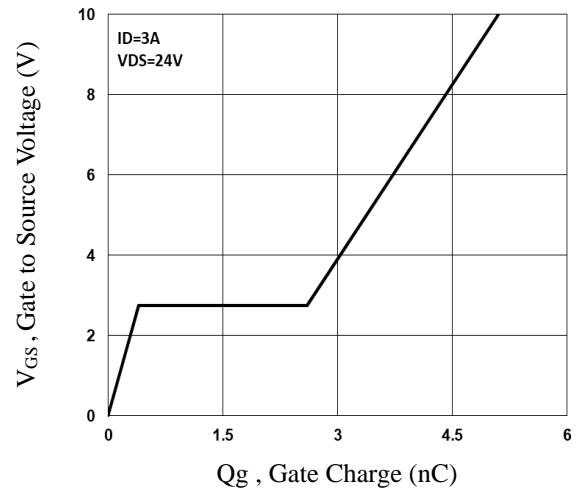
**Fig.1 Continuous Drain Current vs.  $T_J$**



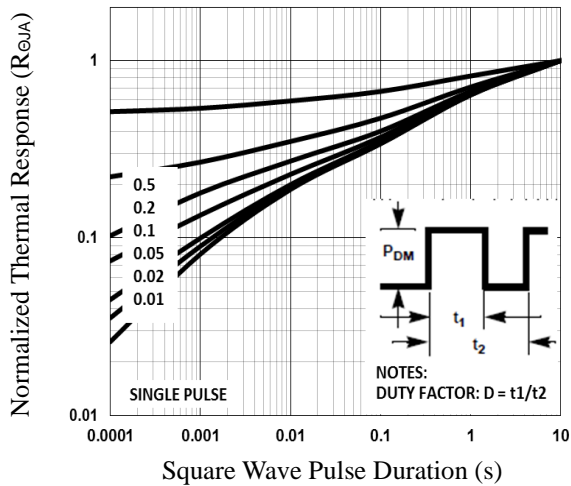
**Fig.2 Normalized  $R_{DS(on)}$  vs.  $T_J$**



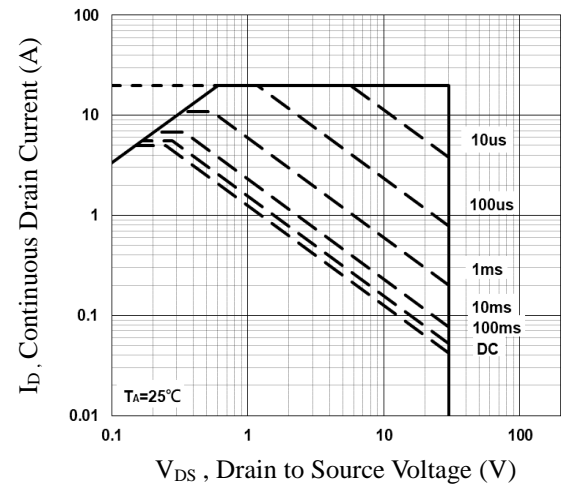
**Fig.3 Normalized  $V_{th}$  vs.  $T_J$**



**Fig.4 Gate Charge Waveform**

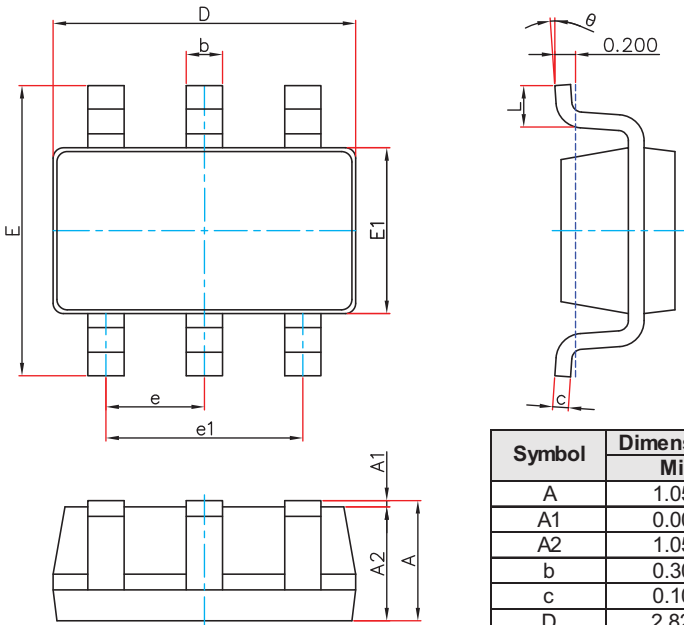


**Fig.5 Normalized Transient Response**



**Fig.6 Maximum Safe Operation Area**

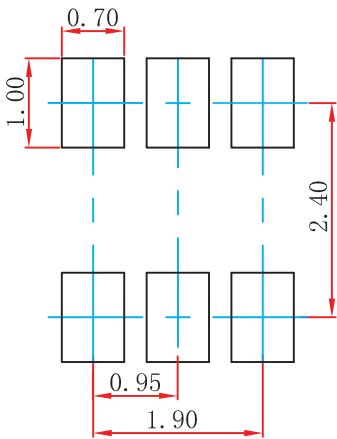
SOT-23-6L Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

M 2012 P A

SOT-23-6L 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
AO6800-MS	SOT-23-6L	3000

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