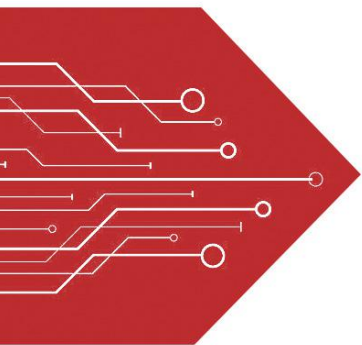


# MSKSEMI

SEMICONDUCTOR



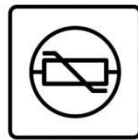
ESD



TVS



TSS



MOV



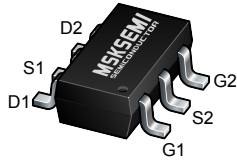
GDT



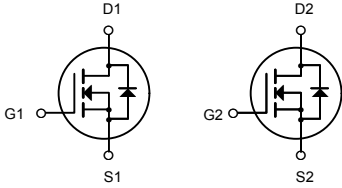
PLED

Product data sheet

[www.msksemi.com](http://www.msksemi.com)



SOT23-6L



Dual N-Channel MOSFET

**Description**

The AO6800-MS uses advanced trench technology to provide excellent  $R_{DS(ON)}$ , low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application.

**General Features**

$V_{DS} = 30V$   $I_D = 4.5A$

$R_{DS(ON)} < 38m\Omega @ V_{GS}=10 V$

**Application**

- Battery protection
- Load switch
- Uninterruptible power supply

**Absolute Maximum Ratings@ $T_j=25^\circ C$ (unless otherwise specified)**

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	30	V
$V_{GS}$	Gate-Source Voltage	$\pm 12$	V
$I_D @ T_A=25^\circ C$	Drain Current, $V_{GS} @ 4.5V^3$	4.5	A
$I_{DM}$	Pulsed Drain Current <sup>1</sup>	15	A
$P_D @ T_A=25^\circ C$	Total Power Dissipation	1.25	W
$T_{STG}$	Storage Temperature Range	-55 to 150	$^\circ C$
$T_J$	Operating Junction Temperature Range	-55 to 150	$^\circ C$
$R_{thj-a}$	Maximum Thermal Resistance, Junction-ambient <sup>3</sup>	125	$^\circ C/W$

**Electrical Characteristics** ( $T_J=25^\circ\text{C}$  unless otherwise specified)

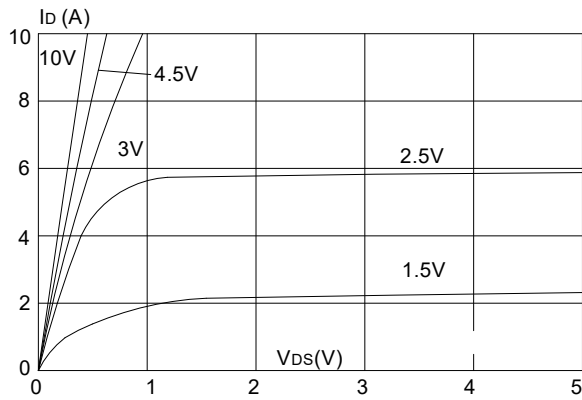
Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
<b>Off Characteristic</b>						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V,$	-	-	1.0	$\mu A$
$I_{GSS}$	Gate to Body Leakage Current	$V_{DS}=0V, V_{GS}= \pm 20V$	-	-	$\pm 100$	nA
<b>On Characteristics</b>						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.5	2.5	V
$R_{DS(on)}$	Static Drain-Source on-Resistance <small>note2</small>	$V_{GS}=10V, I_D=4A$	-	29	38	m $\Omega$
		$V_{GS}=4.5V, I_D=3A$	-	45	65	
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=15V, V_{GS}=0V,$ $f=1.0MHz$	-	233	-	pF
$C_{oss}$	Output Capacitance		-	44	-	pF
$C_{riss}$	Reverse Transfer Capacitance		-	33	-	pF
$Q_g$	Total Gate Charge	$V_{DS}=15V, I_D=2A,$ $V_{GS}=10V$	-	3	-	nC
$Q_{gs}$	Gate-Source Charge		-	0.5	-	nC
$Q_{gd}$	Gate-Drain("Miller") Charge		-	0.8	-	nC
<b>Switching Characteristics</b>						
$t_{d(on)}$	Turn-on Delay Time	$V_{DS}=15V,$ $I_D=4A, R_{GEN}=3\Omega,$ $V_{GS}=10V$	-	4	-	ns
$t_r$	Turn-on Rise Time		-	2.1	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	15	-	ns
$t_f$	Turn-off Fall Time		-	3.2	-	ns
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
$I_S$	Maximum Continuous Drain to Source Diode Forward Current		-	-	4.5	A
$I_{SM}$	Maximum Pulsed Drain to Source Diode Forward Current		-	-	16	A
$V_{SD}$	Drain to Source Diode Forward Voltage	$V_{GS}=0V, I_S=4A$	-	-	1.2	V

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

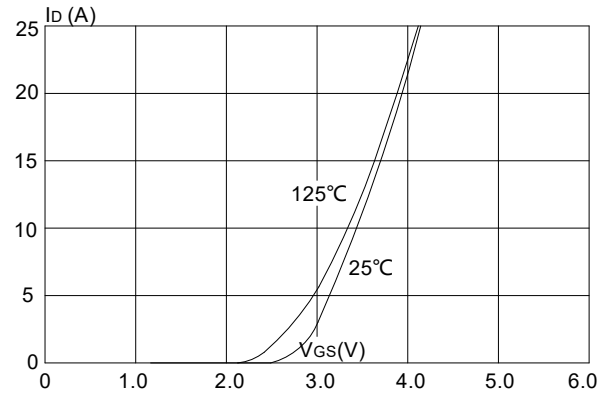
 2. Pulse Test: Pulse Width $\leq 300\mu s$ , Duty Cycle $\leq 0.5\%$

## Typical Performance Characteristics

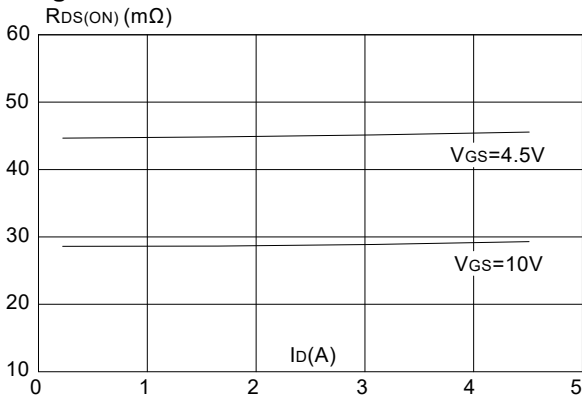
**Figure 1: Output Characteristics**



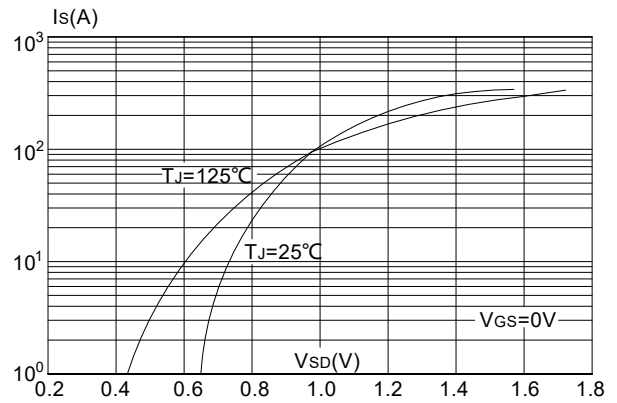
**Figure 2: Typical Transfer Characteristics**



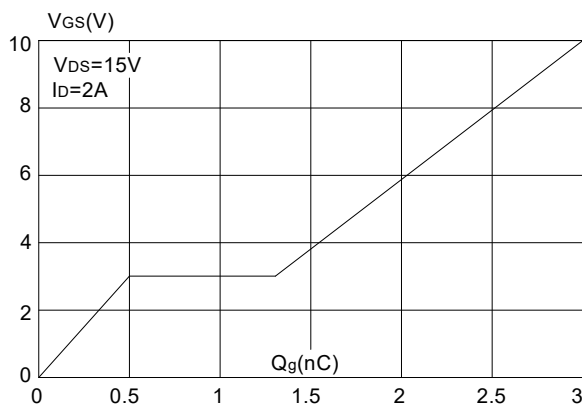
**Figure 3: On-resistance vs. Drain Current**



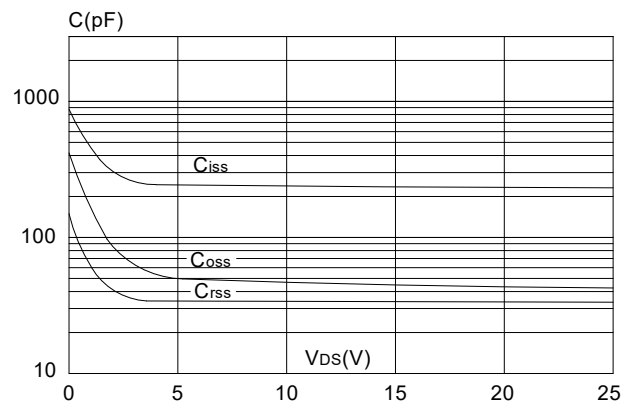
**Figure 4: Body Diode Characteristics**



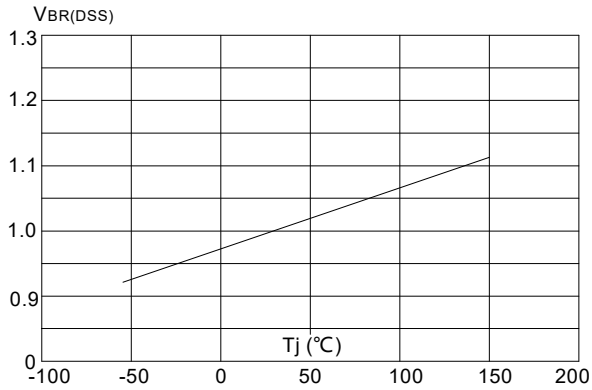
**Figure 5: Gate Charge Characteristics**



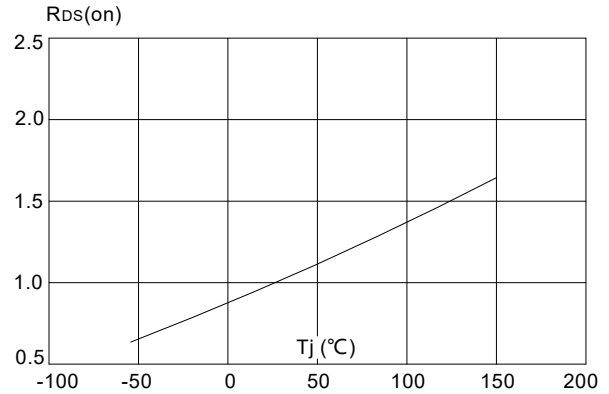
**Figure 6: Capacitance Characteristics**



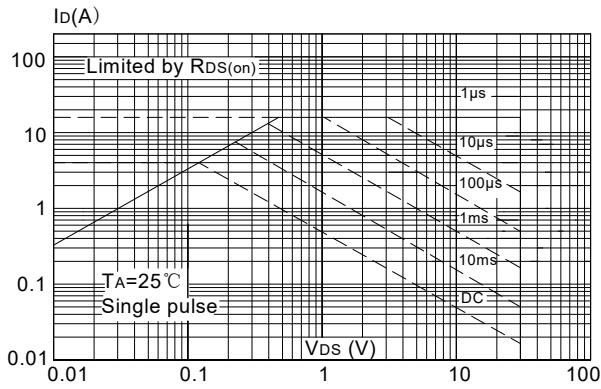
**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature



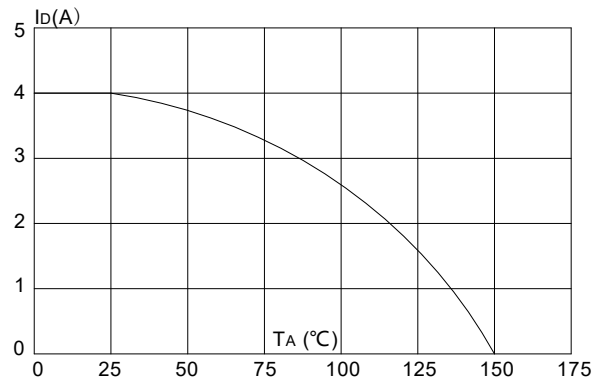
**Figure 8:** Normalized on Resistance vs. Junction Temperature



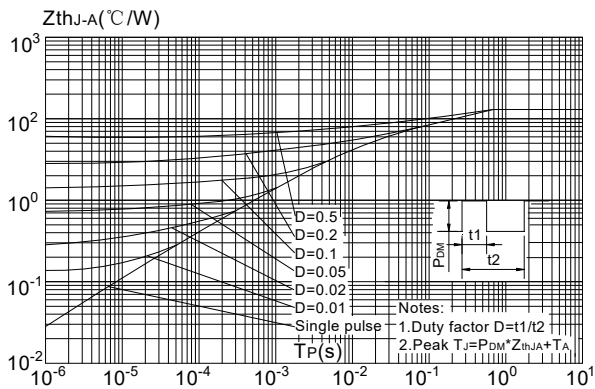
**Figure 9:** Maximum Safe Operating Area



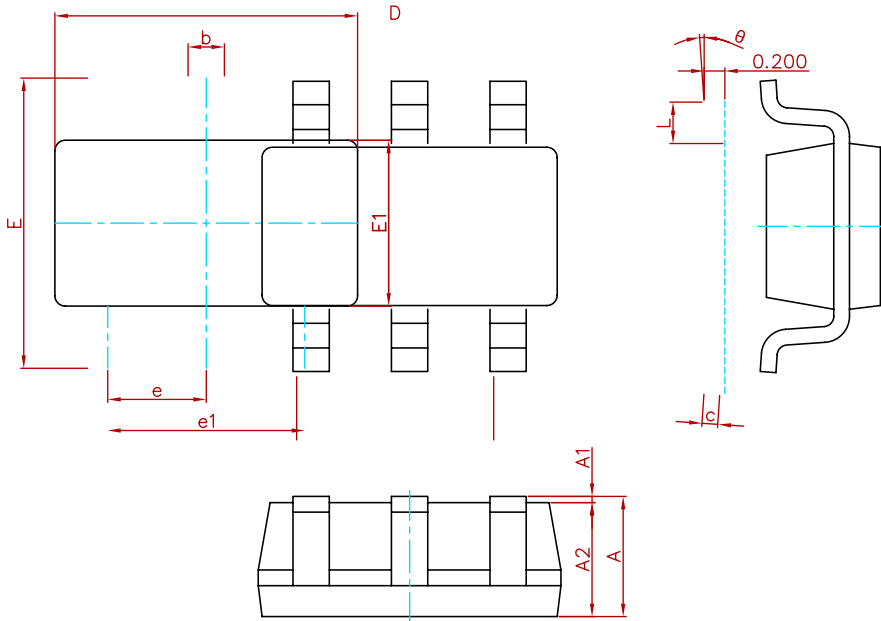
**Figure 10:** Maximum Continuous Drain Current vs. Ambient Temperature



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

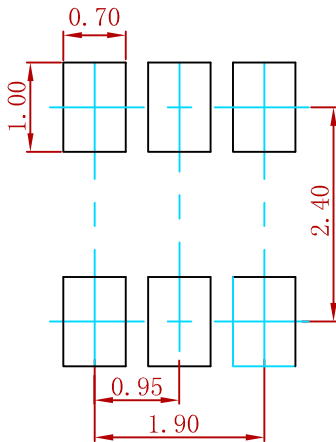


**PACKAGE MECHANICAL DATA**



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°

**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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