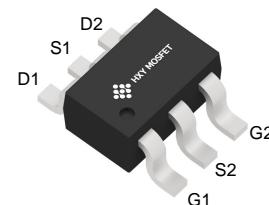




Description

The AO6800-HXY 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.



SOT-23-6L

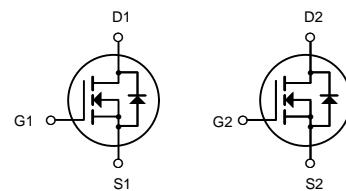
General Features

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

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

Application

Battery protection



Load switch

Dual N-Channel MOSFET

Uninterruptible power supply

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AO6800-HXY	SOT-23-6L	6800 XXX YYYY	3000

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	± 20	V
$I_D @ T_A=25^\circ C$	Drain Current, $V_{GS} @ 4.5V^3$	4.5	A
I_{DM}	Pulsed Drain Current ¹	15	A
$P_D @ T_A=25^\circ C$	Total Power Dissipation	1.25	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C
R_{thj-a}	Maximum Thermal Resistance, Junction-ambient ³	125	°C/W



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

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

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

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



Typical Performance Characteristics

Figure 1: Output Characteristics

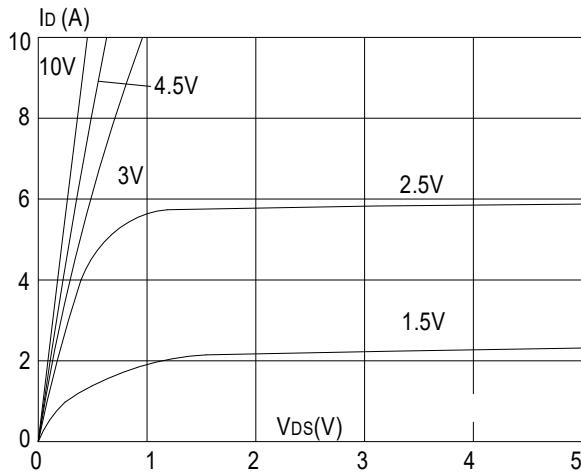


Figure 2: Typical Transfer Characteristics

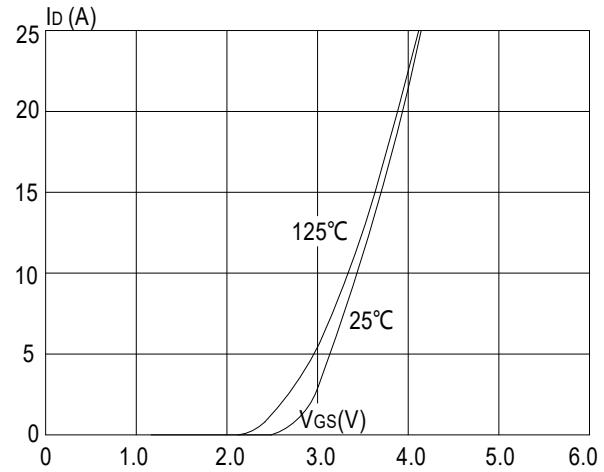


Figure 3: On-resistance vs. Drain Current

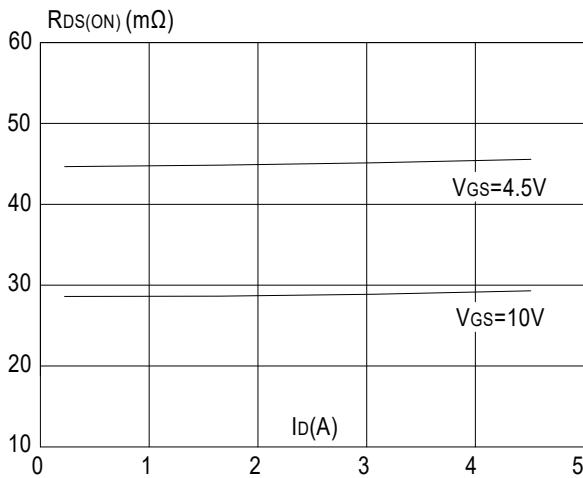


Figure 4: Body Diode Characteristics

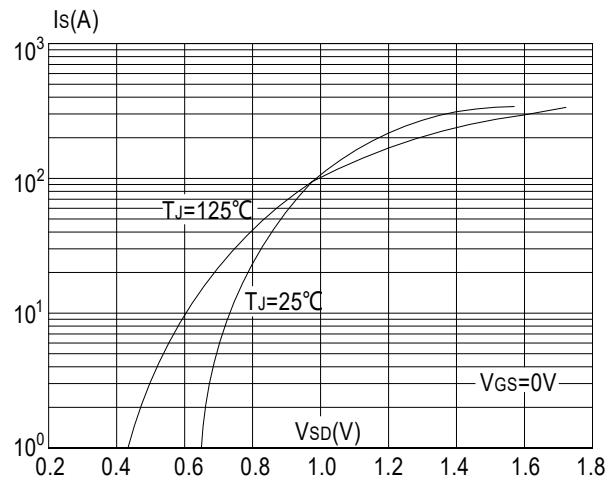


Figure 5: Gate Charge Characteristics

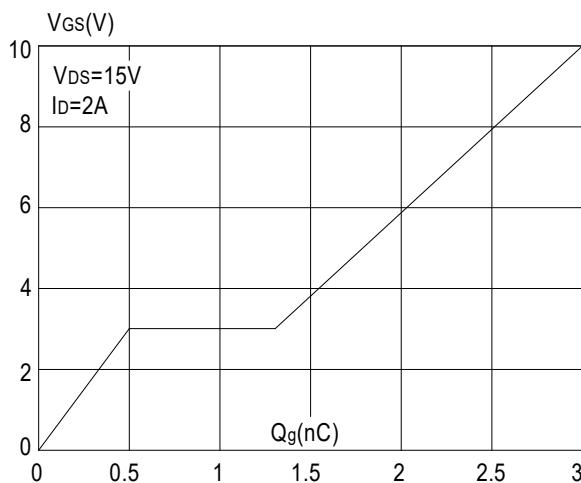


Figure 6: Capacitance Characteristics

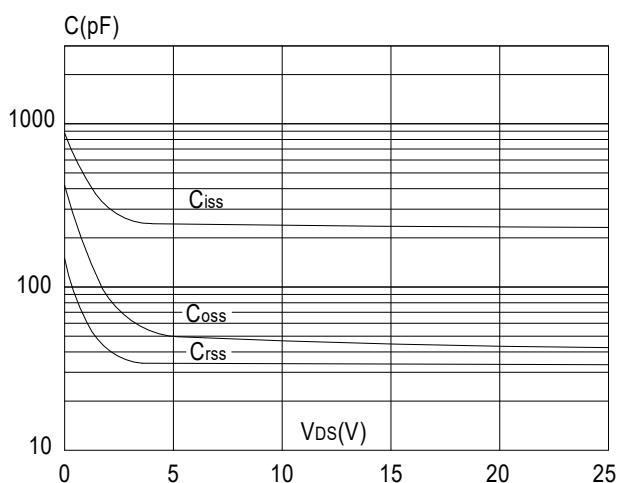




Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

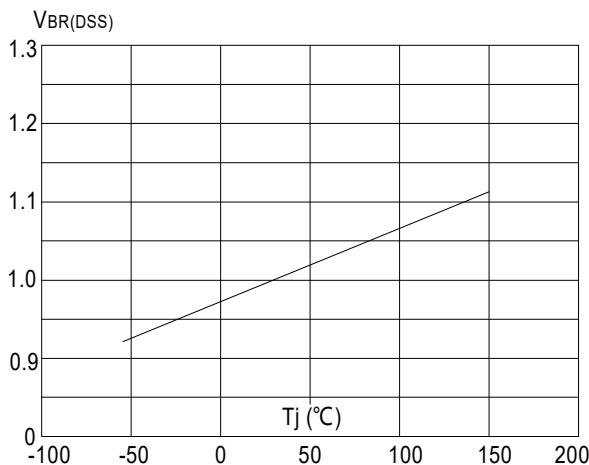


Figure 8: Normalized on Resistance vs. Junction Temperature

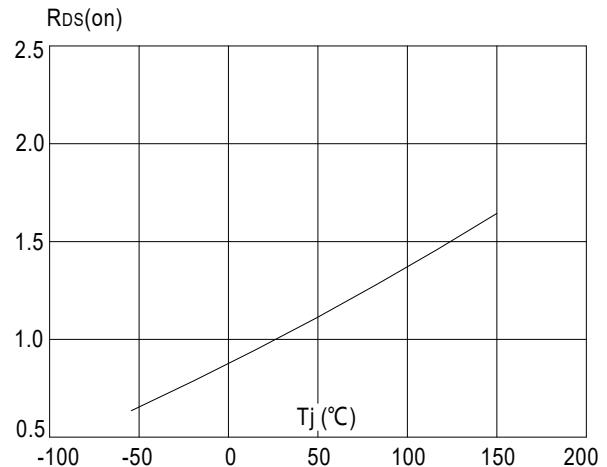


Figure 9: Maximum Safe Operating Area

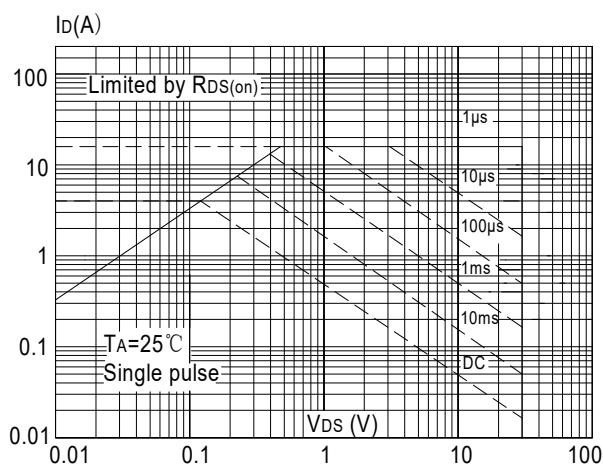


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

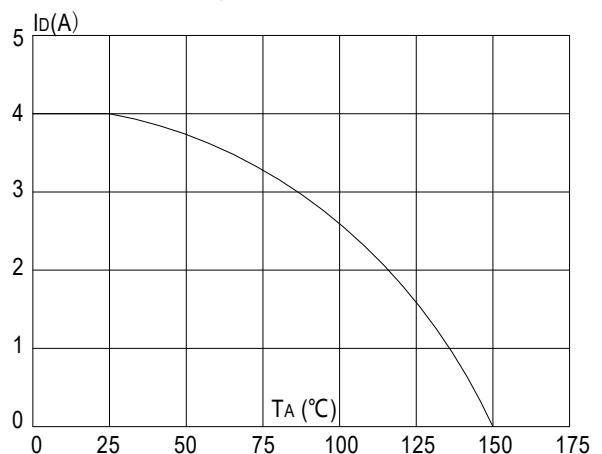
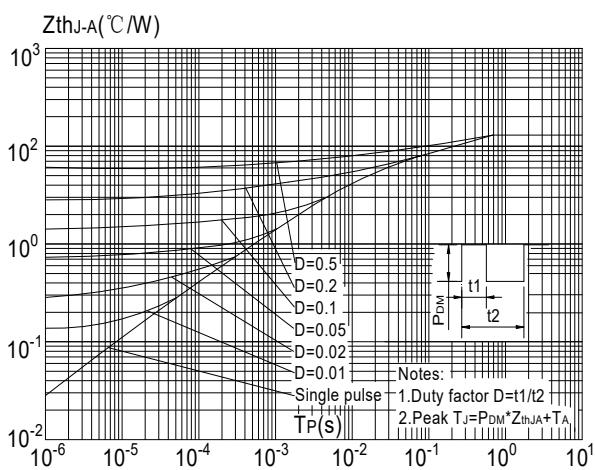
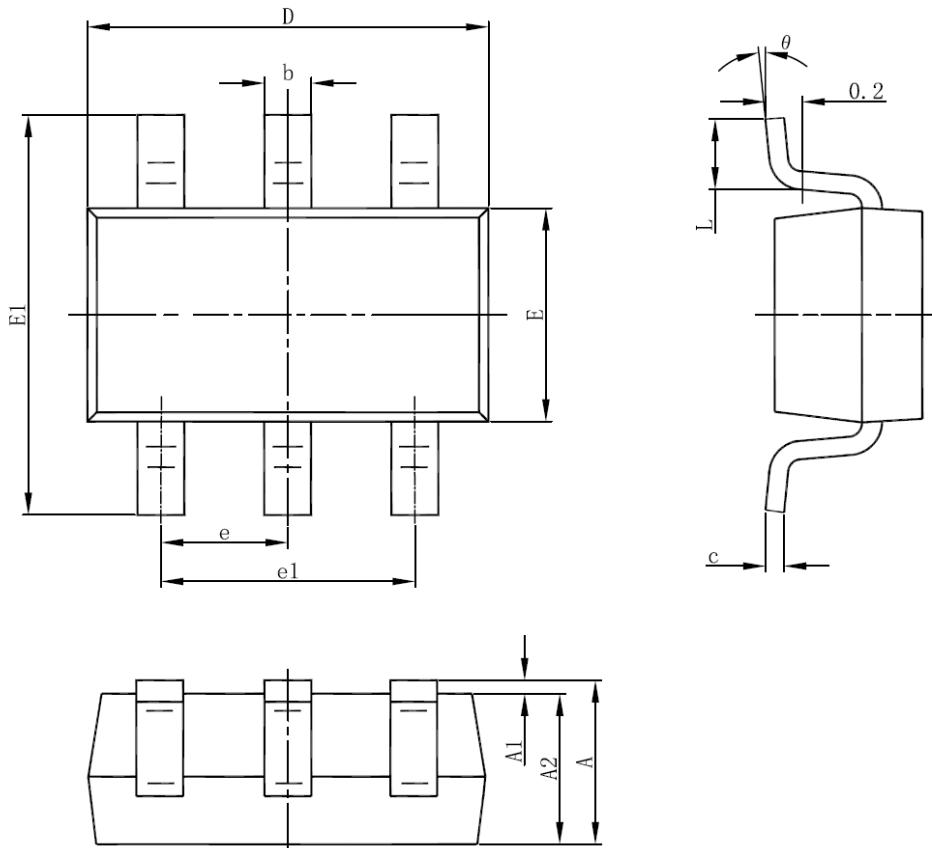


Figure 11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient





SOT-23-6L Package Information



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
E	1.500	1.700	0.059	0.067
E1	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°



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