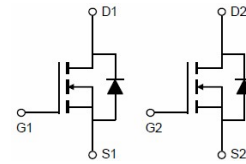


# AP6800

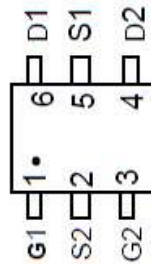
## N-Channel Power MOSFET

### Description

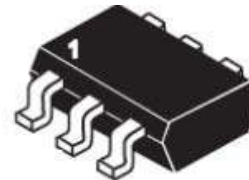
The AP6800 uses advanced trench technology to provide excellent  $R_{DS(ON)}$  and low gate charge. This device is suitable for use as a load switch or in PWM applications.



Schematic diagram



Marking and pin Assignment



SOT23-6L top view

### General Features

- $V_{DS} = 30V, I_D = 5.8A$   
 $R_{DS(ON)} < 32m\Omega @ V_{GS}=4.5V$   
 $R_{DS(ON)} < 28m\Omega @ V_{GS}=10V$
- High power and current handling capability
- Lead free product is acquired
- Surface mount package

### Application

- Battery protection
- Load switch
- Power management

### Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AP6800	AP6800	SOT23-6			

### Absolute Maximum Ratings ( $T_A=25^\circ C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V
Drain Current-Continuous	$I_D$	5.8	A
Drain Current-Pulsed <sup>(Note 1)</sup>	$I_{DM}$	20	A
Maximum Power Dissipation	$P_D$	1.2	W
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 To 150	$^\circ C$

### Thermal Characteristic

Thermal Resistance, Junction-to-Ambient <sup>(Note 2)</sup>	$R_{\theta JA}$	104	$^\circ C/W$
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### Electrical Characteristics ( $T_A=25^\circ C$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	30	33	-	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=30V, V_{GS}=0V$	-	-	1	$\mu A$

**AP6800**
**N-Channel Power MOSFET**

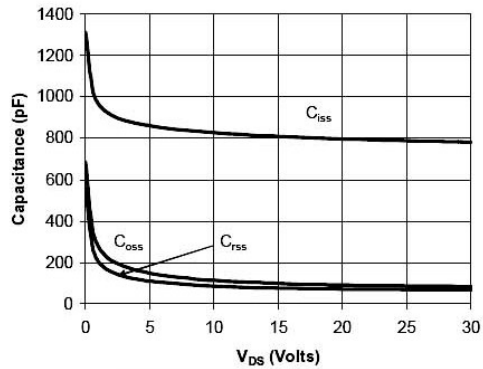
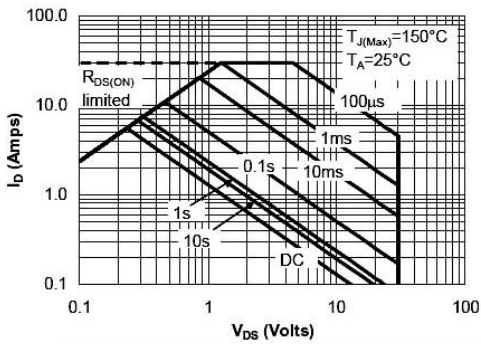
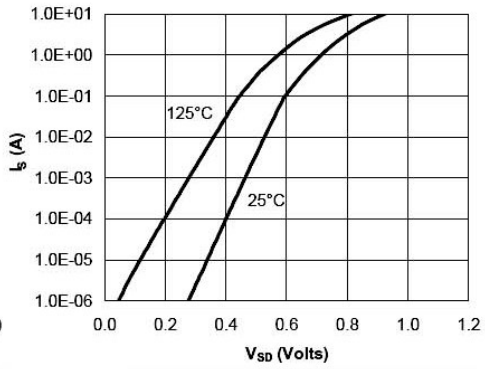
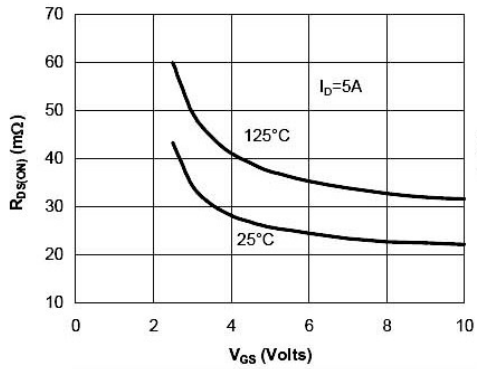
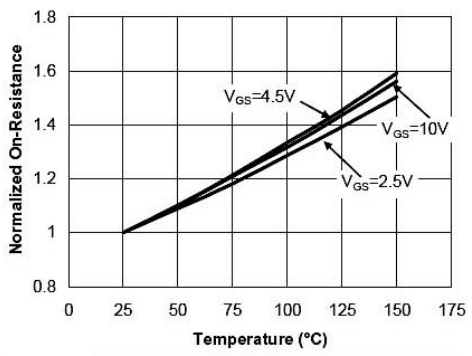
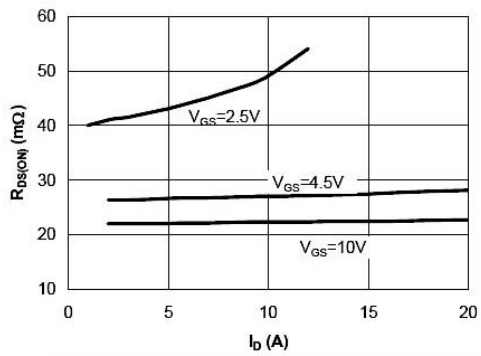
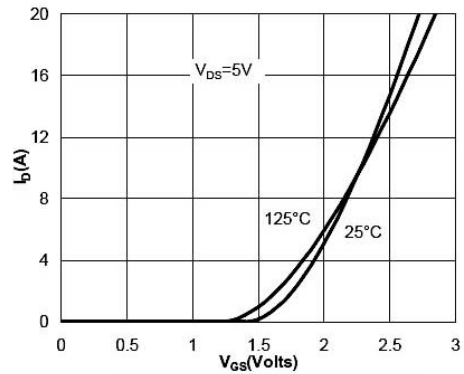
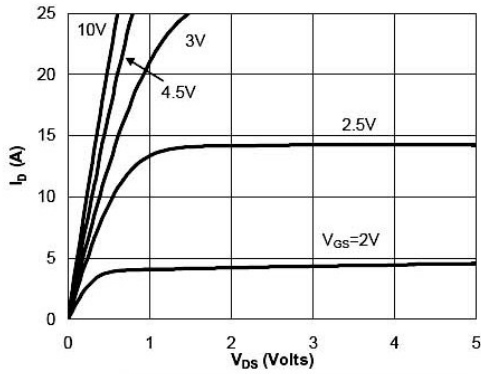
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 12V, V_{DS}=0V$	-	-	$\pm 100$	nA
<b>On Characteristics</b> <sup>(Note 3)</sup>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.7	1.0	1.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=5.8A$	-	22	28	m $\Omega$
		$V_{GS}=4.5V, I_D=4A$	-	26	70	m $\Omega$
Forward Transconductance	$g_{FS}$	$V_{DS}=5V, I_D=3.5A$	-	10	-	S
<b>Dynamic Characteristics</b> <sup>(Note4)</sup>						
Input Capacitance	$C_{iss}$	$V_{DS}=15V, V_{GS}=0V,$ $F=1.0MHz$	-	823	-	PF
Output Capacitance	$C_{oss}$		-	99	-	PF
Reverse Transfer Capacitance	$C_{rss}$		-	77	-	PF
<b>Switching Characteristics</b> <sup>(Note 4)</sup>						
Turn-on Delay Time	$t_{d(on)}$	$V_{DS}=15V, R_L=4.2\Omega$ $V_{GS}=10V, R_{GEN}=3\Omega$	-	3.3	-	nS
Turn-on Rise Time	$t_r$		-	4.8	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	26.5	-	nS
Turn-Off Fall Time	$t_f$		-	10.5	-	nS
Total Gate Charge	$Q_g$	$V_{DS}=15V, I_D=3.5A,$ $V_{GS}=10V$	-	4.0	-	nC
Gate-Source Charge	$Q_{gs}$		-	0.75	-	nC
Gate-Drain Charge	$Q_{gd}$		-	0.65	-	nC
<b>Drain-Source Diode Characteristics</b>						
Diode Forward Voltage <sup>(Note 3)</sup>	$V_{SD}$	$V_{GS}=0V, I_S=3.5A$	-	0.8	1.2	V
Diode Forward Current <sup>(Note 2)</sup>	$I_S$		-	-	3.5	A

**Notes:**

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board,  $t \leq 10$  sec.
3. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .
4. Guaranteed by design, not subject to production

**N-Channel Power MOSFET**

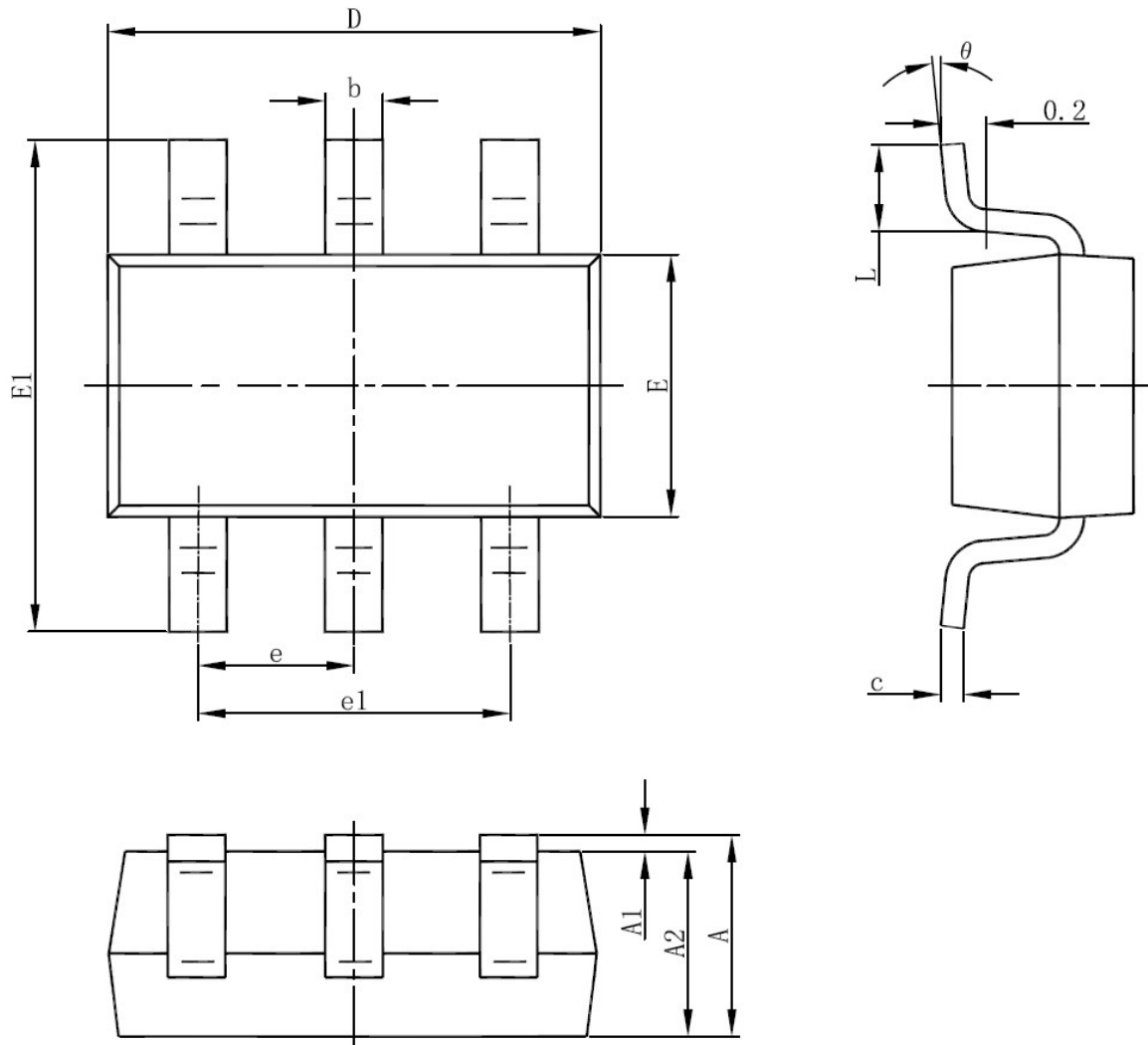
**Electrical Characteristic Curve**



**AP6800**

**N-Channel Power MOSFET**

**SOT23-6L 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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