



General Description

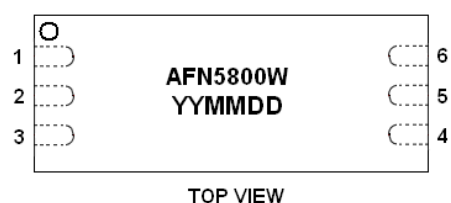
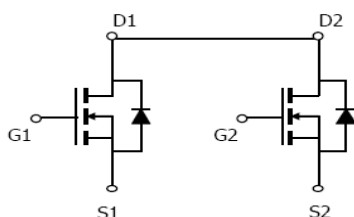
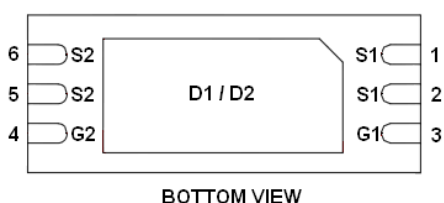
AFN5800W, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

These devices are particularly suited for low voltage power management, such as smart phone and notebook computer and other battery powered circuits, and low in-line power loss are needed in commercial industrial surface mount applications.

Features

- $I_D=8.0A, R_{DS(ON)}=19m\Omega@V_{GS}=10V$
- $I_D=7.0A, R_{DS(ON)}=20m\Omega@V_{GS}=4.5V$
- $I_D=6.0A, R_{DS(ON)}=24m\Omega@V_{GS}=2.5V$
- $I_D=4.5A, R_{DS(ON)}=28m\Omega@V_{GS}=1.8V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- DFN2X5-6L package design

Pin Description (DFN2X5-6L)



Application

- Load Switch
- Portable Equipment
- Battery Powered System

Pin Define

Pin	Symbol	Description
1	S1	Source1
2	S1	Source1
3	G1	Gate1
4	G2	Gate2
5	S2	Source2
6	S2	Source2

Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFN5800WFN256RG	AFN5800W YYMMDD	DFN2X5-6L	Tape & Reel	2500 EA

※ YY year code

※ MM month code

※ DD date code

※ AFN5800WFN256RG : 7" Tape & Reel ; Pb- Free ; Halogen -Free



Absolute Maximum Ratings

($T_A=25^{\circ}\text{C}$ Unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	20	V
Gate –Source Voltage	V_{GSS}	± 12	V
Continuous Drain Current($T_J=150^{\circ}\text{C}$)	I_D	$T_A=25^{\circ}\text{C}$	8
		$T_A=70^{\circ}\text{C}$	6
Pulsed Drain Current	I_{DM}	40	A
Continuous Source Current(Diode Conduction)	I_S	1.6	A
Power Dissipation	P_D	$T_A=25^{\circ}\text{C}$	1.6
		$T_A=70^{\circ}\text{C}$	1.0
Operating Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55/150	$^{\circ}\text{C}$
Thermal Resistance-Junction to Ambient	$R_{\theta JA}$	120	$^{\circ}\text{C/W}$

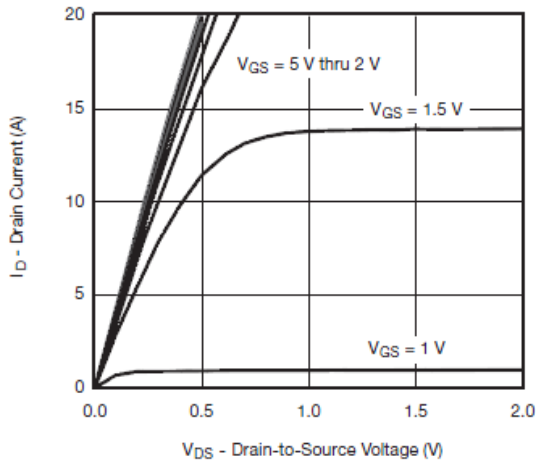
Electrical Characteristics

($T_A=25^{\circ}\text{C}$ Unless otherwise noted)

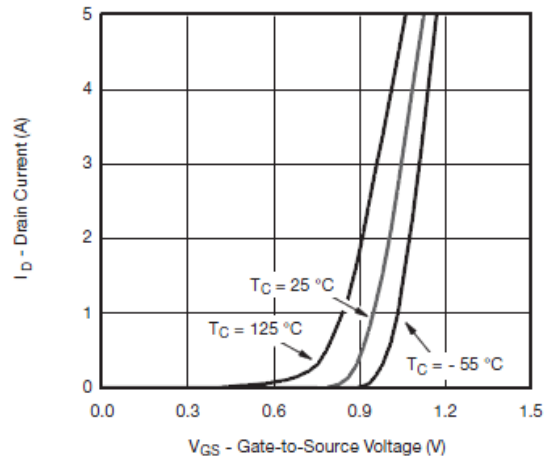
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	20			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.35		0.8	
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 12V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=16V, V_{GS}=0V$			1	uA
		$V_{DS}=16V, V_{GS}=0V$ $T_J=85^{\circ}\text{C}$			10	
On-State Drain Current	$I_{D(on)}$	$V_{DS} \geq 5V, V_{GS}=4.5V$	6			A
		$V_{DS} \geq 5V, V_{GS}=2.5V$	4			
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=8A$		15	19	m Ω
		$V_{GS}=4.5V, I_D=7A$		16	20	
		$V_{GS}=2.5V, I_D=6A$		17	24	
		$V_{GS}=1.8V, I_D=4.5A$		20	28	
Forward Transconductance	g_{FS}	$V_{DS}=5V, I_D=3.6A$		10		S
Diode Forward Voltage	V_{SD}	$I_S=1.6A, V_{GS}=0V$		0.85	1.2	V
Dynamic						
Total Gate Charge	Q_g	$V_{DS}=10V, V_{GS}=4.5V$ $I_D=4.0A$		8.2	14	nC
Gate-Source Charge	Q_{gs}			1.2		
Gate-Drain Charge	Q_{gd}			1.0		
Input Capacitance	C_{iss}	$V_{DS}=10V, V_{GS}=0V$ $f=1\text{MHz}$		850		pF
Output Capacitance	C_{oss}			120		
Reverse Transfer Capacitance	C_{rss}			60		
Turn-On Time	$t_{d(on)}$	$V_{DD}=10V, R_L=2.2\Omega$ $I_D=4.0A, V_{GEN}=4.5V$ $R_G=1\Omega$		10	16	ns
	t_r			16	25	
Turn-Off Time	$t_{d(off)}$			31	45	
	t_f			10	16	



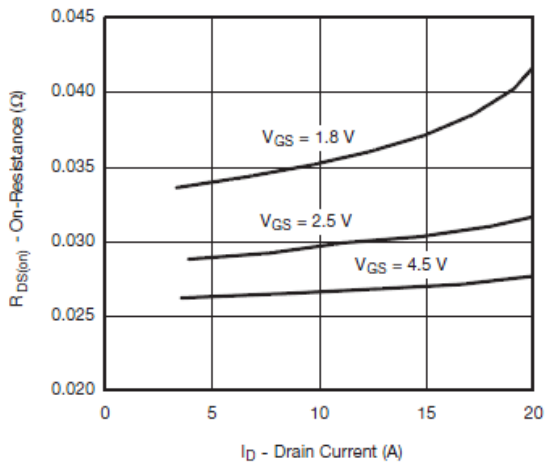
Typical Characteristics



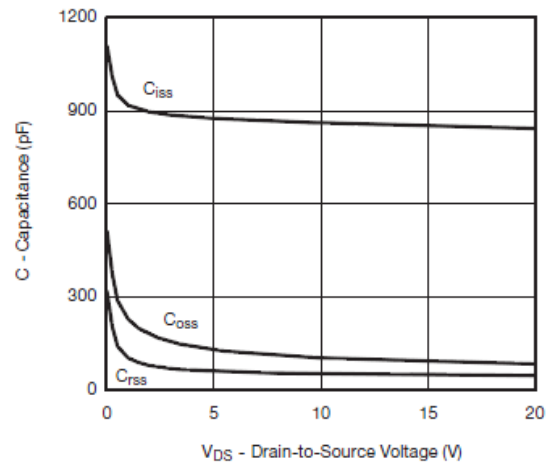
Output Characteristics



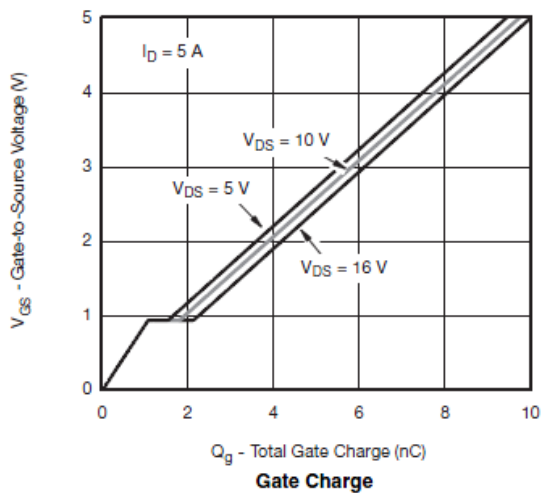
Transfer Characteristics



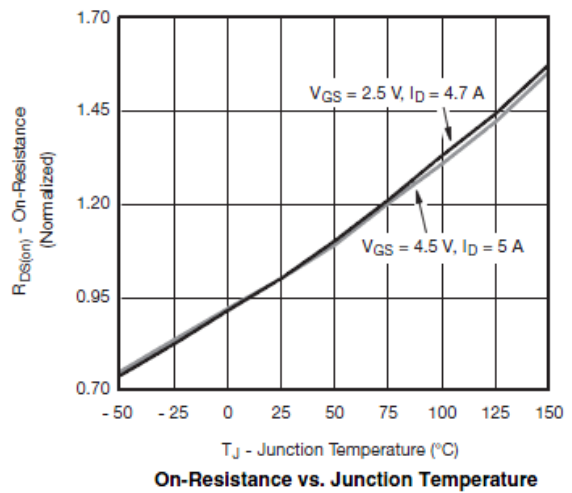
On-Resistance vs. Drain Current and Gate Voltage



Capacitance



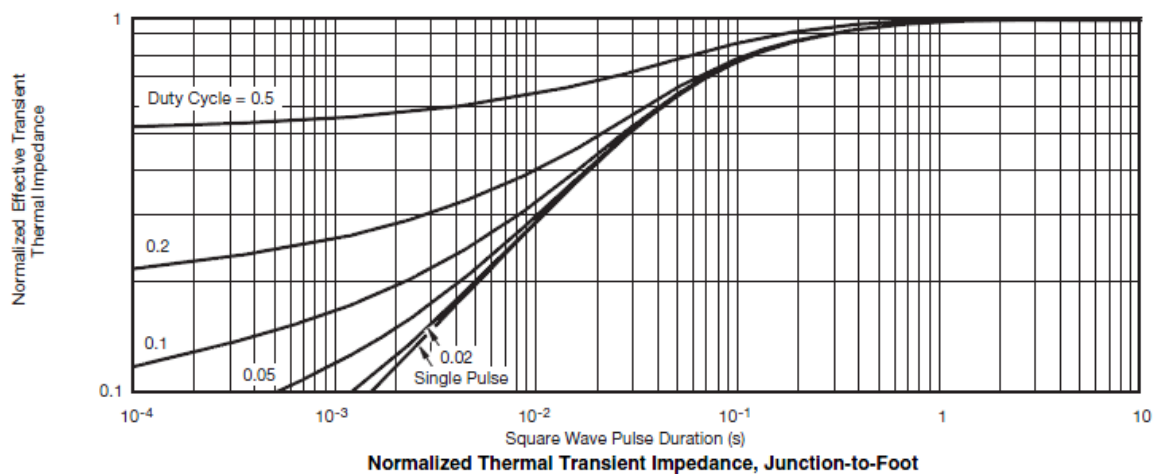
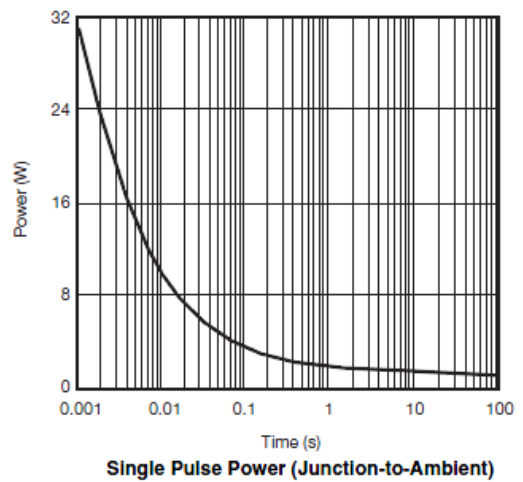
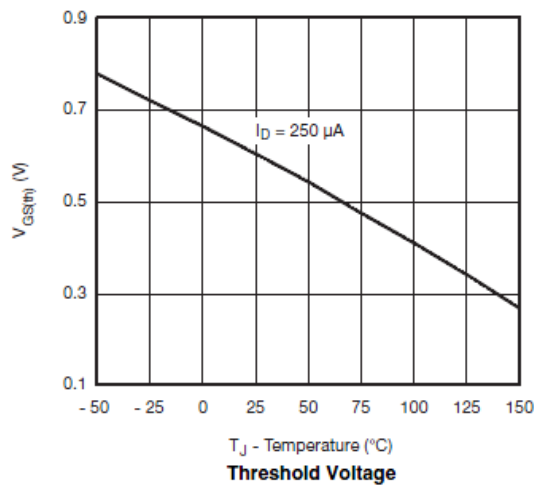
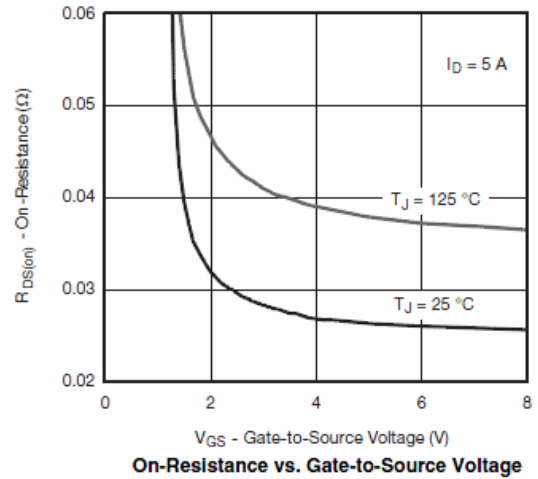
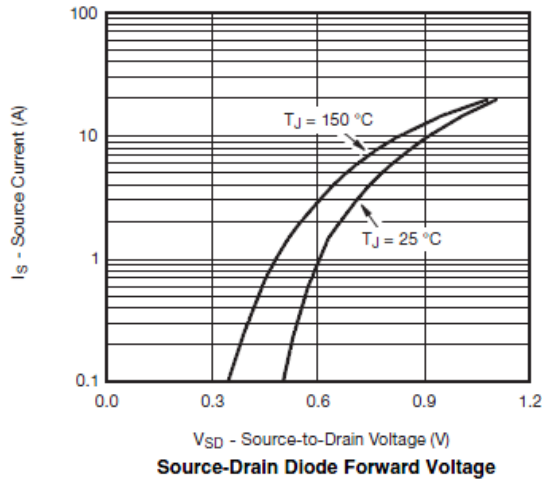
Gate Charge



On-Resistance vs. Junction Temperature



Typical Characteristics





Typical Characteristics

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

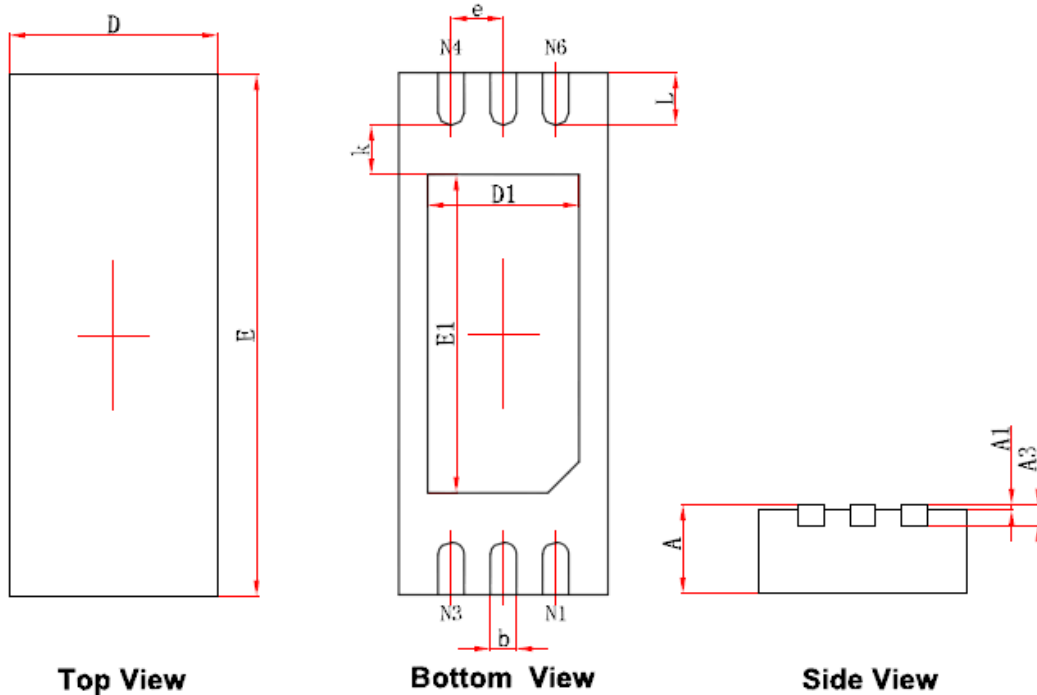


Unclamped Inductive Switching Test Circuit & Waveforms





Package Information (DFN2X5-6L)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A3	0.203REF.		0.008REF.	
D	1.924	2.076	0.076	0.082
E	4.924	5.076	0.194	0.200
D1	1.350	1.550	0.053	0.061
E1	2.950	3.150	0.116	0.124
k	0.200MIN.		0.008MIN.	
b	0.200	0.300	0.008	0.012
e	0.500TYP.		0.020TYP.	
L	0.424	0.576	0.017	0.023

©2010 Alfa-MOS Technology Corp.
 2F, No.80, Sec.1, Cheng Kung Rd., Nan Kang Dist., Taipei City 115, Taiwan (R.O.C.)
 Tel : 886 2) 2651 3928
 Fax : 886 2) 2786 8483
 ©http://www.alfa-mos.com