Alfa-MOS Technology

AFN6810W
100V N-Channel Enhancement Mode MOSFET

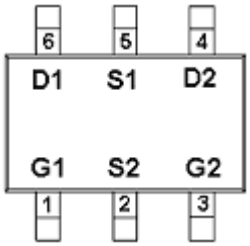
General Description

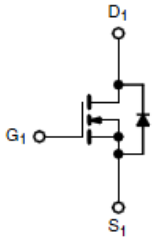
AFN6810W, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge. These devices are particularly suited for low voltage power management, and low in-line power loss are needed in commercial industrial surface mount applications.

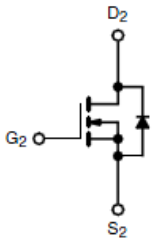
Features

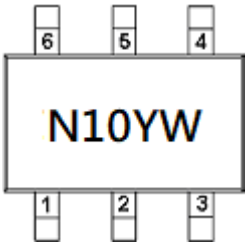
- 100V/2.3A,$R_{DS(ON)}$=310mΩ@V_{GS}=10V
  100V/1.8A,$R_{DS(ON)}$=320mΩ@V_{GS}=4.5V
- Super high density cell design for extremely low $R_{DS\ (ON)}$
- TSOP-6 package design

Pin Description (TSOP-6)









Application

- Power Management in Note book
- LED Display
- DC-DC System
- LCD Panel

Pin Define

Pin	Symbol	Description
1	G1	Gate 1
2	S2	Source 2
3	G2	Gate 2
4	D2	Drain 2
5	S1	Source 1
6	D1	Drain1

Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFN6810WTS6RG	N10YW	TSOP-6	Tape & Reel	3000 EA

※ N10 parts code
※ Y year code (0 ~ 9)
※ W week code (A ~ Z = 1 ~ 26 / a ~ z = 27 ~ 52)
※ AFN6810WTS6RG : 7” Tape & Reel ; Pb- Free ; Halogen –Free

Absolute Maximum Ratings

(T_A=25℃ Unless otherwise noted)

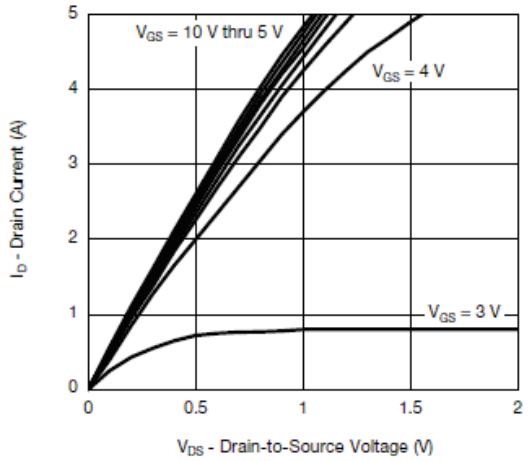
Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V_{DSS}	100	V
Gate –Source Voltage		V_{GSS}	±20	V
Continuous Drain Current(T_J=150℃)	T_A=25℃	I_D	2.3	A
	T_A=70℃		1.8	
Pulsed Drain Current		I_{DM}	4	A
Continuous Source Current(Diode Conduction)		I_S	1.5	A
Power Dissipation	T_A=25℃	P_D	2.0	W
	T_A=70℃		1.3	
Operating Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{STG}	-55/150	℃
Thermal Resistance-Junction to Ambient		$R_{\theta JA}$	120	℃/W

Electrical Characteristics

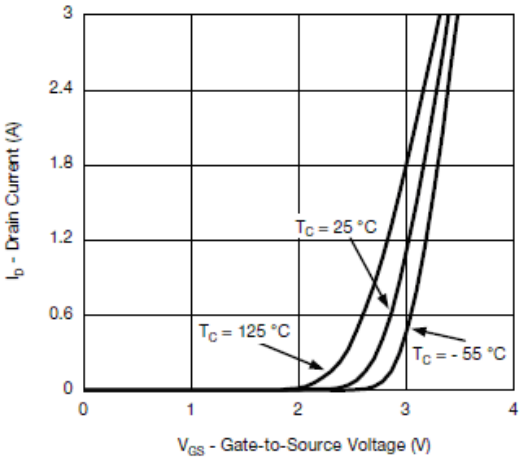
(T_A=25℃ Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=250uA	100			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	1.0		2.0	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=80V,V_{GS}=0V			1	uA
		V_{DS}=80V,V_{GS}=0V T_J=85℃			10	
On-State Drain Current	$I_{D(on)}$	V_{DS}≧5V,V_{GS}=4.5V	5			A
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=2.3A		270	310	mΩ
		V_{GS}=4.5V,I_D=1.8A		290	320	
Forward Transconductance	g_{FS}	V_{DS}=20V,I_D=1.5A		2		S
Diode Forward Voltage	V_{SD}	I_S=1.3A,V_{GS}=0V		0.85	1.2	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=50V,V_{GS}=4.5V I_D≡1.6A		2.8	5.8	nC
Gate-Source Charge	Q_{gs}			0.75		
Gate-Drain Charge	Q_{gd}			1.4		
Input Capacitance	C_{iss}	V_{DS}=50V,V_{GS}=0V f=1MHz		200		pF
Output Capacitance	C_{oss}			22		
Reverse Transfer Capacitance	C_{rss}			13		
Turn-On Time	$t_{d(on)}$	V_{DD}=50V,R_L=39Ω I_D≡1.3A,V_{GEN}=4.5V R_G=1Ω		25	50	ns
	t_r			20	50	
Turn-Off Time	$t_{d(off)}$			15	30	
	t_f			10	25	

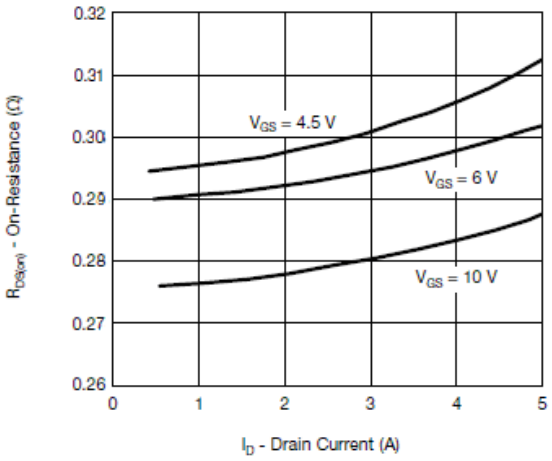
Typical Characteristics



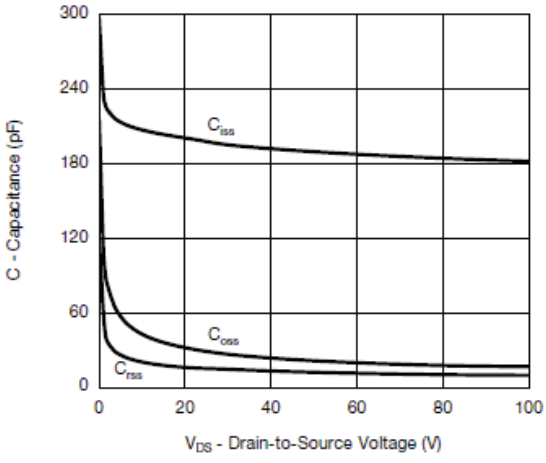
Output Characteristics



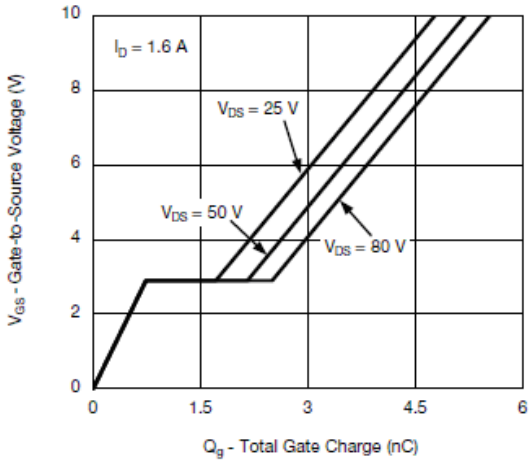
Transfer Characteristics



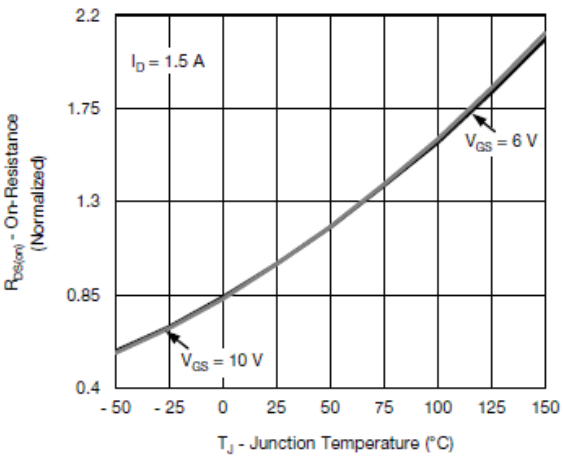
On-Resistance vs. Drain Current and Gate Voltage



Capacitance

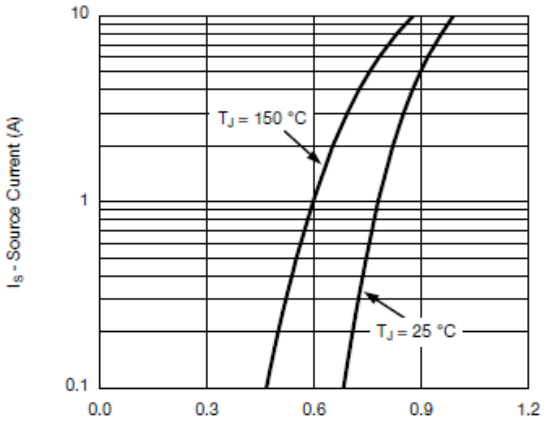


Gate Charge

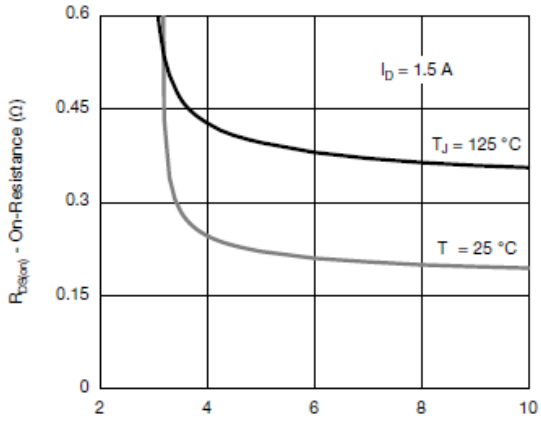


On-Resistance vs. Junction Temperature

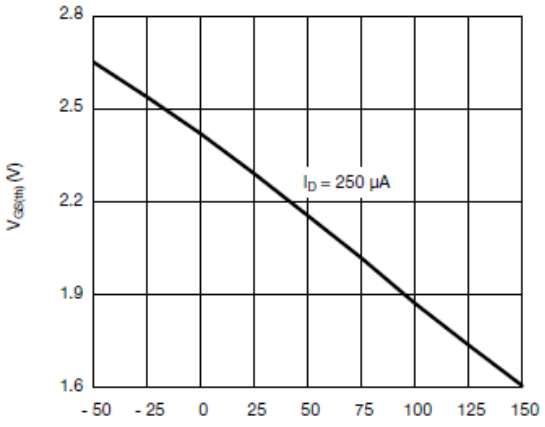
Typical Characteristics



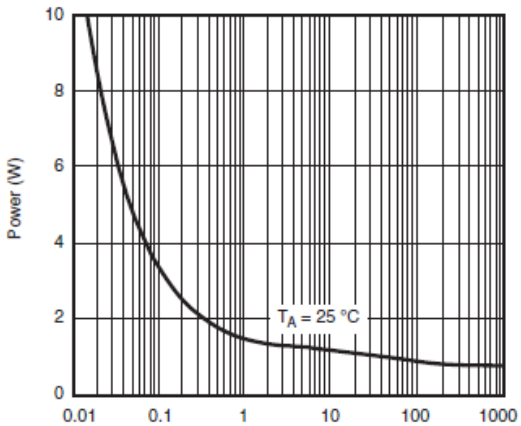
Source-Drain Diode Forward Voltage



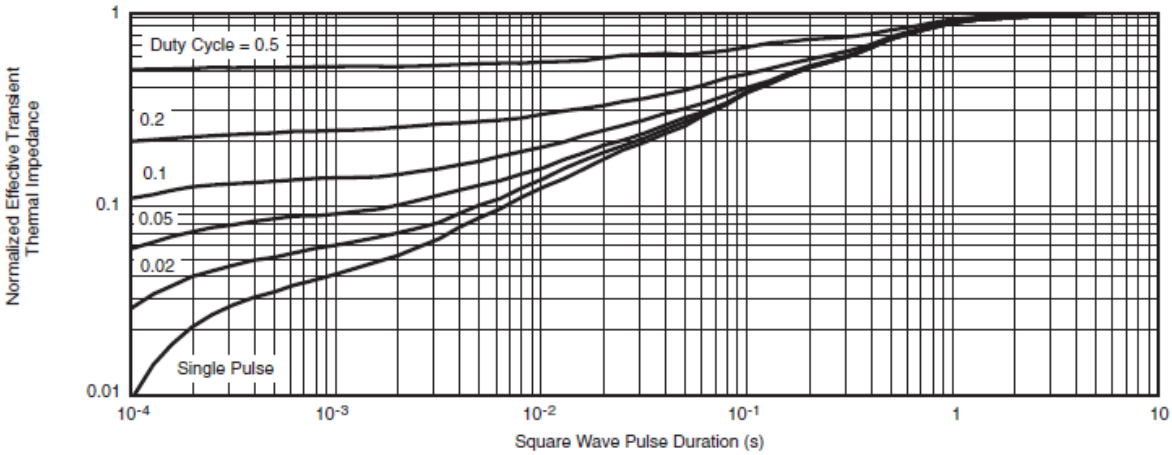
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



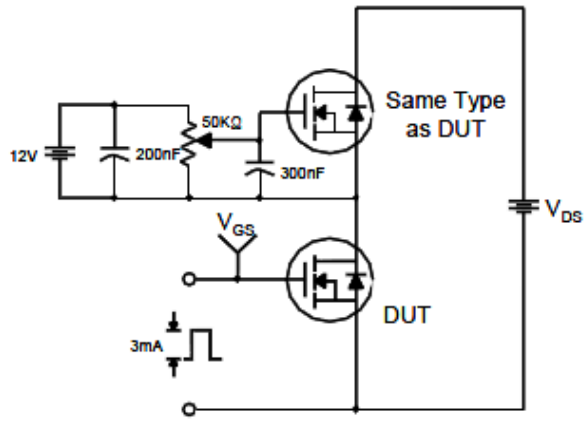
Single Pulse Power

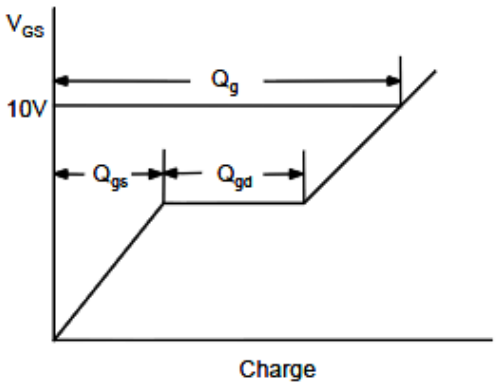


Normalized Thermal Transient Impedance, Junction-to-Foot

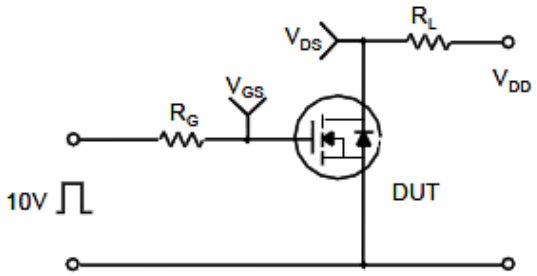
Typical Characteristics

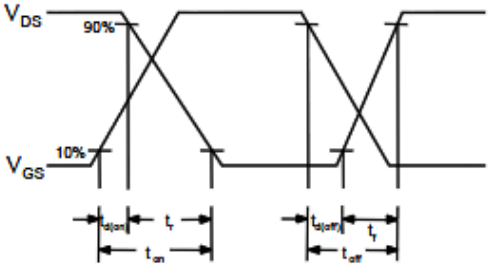
Gate Charge Test Circuit & Waveform



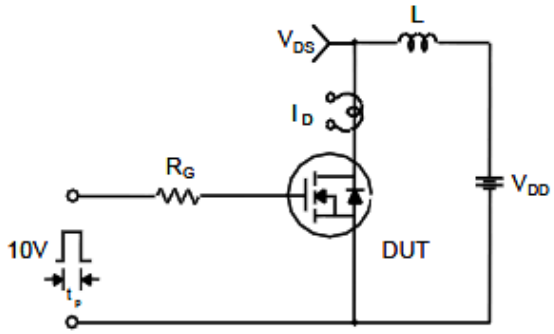


Resistive Switching Test Circuit & Waveforms

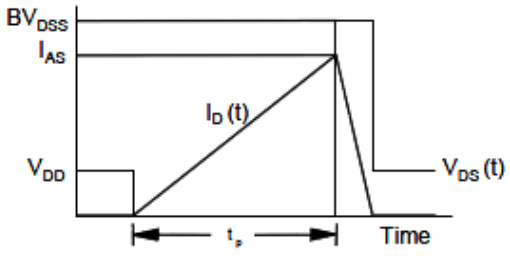




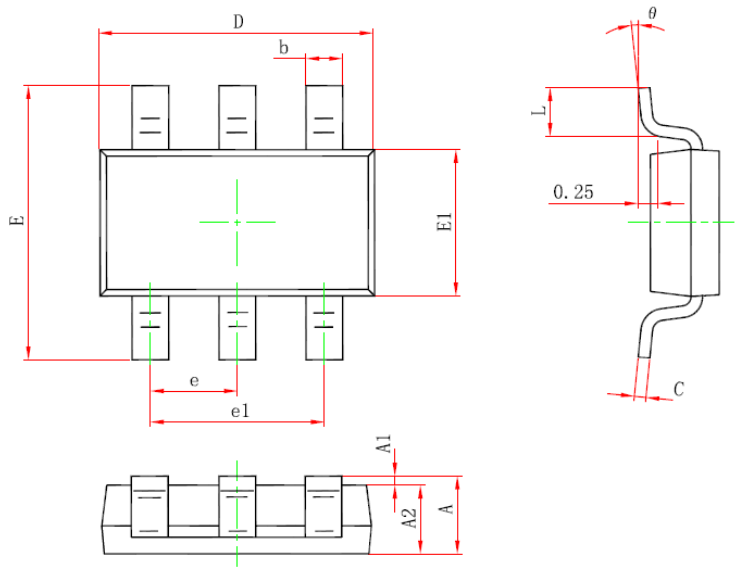
Unclamped Inductive Switching Test Circuit & Waveforms



$$E_{AS} = \frac{1}{2} L I_{AS}^2 \frac{BV_{DSS}}{BV_{DSS} - V_{DD}}$$



Package Information (TSOP-6)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	---	0.900	---	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b	0.350	0.500	0.014	0.020
c	0.080	0.200	0.003	0.008
D	2.820	3.020	0.111	0.119
E1	1.600	1.700	0.063	0.067
E	2.650	2.950	0.104	0.116
e	0.95 (BSC)		0.037(BSC)	
e1	1.90 (BSC)		0.075(BSC)	
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

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