



General Description

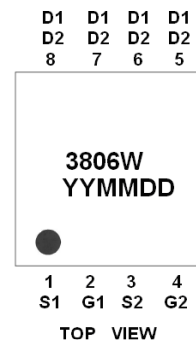
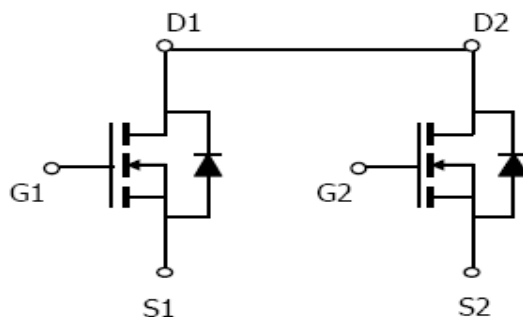
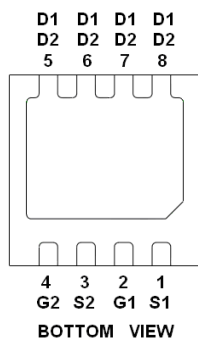
AFN3806W, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

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

- $I_D=9A, R_{DS(ON)}=26m\Omega@V_{GS}=4.5V$
- $I_D=8A, R_{DS(ON)}=32m\Omega@V_{GS}=2.5V$
- $I_D=6A, R_{DS(ON)}=42m\Omega@V_{GS}=1.8V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- DFN3X3-8L package design

Pin Description (DFN3X3-8L)



Application

- Load Switch
- Portable Equipment
- Battery Powered System

Pin Define

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

Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFN3806WFN338RG	3806W	DFN3X3-8L	Tape & Reel	5000 EA

※ YY year code

※ MM month code

※ DD date code

※ AFN3806WFN338RG : 13" Tape & Reel ; Pb- Free ; Halogen -Free



Absolute Maximum Ratings

(T_A=25°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°C)	I _D	T _A =25°C	9
		T _A =70°C	6
Pulsed Drain Current	I _{DM}	20	A
Continuous Source Current(Diode Conduction)	I _S	1.5	A
Power Dissipation	P _D	T _C =25°C	28
		T _C =70°C	15
		T _A =25°C	3.2
		T _A =70°C	2.0
Operating Junction Temperature	T _J	150	°C
Storage Temperature Range	T _{STG}	-55/150	°C
Thermal Resistance Junction-to-Case (Drain)	R _{θJC}	5	°C/W
Thermal Resistance-Junction to Ambient	R _{θJA}	40	

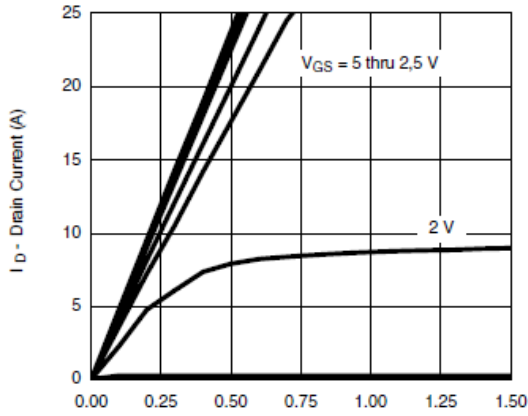
Electrical Characteristics

(T_A=25°C Unless otherwise noted)

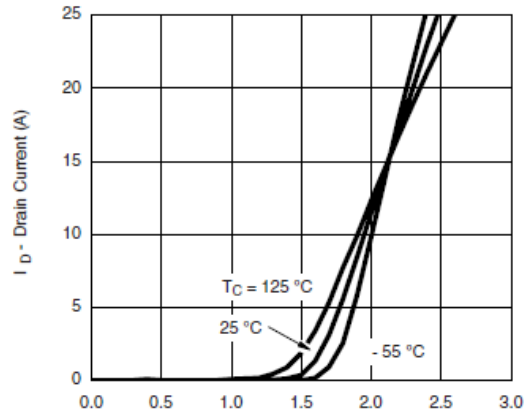
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250uA	20			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	0.3		0.8	
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±12V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =16V, V _{GS} =0V			1	uA
		V _{DS} =16V, V _{GS} =0V T _J =85°C			30	
On-State Drain Current	I _{D(on)}	V _{DS} ≥ 5V, V _{GS} =4.5V	10			A
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 4.5V, I _D =9A		21	26	mΩ
		V _{GS} = 2.5V, I _D =8A		24	32	
		V _{GS} = 1.8V, I _D =6A		31	42	
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =7A		25		S
Diode Forward Voltage	V _{SD}	I _S =1.6A, V _{GS} =0V		0.7	1.2	V
Dynamic						
Total Gate Charge	Q _g	V _{DS} =10V, V _{GS} =4.5V I _D ≧7.0A		650		pC
Gate-Source Charge	Q _{gs}			200		
Gate-Drain Charge	Q _{gd}			180		
Input Capacitance	C _{iss}	V _{DS} =20V, V _{GS} =0V f=1MHz		700		pF
Output Capacitance	C _{oss}			75		
Reverse Transfer Capacitance	C _{rss}			45		
Turn-On Time	t _{d(on)}	V _{DD} =10V, R _L =1.4Ω I _D ≧1.0A, V _{GEN} =4.5V R _G =3Ω		8	12	ns
	t _r			12	20	
Turn-Off Time	t _{d(off)}			32	40	
	t _f			10	15	



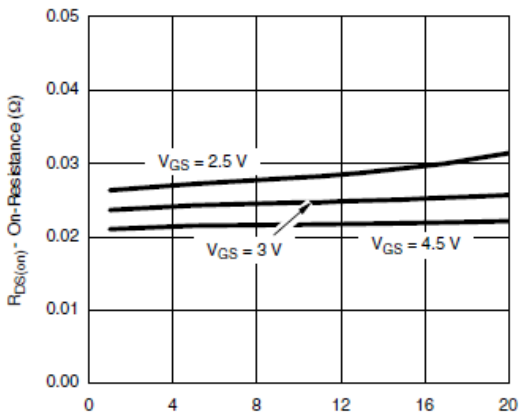
Typical Characteristics



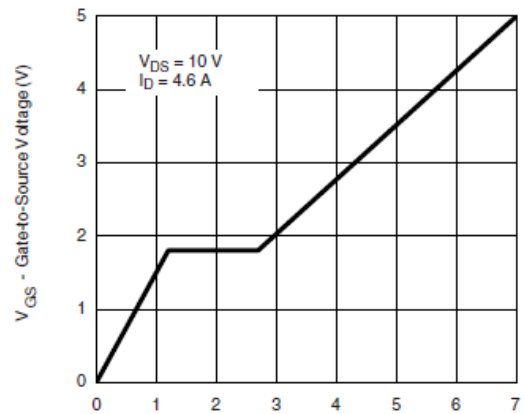
Output Characteristics



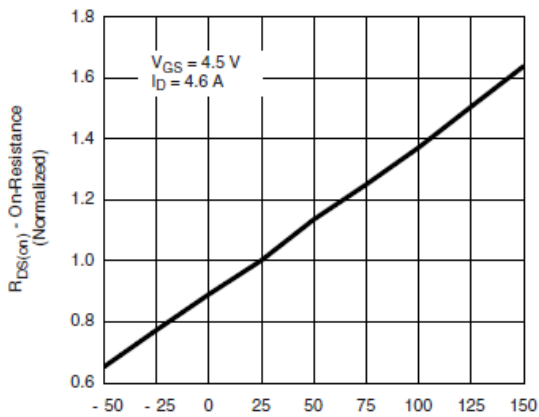
Transfer Characteristics



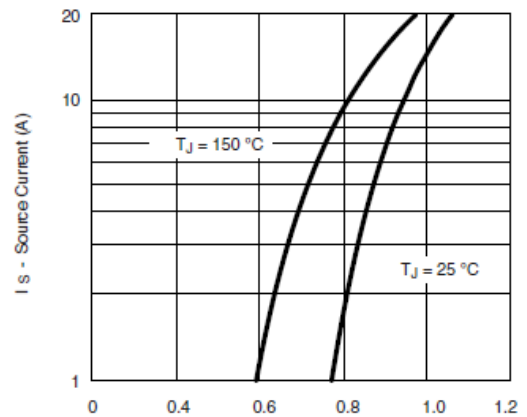
On-Resistance vs. Drain Current



Gate Charge



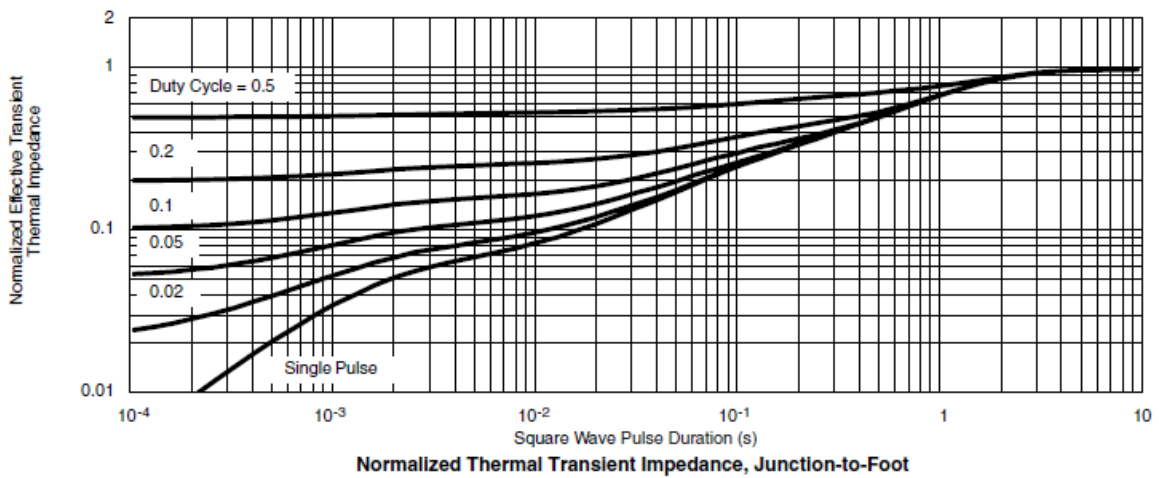
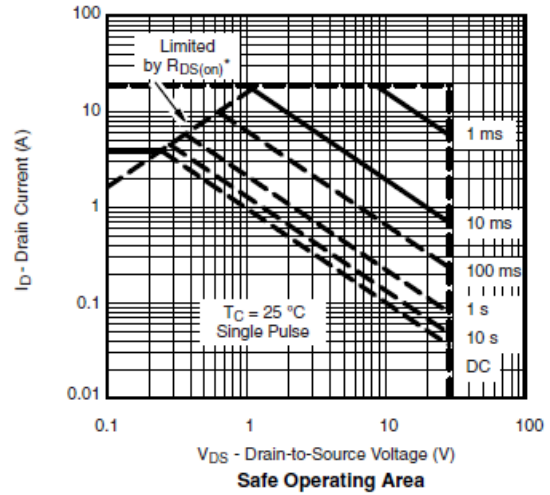
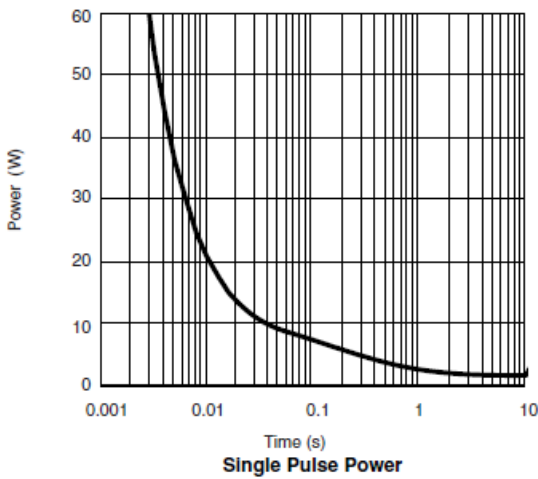
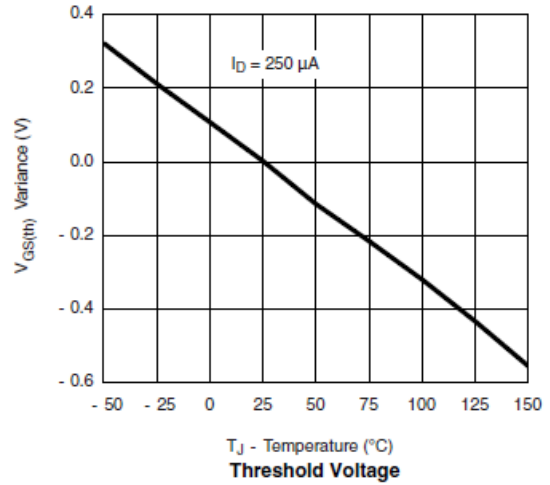
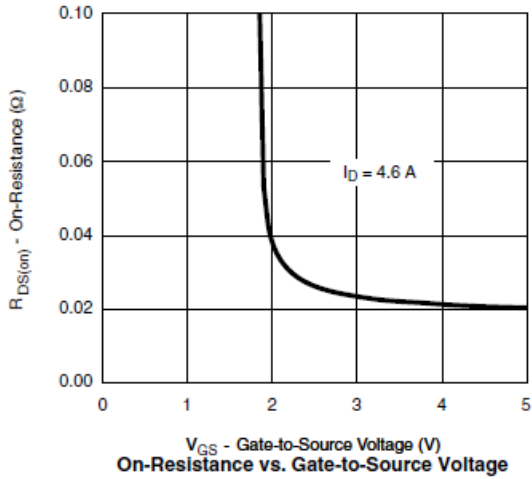
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage



Typical Characteristics





Typical Characteristics

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

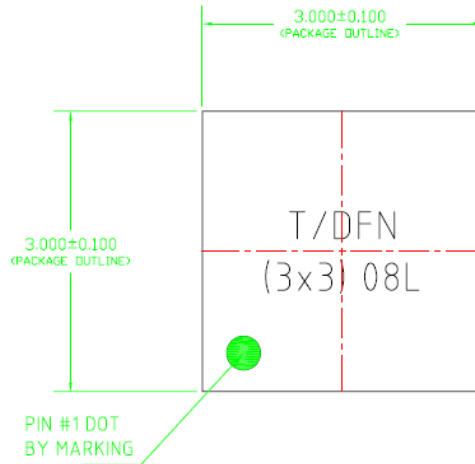


Unclamped Inductive Switching Test Circuit & Waveforms

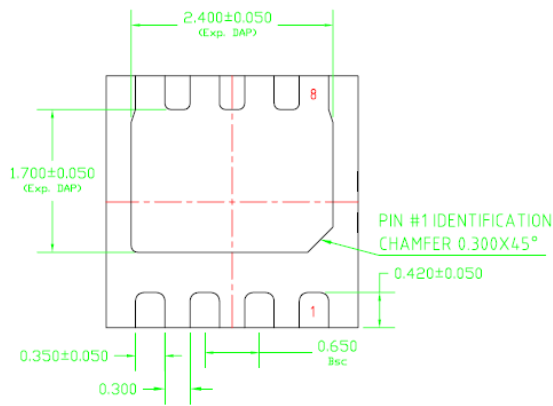




Package Information (DFN3X3-8L)

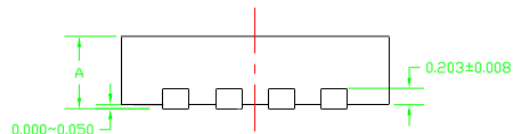


TOP VIEW



BOTTOM VIEW

A		DFN	TDFN
	MAX.	0.900	0.800
	NOM.	0.850	0.750
	MIN.	0.800	0.700



SIDE VIEW

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