



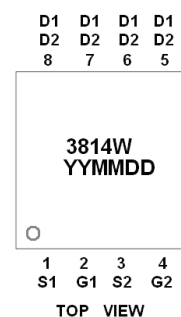
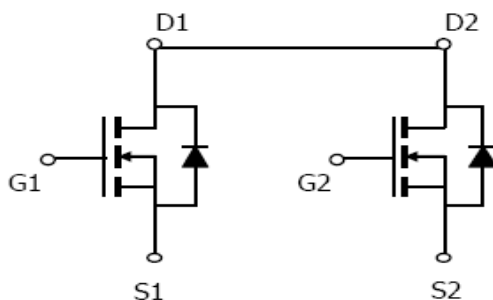
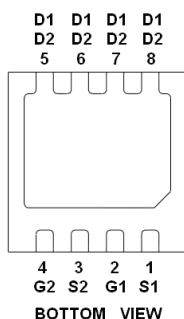
General Description

AFN3814W, 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

- 20V/ 14A, $R_{DS(ON)}=14m\Omega@V_{GS}=4.5V$
- 20V/ 12A, $R_{DS(ON)}=18m\Omega@V_{GS}=2.5V$
- 20V/ 10A, $R_{DS(ON)}=30m\Omega@V_{GS}=1.8V$
- 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
AFN3814WFN338RG	3814W	DFN3X3-8L	Tape & Reel	5000 EA

- ※ YY year code
- ※ MM month code
- ※ DD date code
- ※ AFN3814WFN338RG : 13" 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	$T_A=25^\circ\text{C}$	14
		$T_A=70^\circ\text{C}$	10
Pulsed Drain Current	I_{DM}	20	A
Continuous Source Current(Diode Conduction)	I_S	1.5	A
Power Dissipation	P_D	$T_C=25^\circ\text{C}$	28
		$T_C=70^\circ\text{C}$	15
		$T_A=25^\circ\text{C}$	3.2
		$T_A=70^\circ\text{C}$	2.0
Operating Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55/150	$^\circ\text{C}$
Thermal Resistance Junction-to-Case (Drain)	$R_{\theta JC}$	5	$^\circ\text{C/W}$
Thermal Resistance-Junction to Ambient	$R_{\theta JA}$	40	

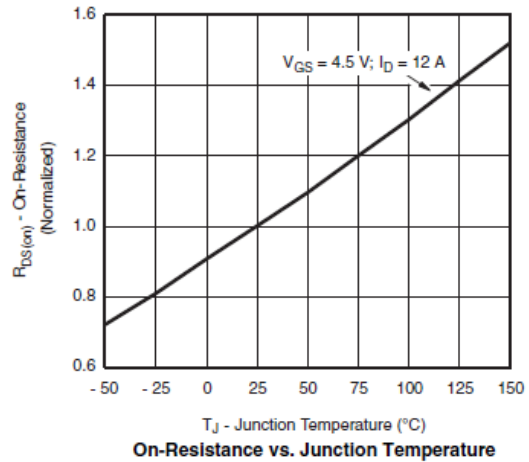
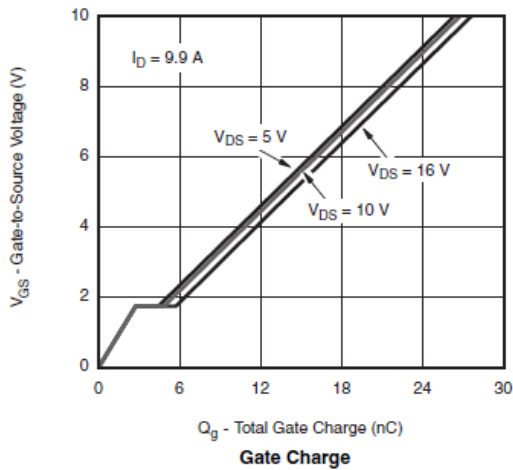
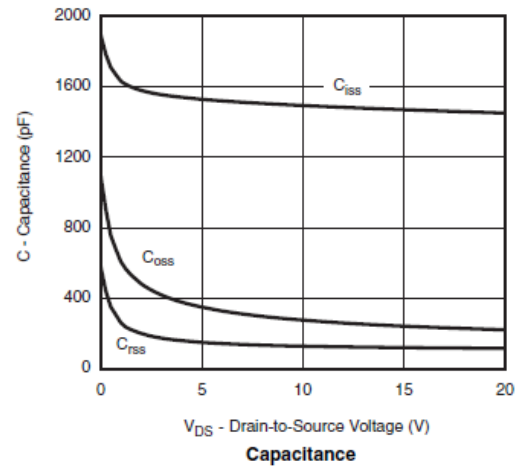
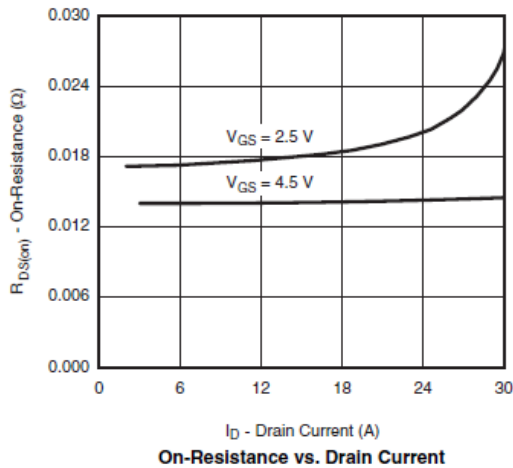
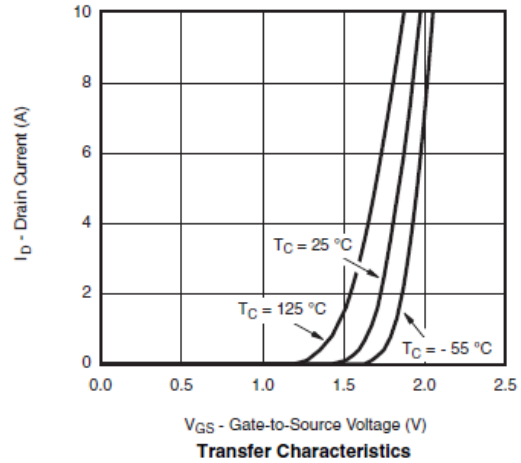
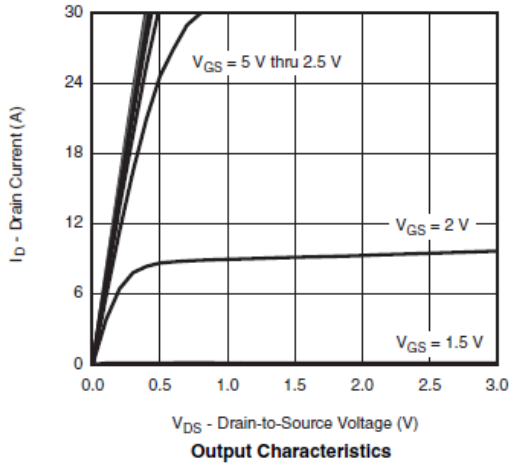
Electrical Characteristics

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

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu\text{A}$	20			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	0.4		1.0	
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 12V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=20V, V_{GS}=0V$			1	uA
		$V_{DS}=20V, V_{GS}=0V$ $T_J=85^\circ\text{C}$			10	
On-State Drain Current	$I_{D(on)}$	$V_{DS} \geq 5V, V_{GS}=4.5V$	30			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=14A$		10	14	m Ω
		$V_{GS}=2.5V, I_D=12A$		14	18	
		$V_{GS}=1.8V, I_D=10A$		23	30	
Forward Transconductance	g_{FS}	$V_{DS}=10V, I_D=7.0A$		40		S
Diode Forward Voltage	V_{SD}	$I_S=1.6A, V_{GS}=0V$		0.8	1.3	V
Dynamic						
Total Gate Charge	Q_g	$V_{DS}=10V, V_{GS}=4.5V$ $I_D=6.0A$		13	19	nC
Gate-Source Charge	Q_{gs}			2.8		
Gate-Drain Charge	Q_{gd}			2.0		
Input Capacitance	C_{iss}	$V_{DS}=10V, V_{GS}=0V$ $f=1\text{MHz}$		1450		pF
Output Capacitance	C_{oss}			285		
Reverse Transfer Capacitance	C_{rss}			145		
Turn-On Time	$t_{d(on)}$	$V_{DD}=10V, R_L=1.3\Omega$ $I_D=6.0A, V_{GEN}=10V$ $R_G=1\Omega$		10	20	ns
	t_r			10	20	
Turn-Off Time	$t_{d(off)}$			25	40	
	t_f			10	20	

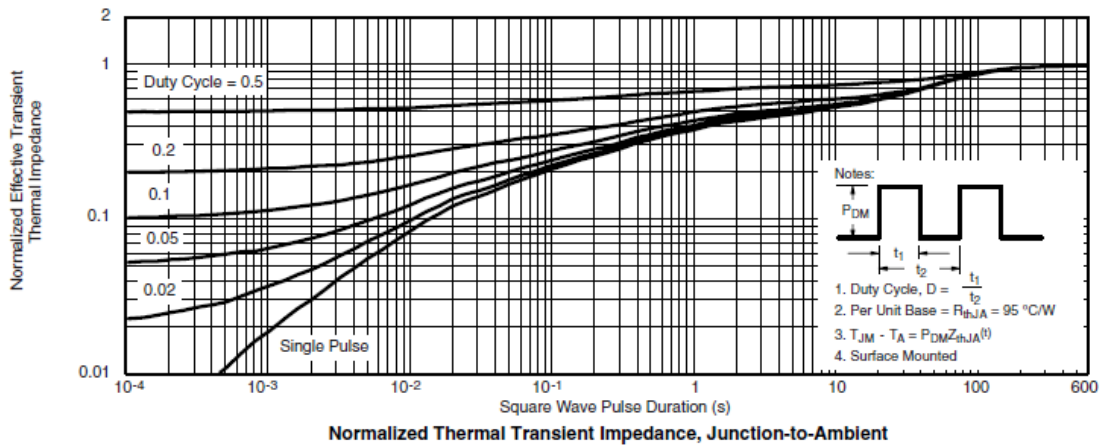
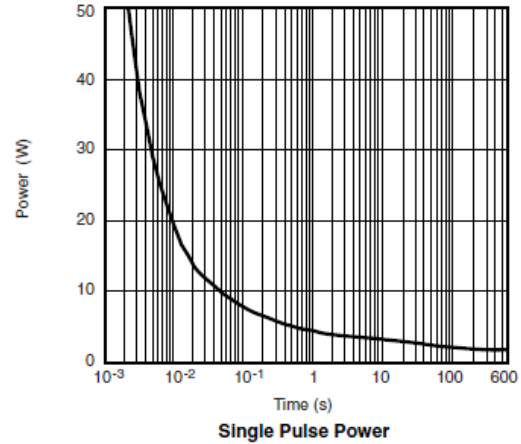
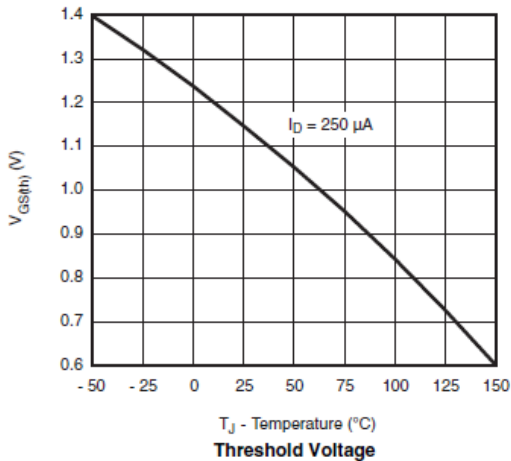
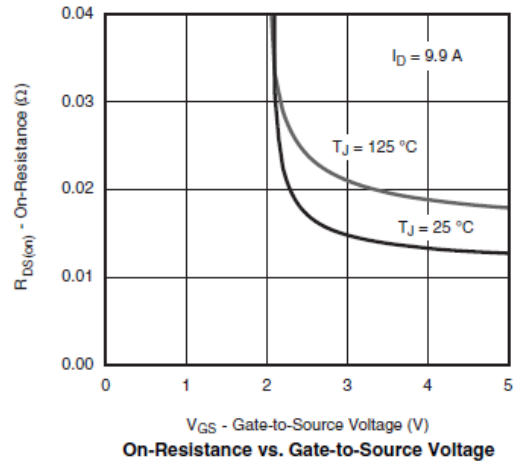
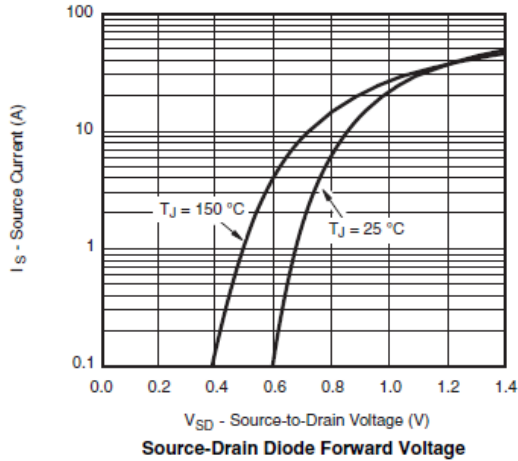


Typical Characteristics





Typical Characteristics





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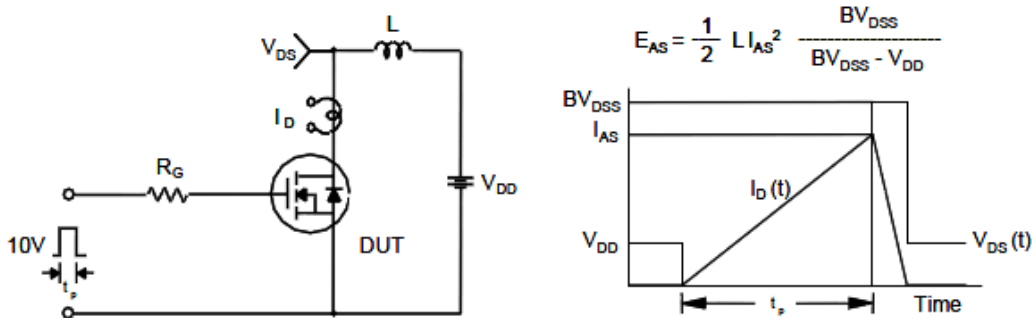
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

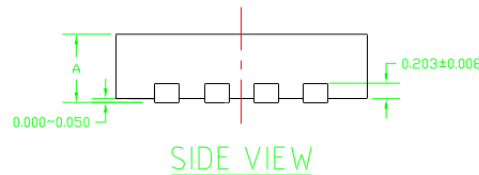
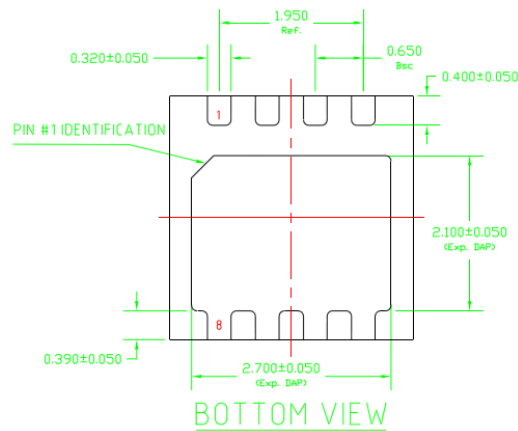
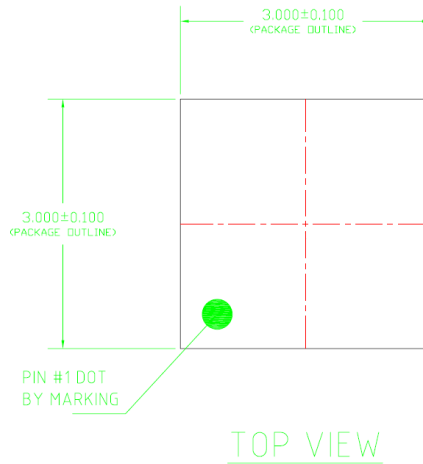


Unclamped Inductive Switching Test Circuit & Waveforms





Package Information (DFN3X3-8L)



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