



## General Description

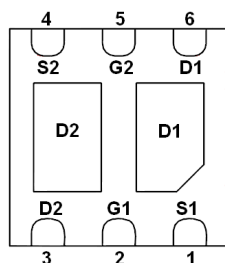
AFN2912W, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent  $R_{DS(ON)}$ , low gate charge.

These devices are particularly suited for low voltage power management, and low in-line power loss are needed in commercial industrial surface mount applications.

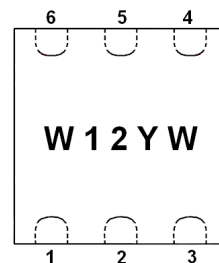
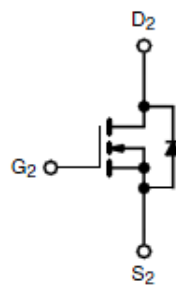
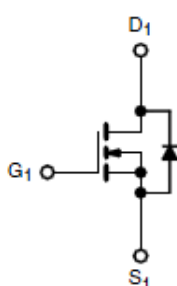
## Features

- $I_D=4.5A, R_{DS(ON)}=38m\Omega@V_{GS}=4.5V$
- $I_D=3.6A, R_{DS(ON)}=48m\Omega@V_{GS}=2.5V$
- $I_D=2.4A, R_{DS(ON)}=68m\Omega@V_{GS}=1.8V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- DFN2X2-6L package design

## Pin Description ( DFN2X2-6L )



BOTTOM VIEW



TOP VIEW

## Application

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

## Pin Define

Pin	Symbol	Description
1	S1	Source1
2	G1	Gate1
3	D2	Drain2
4	S2	Source2
5	G2	Gate2
6	D1	Drain1

## Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFN2912WFN226RG	W12YW	DFN2X2-6L	Tape & Reel	4000 EA

※ W12 parts code

※ Y year code

※ W week code

※ AFN2912WFN226RG : 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	$V_{GSS}$	$\pm 12$	V
Continuous Drain Current( $T_J=150^\circ\text{C}$ )	$I_D$	$T_A=25^\circ\text{C}$	4.5
		$T_A=70^\circ\text{C}$	2.4
Pulsed Drain Current	$I_{DM}$	20	A
Continuous Source Current(Diode Conduction)	$I_S$	1.7	A
Power Dissipation	$P_D$	$T_A=25^\circ\text{C}$	1.9
		$T_A=70^\circ\text{C}$	1.2
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	$^\circ\text{C/W}$

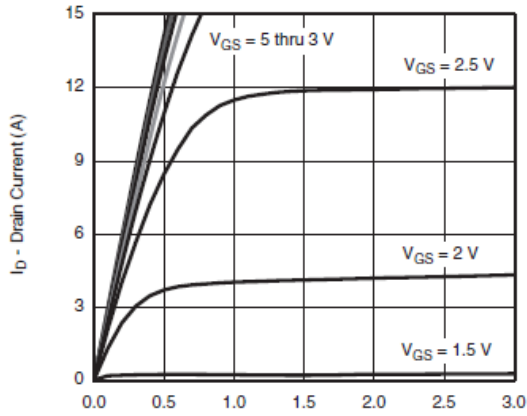
### Electrical Characteristics

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

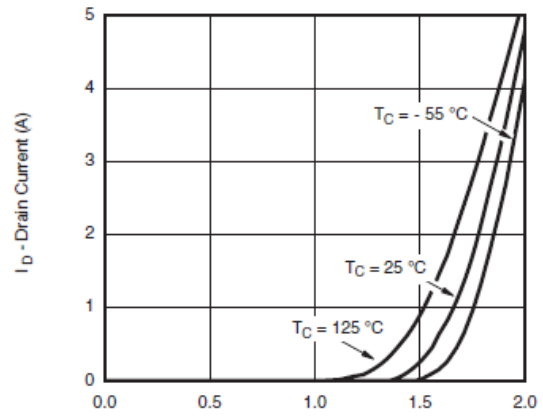
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu\text{A}$	20			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	0.3		0.8	
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 12V$			$\pm 100$	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	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=4.5A$		28	38	m $\Omega$
		$V_{GS}=2.5V, I_D=3.6A$		35	48	
		$V_{GS}=1.8V, I_D=2.4A$		50	68	
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
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS}=10V, V_{GS}=4.5V$ $I_D=3.6A$		4.2	5.0	nC
Gate-Source Charge	$Q_{gs}$			0.6		
Gate-Drain Charge	$Q_{gd}$			0.4		
Input Capacitance	$C_{iss}$	$V_{DS}=10V, V_{GS}=0V$ $f=1\text{MHz}$		340		pF
Output Capacitance	$C_{oss}$			115		
Reverse Transfer Capacitance	$C_{rss}$			33		
Turn-On Time	$t_{d(on)}$	$V_{DD}=10V, R_L=2.8\Omega$ $I_D=3.6A, V_{GEN}=4.5V$ $R_G=1\Omega$		8	15	ns
	$t_r$			8	15	
Turn-Off Time	$t_{d(off)}$			25	40	
	$t_f$			8	15	



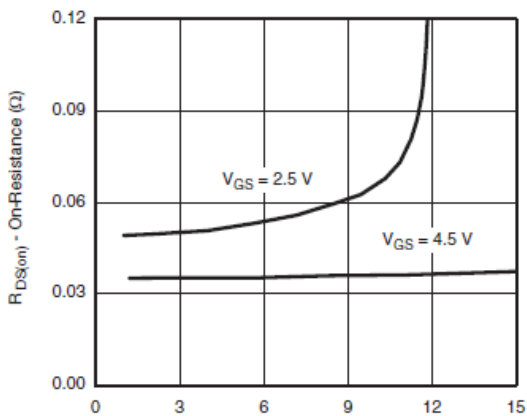
## Typical Characteristics



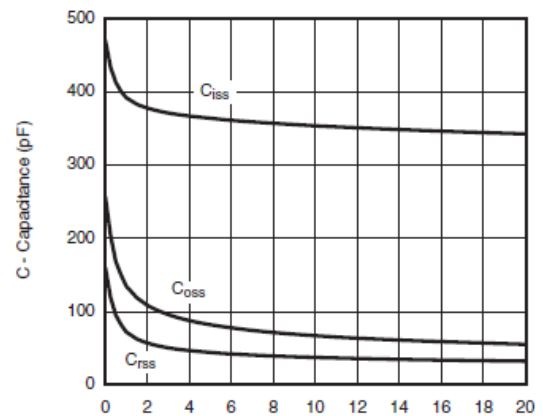
Output Characteristics



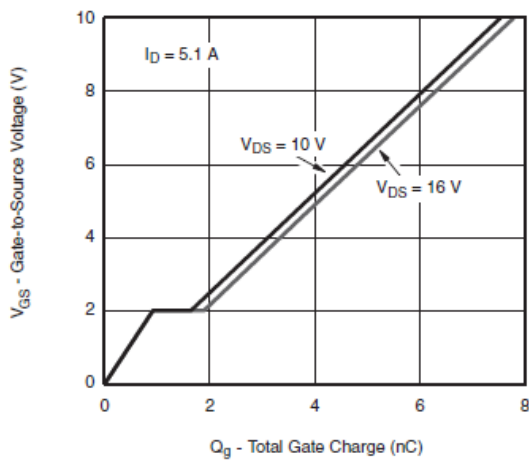
Transfer Characteristics



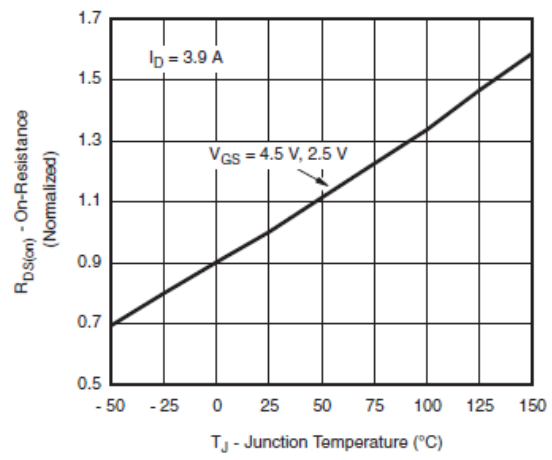
On-Resistance vs. Drain Current and Gate Voltage



Capacitance



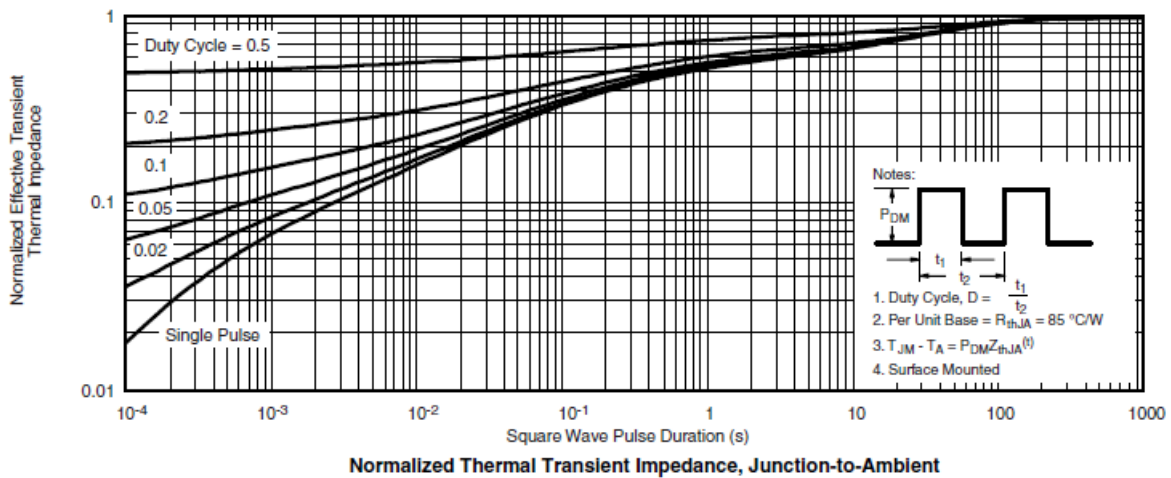
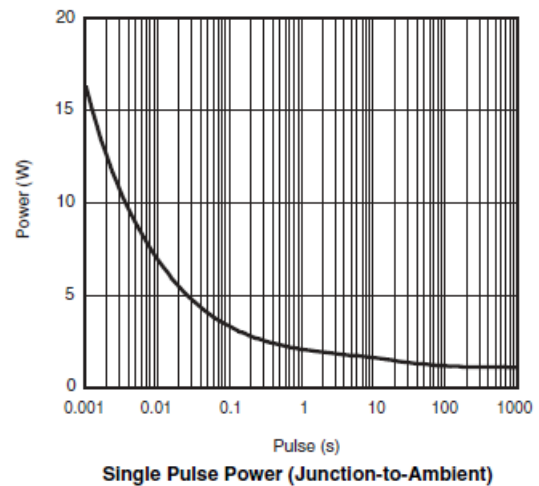
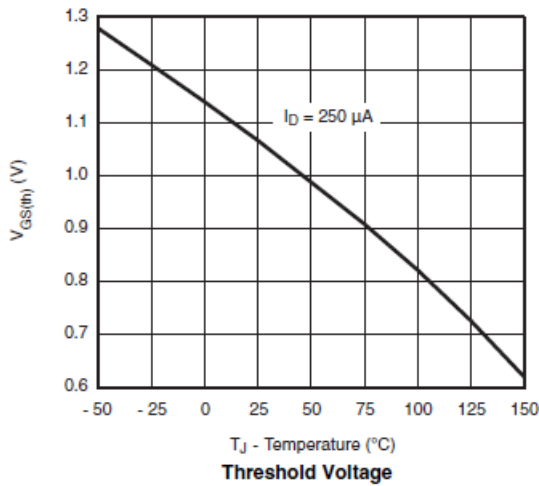
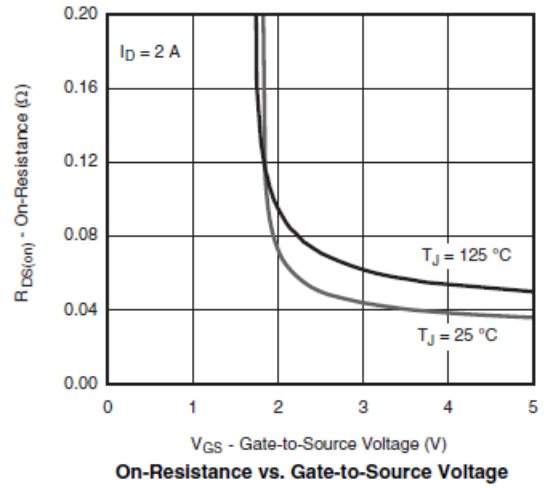
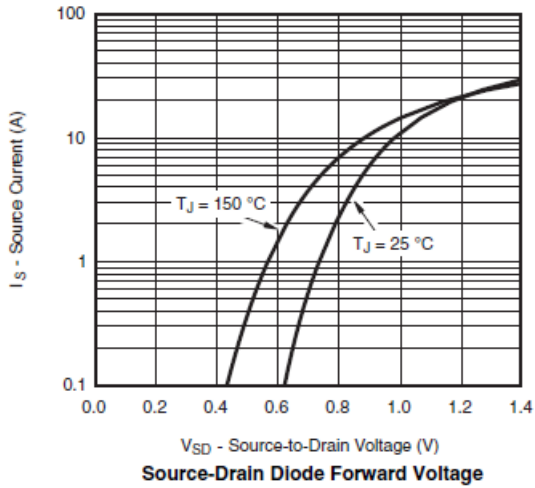
Gate Charge



On-Resistance vs. Junction Temperature



## Typical Characteristics





**Typical Characteristics**

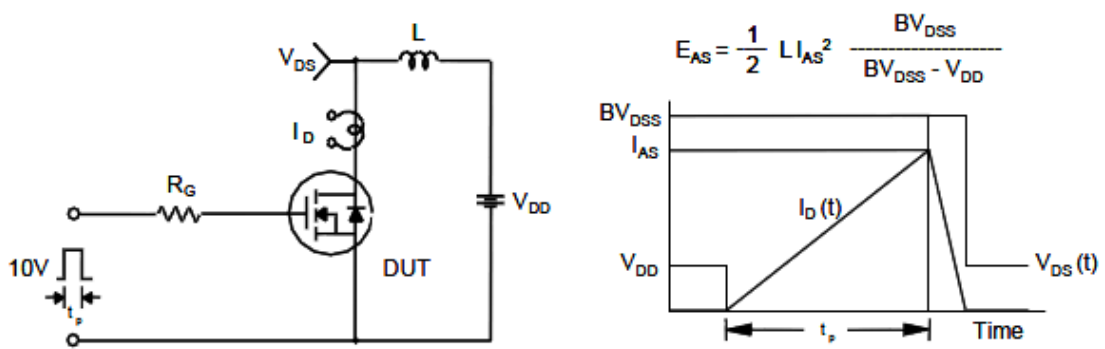
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

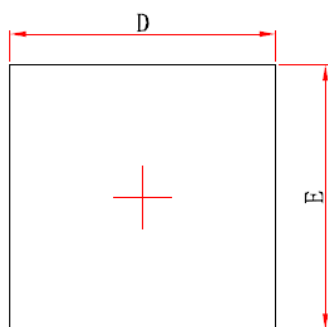


Unclamped Inductive Switching Test Circuit & Waveforms

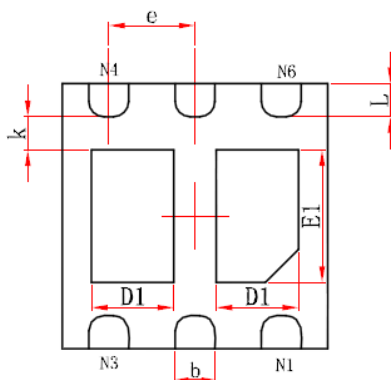




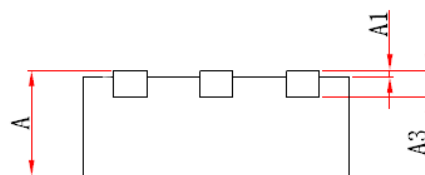
**Package Information ( DFN2X2-6L )**



**Top View**



**Bottom View**



**Side View**

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700/0.800	0.800/0.900	0.028/0.031	0.031/0.035
A1	0.000	0.050	0.000	0.002
A3	0.203REF.		0.008REF.	
D	1.924	2.076	0.076	0.082
E	1.924	2.076	0.076	0.082
D1	0.520	0.720	0.020	0.028
E1	0.900	1.100	0.035	0.043
k	0.200MIN.		0.008MIN.	
b	0.250	0.350	0.010	0.014
e	0.650TYP.		0.026TYP.	
L	0.174	0.326	0.007	0.013

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