



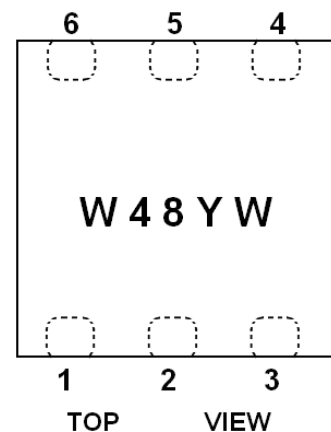
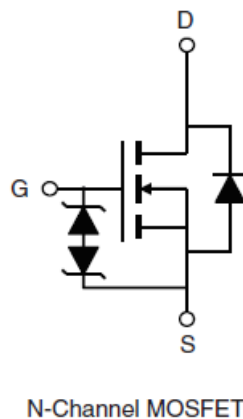
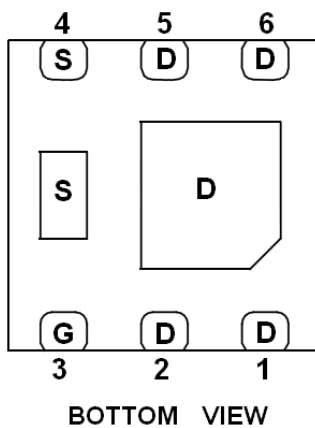
General Description

AFN2448WS, 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/3.0A, $R_{DS(ON)}=11m\Omega@V_{GS}=4.5V$
- 20V/3.0A, $R_{DS(ON)}=13m\Omega@V_{GS}=2.5V$
- 20V/3.0A, $R_{DS(ON)}=20m\Omega@V_{GS}=1.8V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- ESD Protection (>2KV) Diode design-in
- DFN2X2-6L package design

Pin Description (DFN2X2-6L)



Application

- For Smart Phones and Mobile Computing
 - Load Switches
 - DC/DC Converters

Pin Define

Pin	Symbol	Description
1,2,5,6	D	Drain
4	S	Source
3	G	Gate

Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFN2448WSFN226RG	W48YW	DFN2X2-6L	Tape & Reel	4000 EA

- ※ W48 part code
- ※ Y year code
- ※ W week code
- ※ AFN2448WSFN226RG : 7" Tape & Reel ; Pb- Free ; Halogen- Free



Absolute Maximum Ratings

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

Parameter	Symbol	Typical	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	$T_A=25^{\circ}\text{C}$	12
		$T_A=70^{\circ}\text{C}$	10
Pulsed Drain Current	I_{DM}	30	A
Continuous Source Current(Diode Conduction)	I_S	2.9	A
Power Dissipation	P_D	$T_A=25^{\circ}\text{C}$	3.5
		$T_A=70^{\circ}\text{C}$	2.2
Operating Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55/150	$^{\circ}\text{C}$
Thermal Resistance-Junction to Ambient	$R_{\theta JA}$	36	$^{\circ}\text{C/W}$

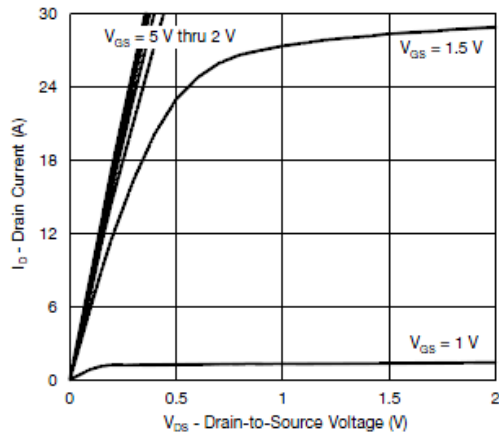
Electrical Characteristics

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

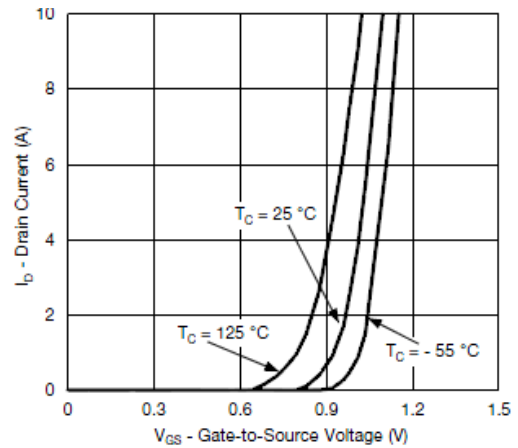
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	20			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5		1.3	V
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 12V$			± 10	μA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=16V, V_{GS}=0V$			10	μA
		$V_{DS}=16V, V_{GS}=0V$ $T_J=85^{\circ}\text{C}$			30	
On-State Drain Current	$I_{D(on)}$	$V_{DS} \geq 5V, V_{GS}=4.5V$	12			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=3.0A$		9.2	11	m Ω
		$V_{GS}=2.5V, I_D=3.0A$		10.7	13	
		$V_{GS}=1.8V, I_D=3.0A$		16.8	20	
Forward Transconductance	g_{FS}	$V_{DS}=10V, I_D=12.4A$		70		S
Diode Forward Voltage	V_{SD}	$I_S=10A, V_{GS}=0V$		0.85	1.2	V
Dynamic						
Total Gate Charge	Q_g	$V_{DS}=10V, V_{GS}=4.5V$ $I_D=12.4A$		13	20	nC
Gate-Source Charge	Q_{gs}			2.5		
Gate-Drain Charge	Q_{gd}			1.5		
Input Capacitance	C_{iss}	$V_{DS}=10V, V_{GS}=0V$ $f=1\text{MHz}$		1340		pF
Output Capacitance	C_{oss}			200		
Reverse Transfer Capacitance	C_{rss}			85		
Turn-On Time	$t_{d(on)}$	$V_{DD}=10V, R_L=1.0\Omega$ $I_D=10A, V_{GEN}=4.5V$ $R_G=1\Omega$		8	15	ns
	t_r			15	25	
Turn-Off Time	$t_{d(off)}$			30	60	
	t_f			8	15	



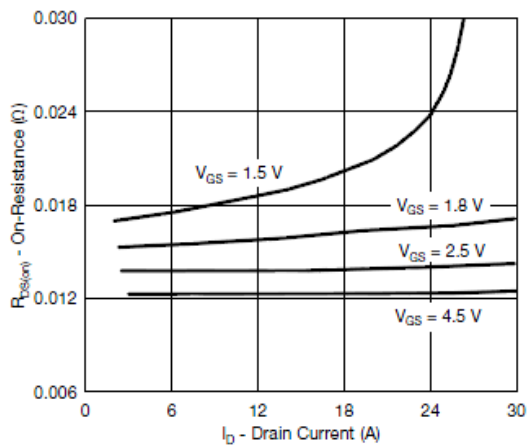
Typical Characteristics



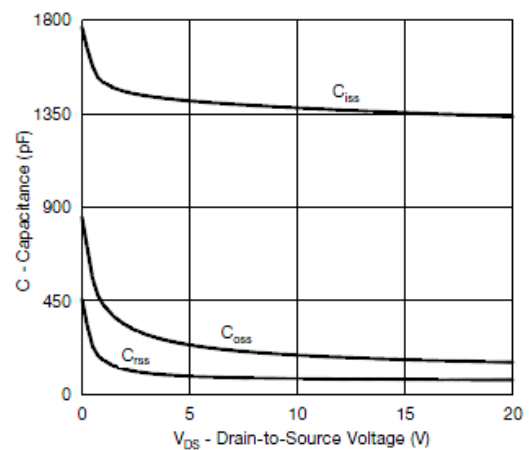
Output Characteristics



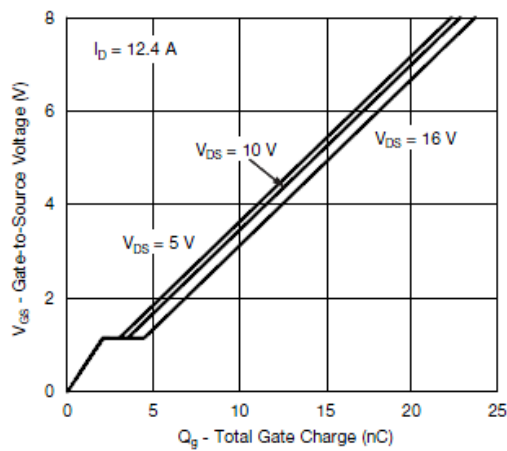
Transfer Characteristics



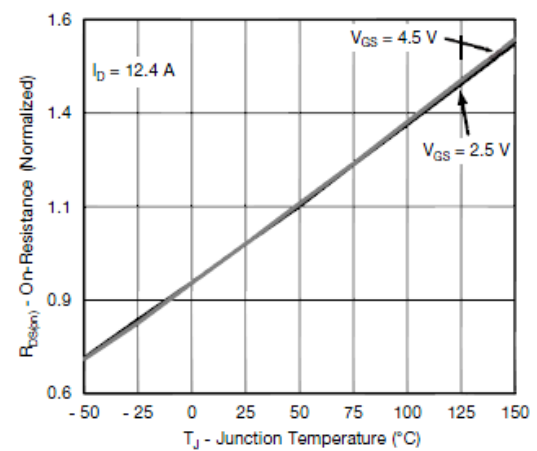
On-Resistance vs. Drain Current and Gate Voltage



Capacitance



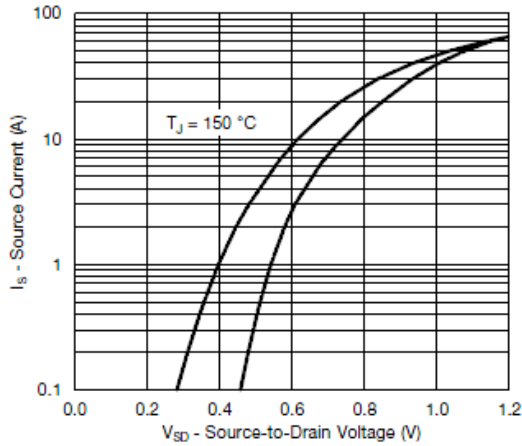
Gate Charge



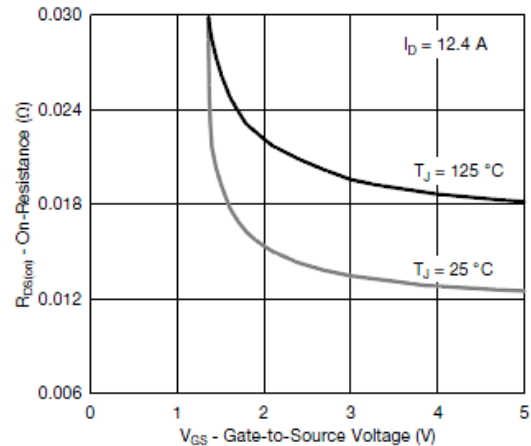
On-Resistance vs. Junction Temperature



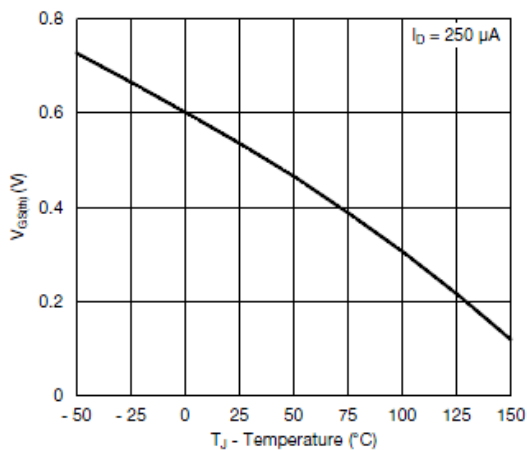
Typical Characteristics



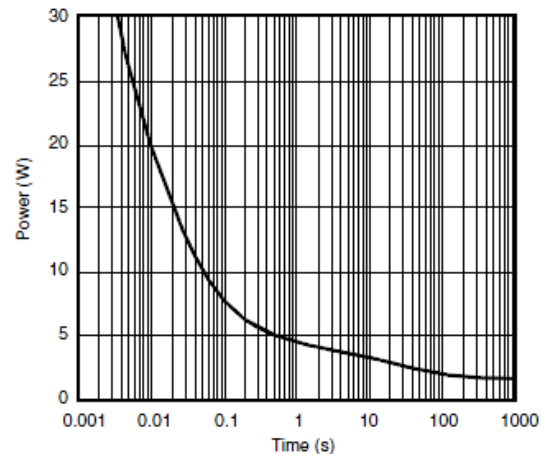
Source-Drain Diode Forward Voltage



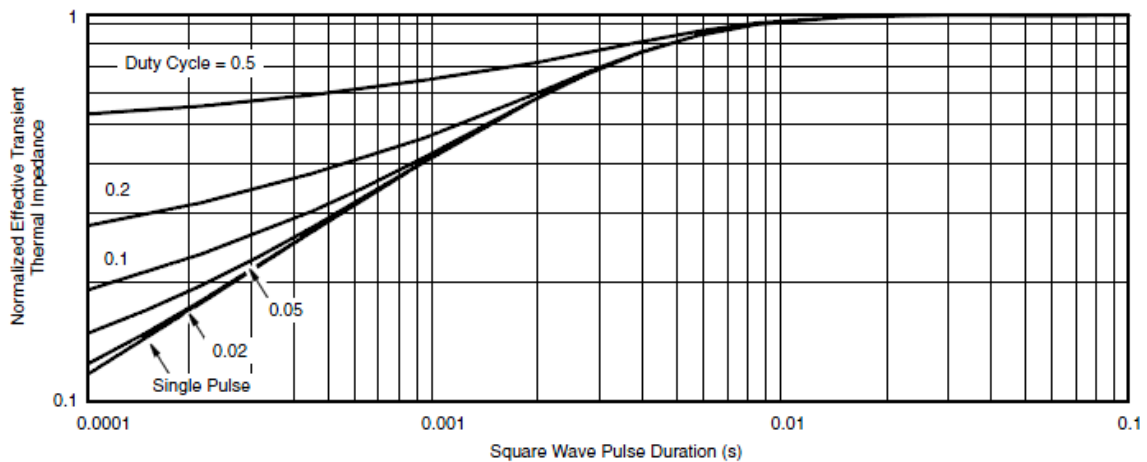
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Case



Typical Characteristics

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

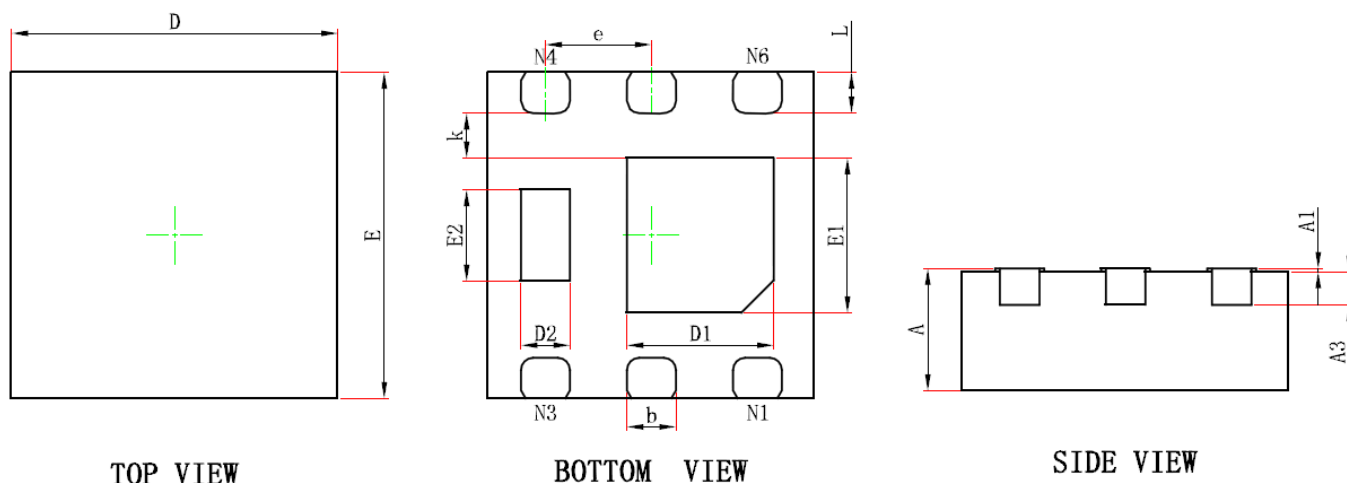


Unclamped Inductive Switching Test Circuit & Waveforms





Package Information (DFN2X2-6L)



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	1.924	2.076	0.076	0.082
D1	0.800	1.000	0.031	0.039
E1	0.850	1.050	0.033	0.041
D2	0.200	0.400	0.008	0.016
E2	0.460	0.660	0.018	0.026
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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