



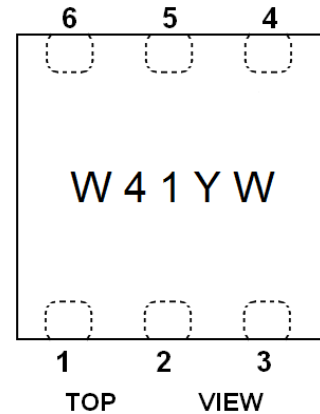
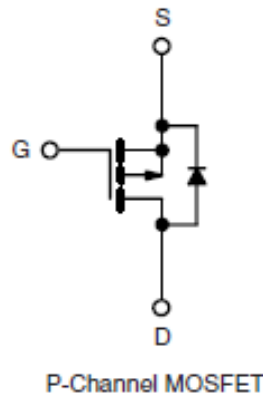
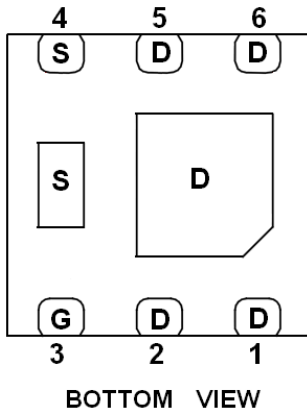
## General Description

AFP2441W, P-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, such as smart phone and notebook computer and other battery powered circuits, and low in-line power loss are needed in commercial industrial surface mount applications.

## Features

- -40V/-4.2A,  $R_{DS(ON)}=75m\Omega@V_{GS}=-10V$
- -40V/-3.2A,  $R_{DS(ON)}=105m\Omega@V_{GS}=-4.5V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- DFN2X2-6L package design

## Pin Description ( DFN2X2-6L )



## Application

- Load Switch, PA Switch and Battery Switch for Portable Devices

## 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
AFP2441WFN226RG	W41YW	DFN2X2-6L	Tape & Reel	4000 EA

- ※ W41 parts code
- ※ Y year code
- ※ W week code ( A ~ Z = 1 ~ 26 / a ~ z = 27 ~ 52 )
- ※ AFP2441WFN226RG : 7" Tape & Reel ; Pb- Free ; Halogen- Free



**Absolute Maximum Ratings**

(T<sub>A</sub>=25°C Unless otherwise noted)

Parameter	Symbol	Typical	Unit
Drain-Source Voltage	V <sub>DSS</sub>	-40	V
Gate –Source Voltage	V <sub>GSS</sub>	±20	V
Continuous Drain Current(T <sub>J</sub> =150°C)	I <sub>D</sub>	T <sub>A</sub> =25°C	-4.2
		T <sub>A</sub> =70°C	-3.2
Pulsed Drain Current	I <sub>DM</sub>	-20	A
Continuous Source Current(Diode Conduction)	I <sub>S</sub>	-1.6	A
Power Dissipation	P <sub>D</sub>	T <sub>C</sub> =25°C	7.8
		T <sub>C</sub> =70°C	5.0
Operating Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature Range	T <sub>STG</sub>	-55/150	°C
Thermal Resistance-Junction to Ambient	R <sub>θJA</sub>	120	°C/W

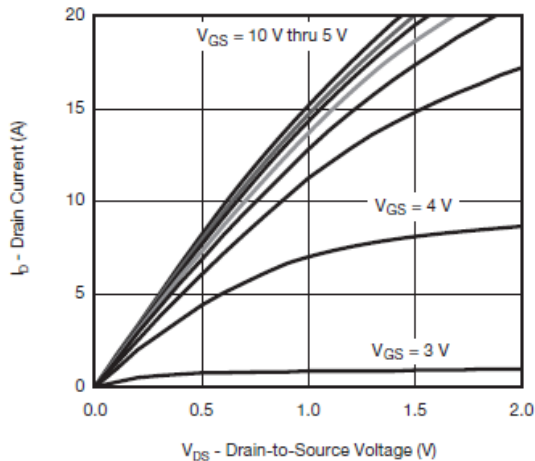
**Electrical Characteristics**

(T<sub>A</sub>=25°C Unless otherwise noted)

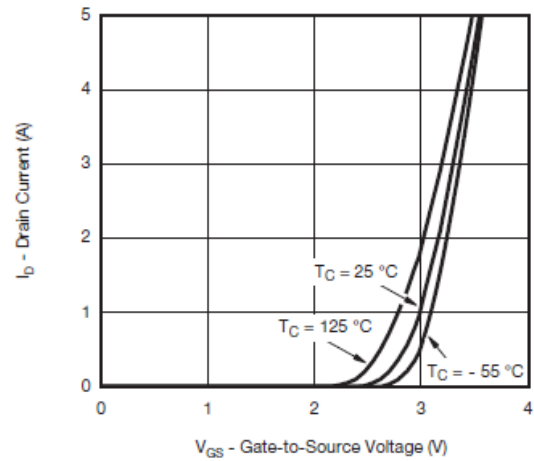
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =-250uA	-40			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250uA	-1.0		-2.0	V
Gate Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±12V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-32V, V <sub>GS</sub> =0V			-1	uA
		V <sub>DS</sub> =-32V, V <sub>GS</sub> =0V T <sub>J</sub> =85°C			-30	
On-State Drain Current	I <sub>D(on)</sub>	V <sub>DS</sub> ≤ -5V, V <sub>GS</sub> =-10V	-10			A
Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-4.2A		65	75	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-3.2A		92	105	
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =-15V, I <sub>D</sub> =-3A		8		S
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-2A, V <sub>GS</sub> =0V		-0.85	-1.3	V
<b>Dynamic</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =-20V, V <sub>GS</sub> =-4.5V I <sub>D</sub> =-3.0A		5	10	nC
Gate-Source Charge	Q <sub>gs</sub>			1.5		
Gate-Drain Charge	Q <sub>gd</sub>			2.5		
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-20V, V <sub>GS</sub> =0V f=1MHz		500		pF
Output Capacitance	C <sub>oss</sub>			65		
Reverse Transfer Capacitance	C <sub>rss</sub>			50		
Turn-On Time	t <sub>d(on)</sub>	V <sub>DD</sub> =-20V, R <sub>L</sub> =8Ω I <sub>D</sub> =-2.5A, V <sub>GEN</sub> =-4.5V R <sub>G</sub> =1.0Ω		25	50	ns
	t <sub>r</sub>			15	30	
Turn-Off Time	t <sub>d(off)</sub>			10	25	
	t <sub>f</sub>			10	25	



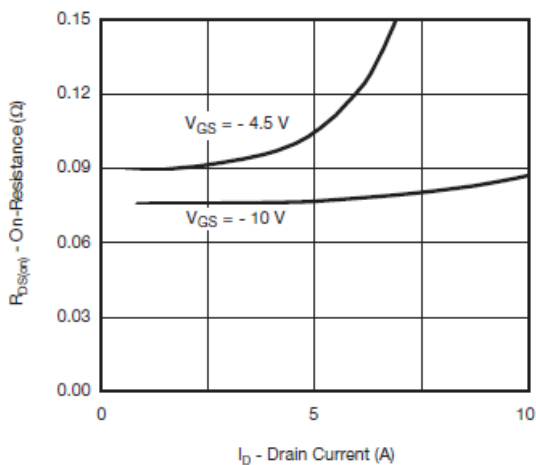
## Typical Characteristics



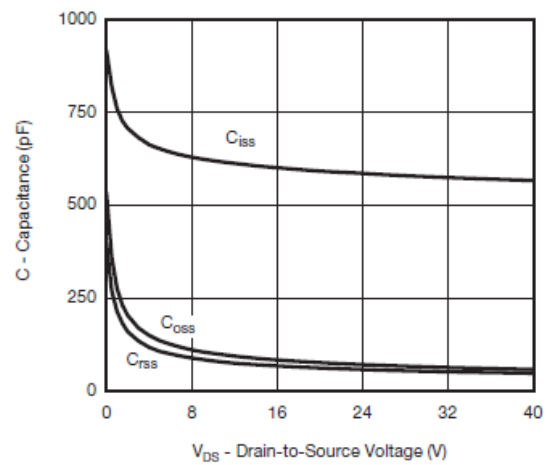
Output Characteristics



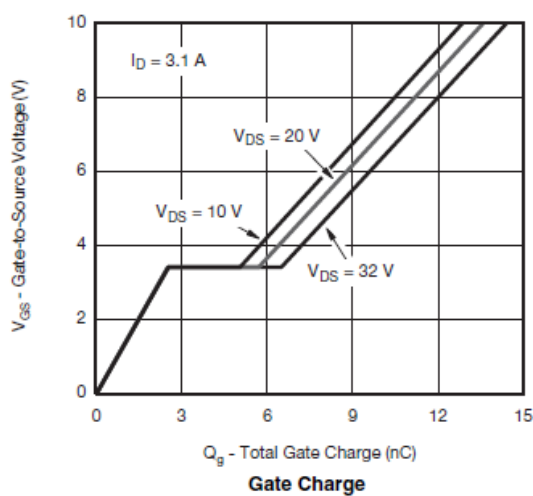
Transfer Characteristics



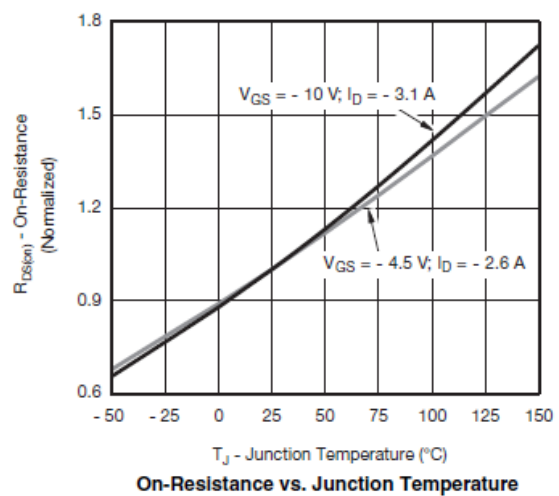
On-Resistance vs. Drain Current



Capacitance



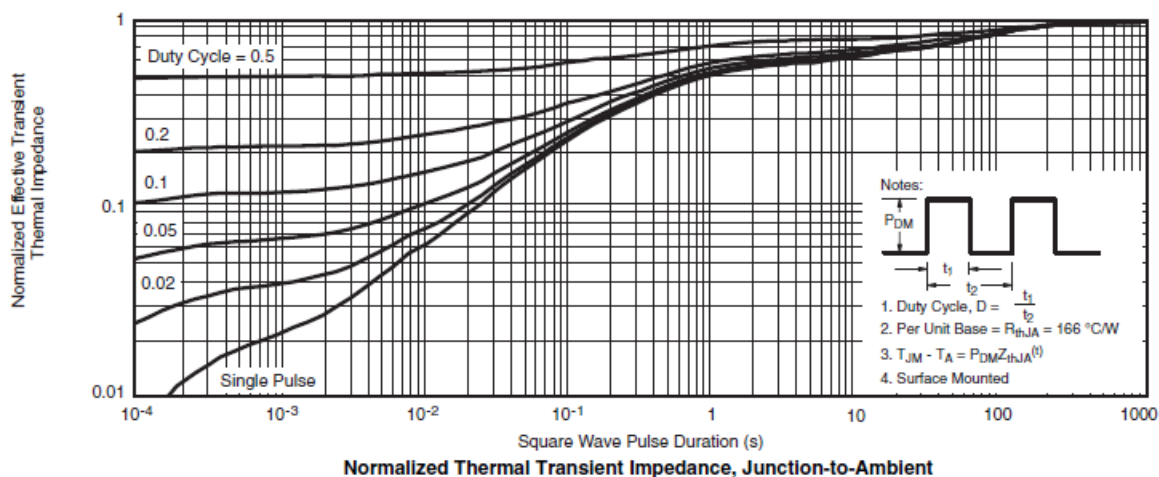
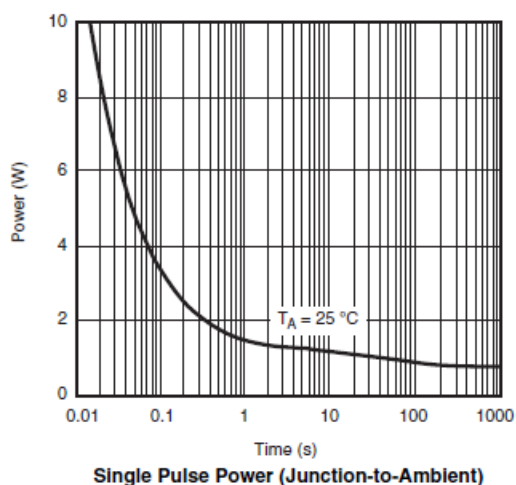
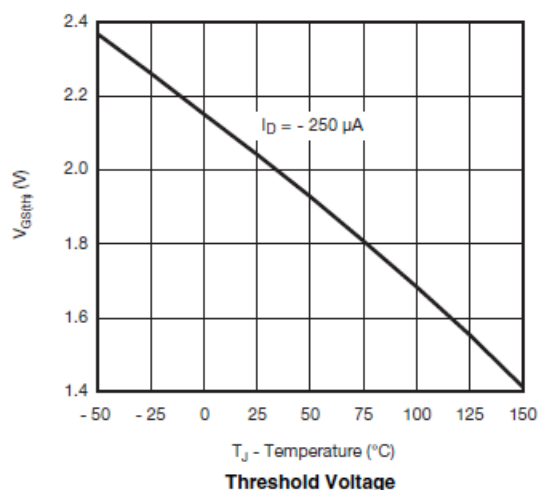
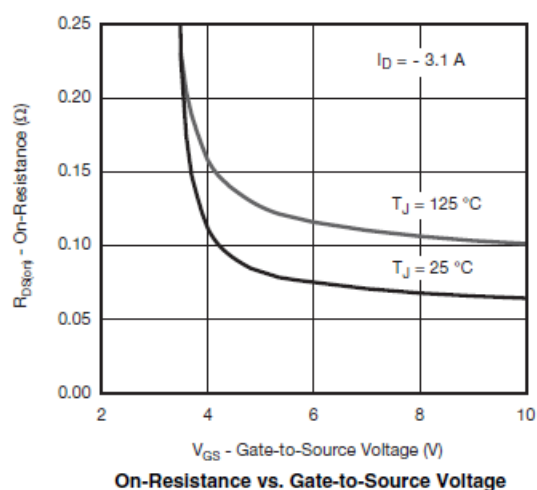
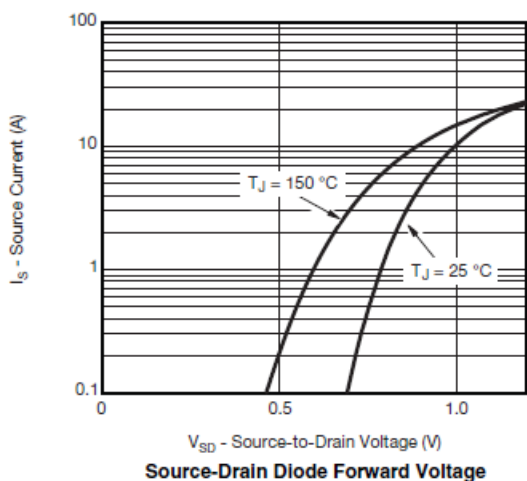
Gate Charge



On-Resistance vs. Junction Temperature



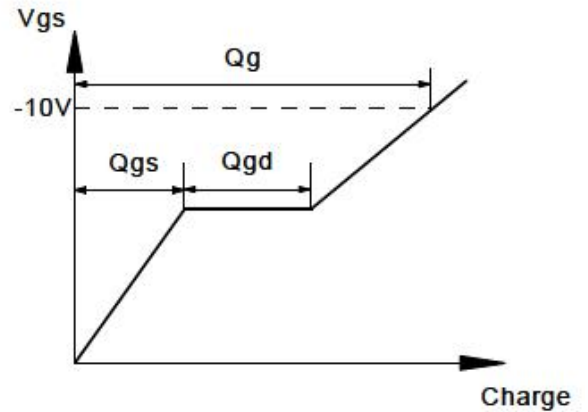
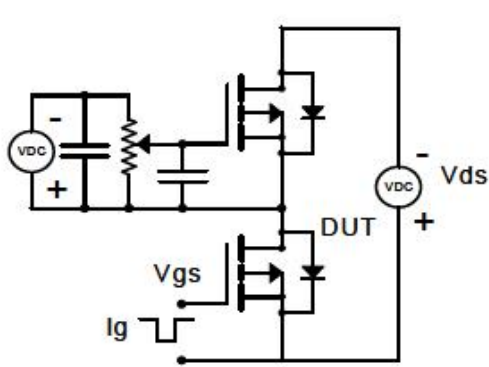
## Typical Characteristics



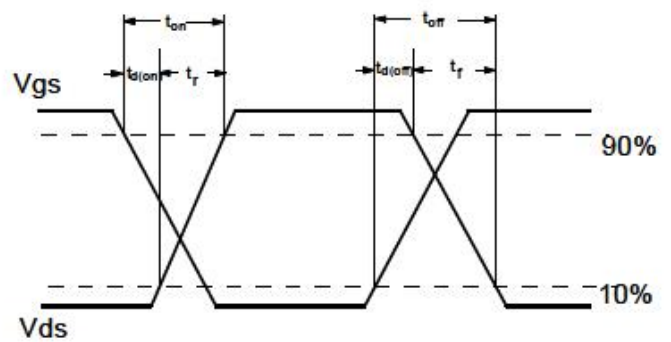
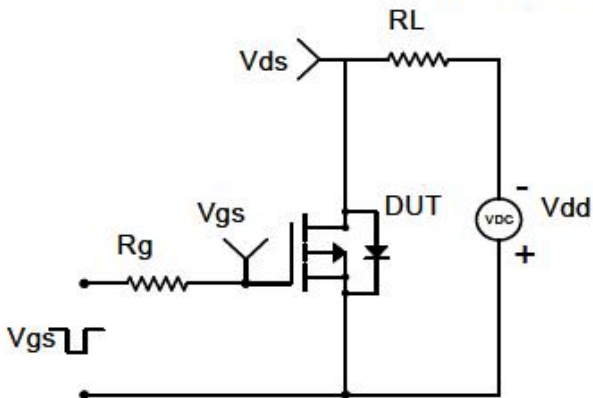


## Typical Characteristics

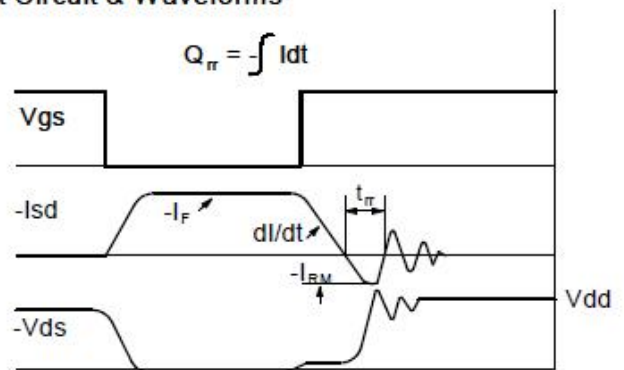
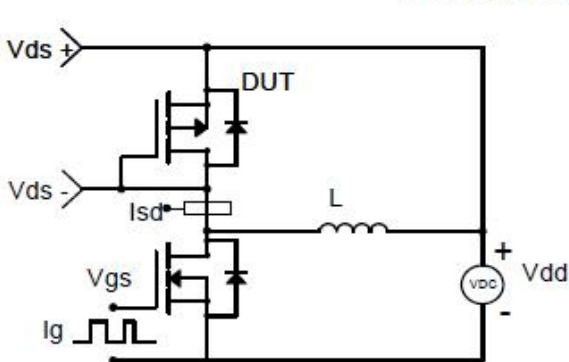
### Gate Charge Test Circuit & Waveform



### Resistive Switching Test Circuit & Waveforms

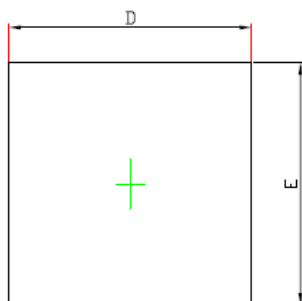


### Diode Recovery Test Circuit & Waveforms

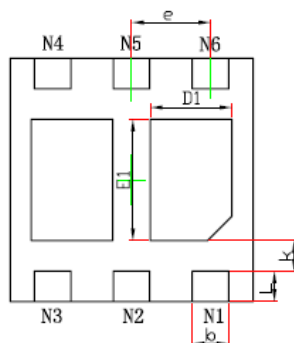




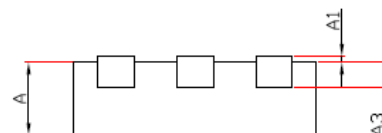
**Package Information ( DFN2X2-6L )**



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	1.950	2.050	0.077	0.081
E	1.950	2.050	0.077	0.081
D1	0.570	0.770	0.022	0.030
E1	0.900	1.100	0.035	0.043
k	0.200MIN.		0.008MIN.	
b	0.250	0.350	0.010	0.014
e	0.65TYP.		0.026TYP.	
L	0.200	0.300	0.008	0.012

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