



## General Description

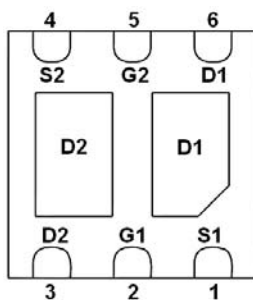
AFP2923W, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent  $R_{DS(ON)}$ , low gate charge.

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.

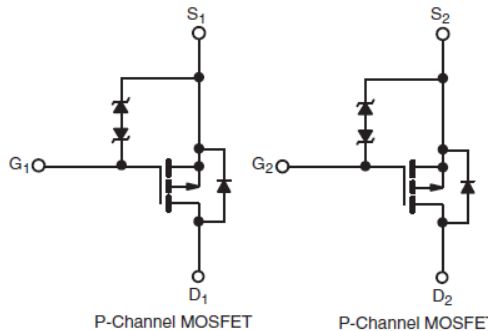
## Features

- -20V/-4.5A,  $R_{DS(ON)}=42m\Omega@V_{GS}=-4.5V$
- -20V/-3.4A,  $R_{DS(ON)}=52m\Omega@V_{GS}=-2.5V$
- -20V/-2.4A,  $R_{DS(ON)}=68m\Omega@V_{GS}=-1.8V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- ESD protection
- DFN2X2-6L package design

## Pin Description ( DFN2X2-6L )

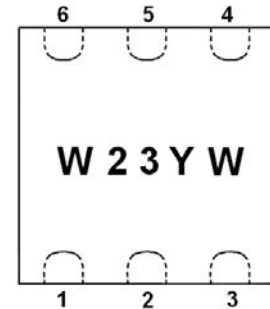


BOTTOM VIEW



P-Channel MOSFET

P-Channel MOSFET



TOP VIEW

## Application

- Charger Switches and Load Switches for Portable Devices
- DC/DC Converters

## 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
AFP2923WFN226RG	W23YW	DFN2X2-6L	Tape & Reel	4000 EA

- ※ W23 parts code
- ※ Y year code
- ※ W week code ( A ~ Z = 1 ~ 26 / a ~ z = 27 ~ 52 )
- ※ AFP2923WFN226RG : 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>	-20	V
Gate –Source Voltage	V <sub>GSS</sub>	±12	V
Continuous Drain Current(T <sub>J</sub> =150°C)	I <sub>D</sub>	T <sub>c</sub> =25°C	-4.5
		T <sub>c</sub> =70°C	-4.5
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>	52	°C/W
Thermal Resistance-Junction to Case(Drian)	R <sub>θJc</sub>	12.5	

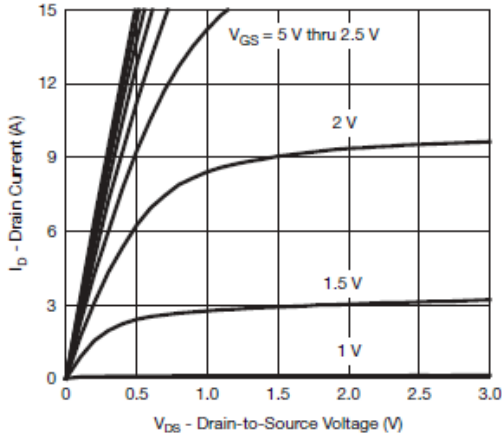
### Electrical Characteristics

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

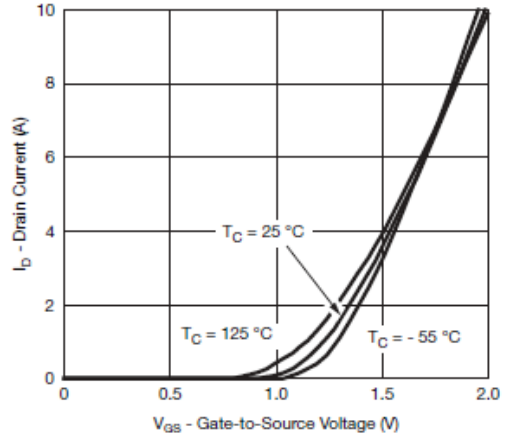
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =-250uA	-20			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250uA	-0.4		-1.0	
Gate Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±8V			±10	uA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-16V, V <sub>GS</sub> =0V			-1	uA
		V <sub>DS</sub> =-16V, V <sub>GS</sub> =0V T <sub>J</sub> =85°C			-10	
On-State Drain Current	I <sub>D(on)</sub>	V <sub>DS</sub> ≥ -5V, V <sub>GS</sub> =-4.5V	-10			A
Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-4.5A		37	42	mΩ
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-3.4A		46	52	
		V <sub>GS</sub> =-1.8V, I <sub>D</sub> =-2.4A		59	68	
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =-6V, I <sub>D</sub> =-4.6A		12		S
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-1.25A, V <sub>GS</sub> =0V		-0.85	-1.2	V
<b>Dynamic</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =-6V, V <sub>GS</sub> =-4.5V I <sub>D</sub> =-5.6A		10	18	nC
Gate-Source Charge	Q <sub>gs</sub>		2.5			
Gate-Drain Charge	Q <sub>gd</sub>		2.8			
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-6V, V <sub>GS</sub> =0V f=1MHz		1450		pF
Output Capacitance	C <sub>oss</sub>		265			
Reverse Transfer Capacitance	C <sub>rss</sub>		255			
Turn-On Time	t <sub>d(on)</sub>	V <sub>DD</sub> =-10V, R <sub>L</sub> =2.7Ω I <sub>D</sub> =-3.7A, V <sub>GEN</sub> =-4.5V R <sub>G</sub> =1Ω		15	25	ns
	t <sub>r</sub>			25	40	
Turn-Off Time	t <sub>d(off)</sub>			40	65	
	t <sub>f</sub>			15	25	



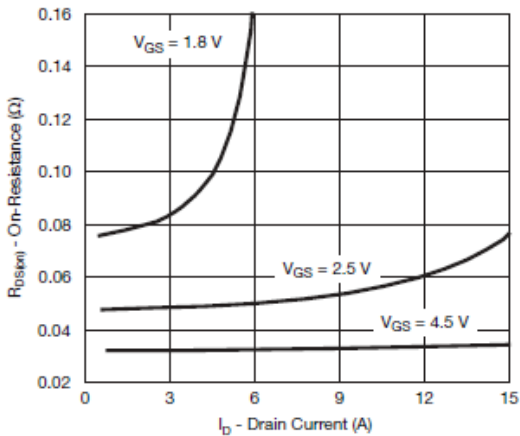
## Typical Characteristics



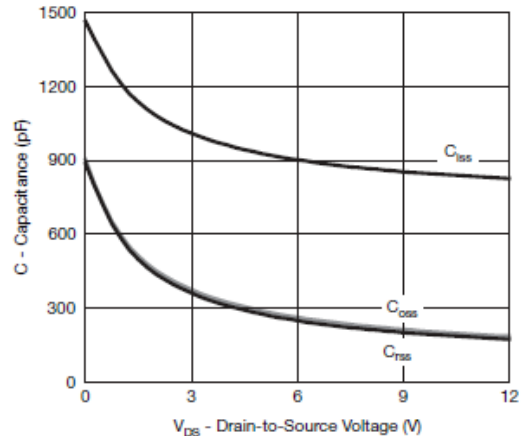
Output Characteristics



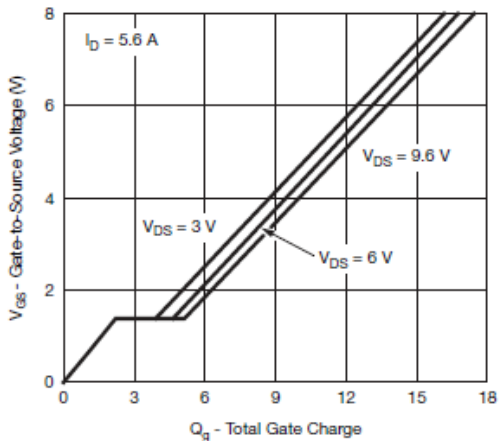
Transfer Characteristics



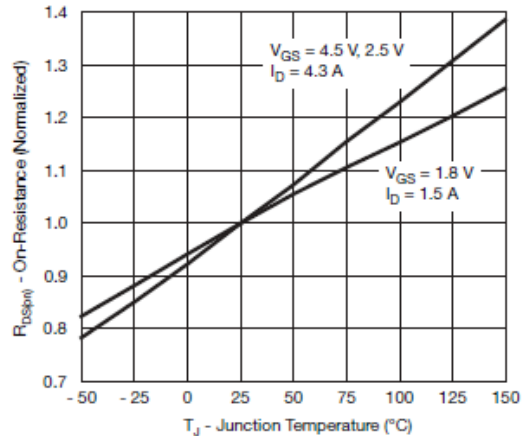
On-Resistance vs. Drain Current and Gate Voltage



Capacitance



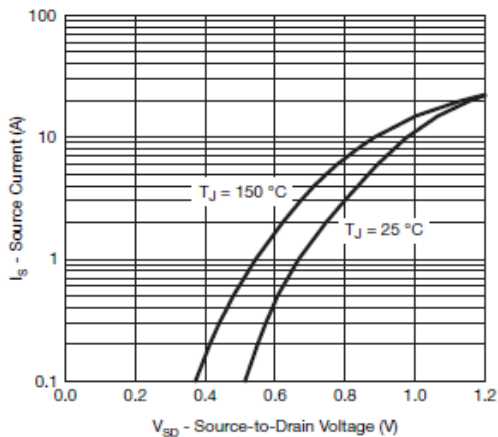
Gate Charge



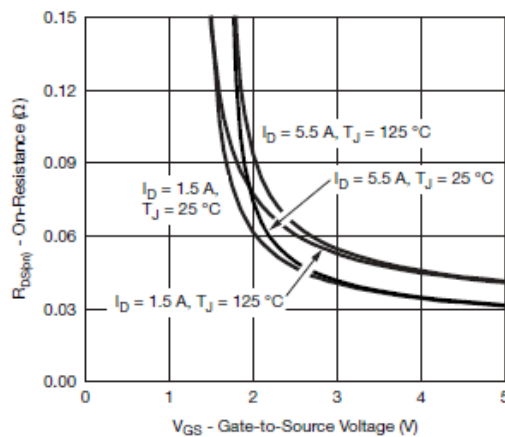
On-Resistance vs. Junction Temperature



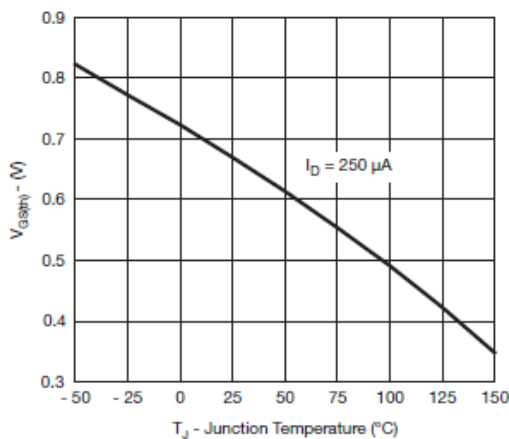
## Typical Characteristics



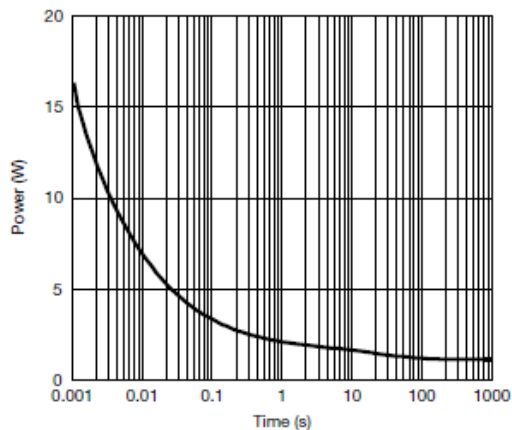
Source-Drain Diode Forward Voltage



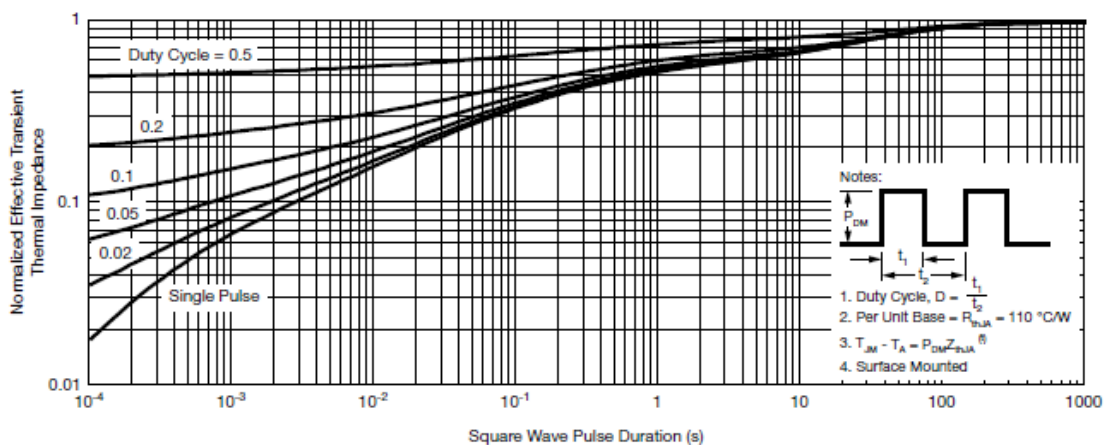
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power, Junction-to-Ambient

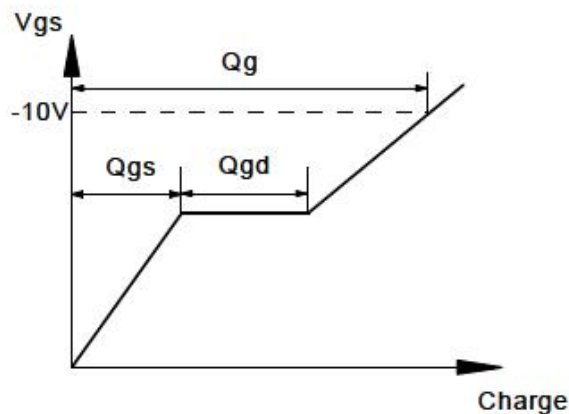
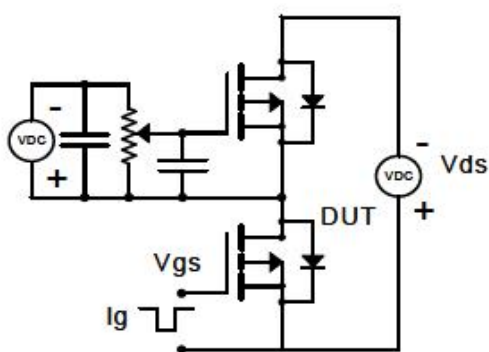


Normalized Thermal Transient Impedance, Junction-to-Ambient

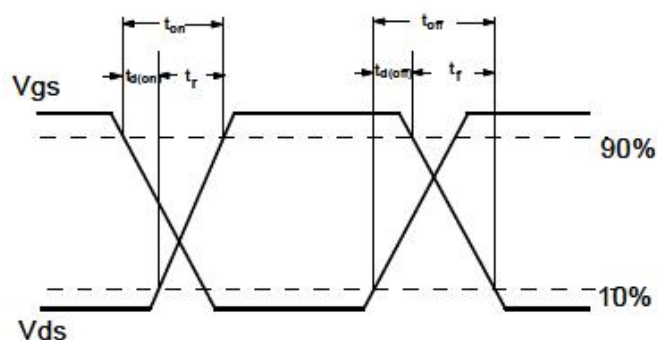
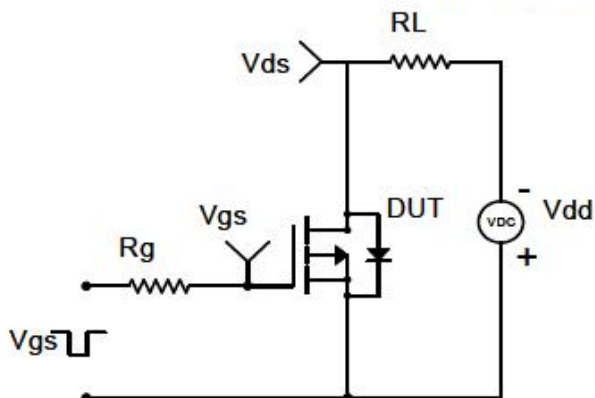


## Typical Characteristics

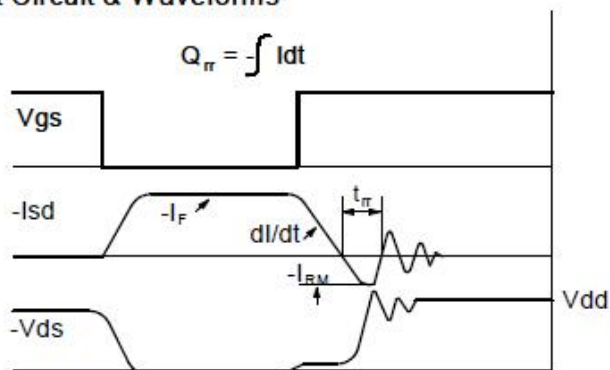
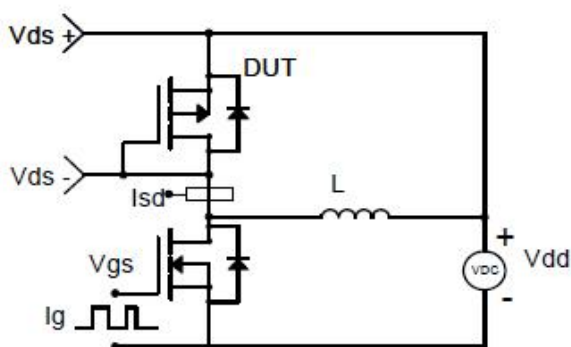
### Gate Charge Test Circuit & Waveform



### Resistive Switching Test Circuit & Waveforms

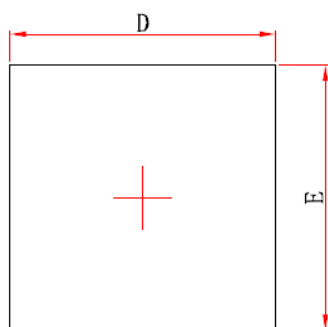


### Diode Recovery Test Circuit & Waveforms

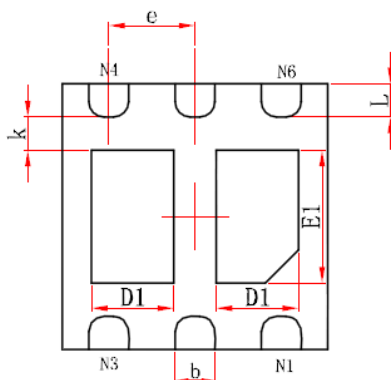




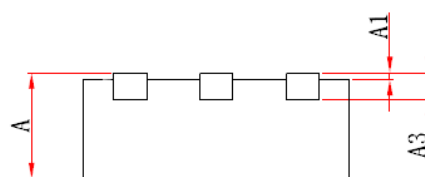
**Package Information ( DFN2X2-6L )**



**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	1.924	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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