



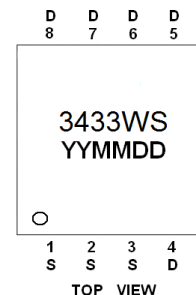
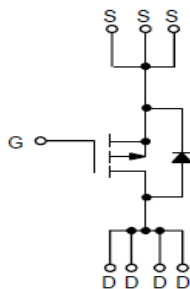
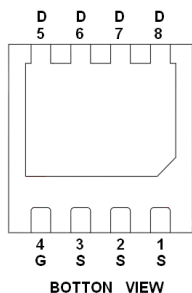
### General Description

AFP3433WS, 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/-7A,  $R_{DS(ON)}=13m\Omega@V_{GS}=-4.5V$
- -20V/-5A,  $R_{DS(ON)}=16m\Omega@V_{GS}=-2.5V$
- -20V/-2A,  $R_{DS(ON)}=20m\Omega@V_{GS}=-1.5V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- DFN3X3-8L package design

### Pin Description ( DFN3X3-8L )



### Application

- DC-DC Converter
- POL

### Pin Define

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

### Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFP3433WSFN338RG	3433WS	DFN3X3-8L	Tape & Reel	5000 EA

- ※ YY year code
- ※ MM month code
- ※ DD date code
- ※ AFP3433WSFN338RG : 13" Tape & Reel ; Pb- Free ; Halogen -Free



**Absolute Maximum Ratings**

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

Parameter	Symbol	Value	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>A</sub> =25°C	-12
		T <sub>A</sub> =70°C	-9
Pulsed Drain Current	I <sub>DM</sub>	-40	A
Continuous Source Current(Diode Conduction)	I <sub>S</sub>	-3	A
Power Dissipation	P <sub>D</sub>	T <sub>C</sub> =25°C	28
		T <sub>C</sub> =70°C	15
		T <sub>A</sub> =25°C	3.2
		T <sub>A</sub> =70°C	2.0
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>	40	°C/W

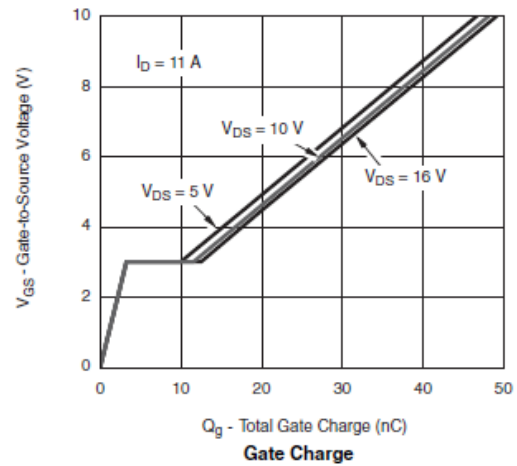
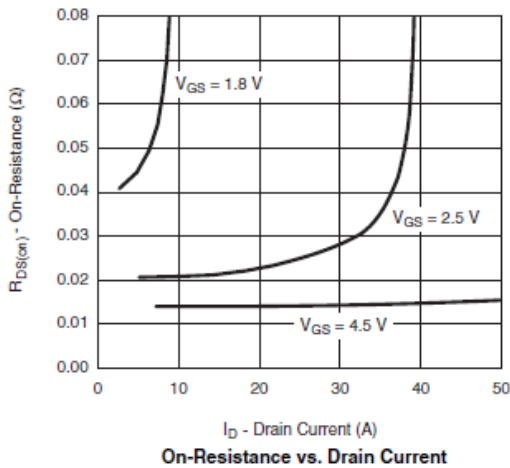
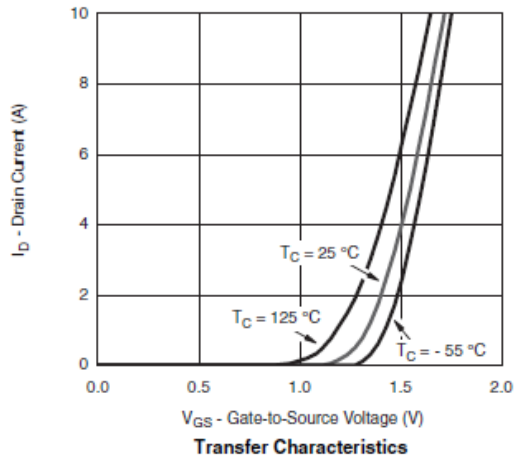
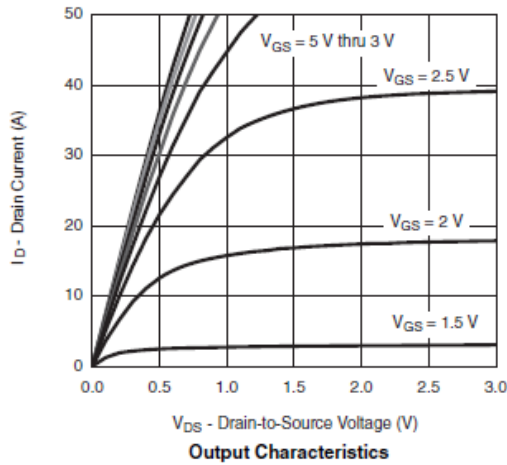
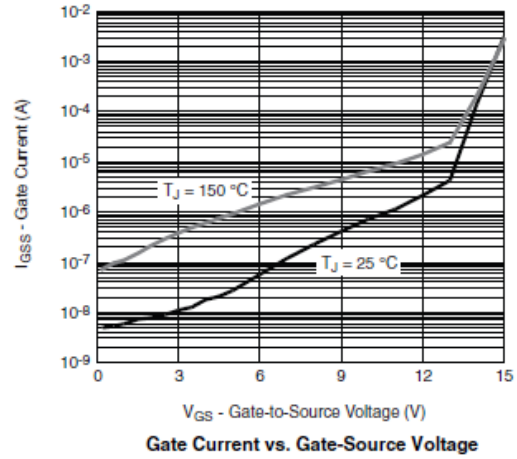
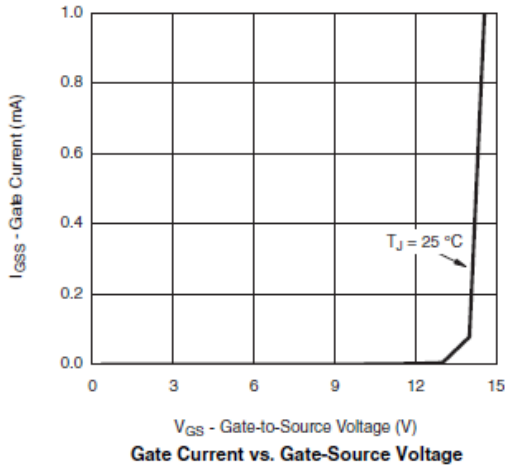
**Electrical Characteristics**

(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	-20			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250uA	-0.5		-1.0	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> =-24V, V <sub>GS</sub> =0V			-1	uA
		V <sub>DS</sub> =-24V, 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> =-4.5V	-20			A
Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-7.0A		9	13	mΩ
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-5.0A		11	16	
		V <sub>GS</sub> =-1.8V, I <sub>D</sub> =-2.0A		15	20	
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =-5V, I <sub>D</sub> =-7A		25		S
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-2.3A, V <sub>GS</sub> =0V		-0.7	-1.3	V
<b>Dynamic</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =-10V, V <sub>GS</sub> =-4.5V I <sub>D</sub> =-7A		20	40	nC
Gate-Source Charge	Q <sub>gs</sub>			3.5		
Gate-Drain Charge	Q <sub>gd</sub>			8.5		
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-10V, V <sub>GS</sub> =0V f=1MHz		2000		pF
Output Capacitance	C <sub>oss</sub>			300		
Reverse Transfer Capacitance	C <sub>rss</sub>			280		
Turn-On Time	t <sub>d(on)</sub>	V <sub>DD</sub> =-10V, R <sub>L</sub> =1Ω I <sub>D</sub> =-3.3A, V <sub>GEN</sub> =-5V R <sub>G</sub> =1Ω		10	20	ns
	t <sub>r</sub>			15	30	
Turn-Off Time	t <sub>d(off)</sub>			90	180	
	t <sub>f</sub>			80	160	

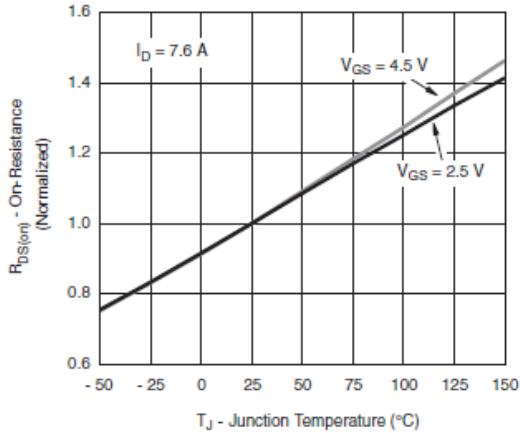


## Typical Characteristics

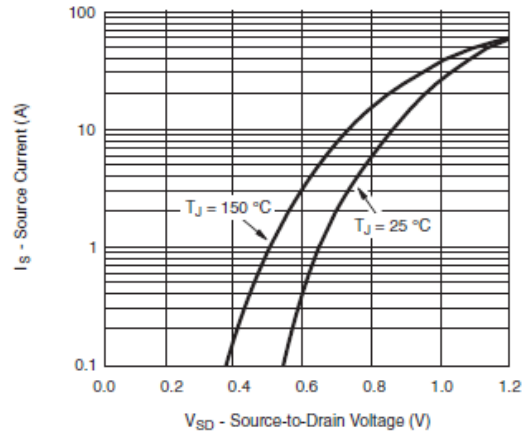




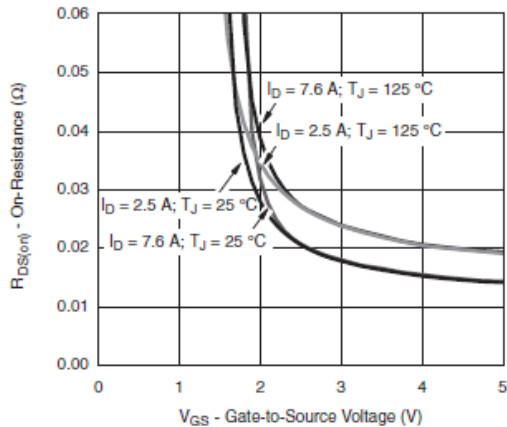
## Typical Characteristics



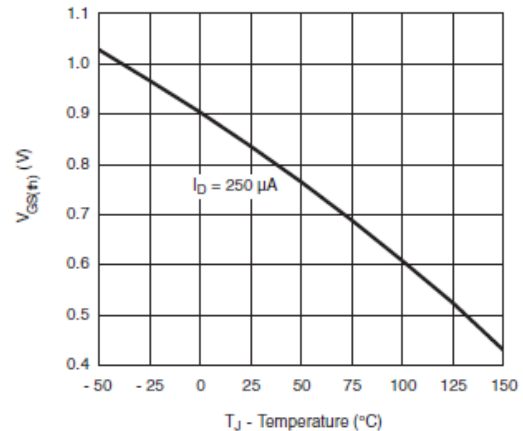
On-Resistance vs. Junction Temperature



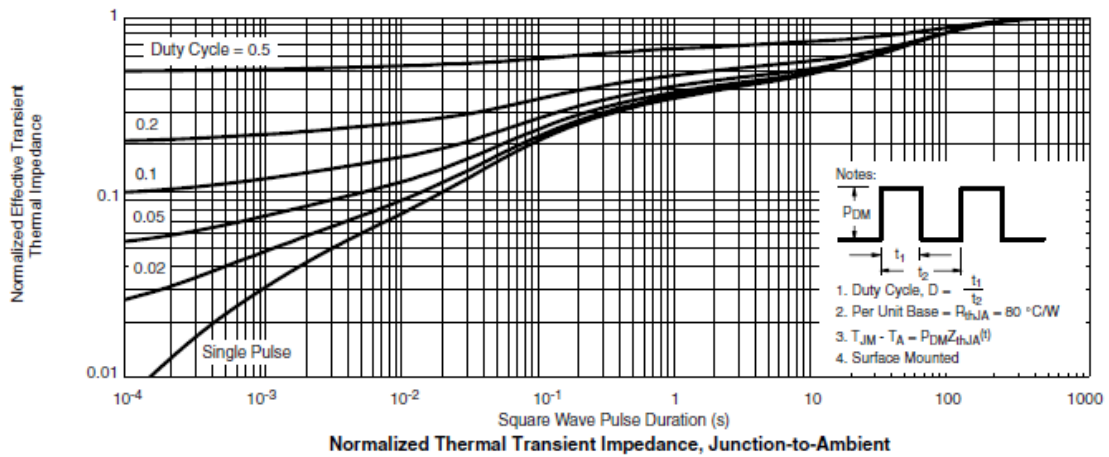
Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage





Typical Characteristics

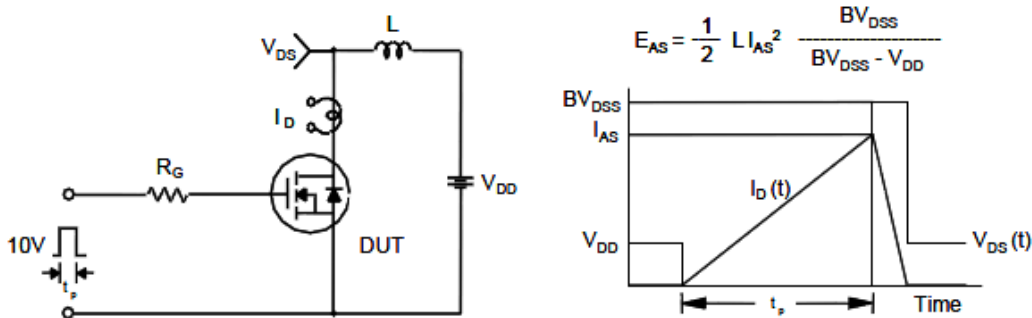
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

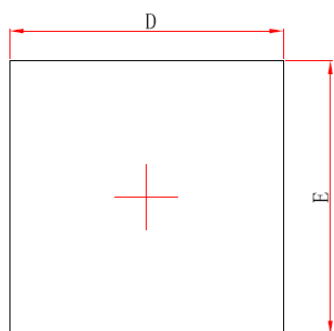


Unclamped Inductive Switching Test Circuit & Waveforms

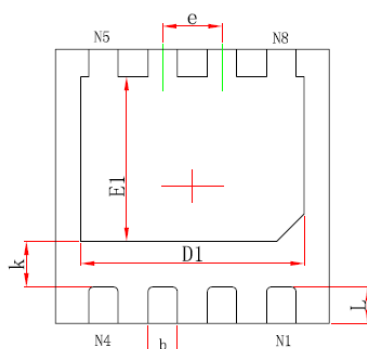




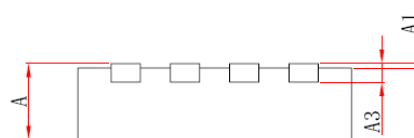
**Package Information ( DFN3X3-8L )**



**Top View**



**Bottom View**



**Side View**

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.800	0.900	0.031	0.035
A1	0.000	0.050	0.000	0.002
A3	0.203REF.		0.008REF.	
D	2.924	3.076	0.115	0.121
E	2.924	3.076	0.115	0.121
D1	2.350	2.550	0.093	0.100
E1	1.700	1.900	0.067	0.075
k	0.450	0.550	0.018	0.022
b	0.270	0.370	0.011	0.015
e	0.650TYP.		0.026TYP.	
L	0.324	0.476	0.013	0.019

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2F, No.80, Sec.1, Cheng Kung Rd., Nan Kang Dist., Taipei City 115, Taiwan (R.O.C.)  
Tel : 886 2) 2651 3928  
Fax : 886 2) 2786 8483  
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