



## General Description

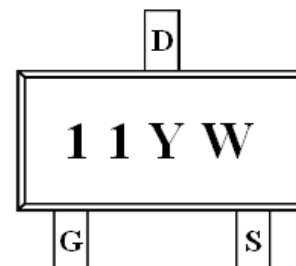
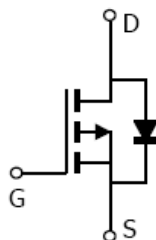
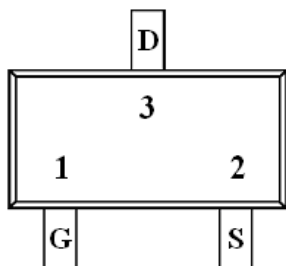
AFP2311, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent  $R_{DS(ON)}$ , low gate charge.

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/-4.0A,  $R_{DS(ON)}=56m\Omega@V_{GS}=4.5V$
- -20V/-3.2A,  $R_{DS(ON)}=70m\Omega@V_{GS}=2.5V$
- -20V/-2.8A,  $R_{DS(ON)}=100m\Omega@V_{GS}=1.8V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23-3L package design

## Pin Description ( SOT-23-3L )



## Application

- Portable Equipment
- Battery Powered System
- Net Working System

## Pin Define

Pin	Symbol	Description
1	G	Gate
2	S	Source
3	D	Drain

## Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFP2311S23RG	11YW	SOT-23-3L	Tape & Reel	3000 EA

- ※ 11 parts code
- ※ Y year code ( 0 ~ 9 )
- ※ W week code ( A ~ Z = 1 ~ 26 / a ~ z = 27 ~ 52 )
- ※ AFP2311S23RG : 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>A</sub> =25°C	-4.0
		T <sub>A</sub> =70°C	-2.8
Pulsed Drain Current	I <sub>DM</sub>	-10	A
Continuous Source Current(Diode Conduction)	I <sub>S</sub>	-1.6	A
Power Dissipation	P <sub>D</sub>	T <sub>A</sub> =25°C	1.25
		T <sub>A</sub> =70°C	0.8
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

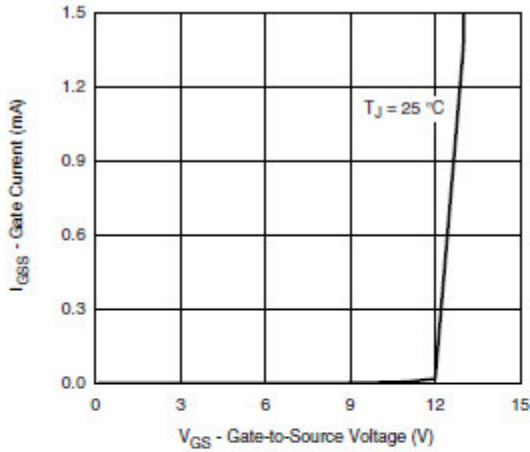
## Electrical Characteristics

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

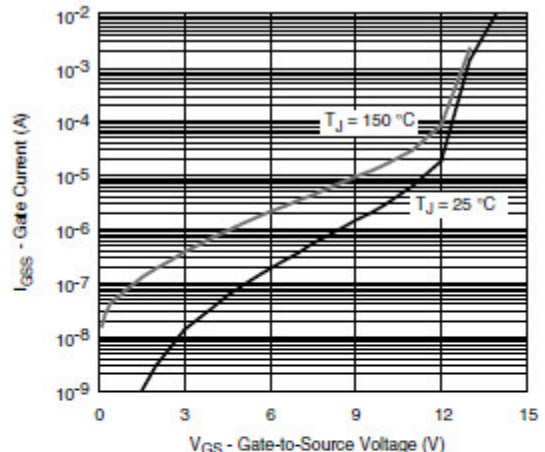
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =-250uA	-20			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250uA	-0.4		-0.8	
Gate Leakage Current	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> =-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	-6			A
		V <sub>DS</sub> ≥ -5V, V <sub>GS</sub> =-2.5V	-4			
Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-4.0A		47	56	mΩ
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-3.2A		60	70	
		V <sub>GS</sub> =-1.8V, I <sub>D</sub> =-2.8A		81	100	
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =-5V, I <sub>D</sub> =-3.6A		10		S
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-1.6A, V <sub>GS</sub> =0V		-0.85	-1.2	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> ≡-4.0A		8.0	12	nC
Gate-Source Charge	Q <sub>gs</sub>			0.9		
Gate-Drain Charge	Q <sub>gd</sub>			3.0		
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-10V, V <sub>GS</sub> =0V f=1MHz		780		pF
Output Capacitance	C <sub>oss</sub>			115		
Reverse Transfer Capacitance	C <sub>rss</sub>			55		
Turn-On Time	t <sub>d(on)</sub>	V <sub>DD</sub> =-10V, R <sub>L</sub> =2.3Ω I <sub>D</sub> ≡-4.0A, V <sub>GEN</sub> =-4.5V R <sub>G</sub> =1Ω		0.2	0.3	us
	t <sub>r</sub>			1.0	1.5	
Turn-Off Time	t <sub>d(off)</sub>			4.0	6.0	
	t <sub>f</sub>			2.0	3.0	



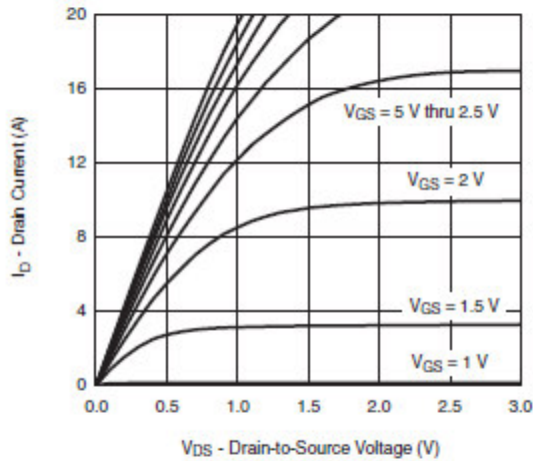
## Typical Characteristics



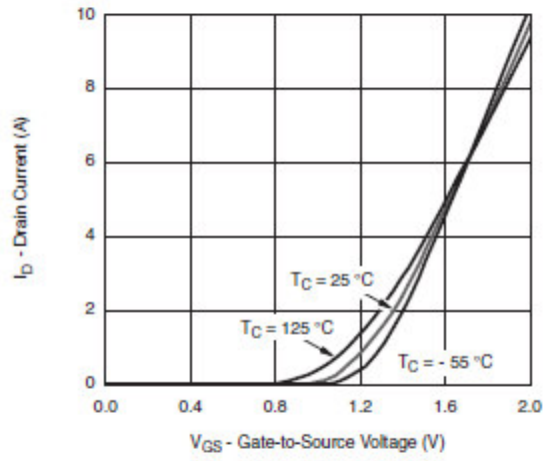
Gate Current vs. Gate-Source Voltage



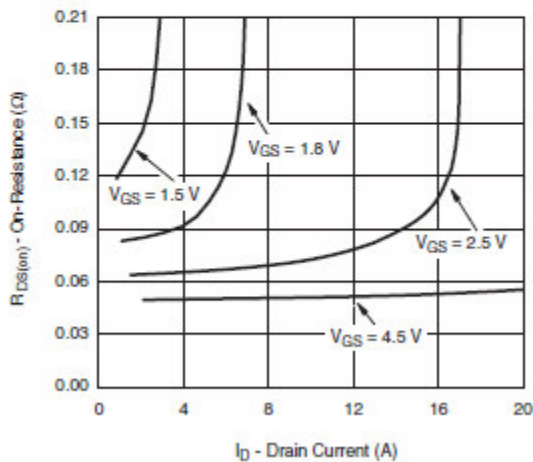
Gate Current vs. Gate-Source Voltage



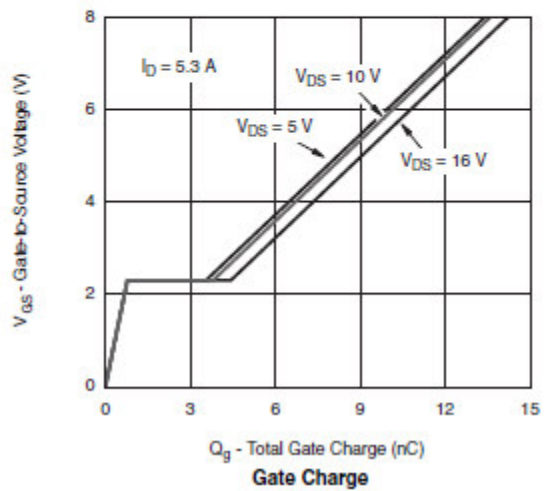
Output Characteristics



Transfer Characteristics



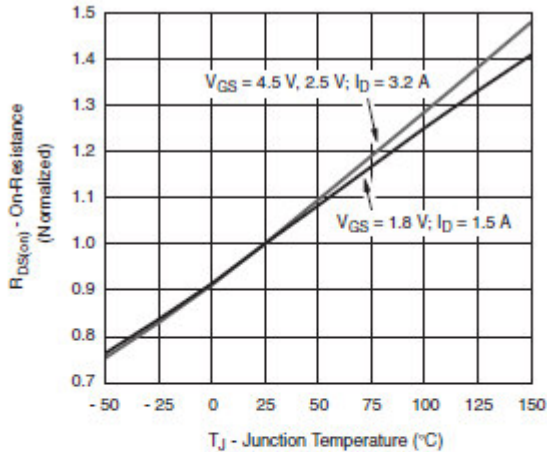
On-Resistance vs. Drain Current



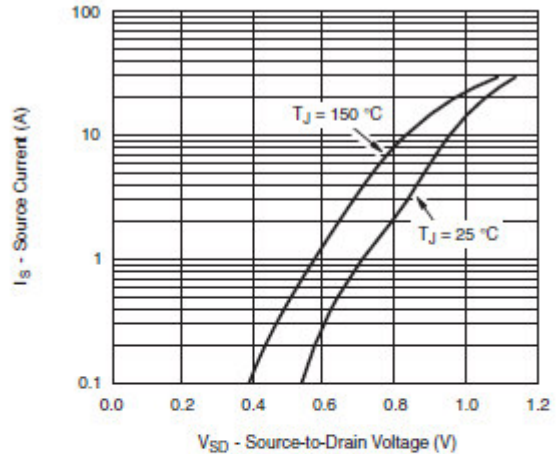
Gate Charge



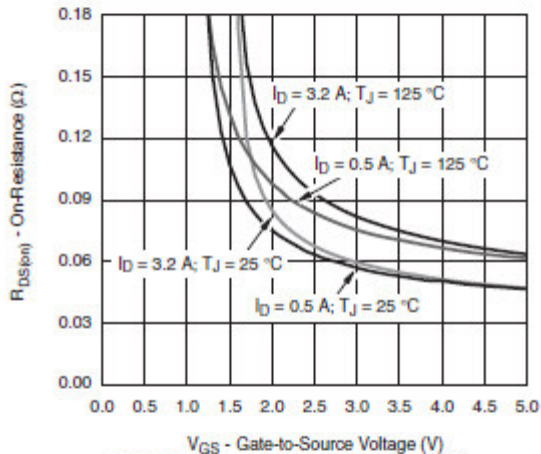
## Typical Characteristics



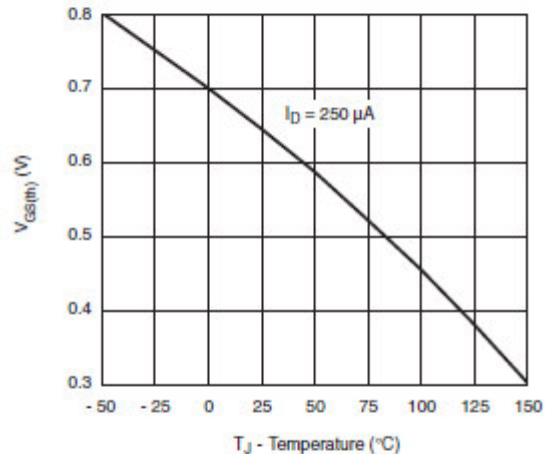
On-Resistance vs. Junction Temperature



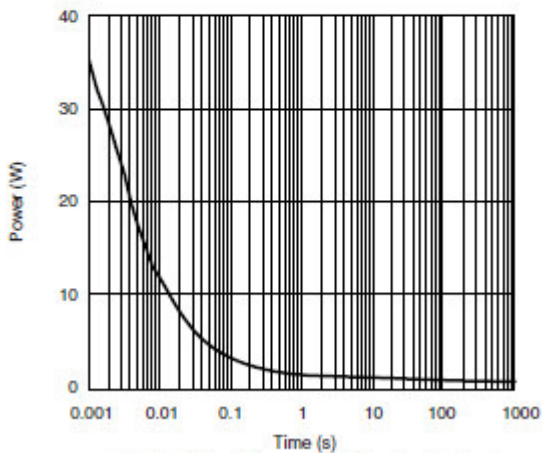
Source-Drain Diode Forward Voltage



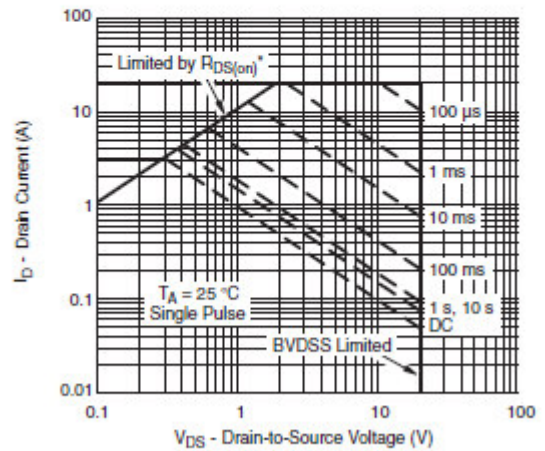
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power, Junction-to-Ambient

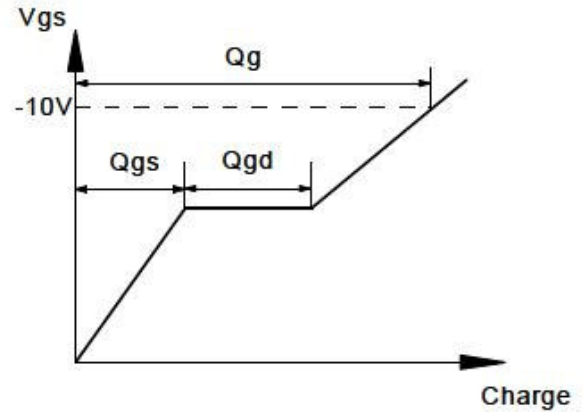
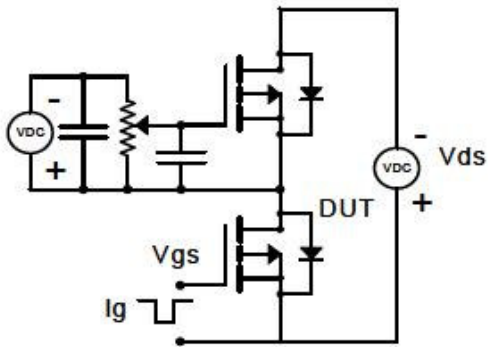


Safe Operating Area, Junction-to-Ambient

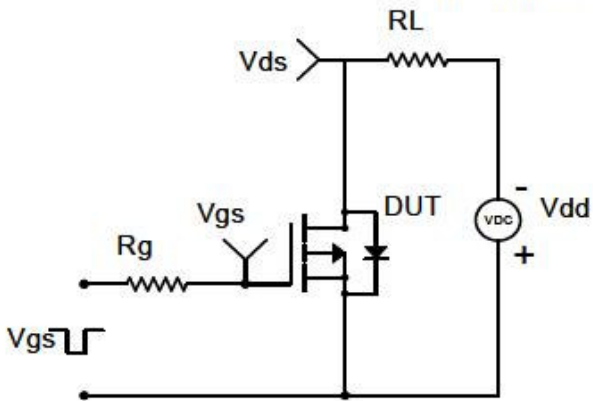


## Typical Characteristics

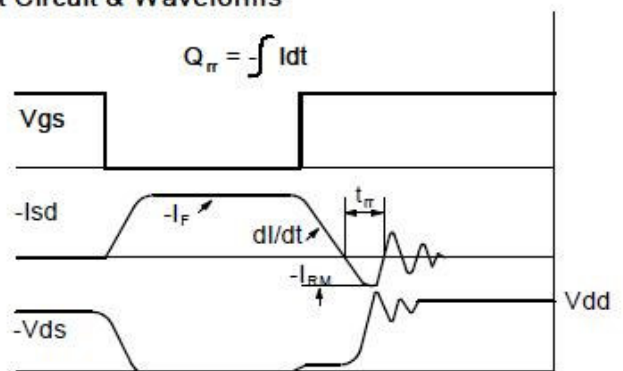
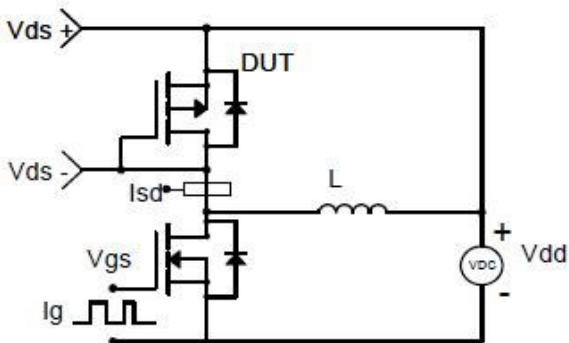
### Gate Charge Test Circuit & Waveform



### Resistive Switching Test Circuit & Waveforms

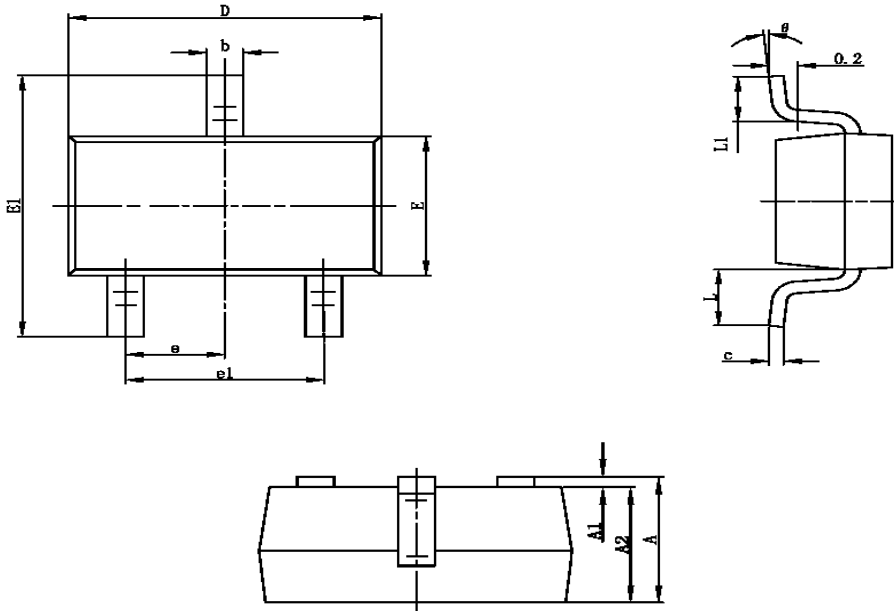


### Diode Recovery Test Circuit & Waveforms





**Package Information ( SOT-23-3L )**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.400	0.012	0.016
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.700REF		0.028REF	
L1	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

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