



General Description

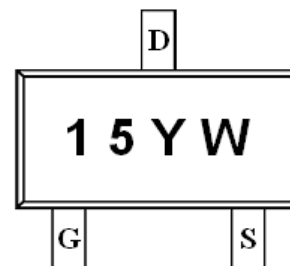
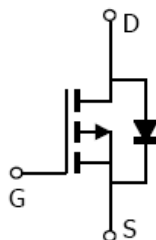
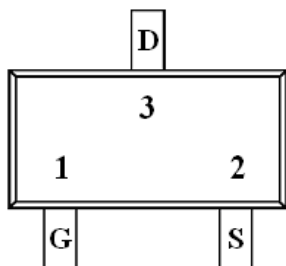
AFP3415, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

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/-4.9A, $R_{DS(ON)}=45m\Omega@V_{GS}=4.5V$
- -20V/-3.4A, $R_{DS(ON)}=58m\Omega@V_{GS}=2.5V$
- -20V/-2.2A, $R_{DS(ON)}=85m\Omega@V_{GS}=1.8V$
- 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
AFP3415S23RG	15YW	SOT-23-3L	Tape & Reel	3000 EA

- ※ 15 parts code
- ※ Y year code (0 ~ 9)
- ※ W week code (A ~ Z = 1 ~ 26 / a ~ z = 27 ~ 52)
- ※ AFP3415S23RG : 7" Tape & Reel ; Pb- Free ; Halogen- Free



Absolute Maximum Ratings

(T_A=25°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°C)	I _D	T _A =25°C	-4.9
		T _A =70°C	-3.9
Pulsed Drain Current	I _{DM}	-10	A
Continuous Source Current(Diode Conduction)	I _S	-1.6	A
Power Dissipation	P _D	T _A =25°C	1.25
		T _A =70°C	0.8
Operating Junction Temperature	T _J	150	°C
Storage Temperature Range	T _{STG}	-55/150	°C
Thermal Resistance-Junction to Ambient	R _{θJA}	120	°C/W

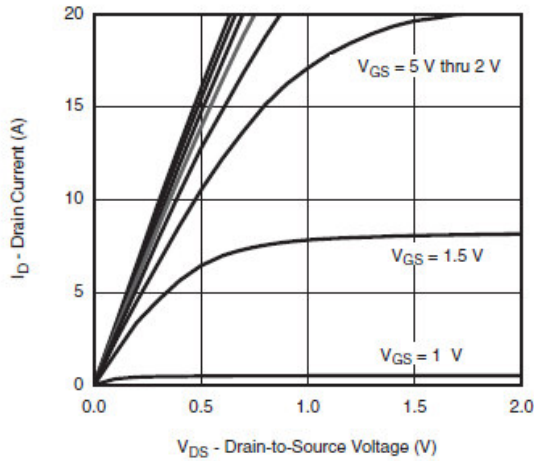
Electrical Characteristics

(T_A=25°C Unless otherwise noted)

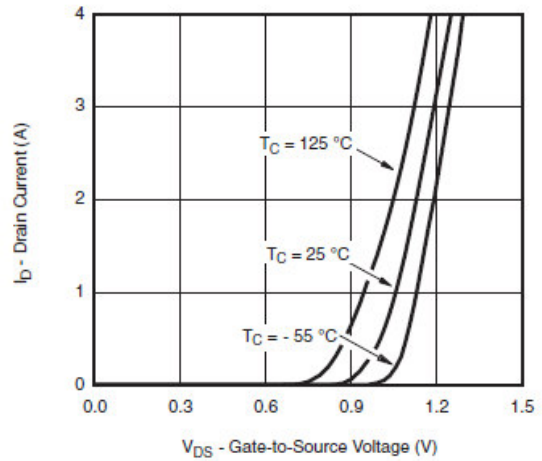
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =-250uA	-20			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250uA	-0.4		-1.0	
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±12V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-16V, V _{GS} =0V			-1	uA
		V _{DS} =-16V, V _{GS} =0V T _J =85°C			-10	
On-State Drain Current	I _{D(on)}	V _{DS} ≥ -5V, V _{GS} =-4.5V	-6			A
		V _{DS} ≥ -5V, V _{GS} =-2.5V	-4			
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =-4.5V, I _D =-4.9A		40	45	mΩ
		V _{GS} =-2.5V, I _D =-3.4A		50	58	
		V _{GS} =-1.8V, I _D =-2.2A		60	85	
Forward Transconductance	g _{FS}	V _{DS} =-5V, I _D =-3.6A		10		S
Diode Forward Voltage	V _{SD}	I _S =-1.6A, V _{GS} =0V		-0.85	-1.2	V
Dynamic						
Total Gate Charge	Q _g	V _{DS} =-10V, V _{GS} =-2.5V I _D ≡-4.0A		10	18	nC
Gate-Source Charge	Q _{gs}			2.5		
Gate-Drain Charge	Q _{gd}			3.5		
Input Capacitance	C _{iss}	V _{DS} =-10V, V _{GS} =0V f=1MHz		1050		pF
Output Capacitance	C _{oss}			165		
Reverse Transfer Capacitance	C _{rss}			135		
Turn-On Time	t _{d(on)}	V _{DD} =-10V, R _L =2.7Ω I _D ≡-3.7A, V _{GEN} =-4.5V R _G =1Ω		15	25	ns
	t _r			25	40	
Turn-Off Time	t _{d(off)}			40	65	
	t _f			15	25	



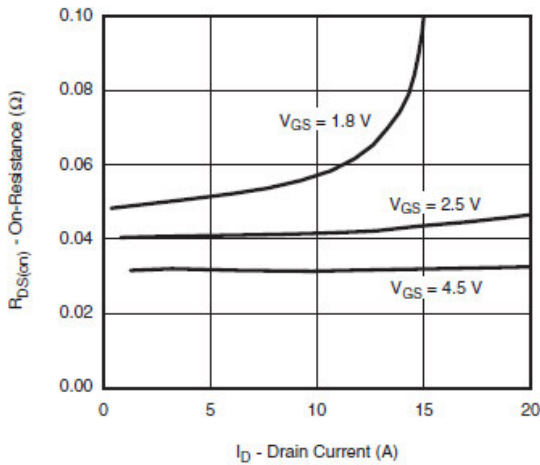
Typical Characteristics



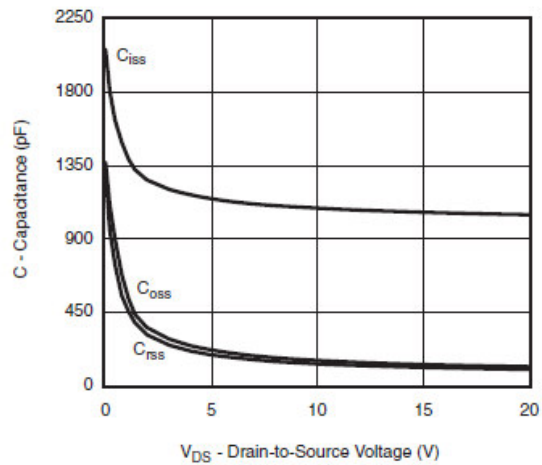
Output Characteristics



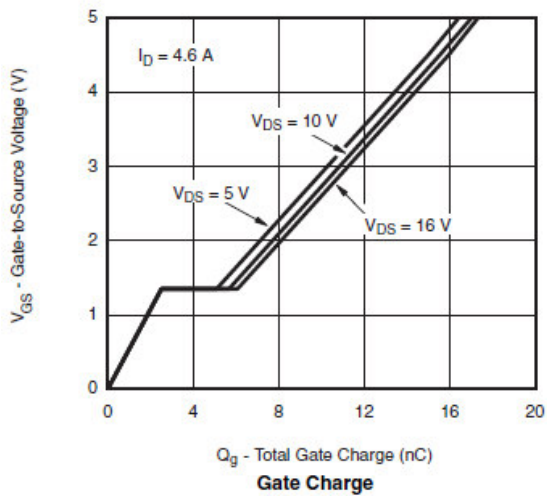
Transfer Characteristics



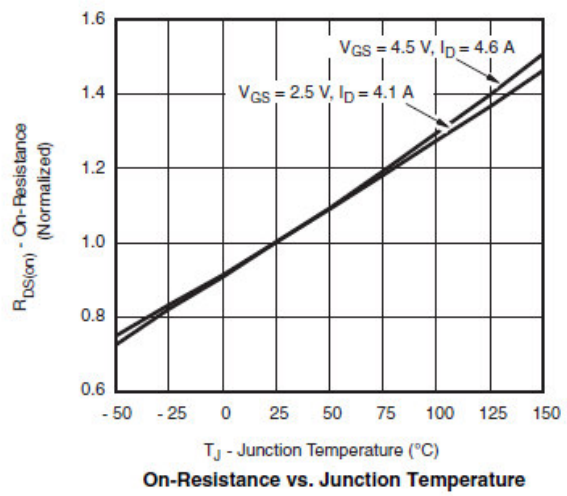
On-Resistance vs. Drain Current and Gate Voltage



Capacitance



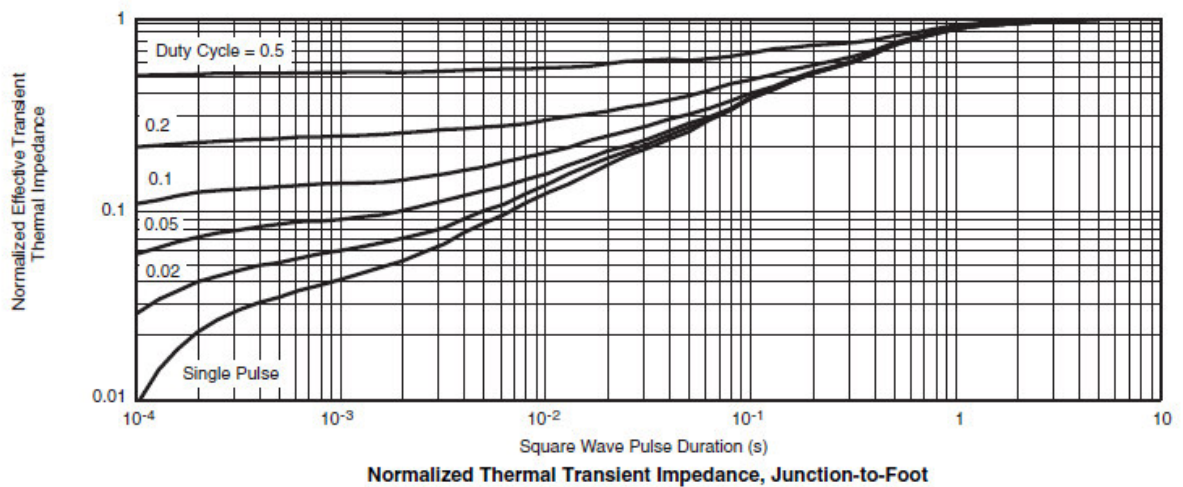
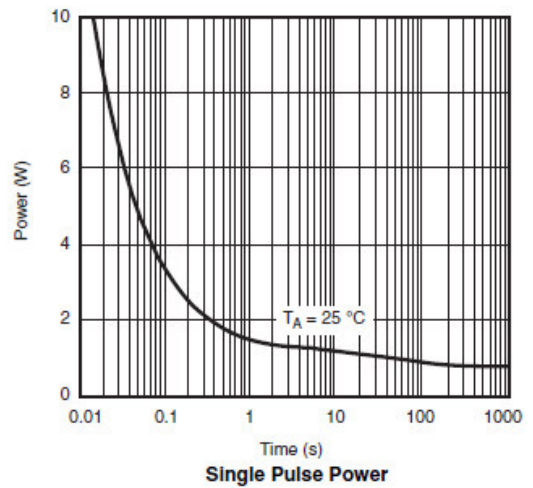
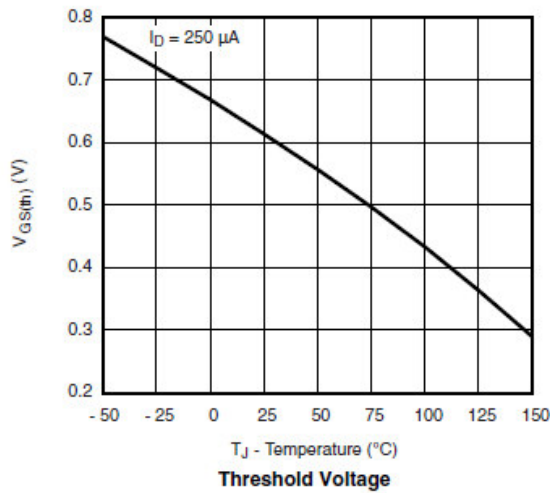
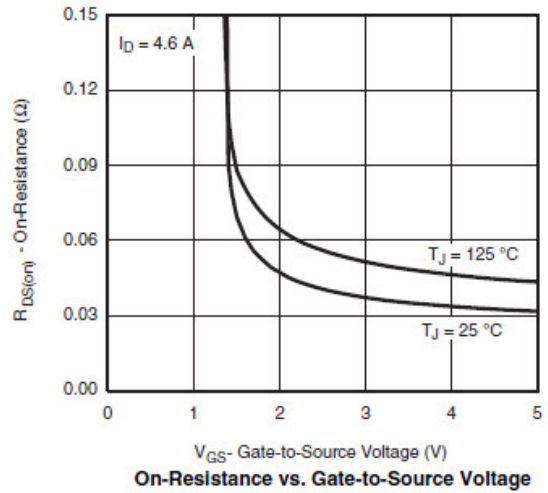
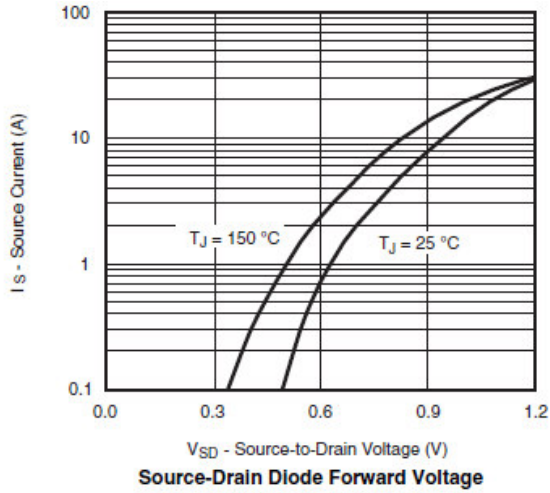
Gate Charge



On-Resistance vs. Junction Temperature



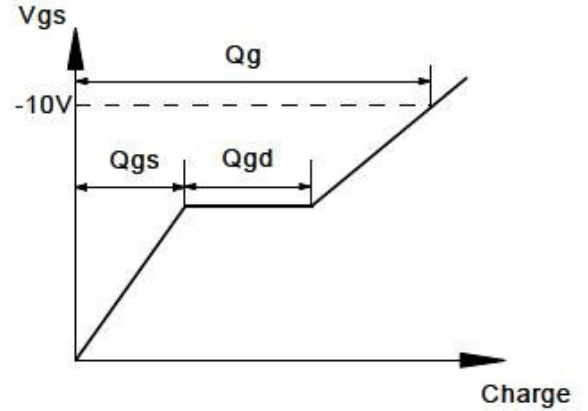
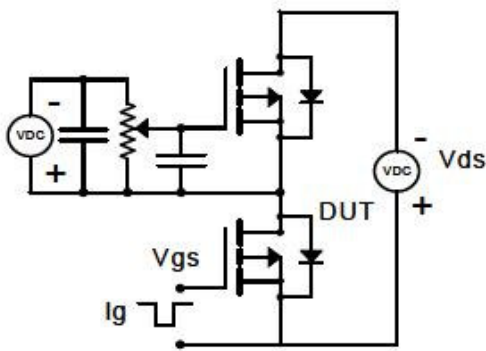
Typical Characteristics



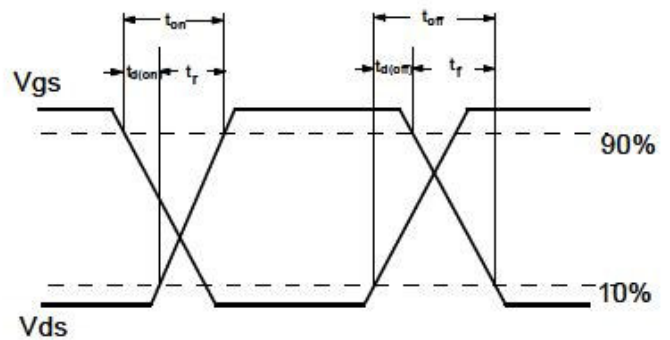
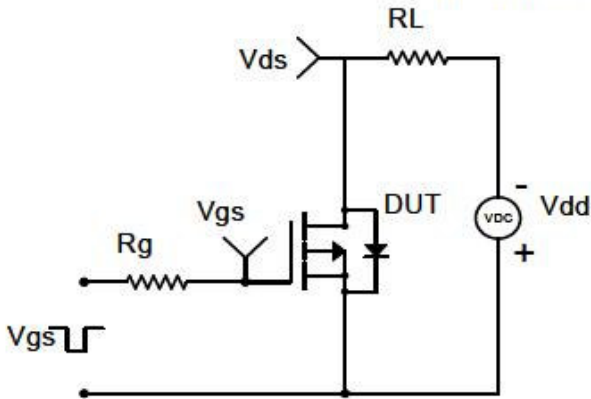


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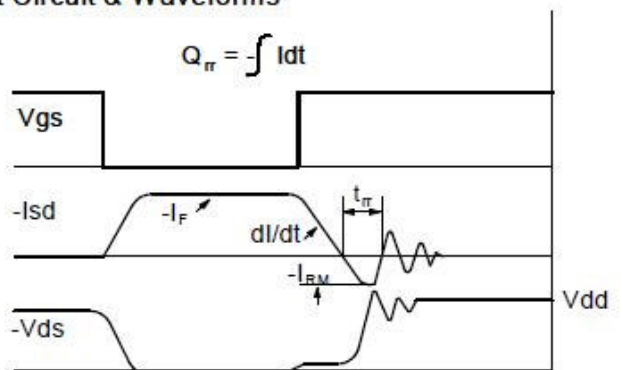
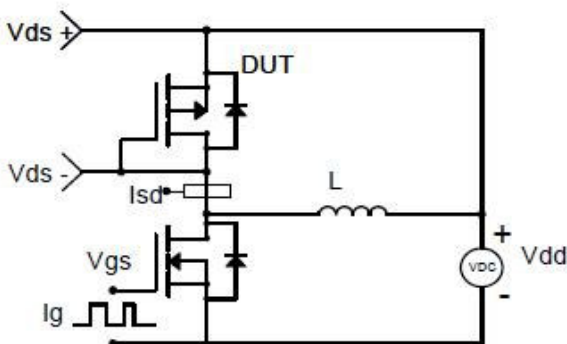
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

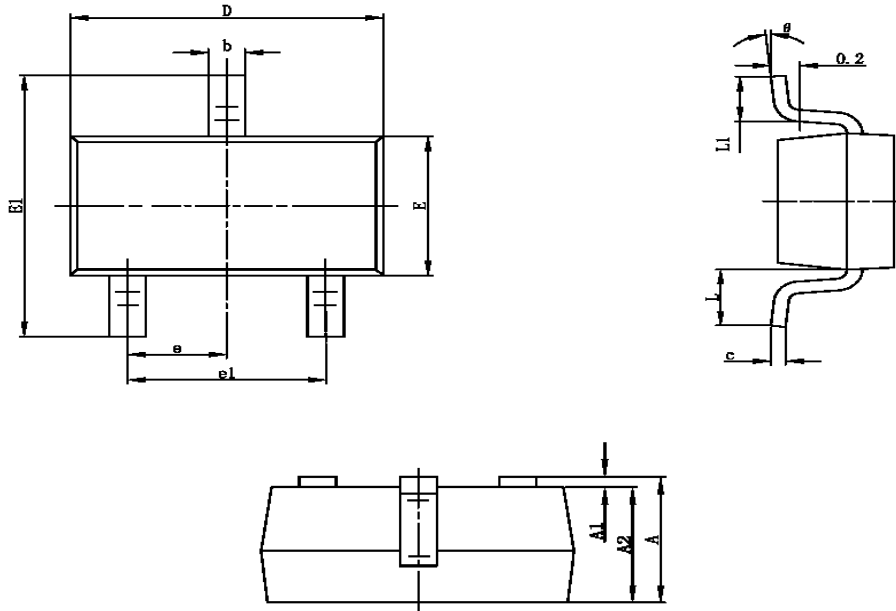


Diode Recovery Test Circuit & Waveforms





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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