Alfa-MOS Technology

AFP7923WS

30V P-Channel Enhancement Mode MOSFET

General Description

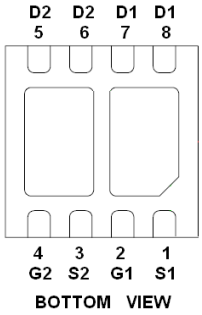
AFP7923WS, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

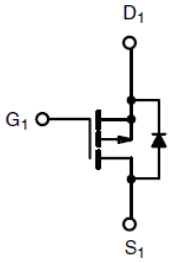
These devices are particularly suited for low voltage power management, such as smart phone and notebook computer and other battery powered circuits, and low in-line power loss are needed in commercial industrial surface mount applications.

Features

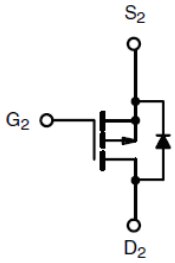
- -30V/-8A, $R_{DS(ON)}$=55mΩ@V_{GS}=10V
- -30V/-6A, $R_{DS(ON)}$=75mΩ@V_{GS}=4.5V
  -30V/-4A, $R_{DS(ON)}$=95mΩ@V_{GS}=-2.5V
- Super high density cell design for extremely low $R_{DS\ (ON)}$
- Exceptional on-resistance and maximum DC current capability
- DFN3X3-8L package design

Pin Description (DFN3X3-8L)

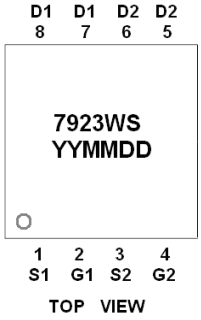




P-Channel MOSFET



P-Channel MOSFET



Application

- DC/DC Conversion
- Load Switch
- DC FAN

Pin Define

Pin	Symbol	Description
1	S1	Source 1
2	G1	Gate 1
3	S2	Source 2
4	G2	Gate 2
5	D2	Drain 2
6	D2	Drain 2
7	D1	Drain 1
8	D1	Drain 1

Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFP7923WSFN338RG	7923WS	DFN3X3-8L	Tape & Reel	5000 EA

※ YY year code
※ MM month code
※ DD date code
※ AFP7923WSFN338RG : 13” Tape & Reel ; Pb- Free ; Halogen- Free

Absolute Maximum Ratings

(T_A=25℃ Unless otherwise noted)

Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V_{DSS}	-30	V
Gate –Source Voltage		V_{GSS}	±12	V
Continuous Drain Current(TJ=150℃)	T_A=25℃	I_D	-8.0	A
	T_A=70℃		-6.0	
Pulsed Drain Current		I_{DM}	-30	A
Continuous Source Current(Diode Conduction)		I_S	-10	A
Power Dissipation	T_A=25℃	P_D	1.8	W
	T_A=70℃		1.2	
Operating Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{STG}	-55/150	℃
Thermal Resistance-Junction to Ambient		$R_{\theta JA}$	62.5	℃/W

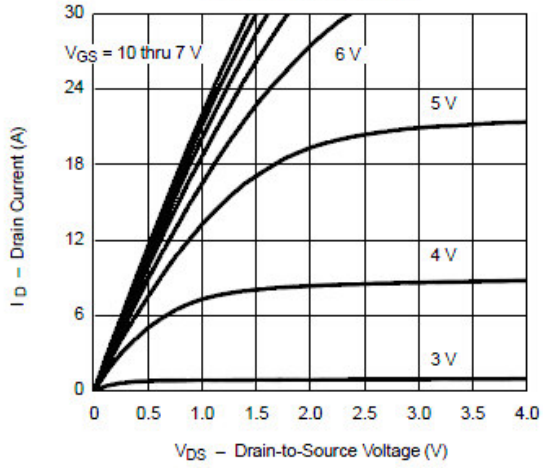
Electrical Characteristics (P-Channel)

(T_A=25℃ Unless otherwise noted)

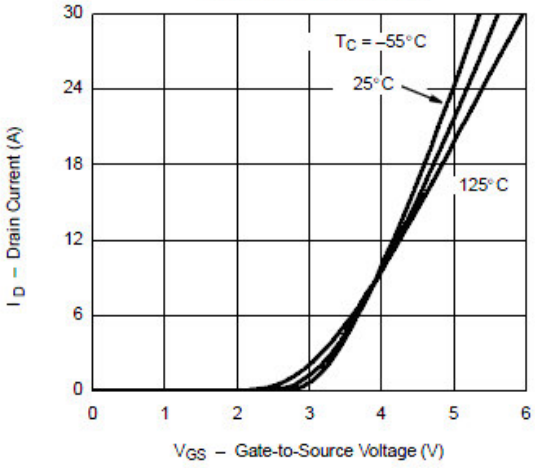
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=-250uA	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250uA	-0.6		-1.1	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±12V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-24V,V_{GS}=0V			1	uA
		V_{DS}=-24V,V_{GS}=0V T_J=85℃			-30	
On-State Drain Current	$I_{D(on)}$	V_{DS}≧-5V,V_{GS}=-10V	25			A
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=-10.0V,I_D=-8.0A		40	55	mΩ
		V_{GS}=-4.5V,I_D=-6.0A		58	75	
		V_{GS}=-2.5V,I_D=-4.0A		78	95	
Forward Transconductance	g_{FS}	V_{DS}=-10V,I_D=-4.9A		10		S
Diode Forward Voltage	V_{SD}	I_S=-1.7A,V_{GS}=0V		0.8	1.3	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=-15V,V_{GS}=-10V I_D≡-5.0A		10	18	nC
Gate-Source Charge	Q_{gs}			1.6		
Gate-Drain Charge	Q_{gd}			3.0		
Input Capacitance	C_{iss}	V_{DS}=-15V,V_{GS}=0V f=1MHz		500		pF
Output Capacitance	C_{oss}			100		
Reverse Transfer Capacitance	C_{rss}			55		
Turn-On Time	$t_{d(on)}$	V_{DD}=-15V,R_L=15Ω I_D≡-1.0A,V_{GEN}=10V R_G=6Ω		8	18	ns
	t_r			8	18	
Turn-Off Time	$t_{d(off)}$			25	50	
	t_f			25	35	

Typical Characteristics

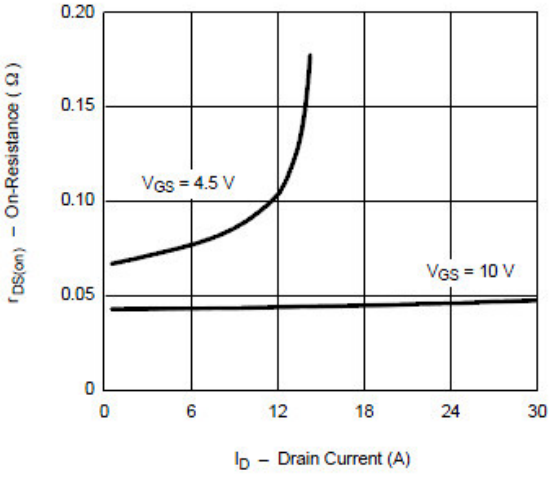
Output Characteristics



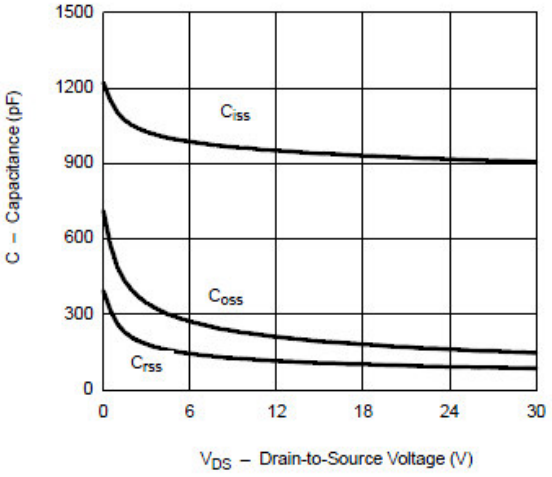
Transfer Characteristics



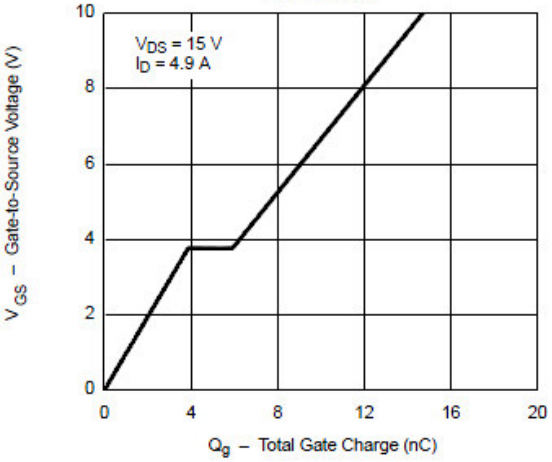
On-Resistance vs. Drain Current



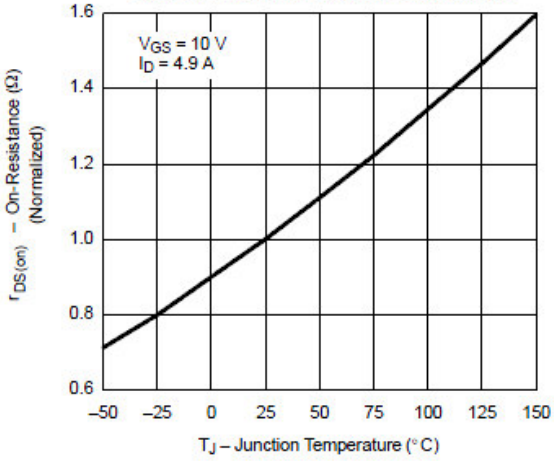
Capacitance



Gate Charge

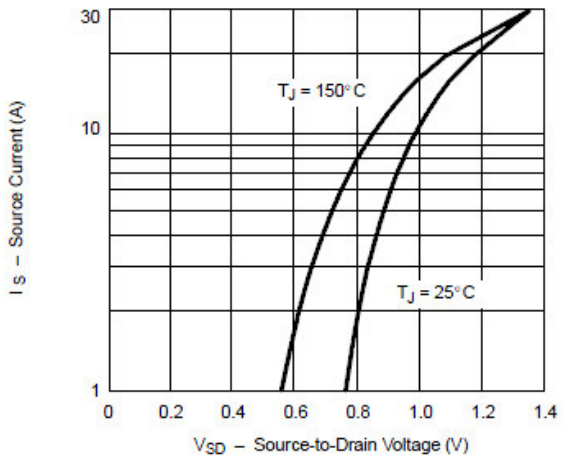


On-Resistance vs. Junction Temperature

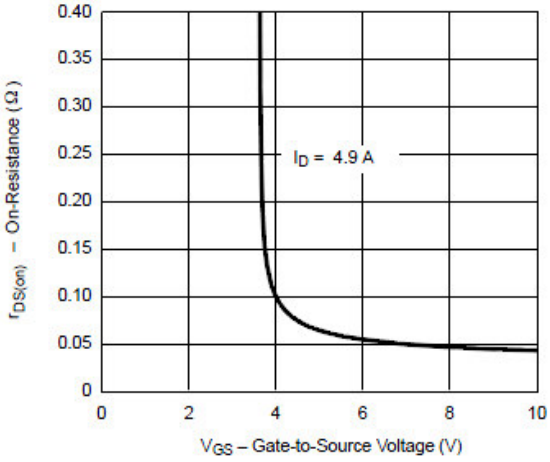


Typical Characteristics

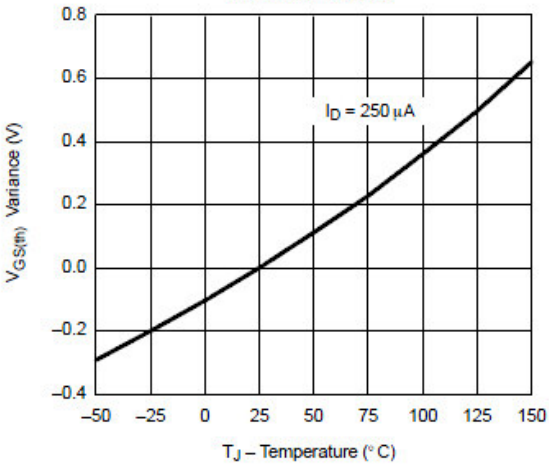
Source-Drain Diode Forward Voltage



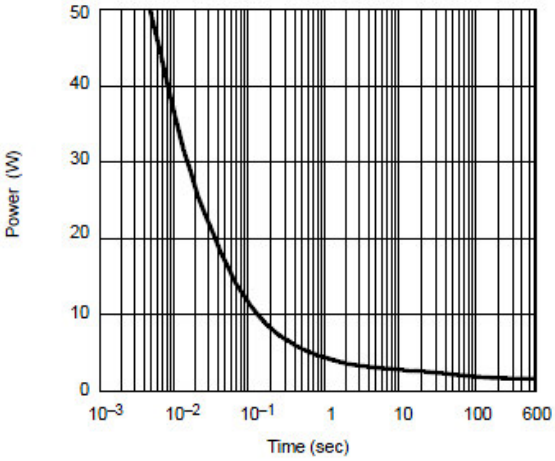
On-Resistance vs. Gate-to-Source Voltage



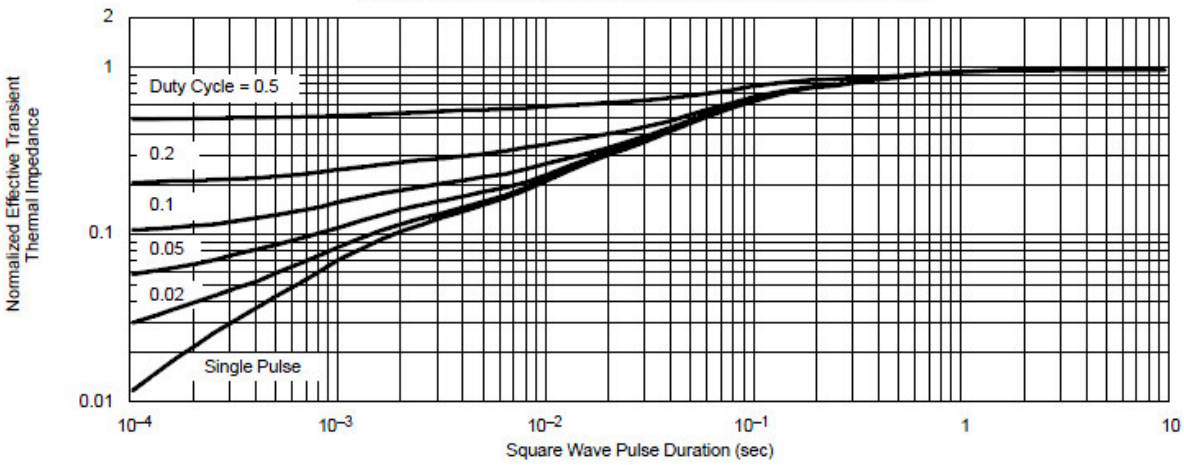
Threshold Voltage



Single Pulse Power

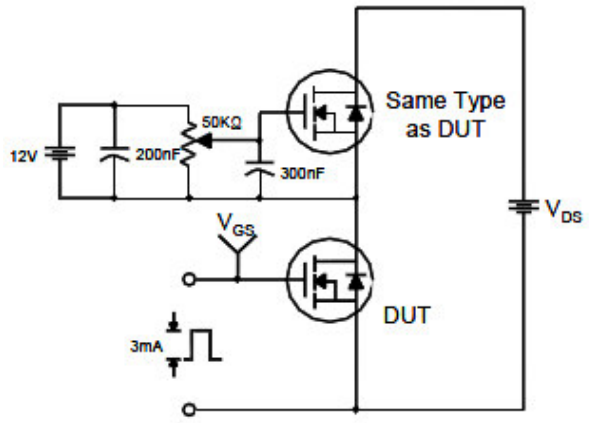


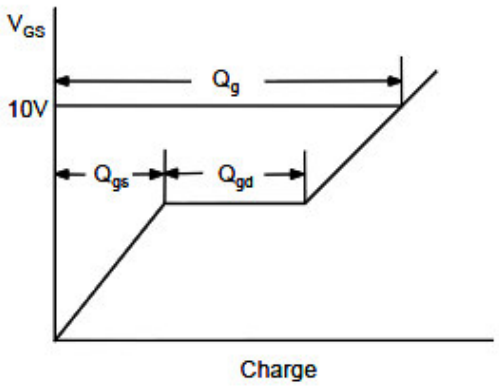
Normalized Thermal Transient Impedance, Junction-to-Foot



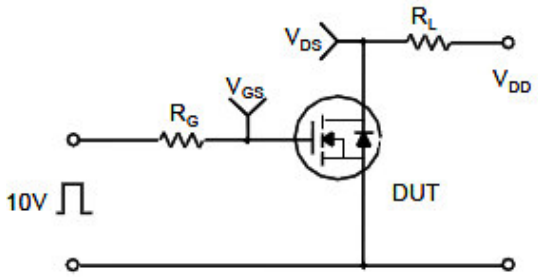
Typical Characteristics

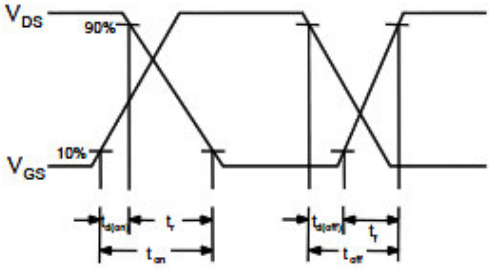
Gate Charge Test Circuit & Waveform



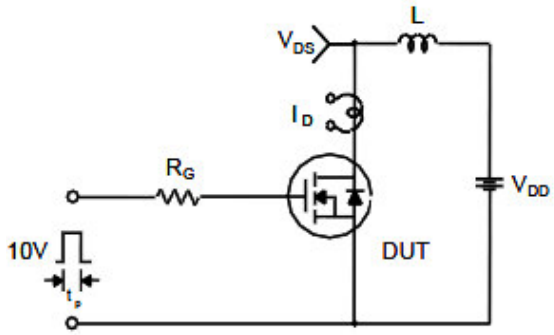


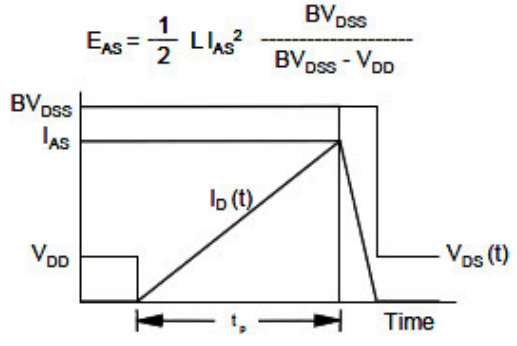
Resistive Switching Test Circuit & Waveforms



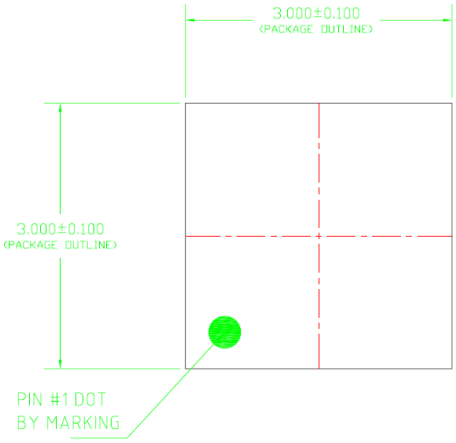


Unclamped Inductive Switching Test Circuit & Waveforms

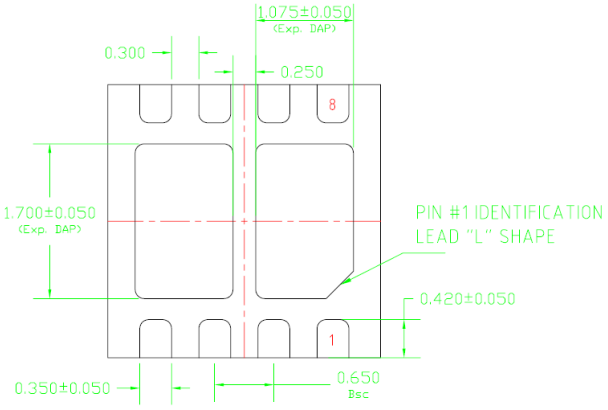




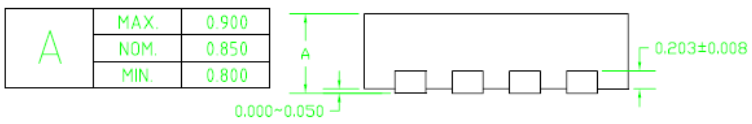
Package Information (DFN3X3-8L)



TOP VIEW



BOTTOM VIEW



SIDE VIEW

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