



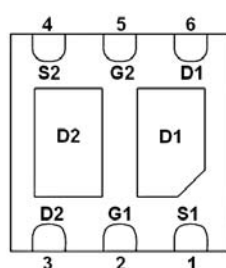
General Description

AFN2920W, N-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, and low in-line power loss are needed in commercial industrial surface mount applications.

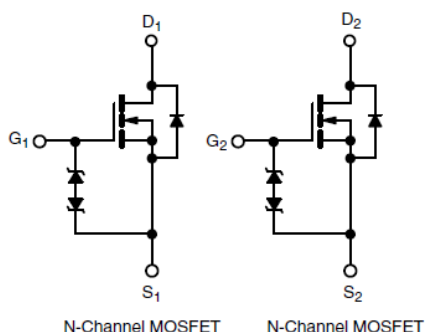
Features

- 20V/5.0A, $R_{DS(ON)}=19m\Omega@V_{GS}=4.5V$
- 20V/4.6A, $R_{DS(ON)}=23m\Omega@V_{GS}=2.5V$
- 20V/4.2A, $R_{DS(ON)}=34m\Omega@V_{GS}=1.8V$
- 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)

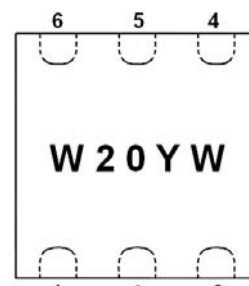


BOTTOM VIEW



N-Channel MOSFET

N-Channel MOSFET



TOP

VIEW

Application

- Load Switch with Low Voltage Drop
- Load Switch for 1.2 V/1.5 V/1.8 V Power Lines
- Smart Phones, Tablet PCs, Portable Media Players

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
AFN2920WFN226RG	W20YW	DFN2X2-6L	Tape & Reel	4000 EA

- ※ W20 parts code
- ※ Y year code
- ※ W week code (A ~ Z = 1 ~ 26 / a ~ z = 27 ~ 52)
- ※ AFN2920WFN226RG : 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 _C =25°C 4.5	A
		T _C =70°C 4.5	
Pulsed Drain Current	I _{DM}	20	A
Continuous Source Current(Diode Conduction)	I _S	1.6	A
Power Dissipation	P _D	T _C =25°C 7.8	W
		T _C =70°C 5.0	
Operating Junction Temperature	T _J	150	°C
Storage Temperature Range	T _{STG}	-55/150	°C
Thermal Resistance-Junction to Ambient	R _{θJA}	52	°C/W
Thermal Resistance-Junction to Case(Drian)	R _{θJC}	12.5	

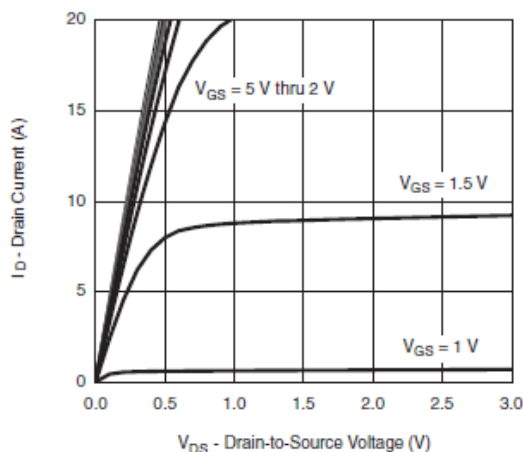
Electrical Characteristics

(T_A=25°C Unless otherwise noted)

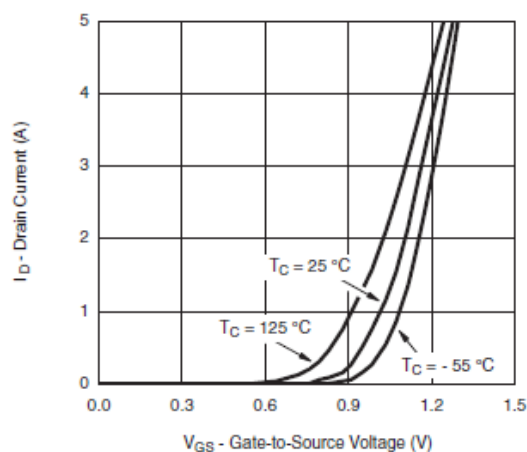
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250uA	20			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	0.4		1.0	
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±12V			±10	uA
Zero Gate Voltage Drain 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	15			A
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =4.5V, I _D =5.0A		15	19	mΩ
		V _{GS} =2.5V, I _D =4.6A		18	23	
		V _{GS} =1.8V, I _D =4.2A		27	34	
Forward Transconductance	g _{FS}	V _{DS} =6V, I _D =5A		28		S
Diode Forward Voltage	V _{SD}	I _S =1.5A, V _{GS} =0V		0.85	1.2	V
Dynamic						
Total Gate Charge	Q _g	V _{DS} =6V, V _{GS} =4.5V I _D ≡5.0A		6.0	12	nC
Gate-Source Charge	Q _{gs}			0.8		
Gate-Drain Charge	Q _{gd}			0.8		
Input Capacitance	C _{iss}	V _{DS} =6V, V _{GS} =0V f=1MHz		620		pF
Output Capacitance	C _{oss}			180		
Reverse Transfer Capacitance	C _{rss}			100		
Turn-On Time	t _{d(on)}	V _{DD} =10V, R _L =5.5Ω I _D ≡3.6A, V _{GEN} =4.5V R _G =6Ω		10	20	ns
	t _r			10	20	
Turn-Off Time	t _{d(off)}			25	40	
	t _f			10	20	



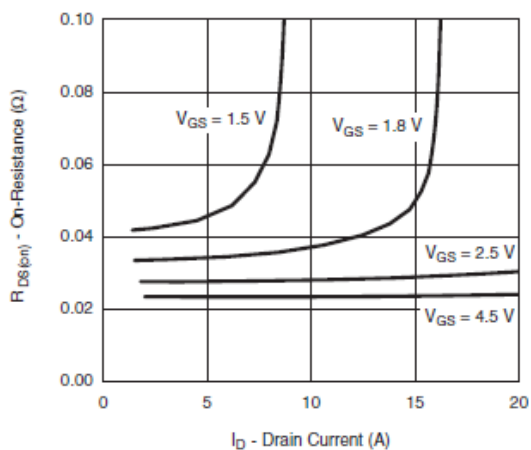
Typical Characteristics



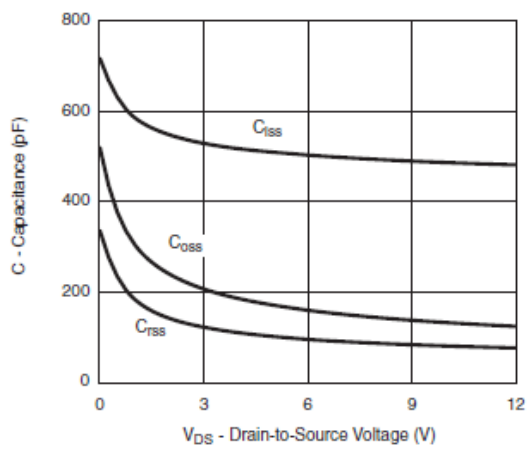
Output Characteristics



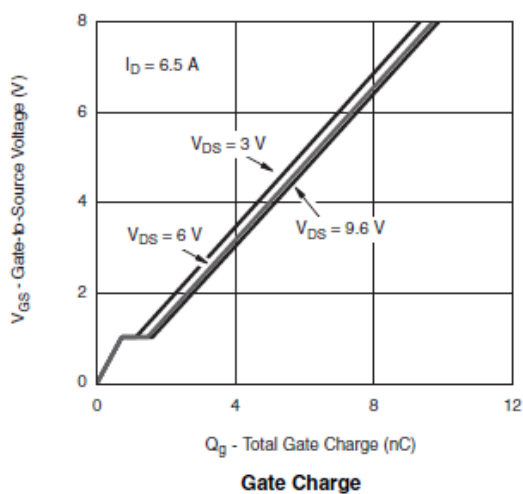
Transfer Characteristics



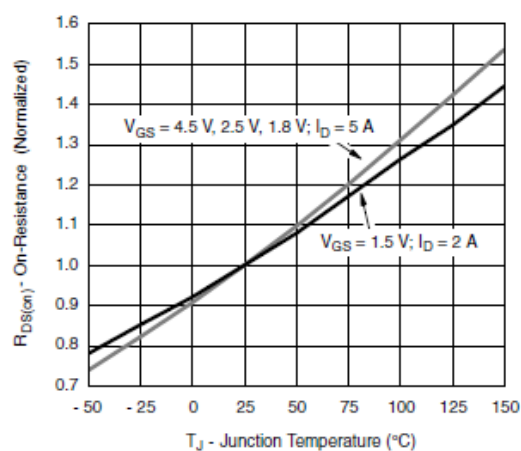
On-Resistance vs. Drain Current and Gate Voltage



Capacitance



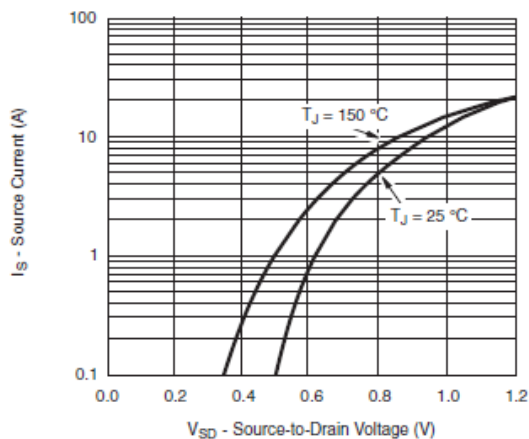
Gate Charge



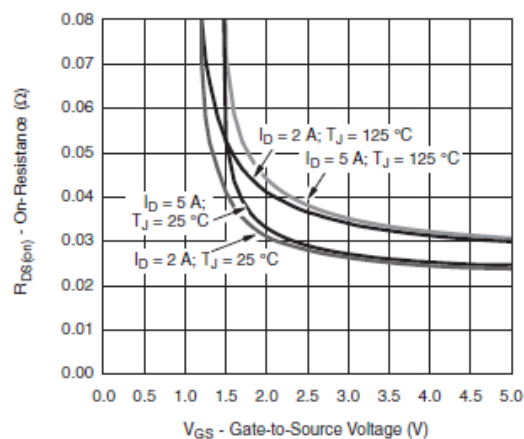
On-Resistance vs. Junction Temperature



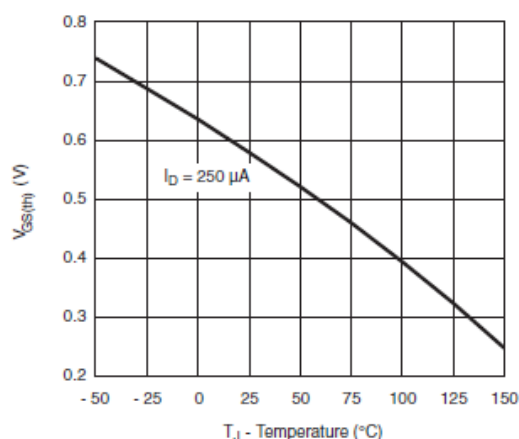
Typical Characteristics



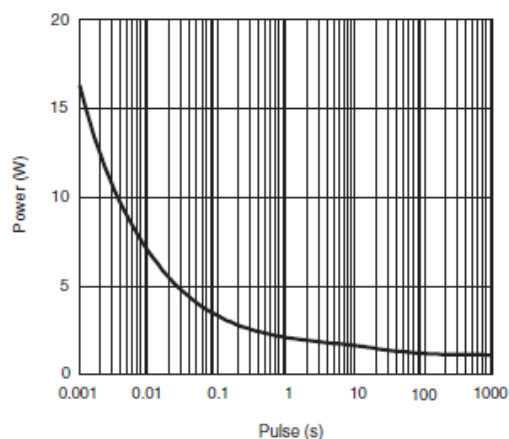
Source-Drain Diode Forward Voltage



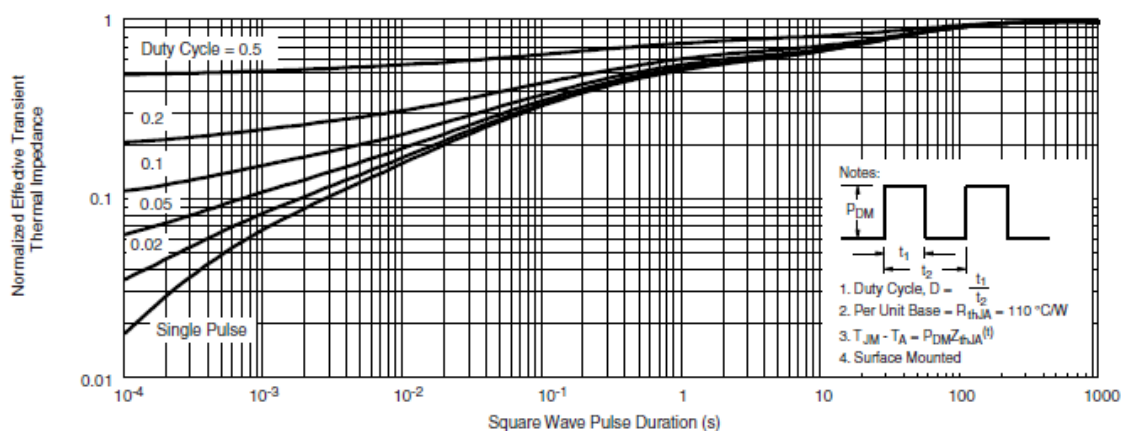
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power (Junction-to-Ambient)

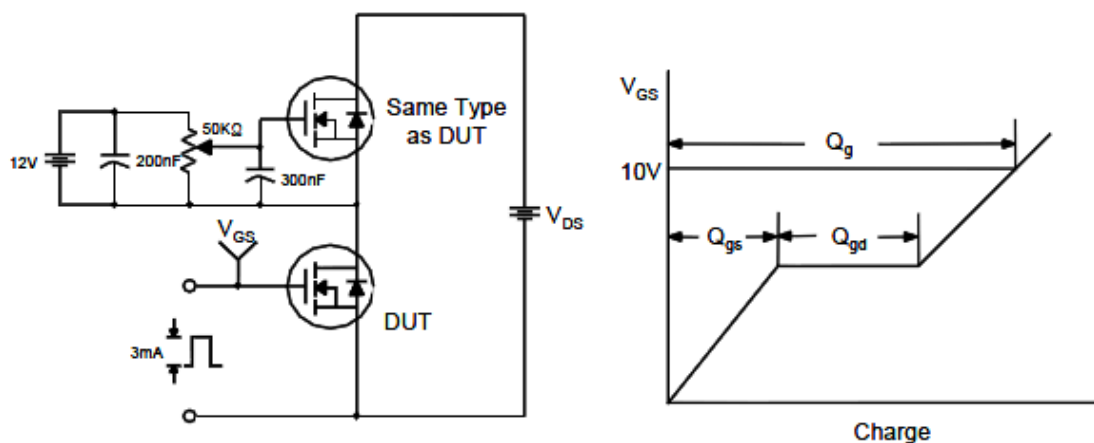


Normalized Thermal Transient Impedance, Junction-to-Ambient

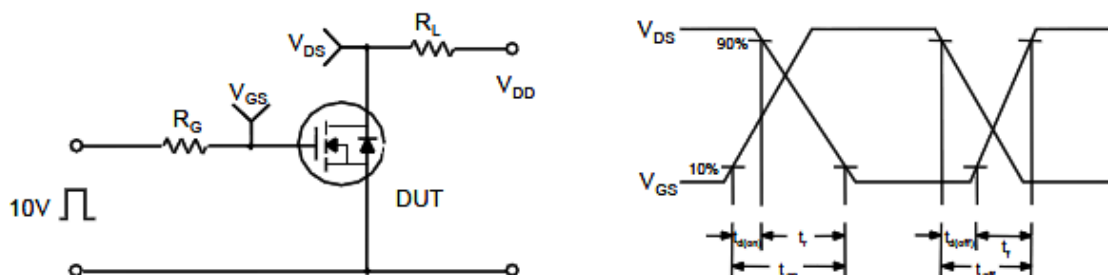


Typical Characteristics

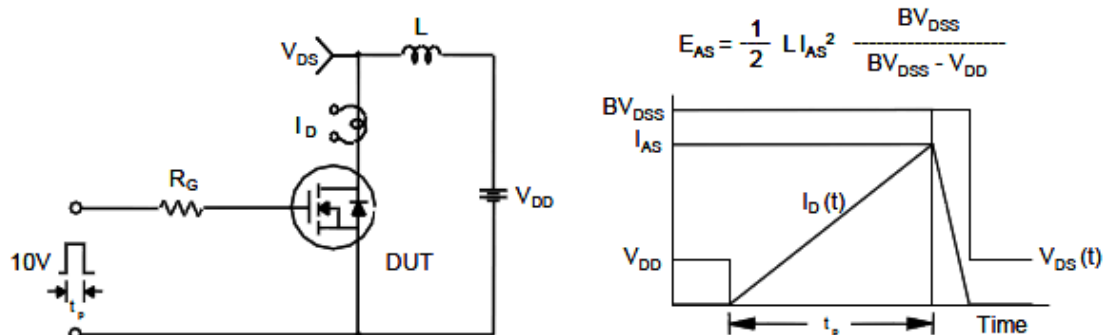
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

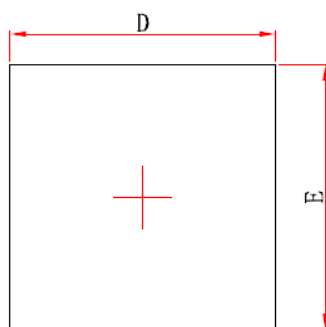


Unclamped Inductive Switching Test Circuit & Waveforms

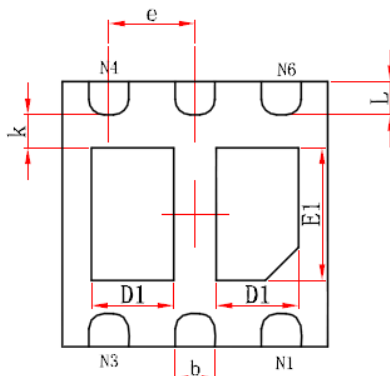




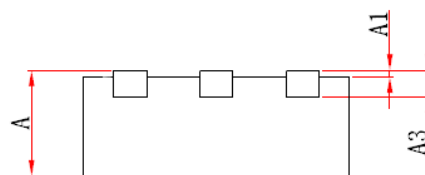
Package Information (DFN2X2-6L)



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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