



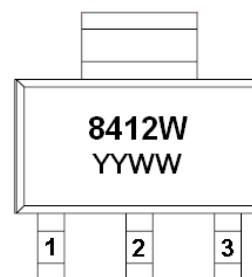
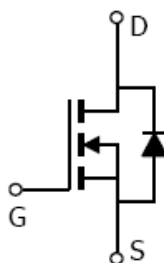
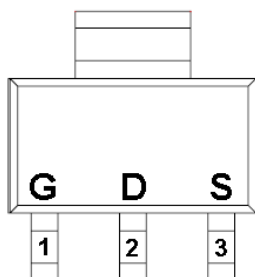
General Description

AFN8412W, 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

- 100V/3.6A, $R_{DS(ON)}=300m\Omega@V_{GS}=10V$
- 100V/3.0A, $R_{DS(ON)}=310m\Omega@V_{GS}=4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- SOT-223 package design

Pin Description (SOT-223)



Application

- Motor and Load Control
- Power Management in White LED System
- Push Pull Converter
- LCD TV Inverter & AD/DC Inverter Systems.

Pin Define

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

Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFN8412WS223RG	8412W	SOT-223	Tape & Reel	2500 EA

- ※ YY year code
- ※ WW week code
- ※ AFN8412WS223RG : 13" 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}	100	V
Gate –Source Voltage	V _{GSS}	±20	V
Continuous Drain Current(T _J =150°C)	I _D	T _c =25°C 3.6	A
		T _c =70°C 2.6	
Pulsed Drain Current	I _{DM}	8	A
Continuous Source Current(Diode Conduction)	I _S	1.6	A
Power Dissipation	P _D	T _A =25°C 2.8	W
		T _A =70°C 1.2	
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

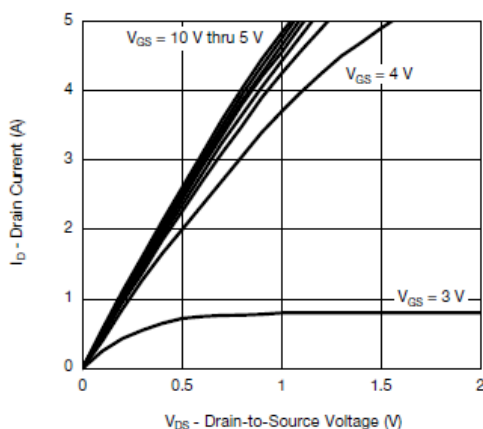
Electrical Characteristics

(T_A=25°C Unless otherwise noted)

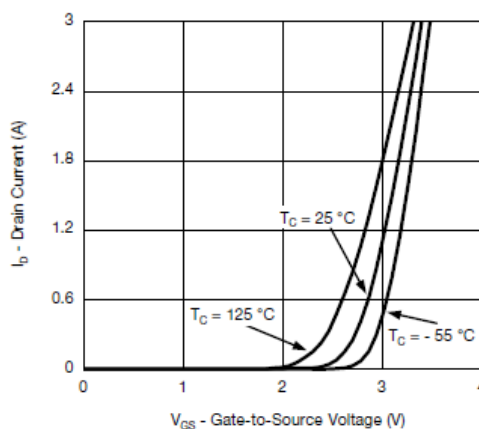
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250uA	100			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	1.0		2.0	
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =80V, V _{GS} =0V			1	uA
		V _{DS} =80V, V _{GS} =0V T _J =85°C			10	
On-State Drain Current	I _{D(on)}	V _{DS} ≥ 5V, V _{GS} =4.5V	5			A
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =3.6A		284	300	mΩ
		V _{GS} =4.5V, I _D =3.0A		288	310	
Forward Transconductance	g _{FS}	V _{DS} =20V, I _D =1.5A		2		S
Diode Forward Voltage	V _{SD}	I _S =1.3A, V _{GS} =0V		0.85	1.2	V
Dynamic						
Total Gate Charge	Q _g	V _{DS} =50V, V _{GS} =4.5V I _D ≧1.6A		2.8	5.8	nC
Gate-Source Charge	Q _{gs}			0.75		
Gate-Drain Charge	Q _{gd}			1.4		
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V f=1MHz		200		pF
Output Capacitance	C _{oss}			22		
Reverse Transfer Capacitance	C _{rss}			13		
Turn-On Time	t _{d(on)}	V _{DD} =50V, R _L =39Ω I _D ≧1.3A, V _{GEN} =4.5V R _G =1Ω		25	50	ns
	t _r			20	50	
Turn-Off Time	t _{d(off)}			15	30	
	t _f			10	25	



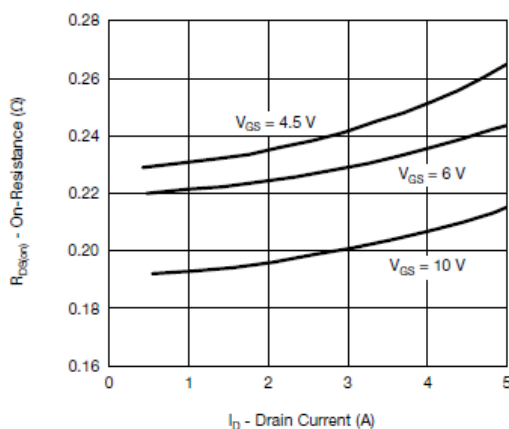
Typical Characteristics



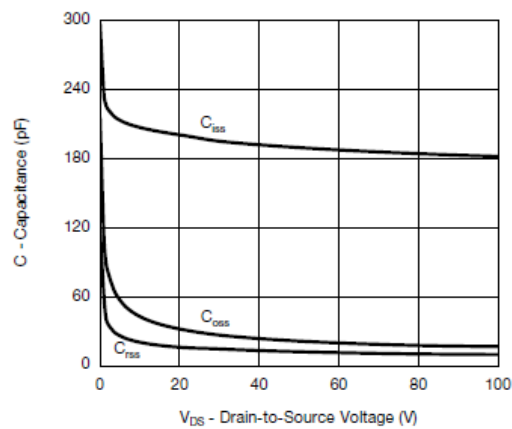
Output Characteristics



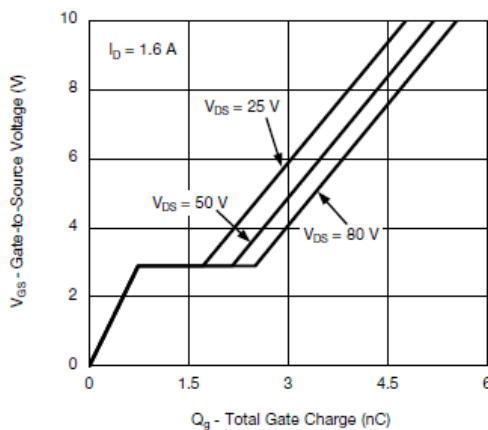
Transfer Characteristics



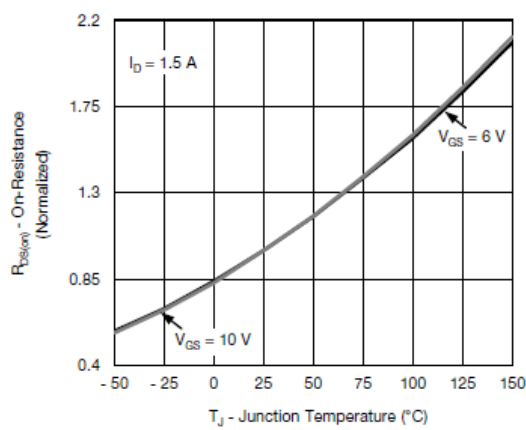
On-Resistance vs. Drain Current and Gate Voltage



Capacitance



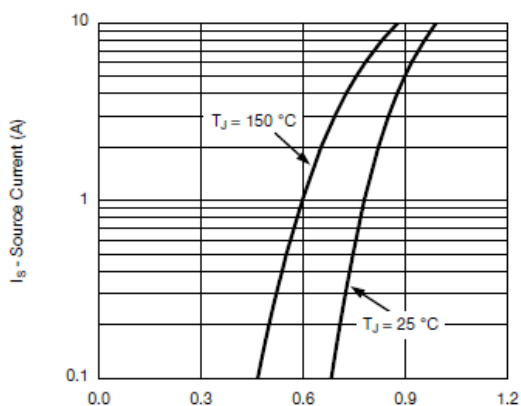
Gate Charge



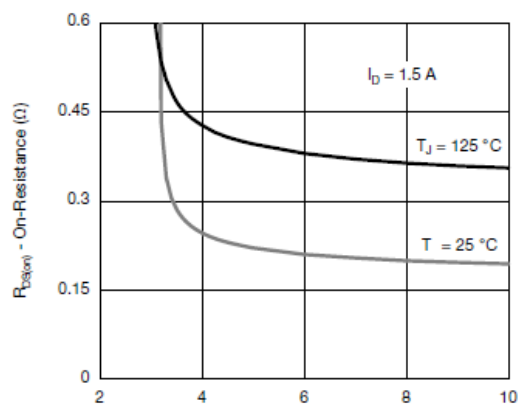
On-Resistance vs. Junction Temperature



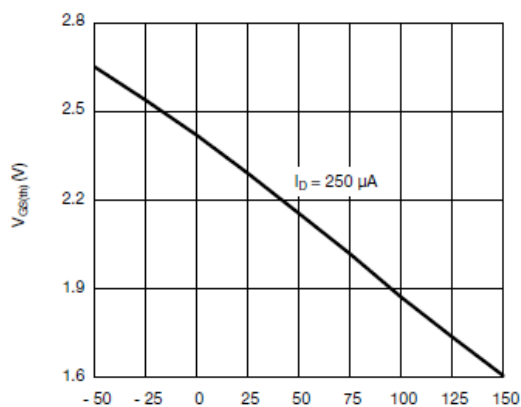
Typical Characteristics



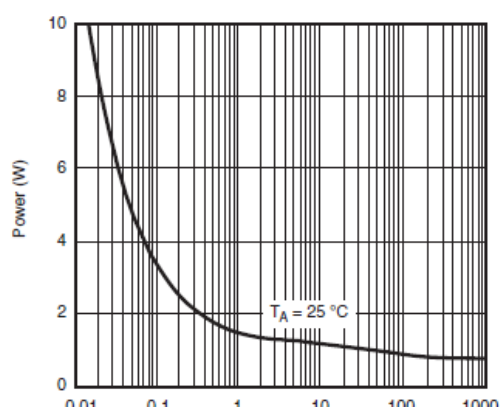
Source-Drain Diode Forward Voltage



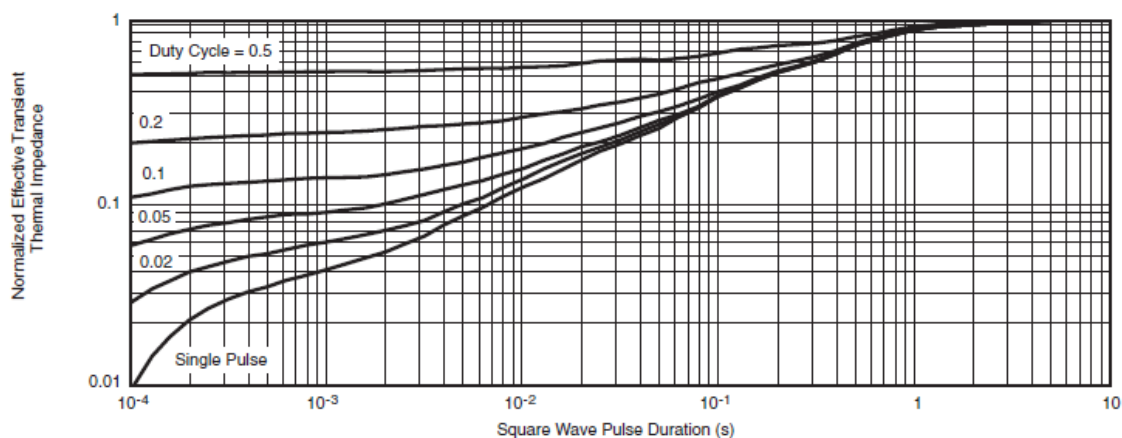
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power

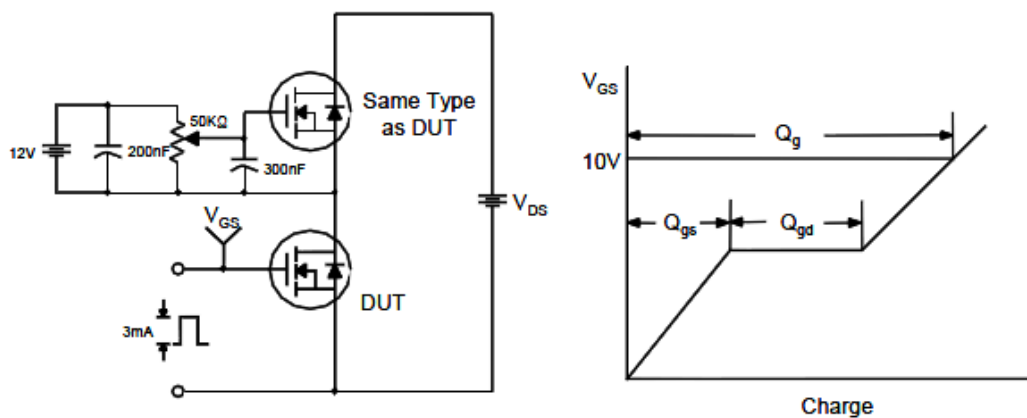


Normalized Thermal Transient Impedance, Junction-to-Foot

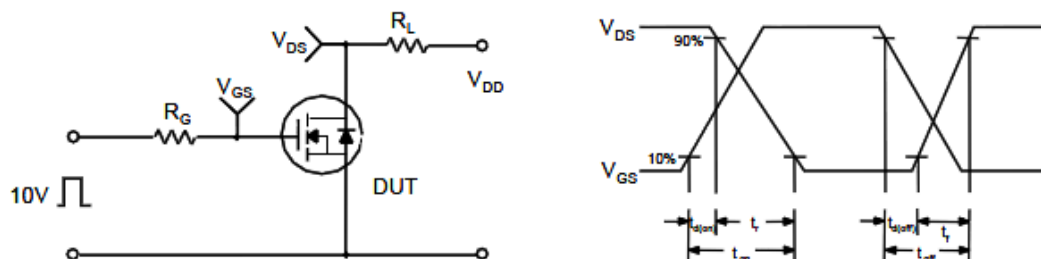


Typical Characteristics

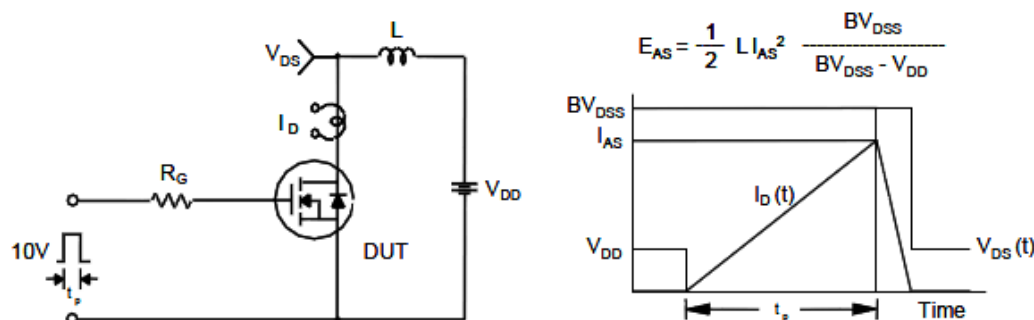
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

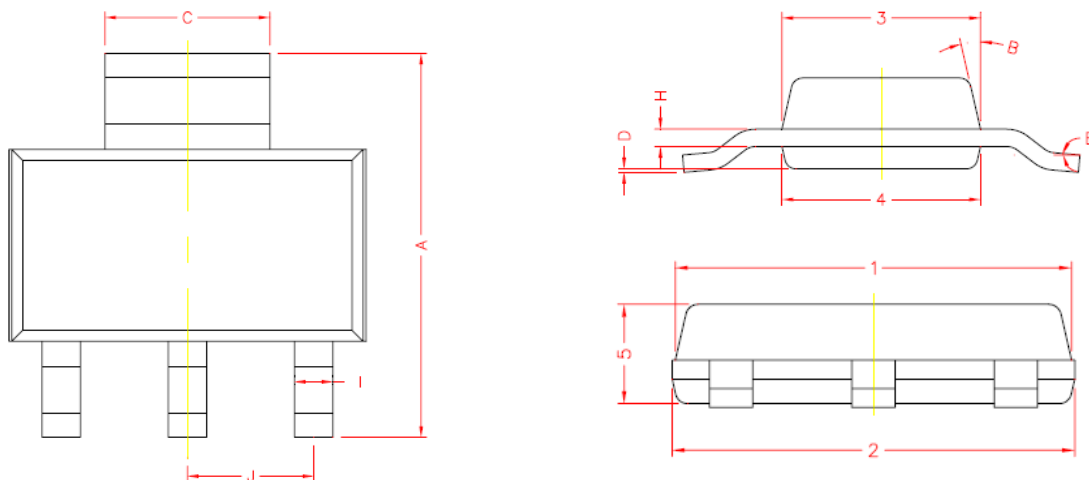


Unclamped Inductive Switching Test Circuit & Waveforms





Package Information (SOT-223)



REF.	DIMENSIONS	
	Millimeters	
	Min.	Max.
A	6.70	7.30
C	2.90	3.10
D	0.02	0.10
E	0*	10*
I	0.60	0.80
H	0.25	0.35
B	13* TYP.	
J	2.30 REF.	
1	6.30	6.70
2	6.30	6.70
3	3.30	3.70
4	3.30	3.70
5	1.40	1.80

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