



General Description

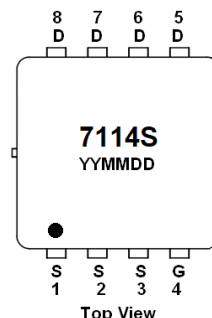
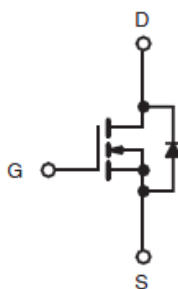
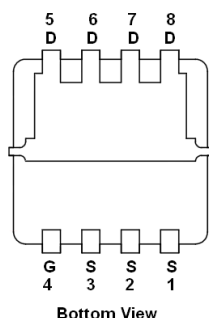
AFN7114S, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

These devices are particularly suited for low voltage power management, 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

- 40V/10A, $R_{DS(ON)} = 9m\Omega @ V_{GS} = 10V$
- 40V/ 5A, $R_{DS(ON)} = 14m\Omega @ V_{GS} = 4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- DFN3.3X3.3-8L package design

Pin Description (DFN3.3X3.3-8L)



Application

- Primary Side Switch
- Synchronous Rectification
- DC/DC Converters
- Boost Converters
- DC/AC Inverters

Pin Define

Pin	Symbol	Description
1 ~ 3	S	Source
4	G	Gate
5 ~ 8	D	Drain

Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFN7114SFN308RG	7114S	DFN3.3X3.3-8L	Tape & Reel	5000 EA

※ YY year code

※ MM month code

※ DD date code

※ AFN7114SFN308RG : 13" Tape & Reel ; Pb- Free ; Halogen -Free



Absolute Maximum Ratings (T_A=25°C Unless otherwise noted)

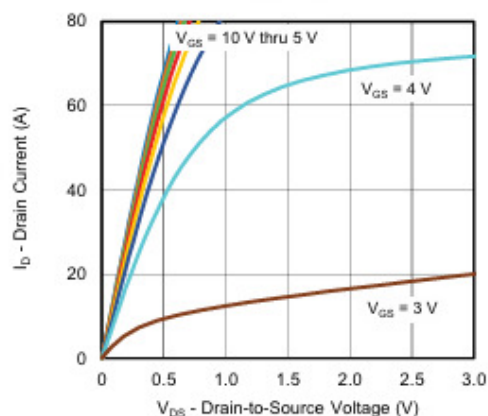
Parameter			Symbol	Typical		Unit
Drain-Source Voltage			V _{DSS}	40		V
Gate –Source Voltage			V _{GSS}	±20		V
Continuous Drain Current(T _J =150°C)	T _C =25°C	T _C =70°C	I _{DSM}	36	29	A
	T _A =25°C	T _A =70°C		14	11	
Pulsed Drain Current (t=100us)			I _{DM}	70		
Continuous Source Current(Diode Conduction)	T _C =25°C		I _S	18		
	T _A =25°C			2.9		
Single Pulse Avalanche Current	L=0.1mH		I _{AS}	12		
			E _{AS}	9.2		mJ
Power Dissipation	T _C =25°C	T _C =75°C	P _D	20	13	W
	T _A =25°C	T _A =75°C		3.2	2.1	
Operating Junction Temperature			T _J	-55/150		°C
Storage Temperature Range			T _{STG}			
Thermal Resistance-Junction to Ambient	t ≤ 10 s		R _{θJA}	31		°C/W
Maximum Junction-to-Case (Drain)	Steady-State		R _{θJA}	5		

Electrical Characteristics (T_A=25°C Unless otherwise noted)

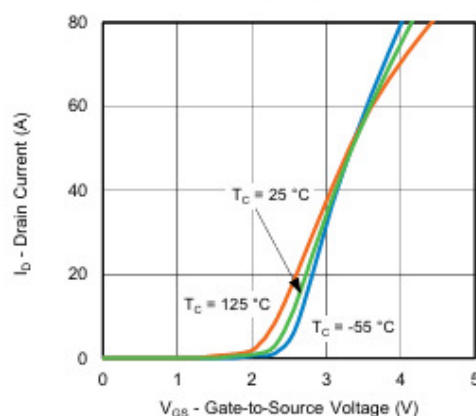
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250uA	40			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	1.0		2.5	
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =32V, V _{GS} =0V			1	uA
		V _{DS} =32V, V _{GS} =0V			10	
		T _J =85°C				
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =10A		7	9	mΩ
		V _{GS} =4.5V, I _D =5A		11	14	
Forward Transconductance	g _{FS}	V _{DS} =15V, I _D =25 A		45		S
Diode Forward Voltage	V _{SD}	I _S =10A, V _{GS} =0V		0.8	1.3	V
Dynamic						
Total Gate Charge	Q _g	V _{DS} =20V, V _{GS} =4.5V I _D ≡10A		5.3	8	nC
Gate-Source Charge	Q _{gs}			2.9		
Gate-Drain Charge	Q _{gd}			0.9		
Input Capacitance	C _{iss}	V _{DS} =20V, V _{GS} =0V f=1MHz		820		pF
Output Capacitance	C _{oss}			165		
Reverse Transfer Capacitance	C _{rss}			20		
Turn-On Time	t _{d(on)}	V _{DD} =20V, R _L =2Ω I _D ≡10A, V _{GEN} =10V R _G =1Ω		8	15	ns
	t _r			5	10	
Turn-Off Time	t _{d(off)}			15	30	
	t _f			5	10	



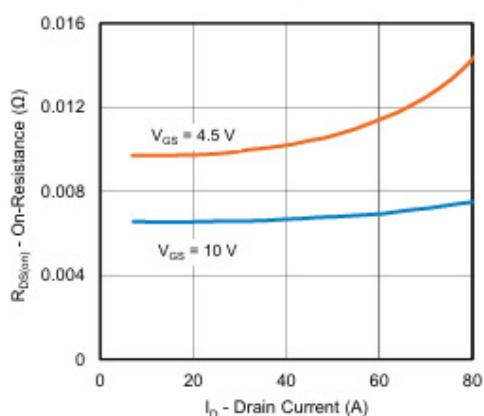
Typical Characteristics



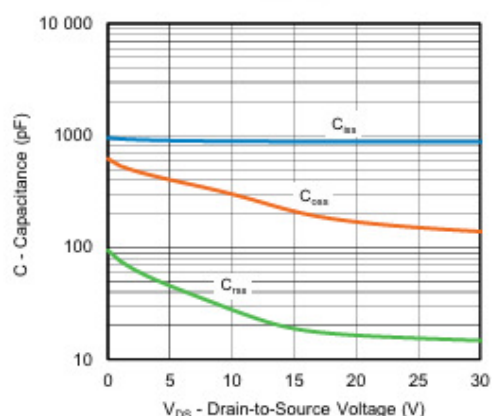
Output Characteristics



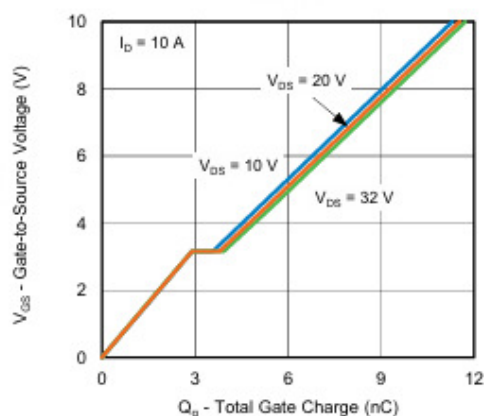
Transfer Characteristics



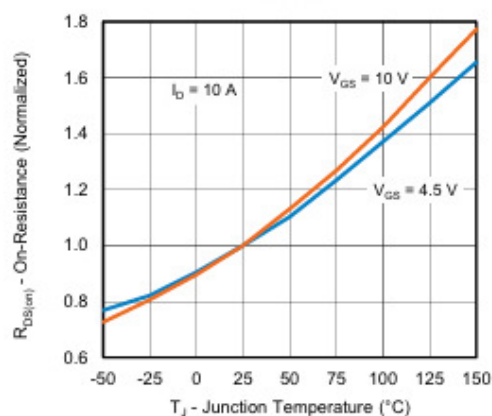
On-Resistance vs. Drain Current and Gate Voltage



Capacitance



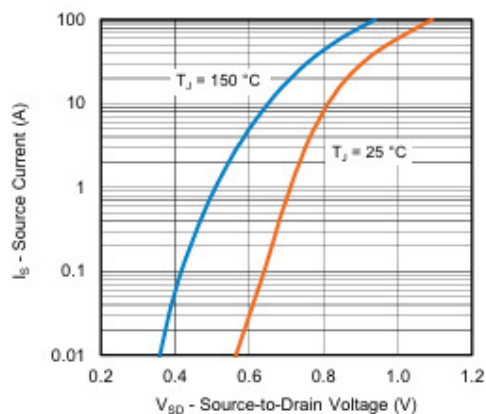
Gate Charge



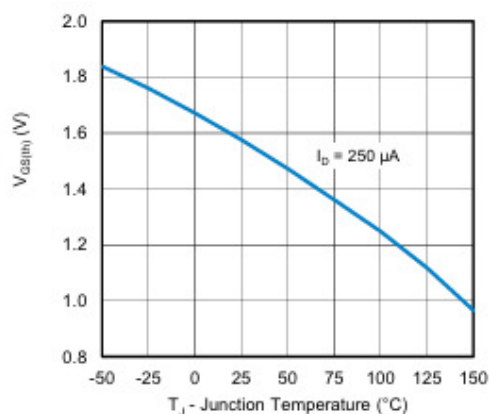
On-Resistance vs. Junction Temperature



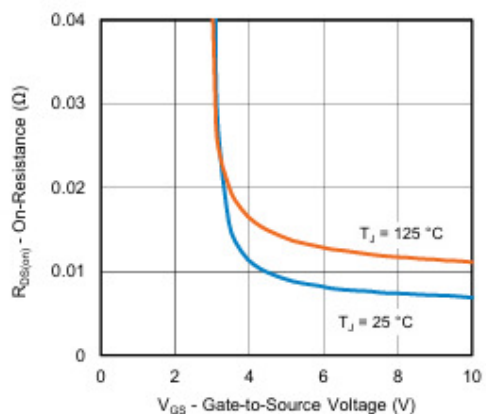
Typical Characteristics



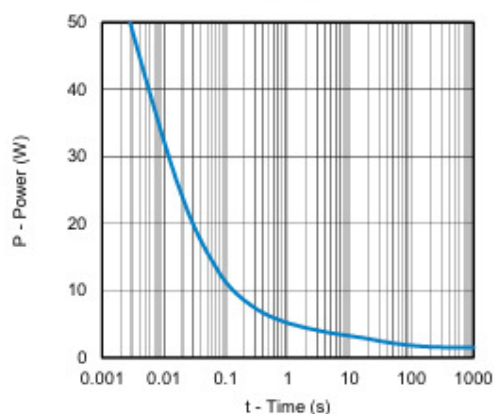
Source-Drain Diode Forward Voltage



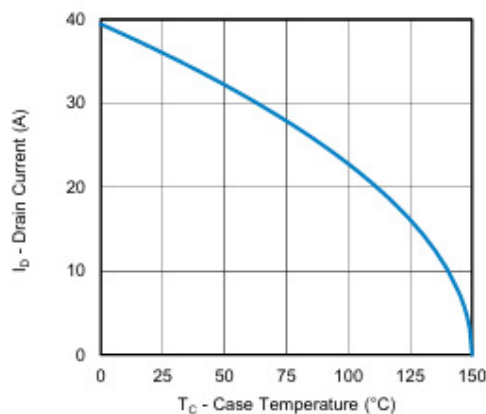
Threshold Voltage



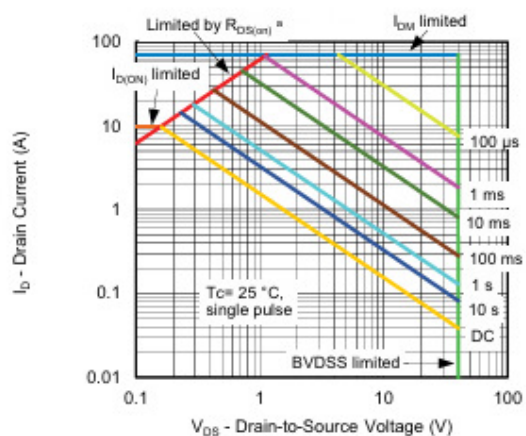
On-Resistance vs. Gate-to-Source Voltage



Single Pulse Power, Junction-to-Ambient



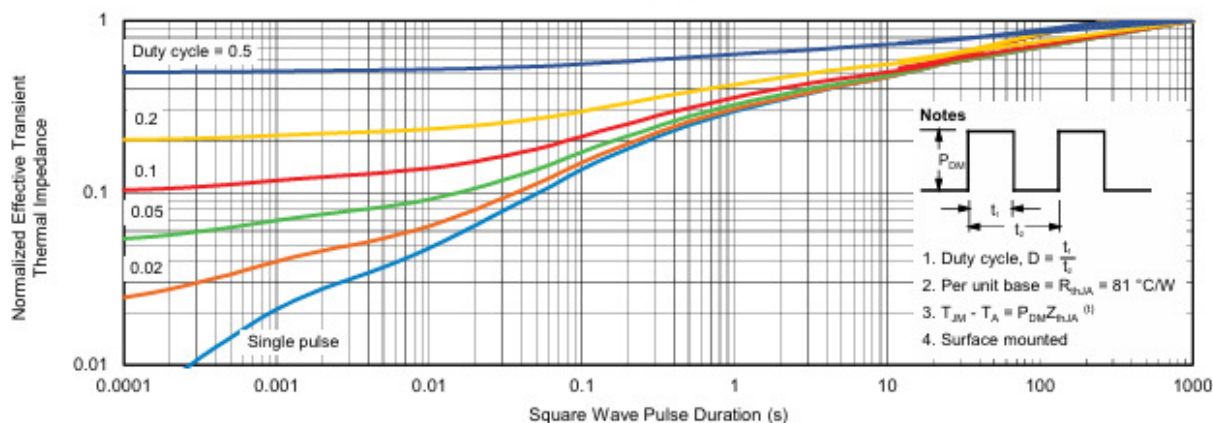
Current Derating ^a



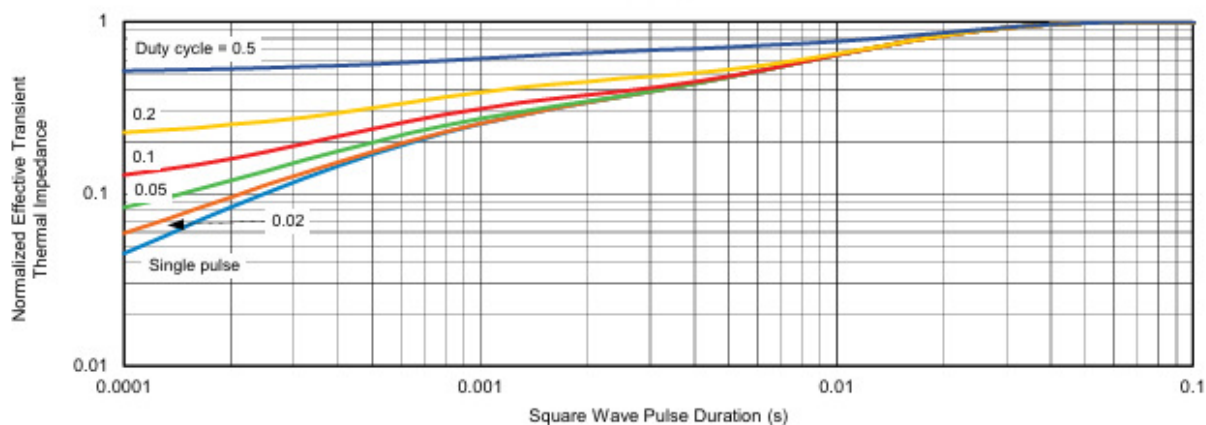
Safe Operating Area, Junction-to-Ambient



Typical Characteristics



Normalized Thermal Transient Impedance, Junction-to-Ambient

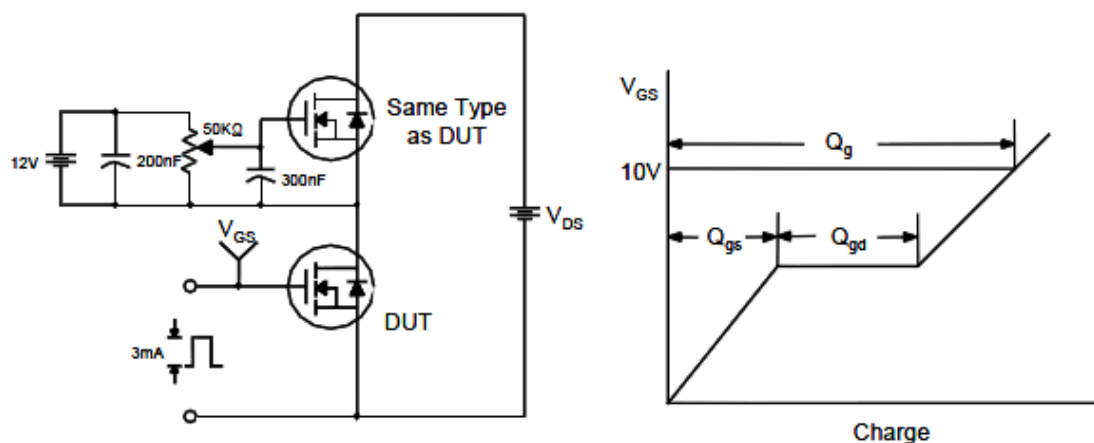


Normalized Thermal Transient Impedance, Junction-to-Case

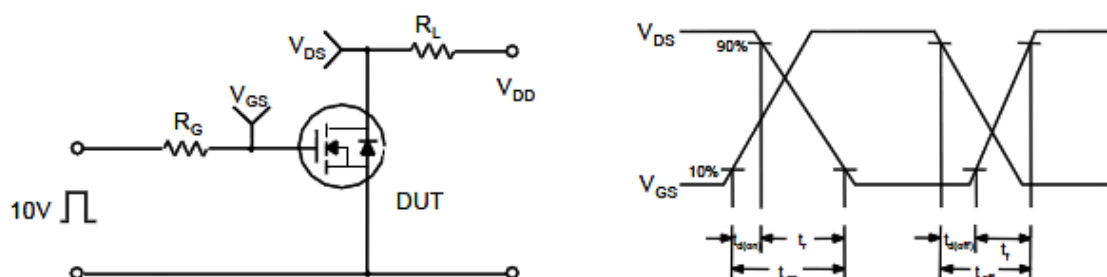


Typical Characteristics

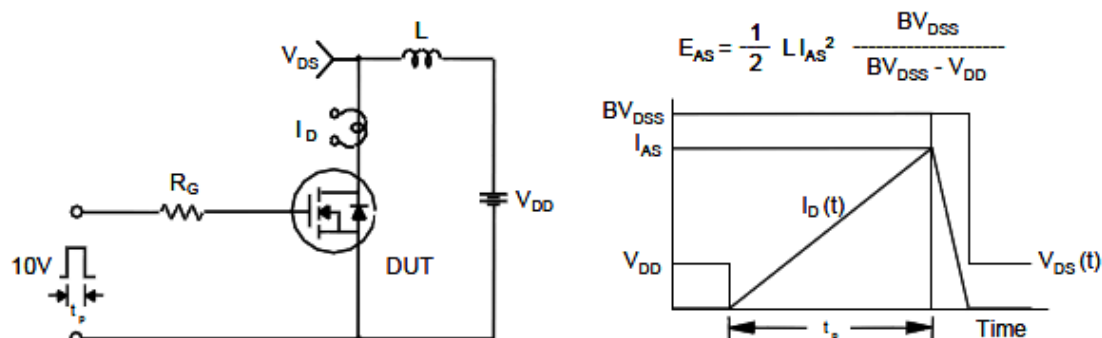
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

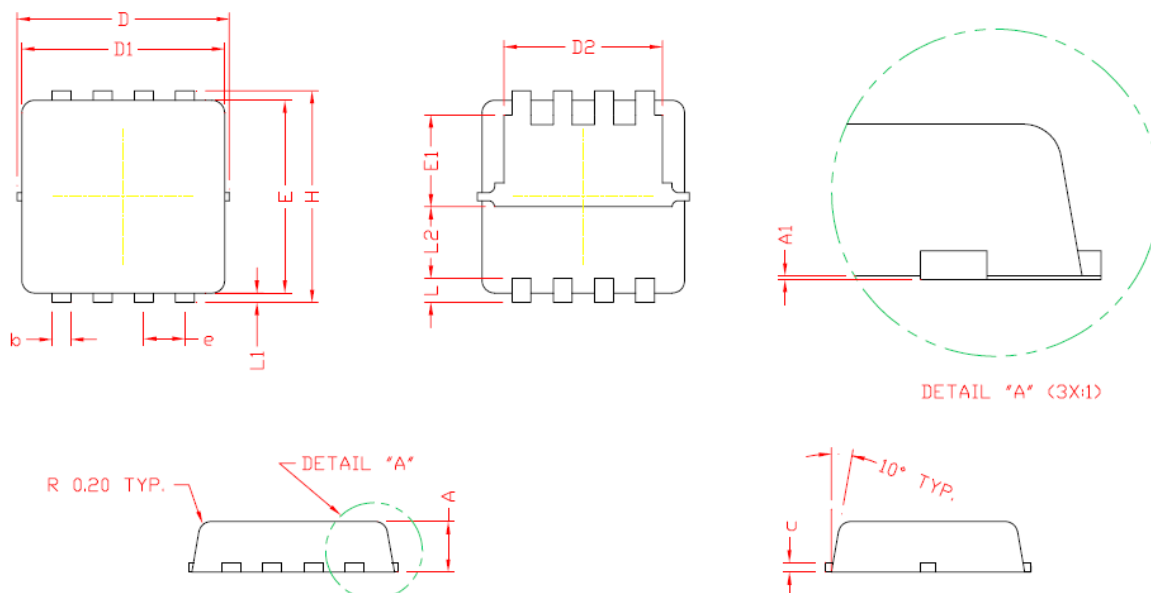


Unclamped Inductive Switching Test Circuit & Waveforms





Package Information (DFN3.3X3.3-8L)



DIMENSIONS

REF.	Millimeters		REF.	Millimeters	
	Min.	Max.		Min.	Max.
A	0.70	0.90	E	3.00	3.20
A1	0.00	0.05	E1	1.35	1.55
b	0.24	0.35	e	0.65 BSC.	
c	0.10	0.20	H	3.20	3.40
D	3.25	3.40	L	0.30	0.50
D1	3.05	3.25	L1	0.10	0.20
D2	2.40	2.60	L2	1.13 Ref.	

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