



General Description

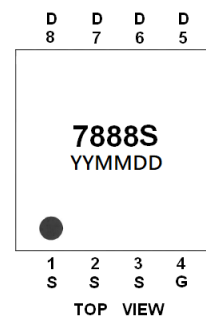
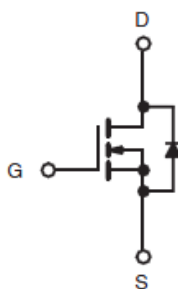
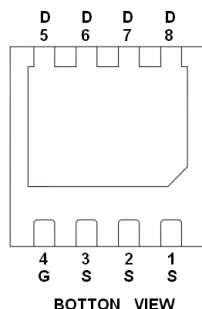
AFN7888S, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

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

- $I_D=10A, R_{DS(ON)}=55m\Omega @ V_{GS}=10V$
- $I_D= 8A, R_{DS(ON)}=60m\Omega @ V_{GS}=4.5V$
- 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)



Application

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

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
AFN7888SFN338RG	7888S	DFN3X3-8L	Tape & Reel	5000 EA

※ YY year code

※ MM month code

※ DD date code

※ AFN7888SFN338RG : 13" Tape & Reel ; Pb- Free ; Halogen -Free



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

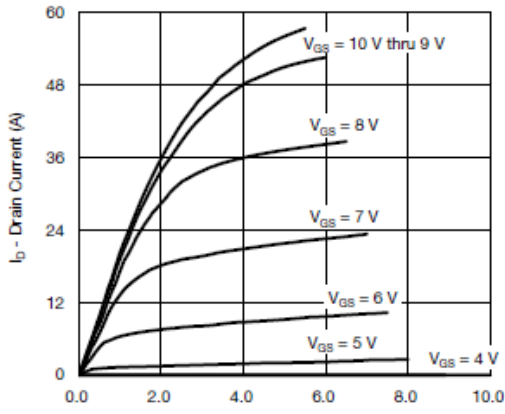
Parameter	Symbol	Typical	Unit
Drain-Source Voltage	V _{DSS}	150	V
Gate –Source Voltage	V _{GSS}	±20	V
Continuous Drain Current (T _J =150°C)	T _C =25°C	20	A
	T _C =70°C	16	
Pulsed Drain Current (t=100us)	T _A =25°C	5.2	
	T _A =70°C	4.2	
Continuous Source Current (Diode Conduction)	I _S	40	3.2
Single pulse avalanche current	I _{AS}	10	
Single pulse avalanche energy	E _{AS}	5	mJ
Power Dissipation	T _C =25°C	52	W
	T _C =70°C	33	
Operating Junction Temperature	T _A =25°C	3.7	
	T _A =70°C	2.4	
Storage Temperature Range	T _{STG}	-55/150	°C
Thermal Resistance-Junction to Ambient	R _{θJA}	33	°C/W
Maximum junction-to-case (drain)	R _{θJC}	2.4	

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

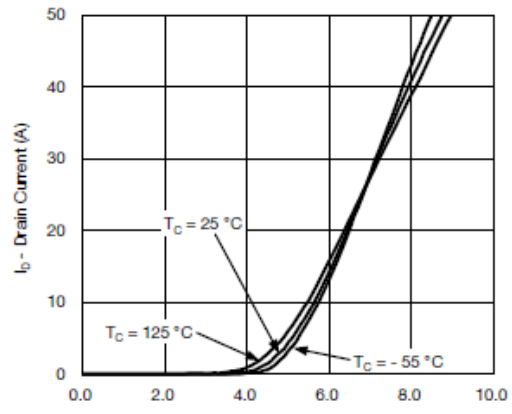
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250uA	150			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	1.2		2.5	
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =120V, V _{GS} =0V			1	uA
		V _{DS} =120V, V _{GS} =0V T _J =85°C			10	
On-State Drain Current	I _{D(on)}	V _{DS} ≥ 10V, V _{GS} =10V	40			A
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =10A		45	55	mΩ
		V _{GS} =4.5V, I _D = 8A		50	60	
Forward Transconductance	g _{FS}	V _{DS} =15V, I _D =10A		12		S
Diode Forward Voltage	V _{SD}	I _S =4.0A, V _{GS} =0V		0.8	1.2	V
Dynamic						
Total Gate Charge	Q _g	V _{DS} =75V, V _{GS} =7.5V I _D ≡10A		8	16	nC
Gate-Source Charge	Q _{gs}			2.5		
Gate-Drain Charge	Q _{gd}			3.5		
Gate resistance	R _g		0.2	1.3	2.0	Ω
Input Capacitance	C _{iss}	V _{DS} =75V, V _{GS} =0V f=1MHz		450		pF
Output Capacitance	C _{oss}			135		
Reverse Transfer Capacitance	C _{rss}			15		
Turn-On Time	t _{d(on)}	V _{DD} =75V, R _L =5Ω I _D ≡10A, V _{GEN} =10V R _G =1.0Ω		15	30	ns
	t _r			10	20	
Turn-Off Time	t _{d(off)}			15	30	
	t _f			10	20	



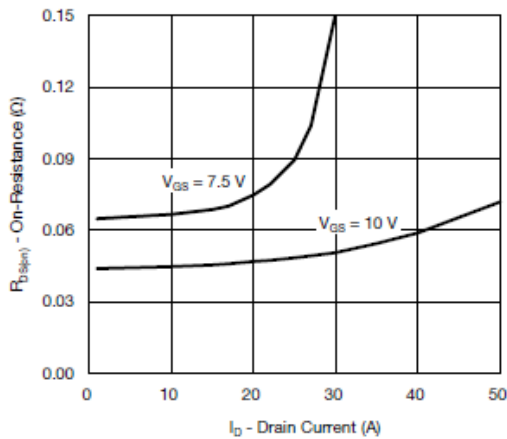
Typical Characteristics



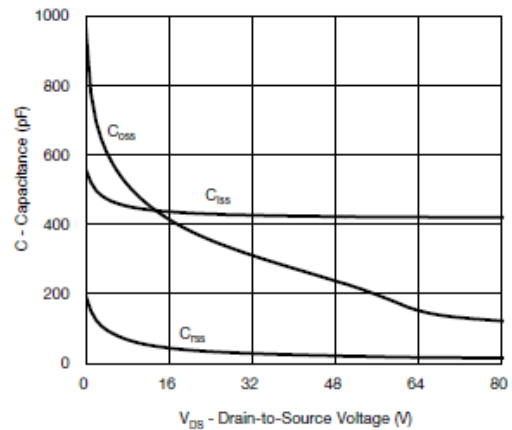
Output Characteristics



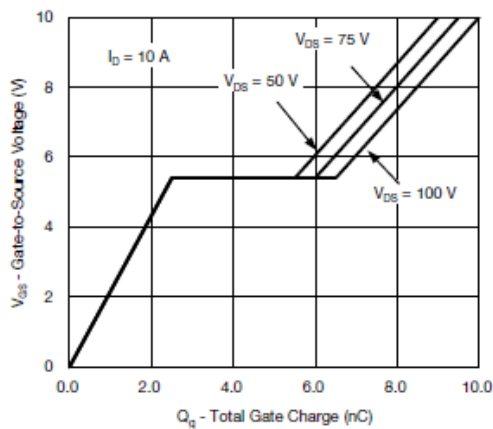
Transfer Characteristics



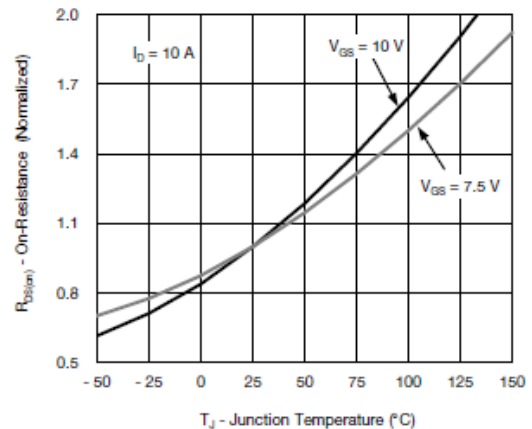
On-Resistance vs. Drain Current and Gate Voltage



Capacitance



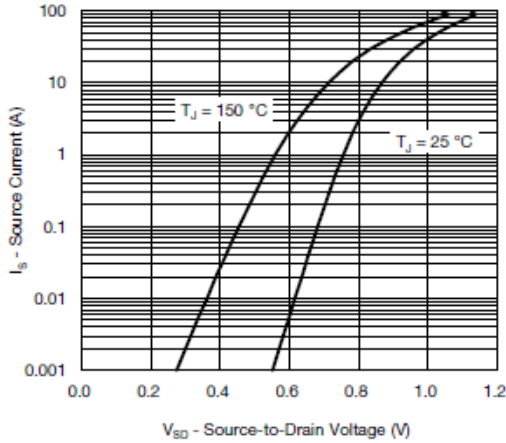
Gate Charge



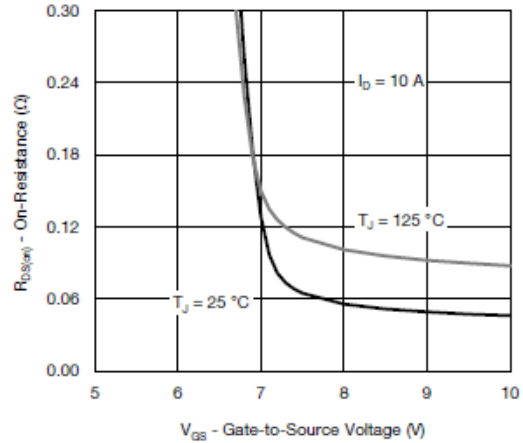
On-Resistance vs. Junction Temperature



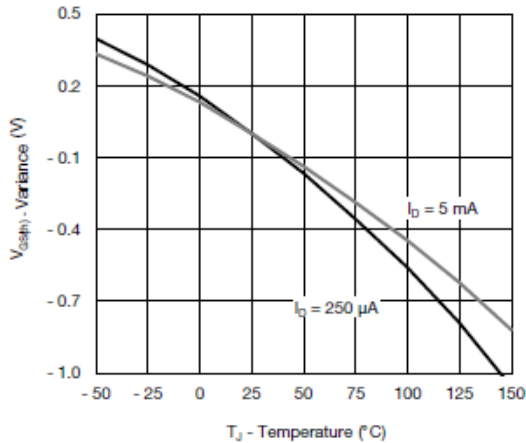
Typical Characteristics



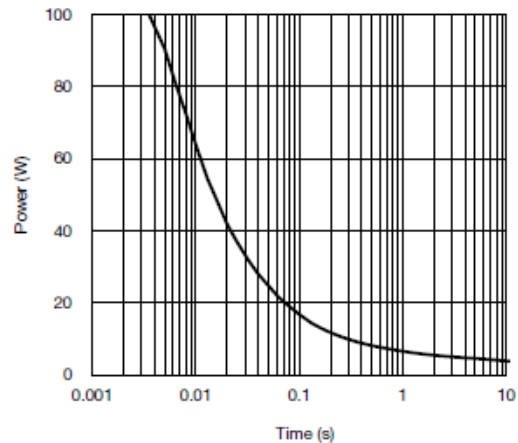
Source-Drain Diode Forward Voltage



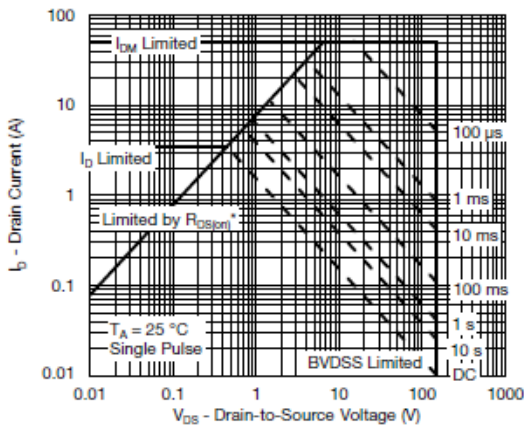
On-Resistance vs. Gate-to-Source Voltage



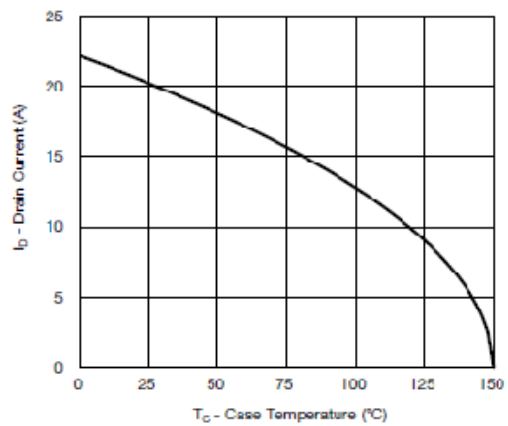
Threshold Voltage



Single Pulse Power, Junction-to-Ambient



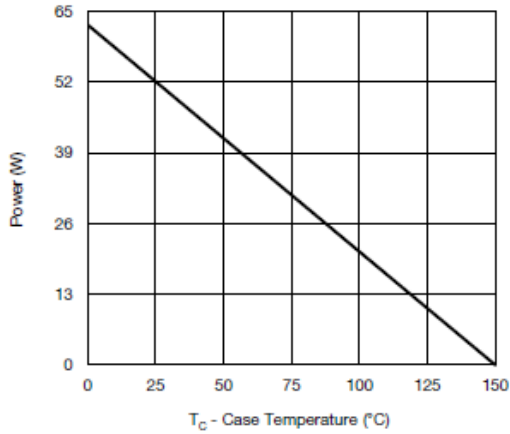
Safe Operating Area, Junction-to-Ambient



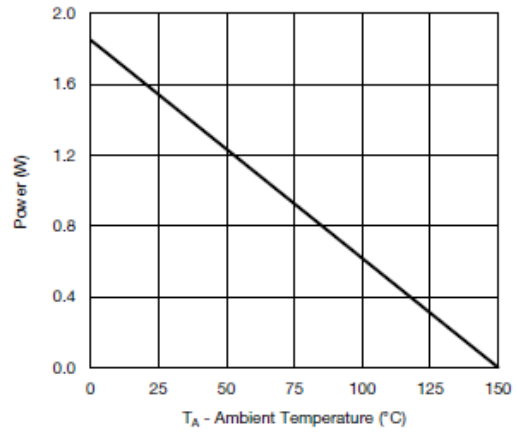
Current Derating*



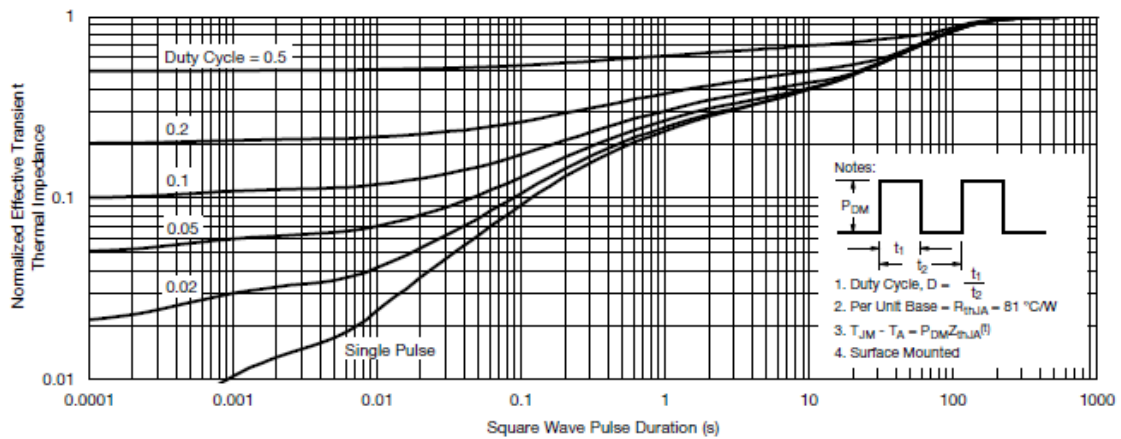
Typical Characteristics



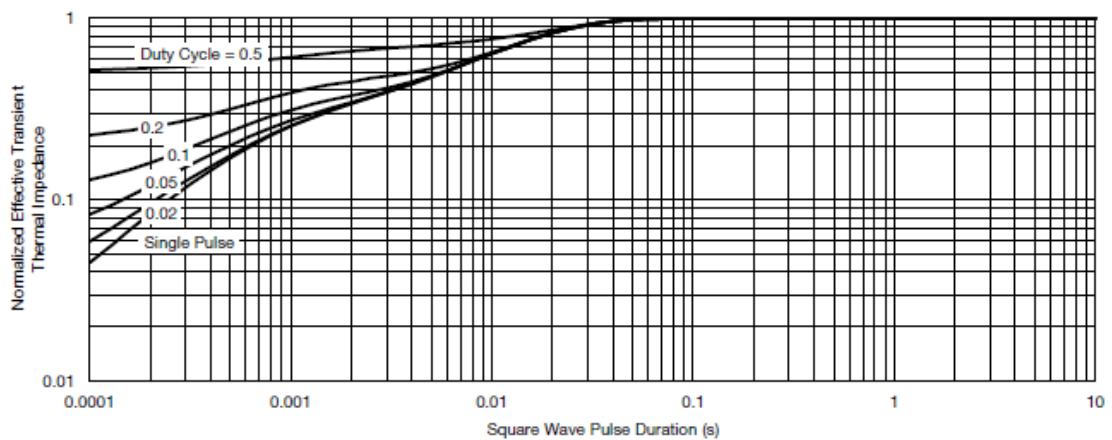
Power, Junction-to-Case



Power, Junction-to-Ambient



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

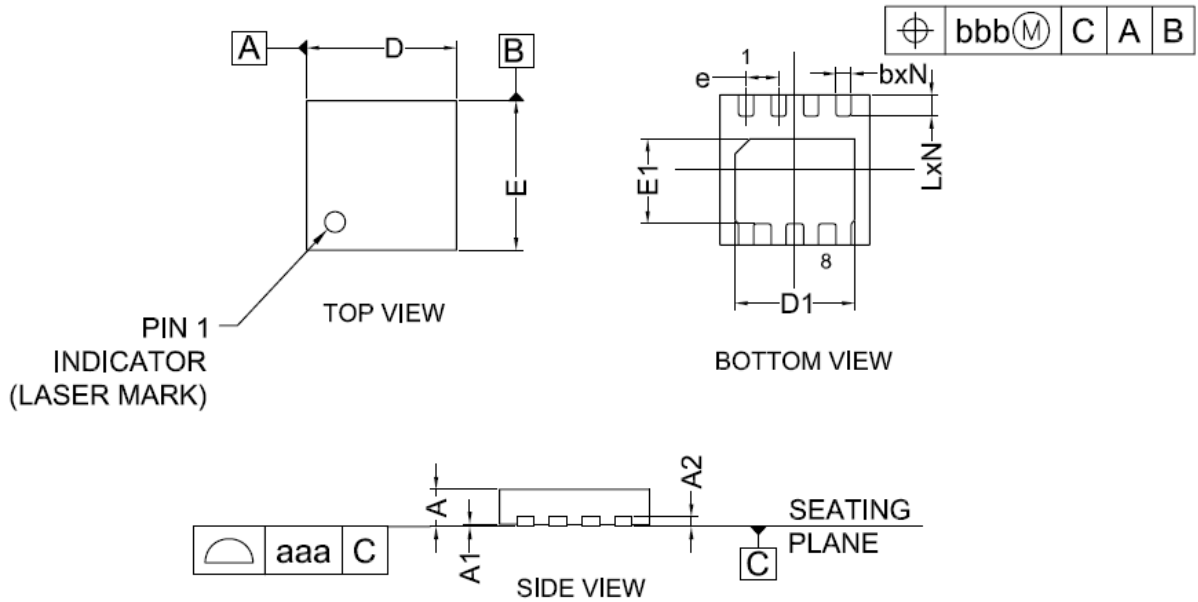


Unclamped Inductive Switching Test Circuit & Waveforms





Package Information (DFN3X3-8L)



SYMBOL	MIN	TYP	MAX
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
A2	0.203		
b	0.25	0.30	0.35
D	2.90	3.00	3.10
D1	2.35	2.40	2.45
E	2.90	3.00	3.10
E1	1.65	1.70	1.75
e	0.65BSC		
L	0.37	0.42	0.47
N	8		
aaa	0.08		
bbb	0.10		

COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

©2010 Alfa-MOS Technology Corp.
2F, No.80, Sec.1, Cheng Kung Rd., Nan Kang Dist., Taipei City 115, Taiwan (R.O.C.)
Tel : 886 2) 2651 3928
Fax : 886 2) 2786 8483
©http://www.alfa-mos.com