Alfa-MOS Technology

AFN6448S
80V N-Channel Enhancement Mode MOSFET

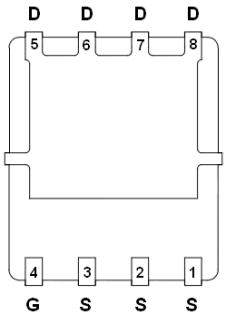
General Description

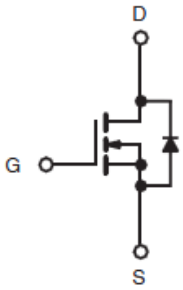
AFN6448S, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.
These devices are particularly suited for low voltage power management, and low in-line power loss are needed in commercial industrial surface mount applications.

Features

- 80V/10A,$R_{DS(ON)}$= 9.8mΩ@V_{GS}=10V
- 80V/ 8A,$R_{DS(ON)}$= 11.8mΩ@V_{GS}= 6V
- Super high density cell design for extremely low $R_{DS\ (ON)}$
- DFN5X6-8L package design

Pin Description (DFN5X6-8L)





Application

- Synchronous Rectifier
- Power Supplies
- LED TV

Pin Define

Pin	Symbol	Description
1	S	Source
2	S	Source
3	S	Source
4	G	Gate
5	D	Drain
6	D	Drain
7	D	Drain
8	D	Drain

Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFN6448SFN568RG	6448S	DFN5X6-8L	Tape & Reel	2500 EA

※ 6448S : Parts Code
※ YYMMDD : Date Code
※ AFN6448SFN568RG : 13”Tape & Reel ; Pb- Free ; Halogen- Free

Absolute Maximum Ratings

(T_A=25℃ Unless otherwise noted)

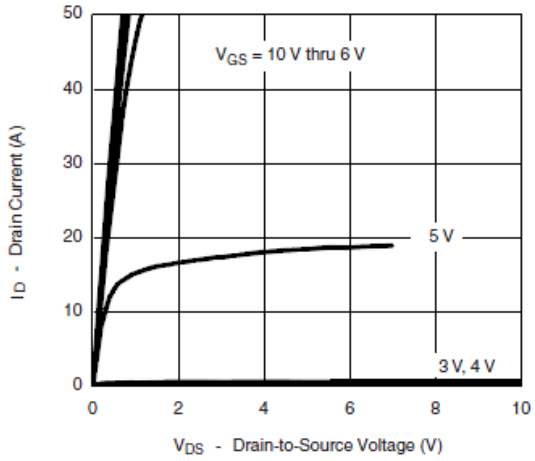
Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V_{DSS}	80	V
Gate –Source Voltage		V_{GSS}	±20	V
Continuous Drain Current(T_J=150℃)	T_A=25℃	I_{DSM}	11	A
	T_A=70℃		9	
Pulsed Drain Current		I_{DM}	50	
Continuous Source Current(Diode Conduction)		I_S	4.7	
Single Pulse Avalanche Current		I_{AS}	50	
Power Dissipation	T_A=25℃	P_{DSM}	2.5	W
	T_A=75℃		1.6	
Operating Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{STG}	-55/150	℃
Thermal Resistance-Junction to Ambient	t ≤ 10 s	$R_{\theta JA}$	15	℃/W
	Steady-State		45	

Electrical Characteristics

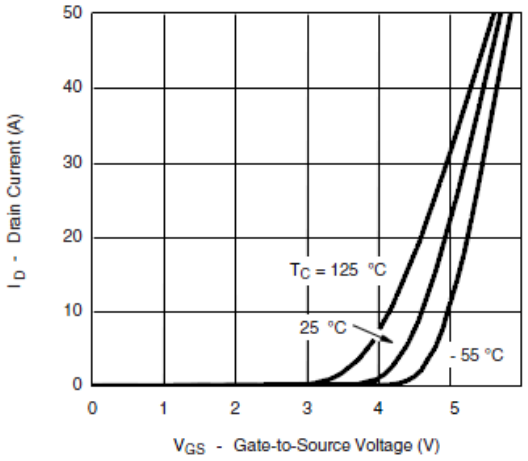
(T_A=25℃ Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=250uA	80			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	2.0		4.0	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=64V,V_{GS}=0V			1	uA
		V_{DS}=64V,V_{GS}=0V T_J=85℃			30	
On-State Drain Current	$I_{D(on)}$	V_{DS}≧5V,V_{GS}=10V	50			A
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=10A		8.3	9.8	mΩ
		V_{GS}=6V,I_D=8A		9.6	11.8	
Forward Transconductance	g_{FS}	V_{DS}=5V,I_D=10A		30		S
Diode Forward Voltage	V_{SD}	I_S=1A,V_{GS}=0V		0.8	1.3	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=40V,V_{GS}=10V I_D≡10A		35	55	nC
Gate-Source Charge	Q_{gs}			8		
Gate-Drain Charge	Q_{gd}			12		
Input Capacitance	C_{iss}	V_{DS}=40V,V_{GS}=0V f=1MHz		2800		pF
Output Capacitance	C_{oss}			360		
Reverse Transfer Capacitance	C_{rss}			150		
Turn-On Time	$t_{d(on)}$	V_{DD}=40V,R_L=40Ω I_D≡10A,V_{GEN}=10V R_G=6Ω		18	35	ns
	t_r			12	25	
Turn-Off Time	$t_{d(off)}$			40	80	
	t_f			32	65	

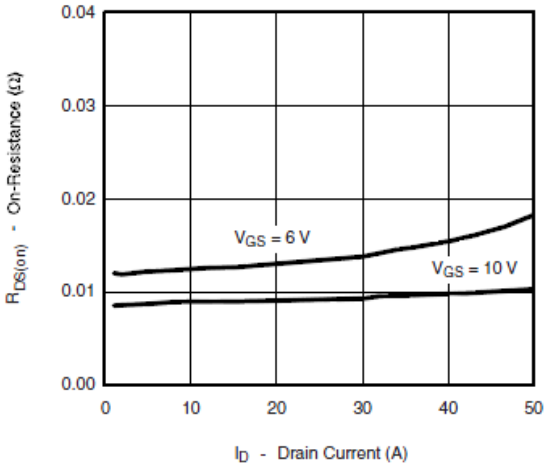
Typical Characteristics



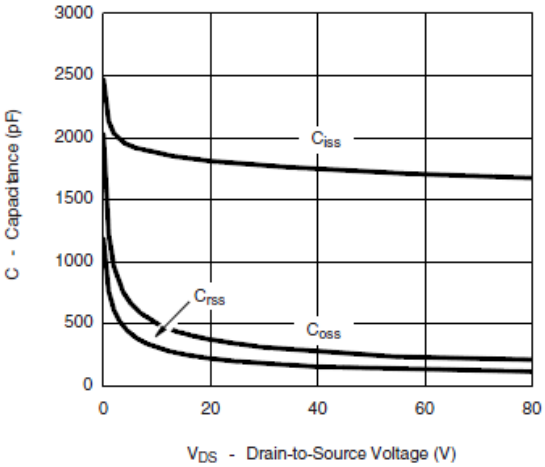
Output Characteristics



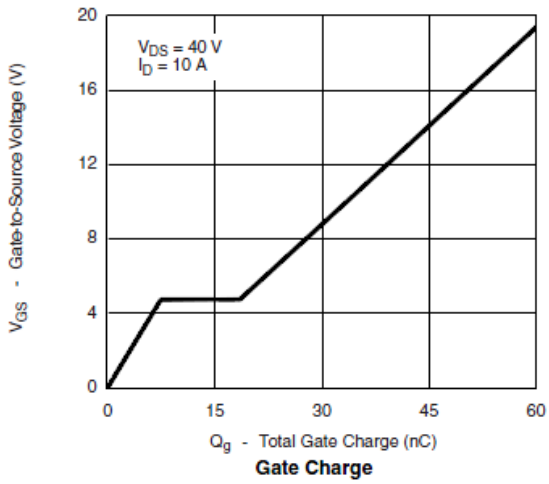
Transfer Characteristics



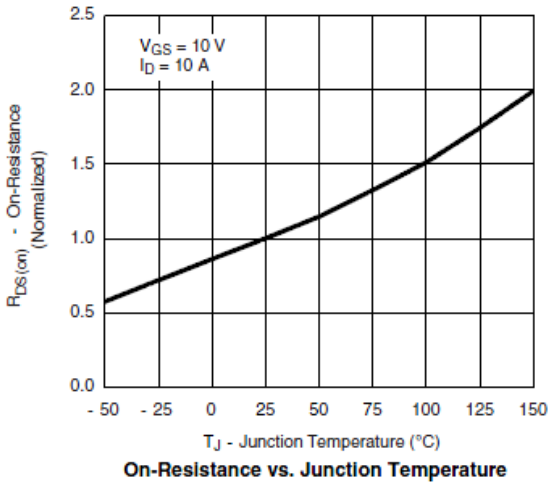
On-Resistance vs. Drain Current



Capacitance

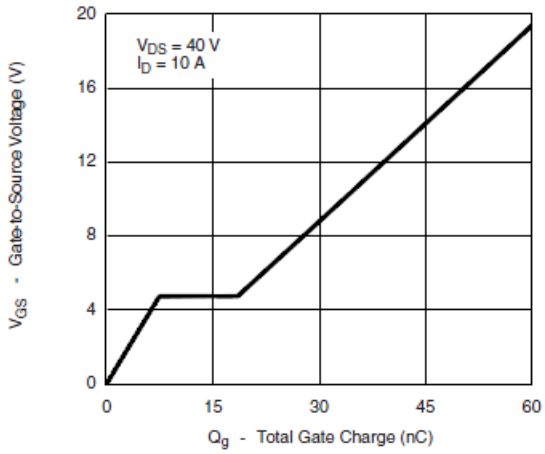


Gate Charge

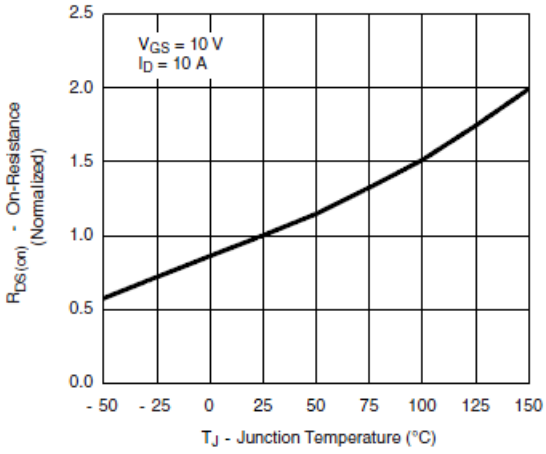


On-Resistance vs. Junction Temperature

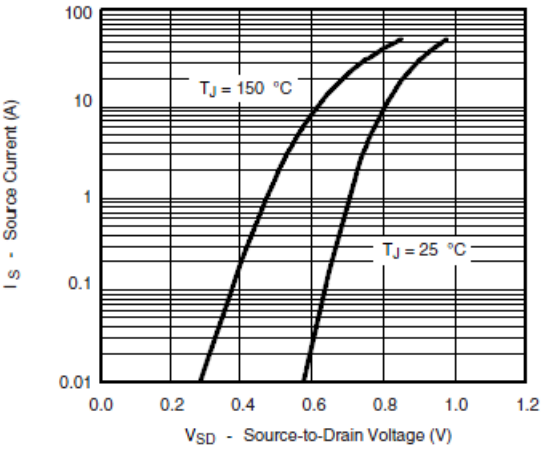
Typical Characteristics



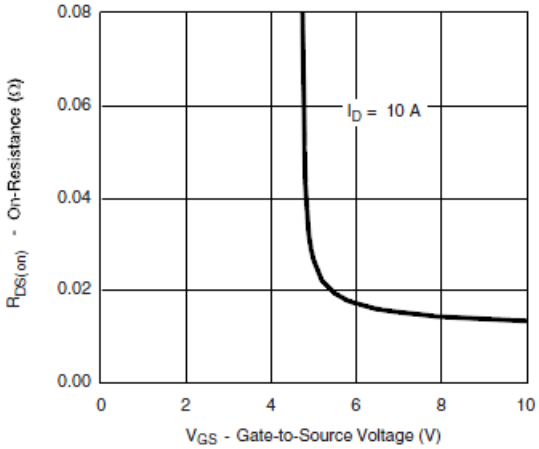
Gate Charge



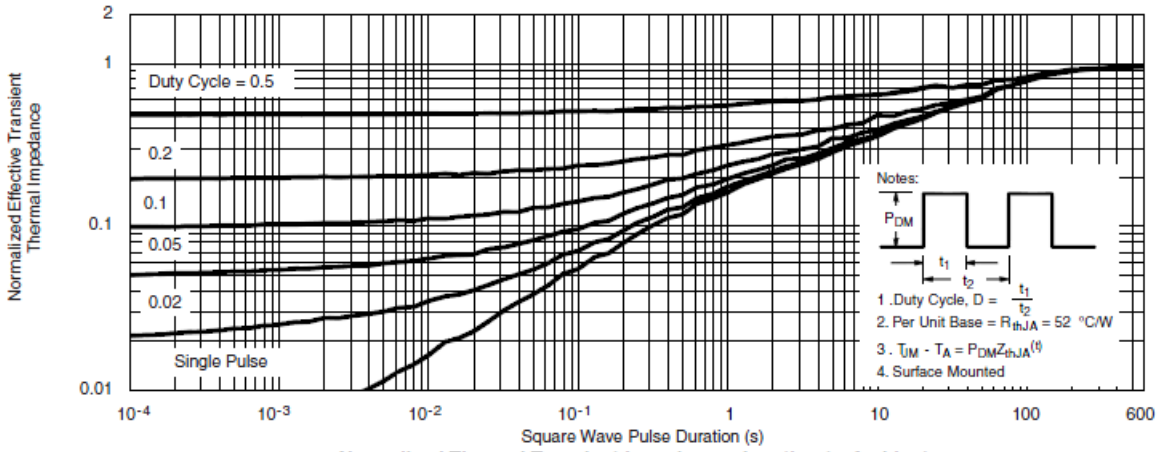
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage



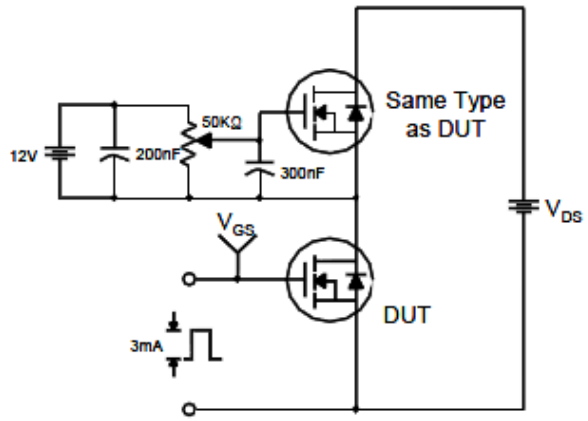
On-Resistance vs. Gate-to-Source Voltage

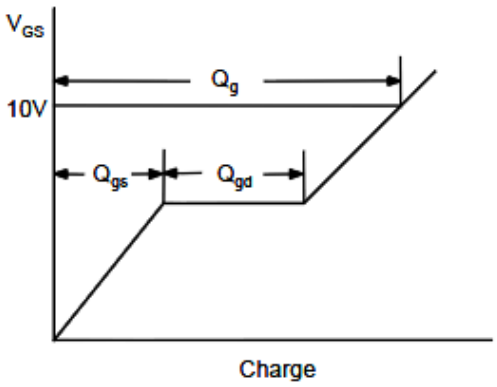


Normalized Thermal Transient Impedance, Junction-to-Ambient

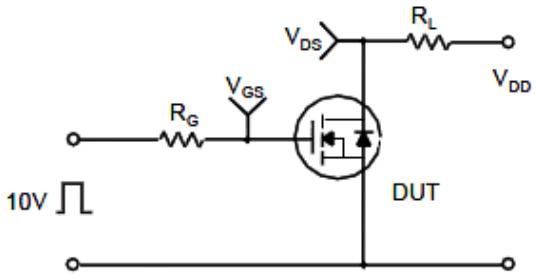
Typical Characteristics

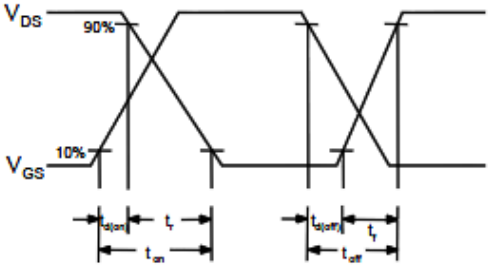
Gate Charge Test Circuit & Waveform



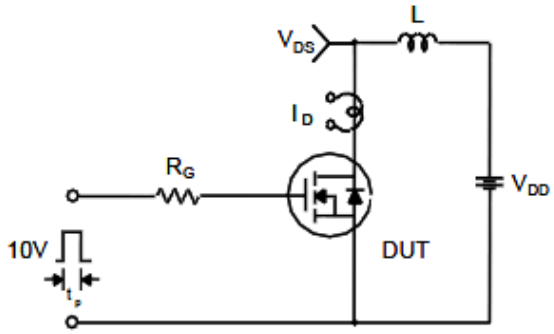


Resistive Switching Test Circuit & Waveforms

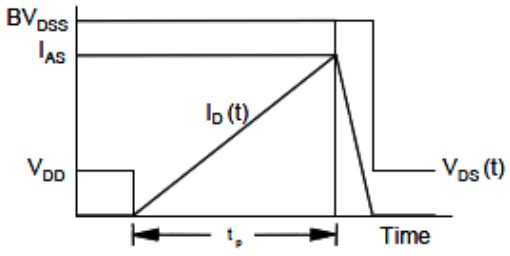




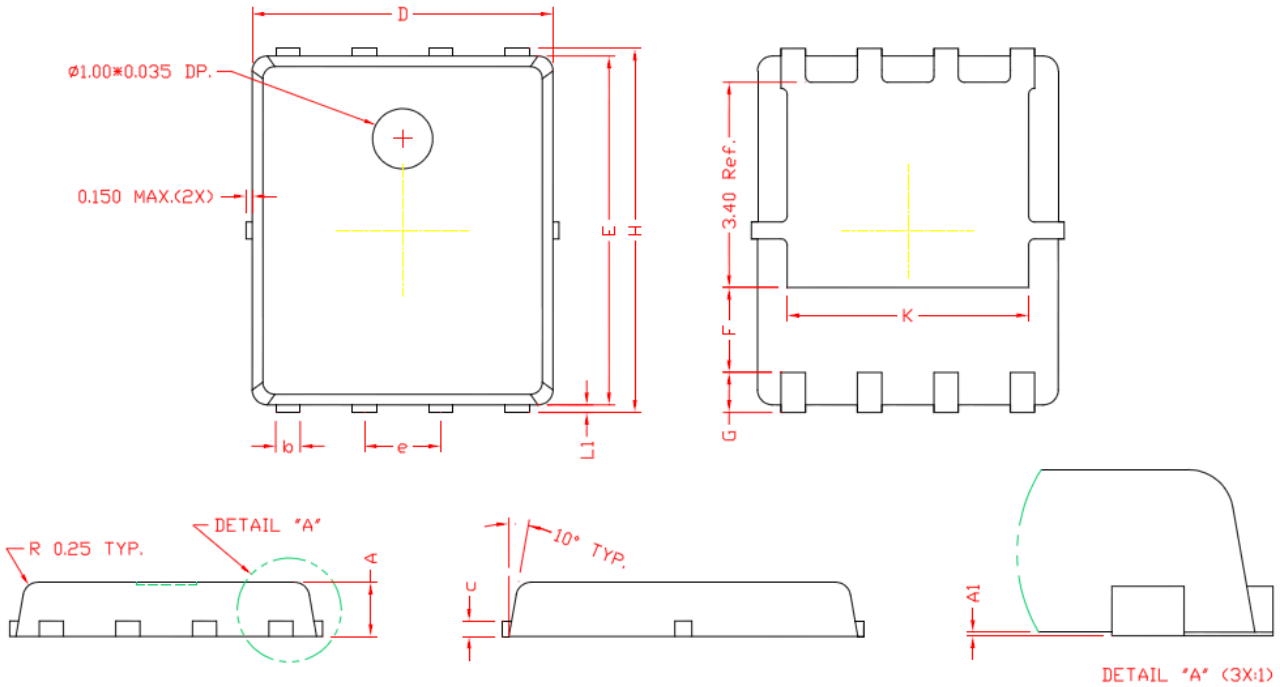
Unclamped Inductive Switching Test Circuit & Waveforms



$$E_{AS} = \frac{1}{2} L I_{AS}^2 \frac{BV_{DSS}}{BV_{DSS} - V_{DD}}$$



Package Information (DFN5X6-8L)



DIMENSIONS

REF.	Millimeters		REF.	Millimeters	
	Min.	Max.		Min.	Max.
A	0.80	1.00	E	5.70	5.90
A1	0.00	0.05	e	1.27 BSC.	
b	0.35	0.49	H	5.95	6.20
c	0.254 Ref.		L1	0.10	0.18
D	4.90	5.10	G	0.60 Ref.	
F	1.40 Ref.		K	4.00 Ref.	

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