Alfa-MOS Technology

AFN6252S

150V N-Channel Enhancement Mode MOSFET

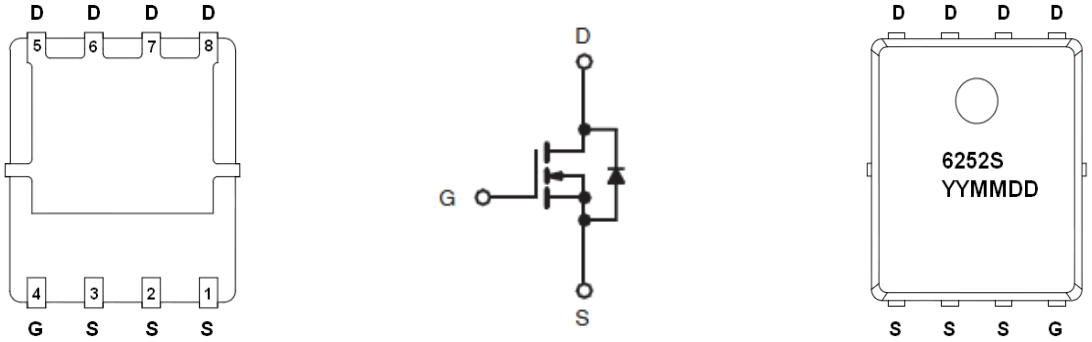
General Description

AFN6252S, 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

- 150V/5.9A,$R_{DS(ON)}$= 64mΩ@V_{GS}=10V
- 150V/4.8A,$R_{DS(ON)}$= 70mΩ@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
1~3	S	Source
4	G	Gate
5~8	D	Drain

Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFN6252SFN568RG	6252S	DFN5X6-8L	Tape & Reel	2500 EA

※ A Lot code
※ B Date code
※ AFN6252SFN568RG : 13”Tape & Reel ; Pb- Free ; Halogen- Free

Absolute Maximum Ratings

(T_A=25℃ Unless otherwise noted)

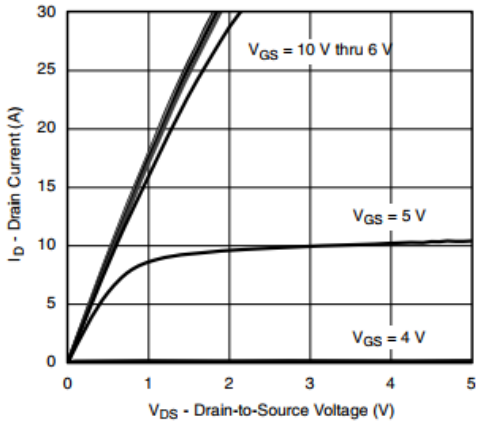
Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V_{DSS}	150	V
Gate –Source Voltage		V_{GSS}	±20	V
Continuous Drain Current(T_J=150℃)	T_C=25℃	I_{DSM}	18	A
	T_C=70℃		12	
	T_A=25℃		5.9	
	T_A=70℃		4.8	
Pulsed Drain Current		I_{DM}	30	
Continuous Source Current(Diode Conduction)	T_C=25℃	I_S	30	
Single Pulse Avalanche Current	L = 0.1 mH	I_{AS}	15	
Power Dissipation	T_A=25℃	P_{DSM}	2	W
	T_A=75℃		1.25	
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

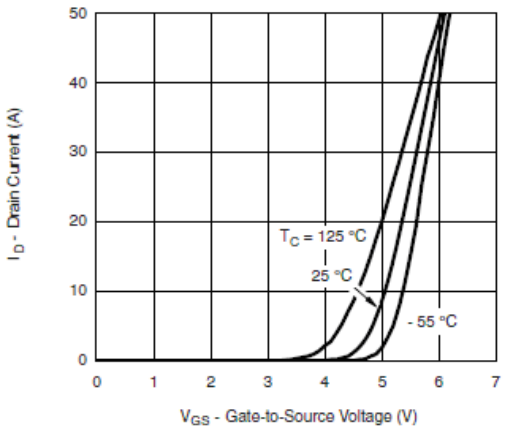
(T_A=25℃ Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=250uA	150			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	2	3	4	
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℃			5	
On-State Drain Current	$I_{D(on)}$	V_{DS}≧5V,V_{GS}=10V	25			A
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=5.9A		52	64	mΩ
		V_{GS}=6V,I_D=4.8A		55	70	
Forward Transconductance	g_{FS}	V_{DS}=15V,I_D=25A		40		S
Diode Forward Voltage	V_{SD}	I_S=2.5A,V_{GS}=0V		0.8	1.2	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=75V,V_{GS}=10V I_D≡5.9A		30	50	nC
Gate-Source Charge	Q_{gs}			10		
Gate-Drain Charge	Q_{gd}			12		
Input Capacitance	C_{iss}	V_{DS}=25V,V_{GS}=0V f=1MHz		1685		pF
Output Capacitance	C_{oss}			215		
Reverse Transfer Capacitance	C_{rss}			100		
Turn-On Time	$t_{d(on)}$	V_{DD}=50V,R_L=3Ω I_D≡4.8,V_{GEN}=10V R_G=2.5Ω		15	30	ns
	t_r			70	135	
Turn-Off Time	$t_{d(off)}$			25	50	
	t_f			60	100	

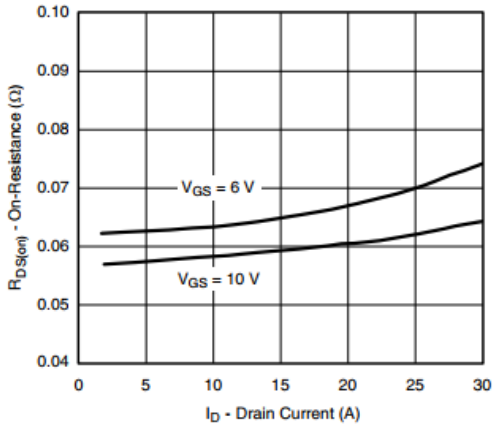
Typical Characteristics



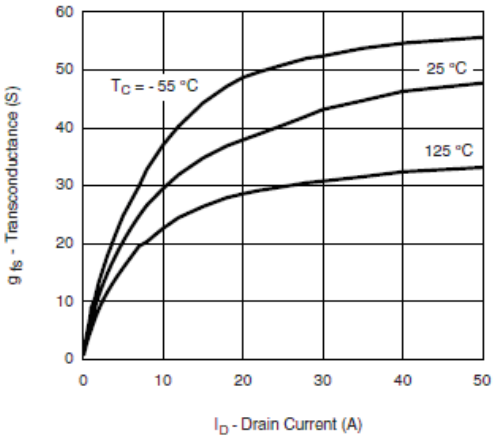
Output Characteristics



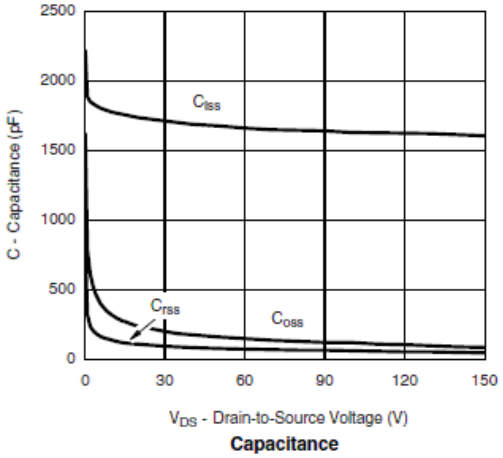
Transfer Characteristics



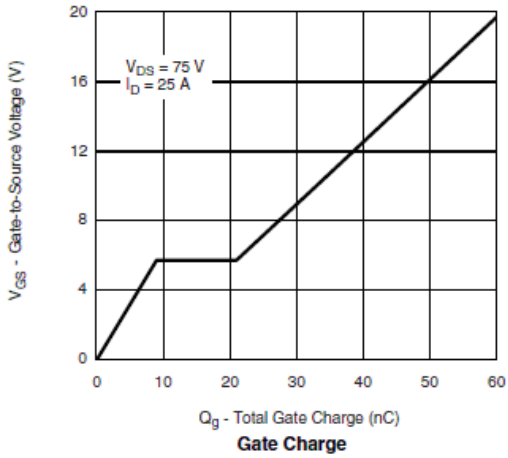
On-Resistance vs. Drain Current and Gate Voltage



Transconductance

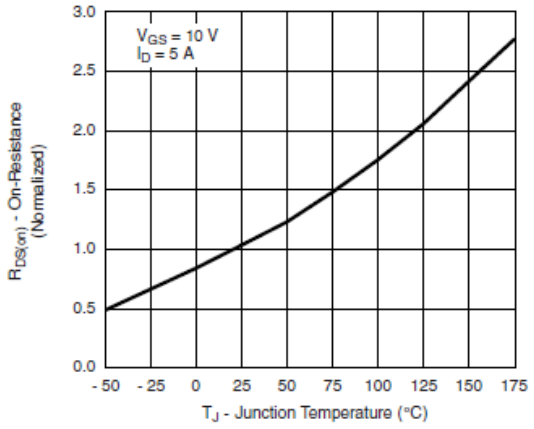


Capacitance

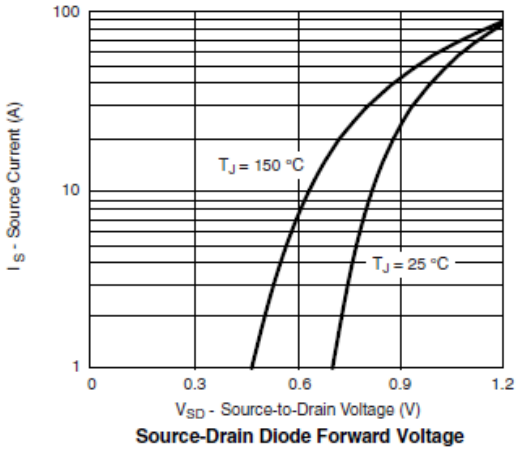


Gate Charge

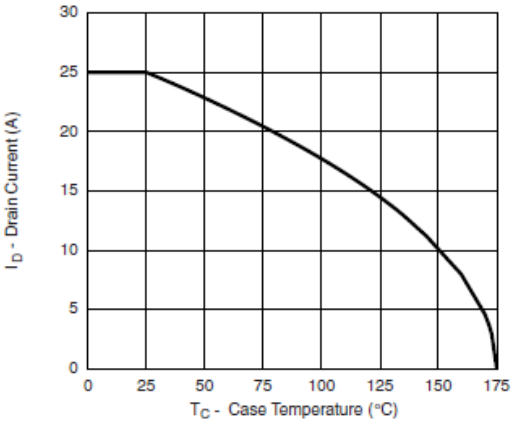
Typical Characteristics



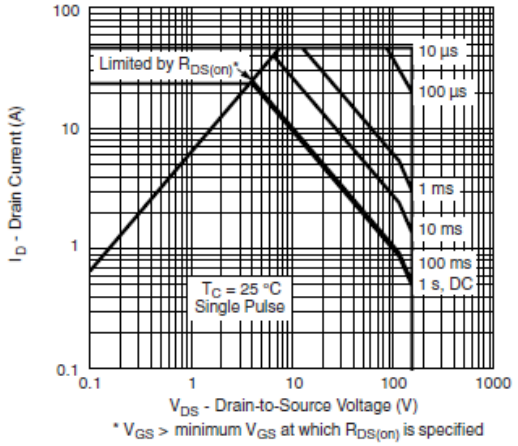
On-Resistance vs. Junction Temperature



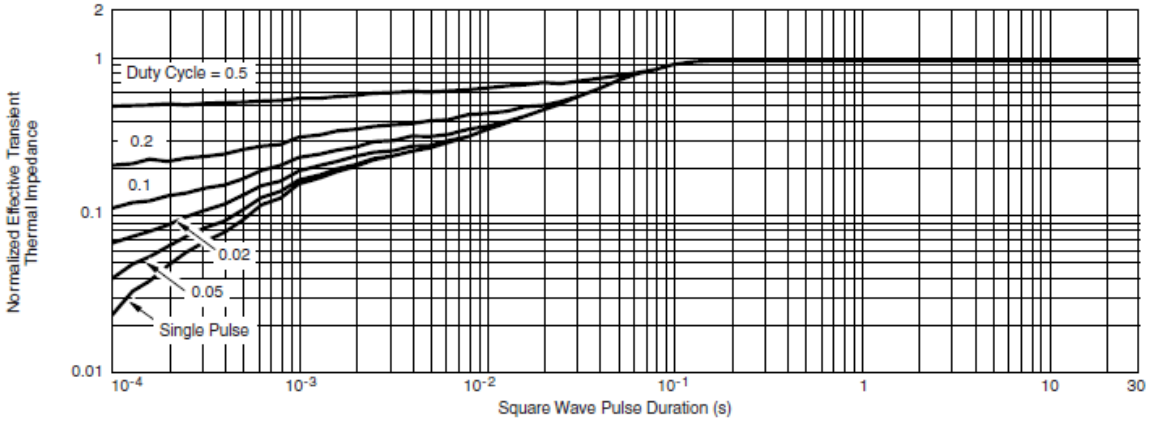
Source-Drain Diode Forward Voltage



Maximum Avalanche Drain Current vs. Case Temperature



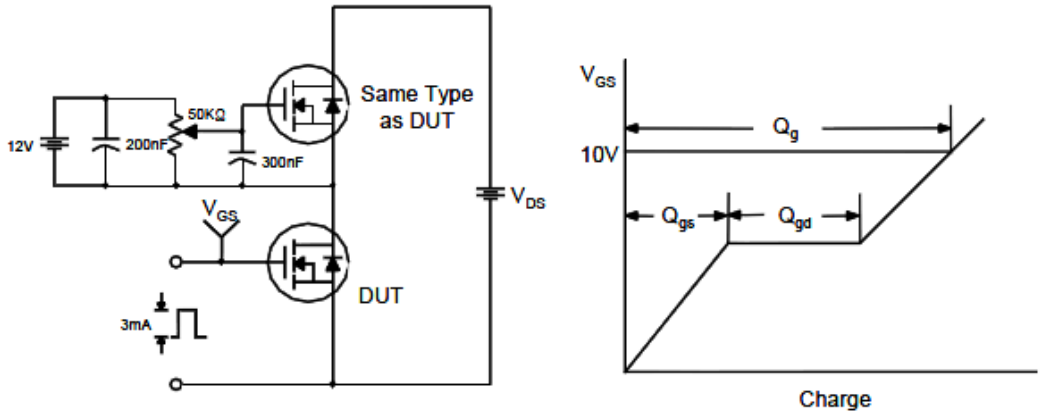
Safe Operating Area



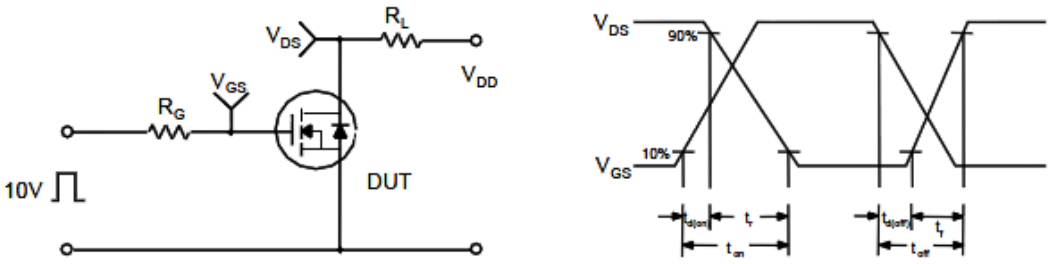
Normalized Thermal Transient Impedance, Junction-to-Case

Typical Characteristics

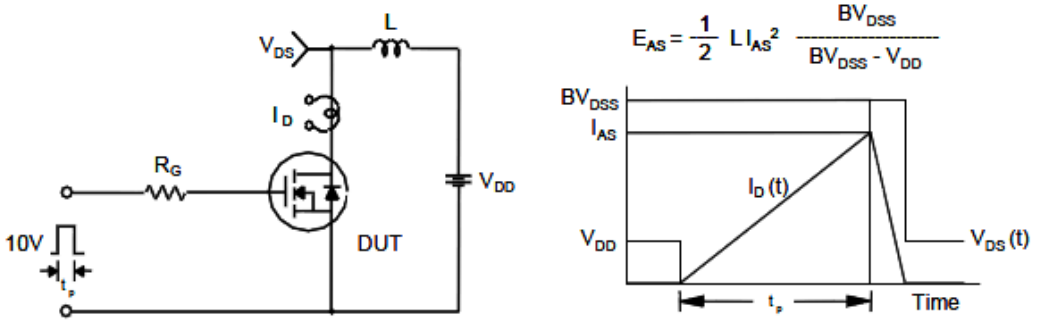
Gate Charge Test Circuit & Waveform



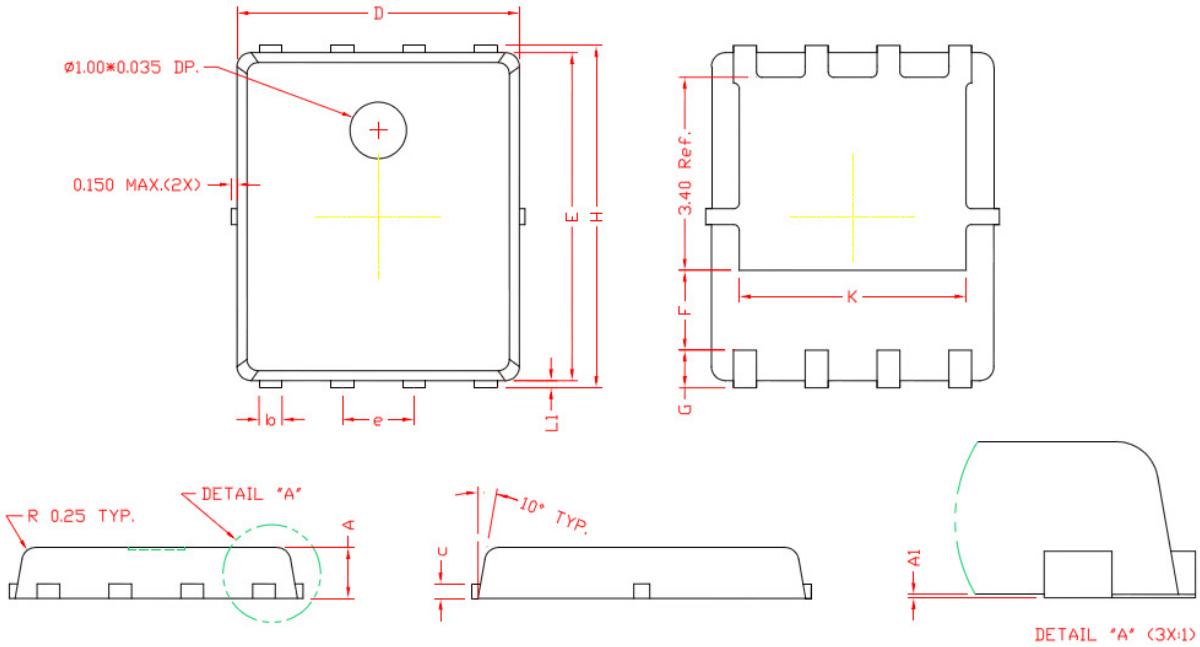
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms



Package Information (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.	

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