



## General Description

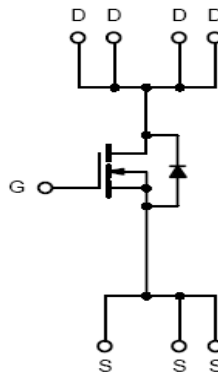
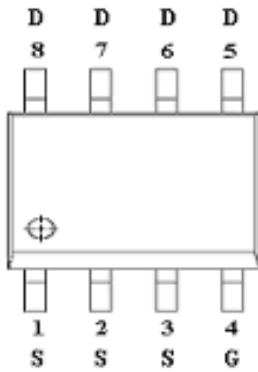
AFN4062S, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent  $R_{DS(ON)}$ , low gate charge.

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

- $I_D=20A, R_{DS(ON)}= 4.8m\Omega@V_{GS}=10V$
- $I_D=15A, R_{DS(ON)}= 6.0m\Omega@V_{GS}=6.0V$
- $60V/10A, R_{DS(ON)}= 7.5m\Omega@V_{GS}=4.5V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- SOP-8P package design

## Pin Description ( SOP-8P )



## Application

- DC/DC Primary Side Switch
- Industrial
- Synchronous Rectification
- Load Switch
- DC/DC 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
AFN4062SS8RG	4062S	SOP-8P	Tape & Reel	2500 EA

※ A Lot code

※ B Date code

※ AFN4062SS8RG : 13" Tape & Reel ; Pb- Free ; Halogen -Free



## Absolute Maximum Rating

( $T_A=25^\circ\text{C}$  Unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DSS}$	60	V
Gate -Source Voltage	$V_{GSS}$	$\pm 20$	V
Continuous Drain Current( $T_J=150^\circ\text{C}$ )	$I_{DSM}$	$T_A=25^\circ\text{C}$	22
		$T_A=70^\circ\text{C}$	18
Pulsed Drain Current	$I_{DM}$	150	A
Continuous Source Current(Diode Conduction)	$I_S$	3.2	
Single Pulse Avalanche Current	$I_{AS}$	$L=0.1\text{mH}$	25
			$E_{AS}$
Power Dissipation	$P_D$	$T_A=25^\circ\text{C}$	3.5
		$T_A=75^\circ\text{C}$	2.2
Operating Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55/150	$^\circ\text{C}$
Thermal Resistance-Junction to Ambient	$t \leq 10\text{ s}$	$R_{\theta JA}$	29
Maximum Junction-to-Foot (Drain)	Steady-State	$R_{\theta JF}$	13

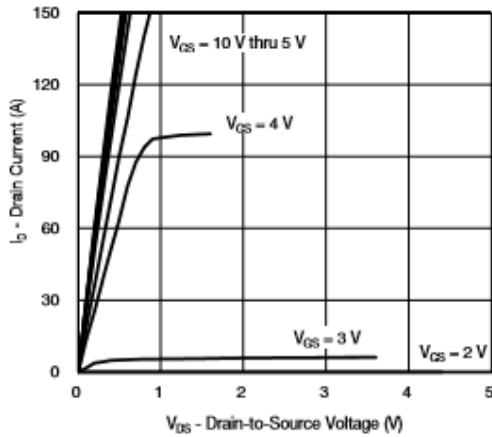
## Electrical Characteristics

( $T_A=25^\circ\text{C}$  Unless otherwise noted)

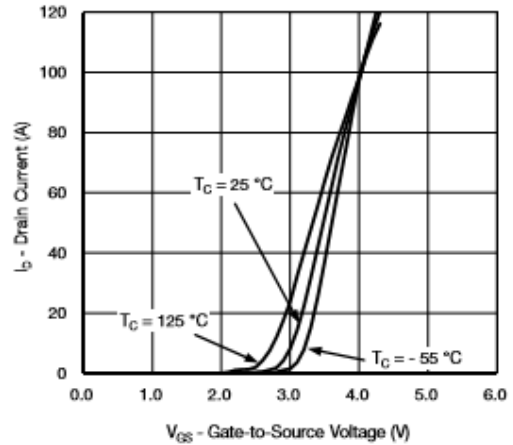
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	60			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0		2.5	
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=48V, V_{GS}=0V$			1	
		$V_{DS}=48V, V_{GS}=0V$ $T_J=85^\circ\text{C}$			30	$\mu A$
On-State Drain Current	$I_{D(on)}$	$V_{DS} \geq 5V, V_{GS}=10V$	30			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$		3.7	4.8	
		$V_{GS}=6.0V, I_D=15A$		4.6	6.0	$m\Omega$
		$V_{GS}=4.5V, I_D=10A$		5.8	7.5	
Forward Transconductance	$g_{FS}$	$V_{DS}=15V, I_D=20A$		80		S
Diode Forward Voltage	$V_{SD}$	$I_S=20A, V_{GS}=0V$		0.8	1.3	V
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS}=30V, V_{GS}=4.5V$ $I_D \equiv 10A$		18	35	nC
Gate-Source Charge	$Q_{gs}$			9		
Gate-Drain Charge	$Q_{gd}$			6		
Input Capacitance	$C_{iss}$	$V_{DS}=30V, V_{GS}=0V$ $f=1\text{MHz}$		3175		pF
Output Capacitance	$C_{oss}$			1250		
Reverse Transfer Capacitance	$C_{rss}$			100		
Turn-On Time	$t_{d(on)}$	$V_{DD}=30V, R_L=30\Omega$ $I_D \equiv 10A, V_{GEN}=10V$ $R_G=1\Omega$		20	40	ns
	$t_r$			10	20	
Turn-Off Time	$t_{d(off)}$			30	60	
	$t_f$			10	20	



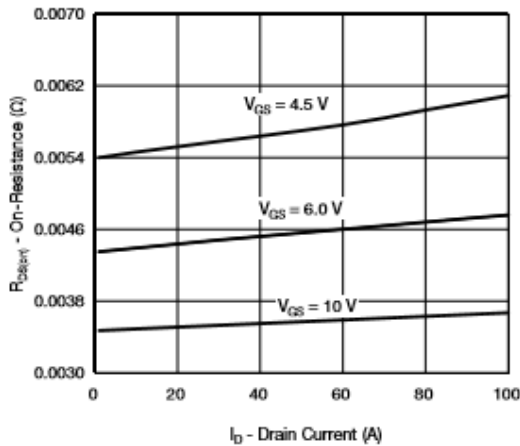
## Typical Characteristics



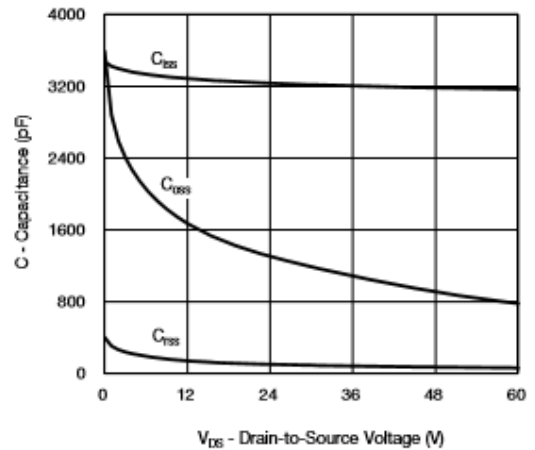
Output Characteristics



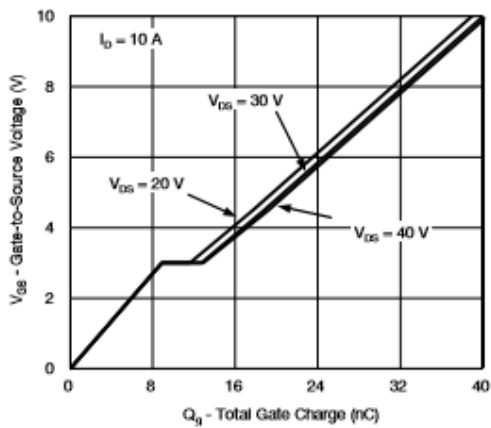
Transfer Characteristics



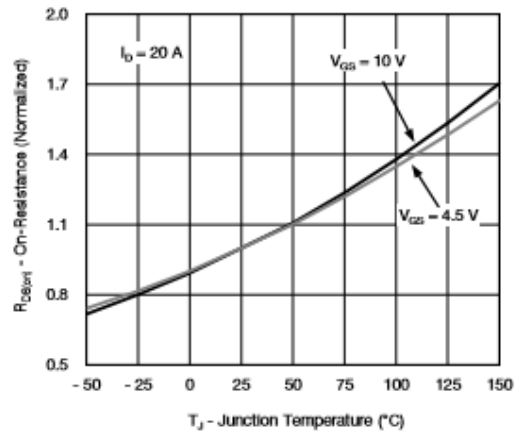
On-Resistance vs. Drain Current



Capacitance



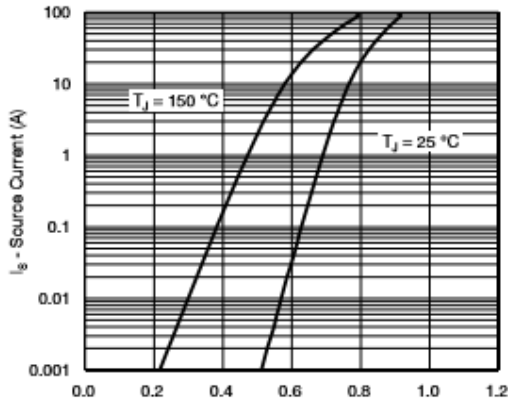
Gate Charge



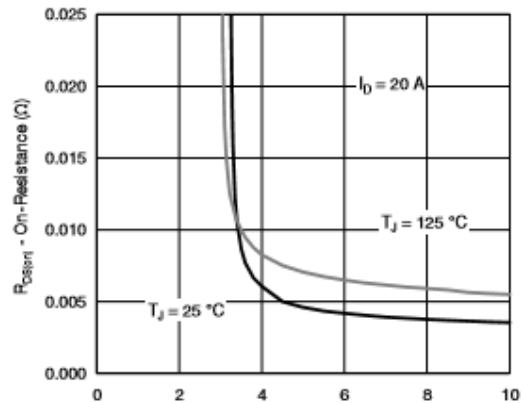
On-Resistance vs. Junction Temperature



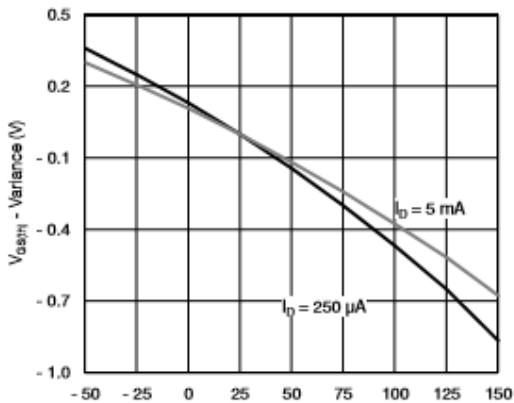
## Typical Characteristics



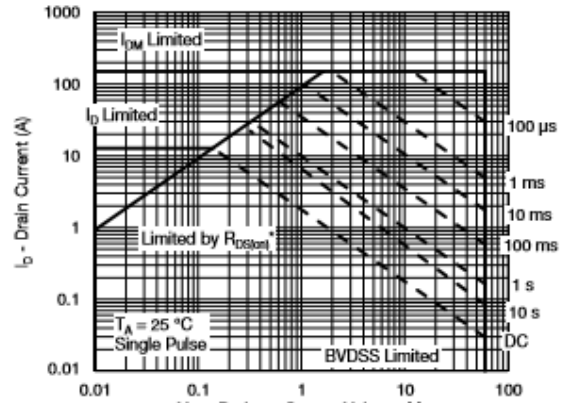
Source-Drain Diode Forward Voltage



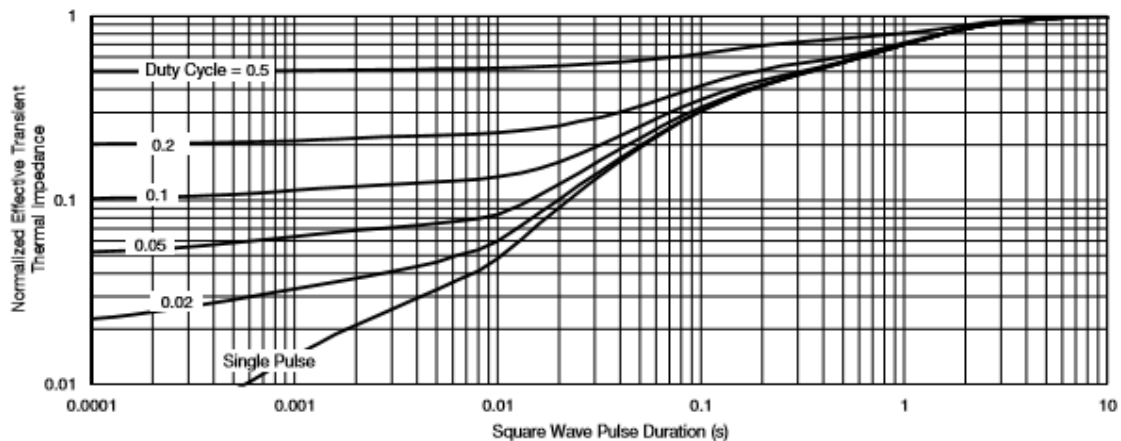
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Safe Operating Area, Junction-to-Ambient

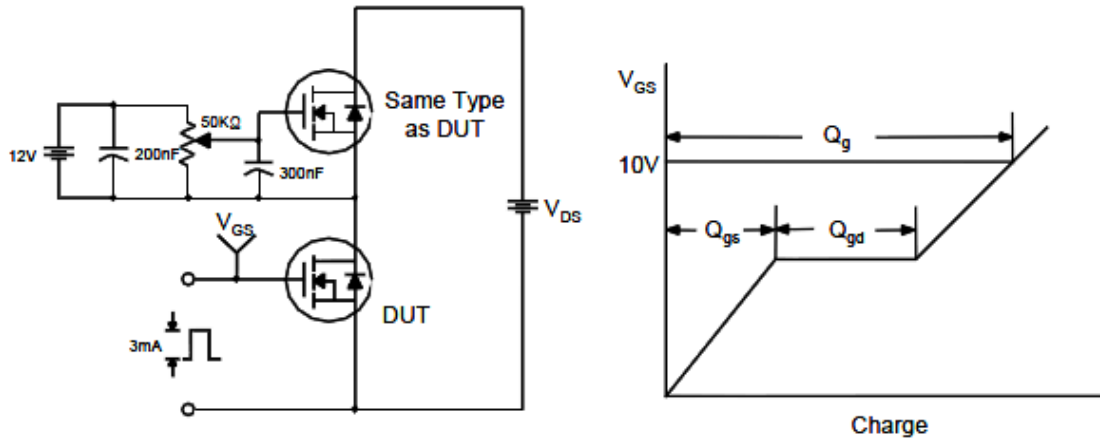


Normalized Thermal Transient Impedance, Junction-to-Foot

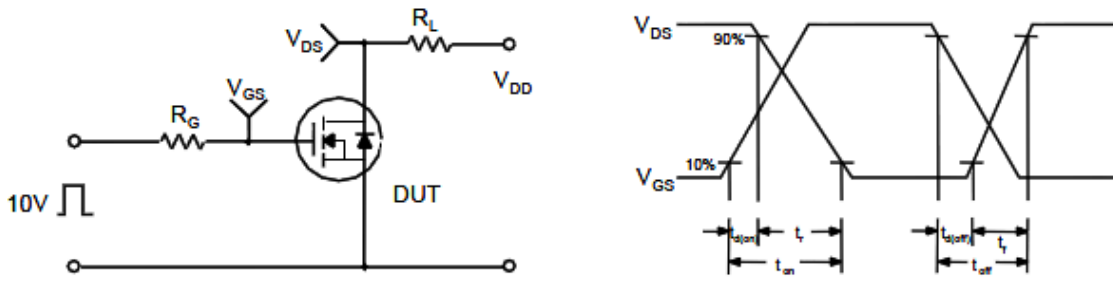


**Typical Characteristics**

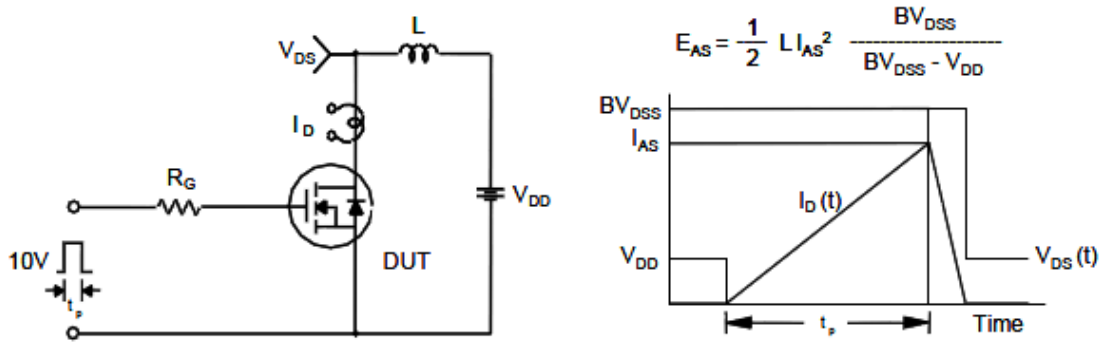
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

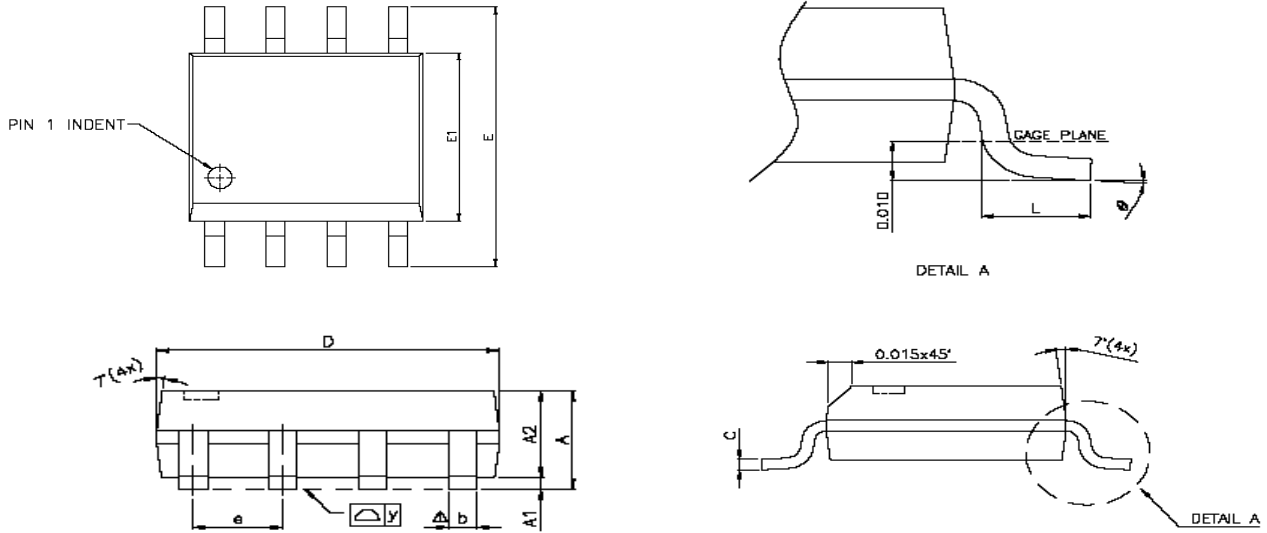


Unclamped Inductive Switching Test Circuit & Waveforms





**Package Information ( SOP-8P )**



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.47	1.60	1.73	0.058	0.063	0.068
A1	0.10	—	0.25	0.004	—	0.010
A2	—	1.45	—	—	0.057	—
b	0.33	0.41	0.51	0.013	0.016	0.020
C	0.19	0.20	0.25	0.0075	0.008	0.0098
D	4.80	4.85	4.95	0.189	0.191	0.195
E	5.80	6.00	6.20	0.228	0.236	0.244
E1	3.80	3.90	4.00	0.150	0.154	0.157
e	—	1.27	—	—	0.050	—
L	0.38	0.71	1.27	0.015	0.028	0.050
$\Delta$ y	—	—	0.076	—	—	0.003
$\varnothing$	0°	—	8°	0°	—	8°

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 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  
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