



### General Description

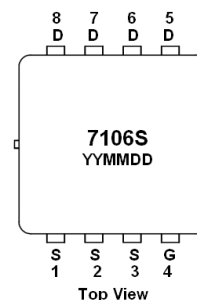
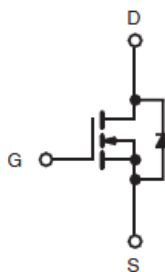
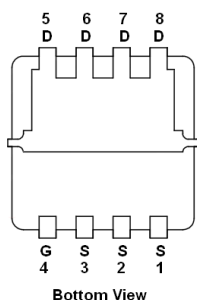
AFN7106S, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent  $R_{DS(ON)}$ , low gate charge.

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

- 20V/20A,  $R_{DS(ON)}=6.2m\Omega@V_{GS}=4.5V$
- 20V/15A,  $R_{DS(ON)}=8.4m\Omega@V_{GS}=2.5V$
- 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

- DC-DC Converter
- POL

### 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
AFN7106SFN308RG	7106S	DFN3.3X3.3-8L	Tape & Reel	5000 EA

※ YY year code

※ MM month code

※ DD date code

※ AFN7106SFN308RG : 13" Tape & Reel ; Pb- Free ; Halogen -Free



### Absolute Maximum Ratings

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

Parameter	Symbol	Typical	Unit
Drain-Source Voltage	$V_{DSS}$	20	V
Gate-Source Voltage	$V_{GSS}$	$\pm 12$	V
Continuous Drain Current( $T_J=150^\circ\text{C}$ )	$I_D$	$T_A=25^\circ\text{C}$	20
		$T_A=70^\circ\text{C}$	15
Pulsed Drain Current	$I_{DM}$	70	A
Continuous Source Current(Diode Conduction)	$I_S$	40	A
Power Dissipation	$P_D$	$T_C=25^\circ\text{C}$	3.8
		$T_C=70^\circ\text{C}$	2
Operating Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55/150	$^\circ\text{C}$
Thermal Resistance Junction-to-Case (Drain)	$R_{\theta JC}$	5	$^\circ\text{C/W}$
Thermal Resistance-Junction to Ambient	$R_{\theta JA}$	40	

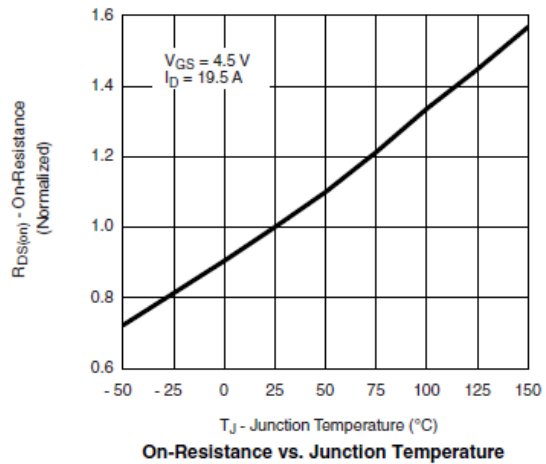
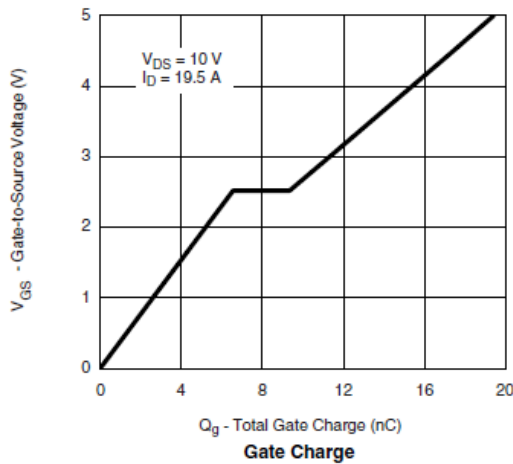
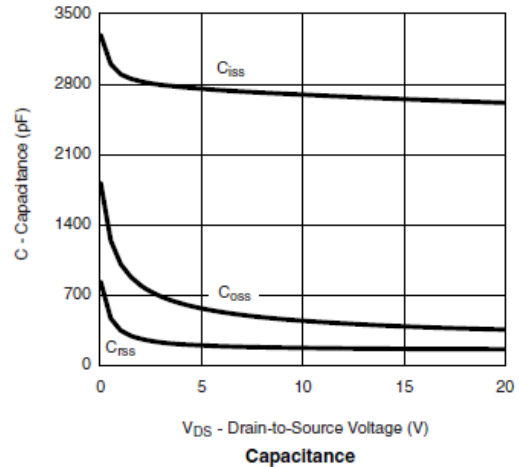
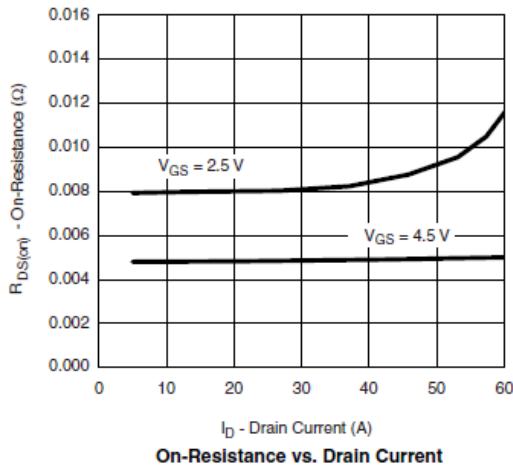
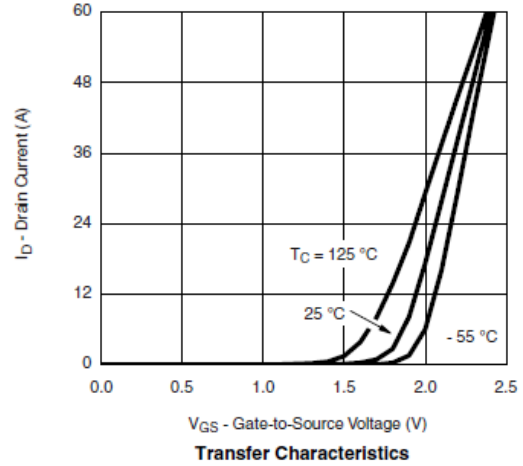
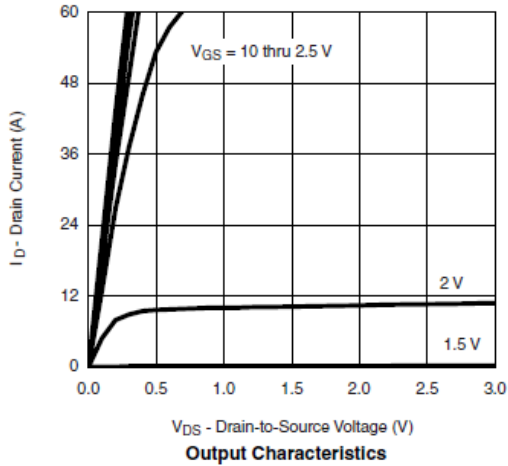
### Electrical Characteristics

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

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu\text{A}$	20			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	0.5		1.0	
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=16V, V_{GS}=0V$			1	$\mu\text{A}$
		$V_{DS}=16V, V_{GS}=0V$ $T_J=85^\circ\text{C}$			10	
On-State Drain Current	$I_{D(on)}$	$V_{DS} \geq 5V, V_{GS}=4.5V$	50			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=20A$		4.3	6.2	m $\Omega$
		$V_{GS}=2.5V, I_D=15A$		5.5	8.4	
Forward Transconductance	$g_{FS}$	$V_{DS}=15V, I_D=20A$		80		S
Diode Forward Voltage	$V_{SD}$	$I_S=3.2A, V_{GS}=0V$		0.7	1.3	V
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS}=10V, V_{GS}=4.5V$ $I_D=20A$		15	25	nC
Gate-Source Charge	$Q_{gs}$			6		
Gate-Drain Charge	$Q_{gd}$			5		
Input Capacitance	$C_{iss}$	$V_{DS}=15V, V_{GS}=0V$ $f=1\text{MHz}$		1800		pF
Output Capacitance	$C_{oss}$			350		
Reverse Transfer Capacitance	$C_{rss}$			150		
Turn-On Time	$t_{d(on)}$	$V_{DD}=10V, R_L=10\Omega$ $I_D=1A, V_{GEN}=10V$ $R_G=6.0\Omega$		25	40	ns
	$t_r$			15	25	
Turn-Off Time	$t_{d(off)}$			50	75	
	$t_f$			15	25	

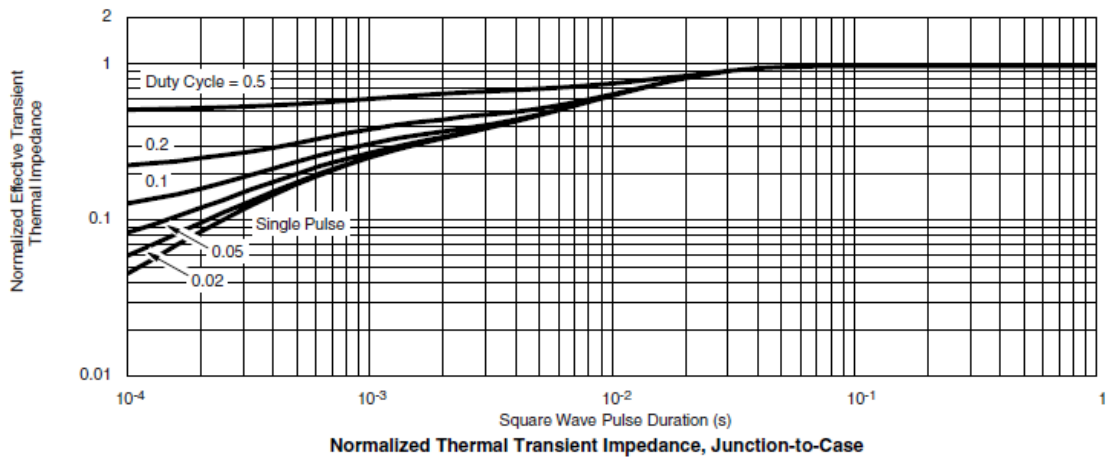
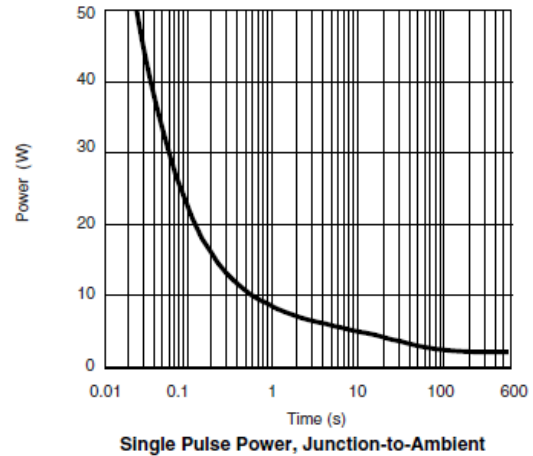
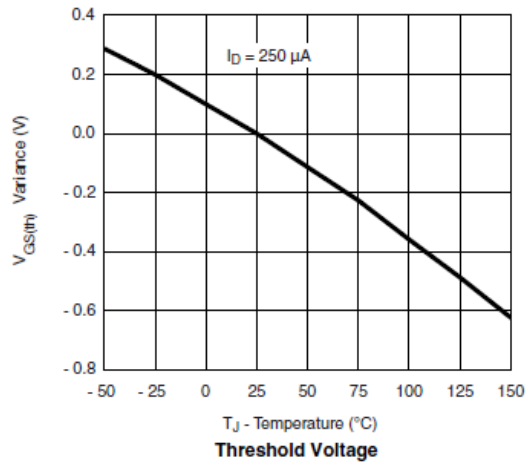
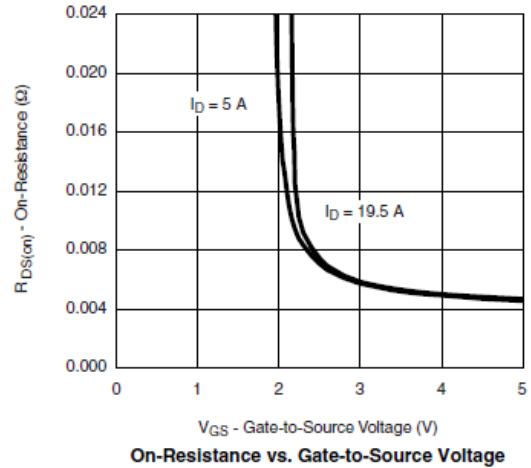
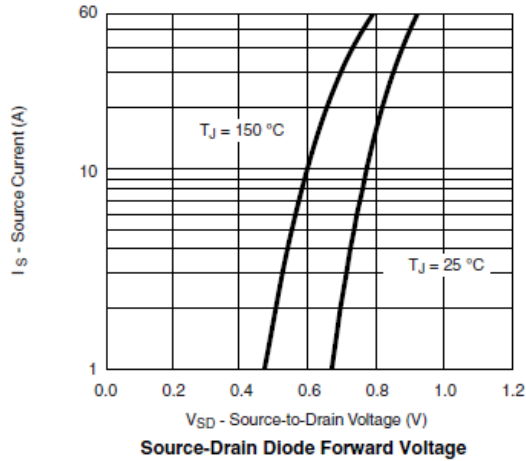


## Typical Characteristics





## Typical Characteristics



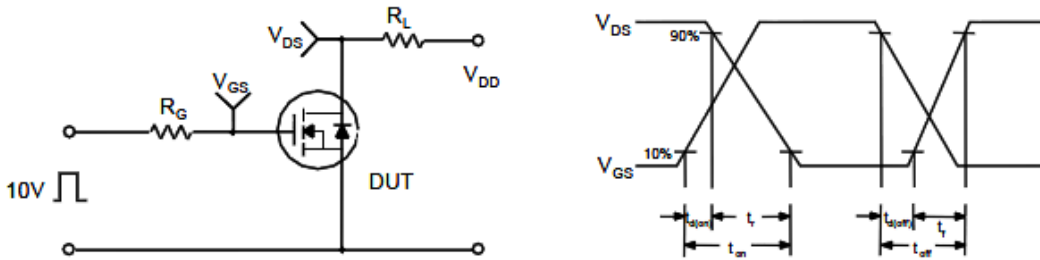


## Typical Characteristics

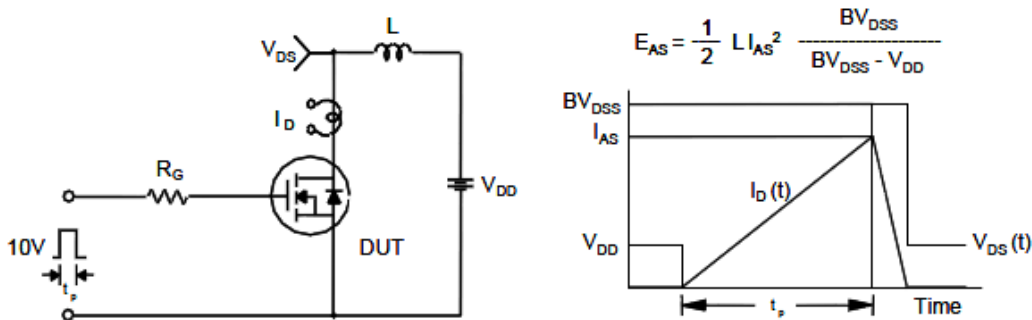
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

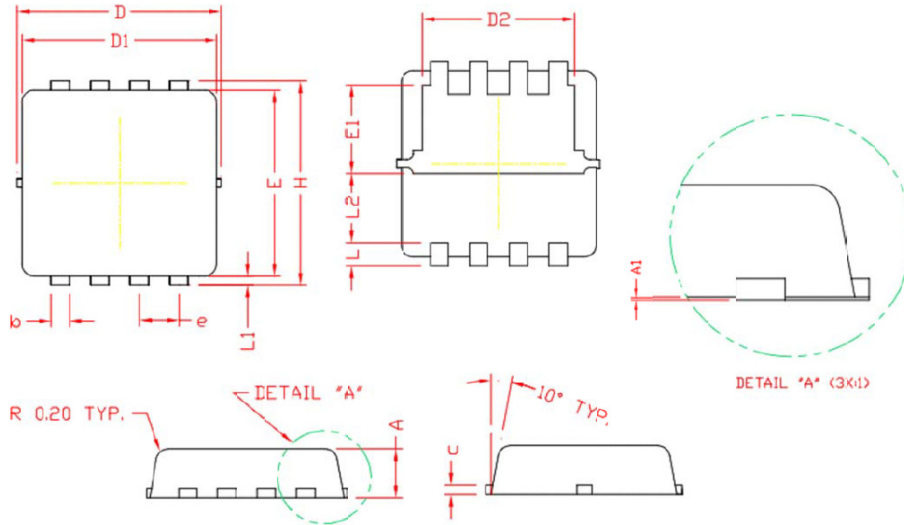


Unclamped Inductive Switching Test Circuit & Waveforms





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



**COMMON DIMENSIONS**

(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	0.70	0.80	0.90
A1	0.00	0.03	0.05
b	0.24	0.30	0.35
c	0.10	0.15	0.20
D	3.25	3.32	3.40
D1	3.05	3.15	3.25
D2	2.40	2.50	2.60
E	3.00	3.10	3.20
E1	1.35	1.45	1.55
e	0.65 BSC.		
H	3.20	3.30	3.40
L	0.30	0.40	0.50
L1	0.10	0.15	0.20
L2	1.13 REF.		

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