



General Description

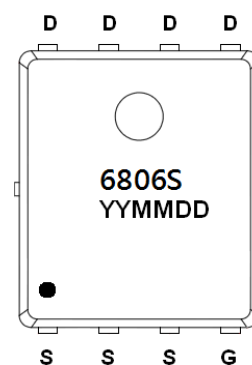
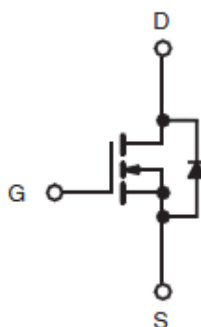
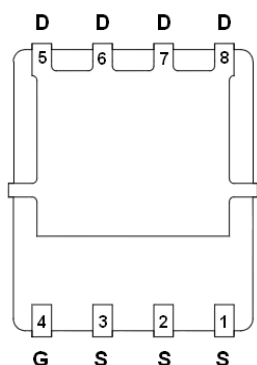
AFN6806S, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

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

- $I_D=20A, R_{DS(ON)}=7.5m\Omega@V_{GS}=10V$
- $I_D=15A, R_{DS(ON)}=9.5m\Omega@V_{GS}=4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- DFN5X6-8L package design

Pin Description (DFN5X6-8L)



Application

- Networking / Telecom / Server
- LED Lighting Applications
- Quick Charger Applications
- DC-DC Primary Side Switch

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
AFN6806SFN568RG	6806S	DFN5X6-8L	Tape & Reel	2500 EA

※ 6806S : Parts Code

※ YYMMDD : Date Code

※ AFN6806SFN568RG : 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}	100	V
Gate –Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current($T_J=150^{\circ}\text{C}$)	$T_C=25^{\circ}\text{C}$	60	A
	$T_C=70^{\circ}\text{C}$	60	
Pulsed Drain Current ($t=100\mu\text{s}$)	$T_A=25^{\circ}\text{C}$	20	
	$T_A=70^{\circ}\text{C}$	16	
Continuous Source Current(Diode Conduction)	I_S	60	A
	$T_A=25^{\circ}\text{C}$	5.6	
Single Pulse Avalanche Current	I_{AS}	35	mJ
	E_{AS}	60	
Power Dissipation	$T_C=25^{\circ}\text{C}$	104	W
	$T_C=75^{\circ}\text{C}$	66	
Operating Junction Temperature	$T_A=25^{\circ}\text{C}$	6.25	W
	$T_A=75^{\circ}\text{C}$	4.0	
Storage Temperature Range	T_J	150	$^{\circ}\text{C}$
Thermal Resistance-Junction to Ambient	T_{STG}	-55/150	$^{\circ}\text{C}$
Maximum Junction-to-Case (Drain)	$t \leq 10 \text{ s}$	15	$^{\circ}\text{C/W}$
	Steady-State	0.9	

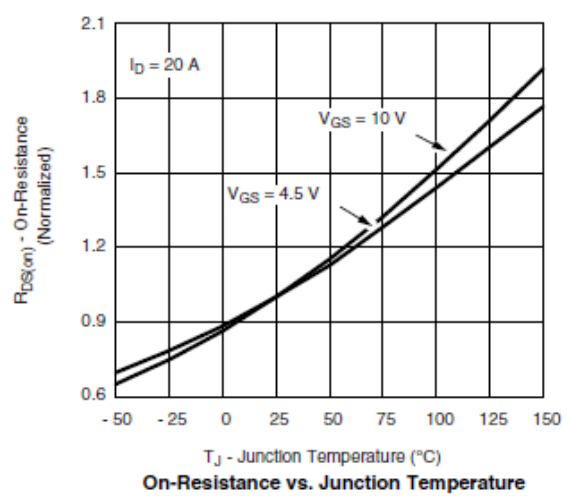
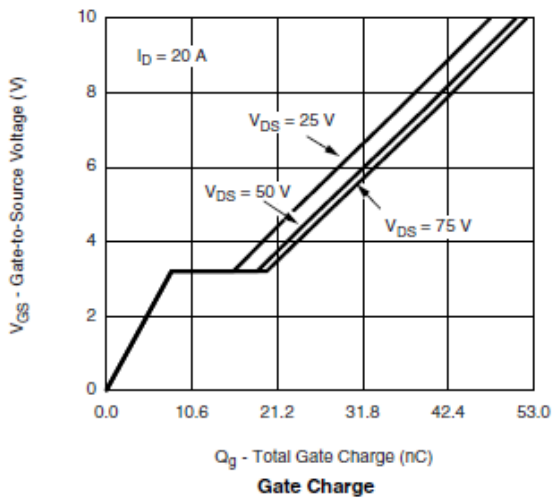
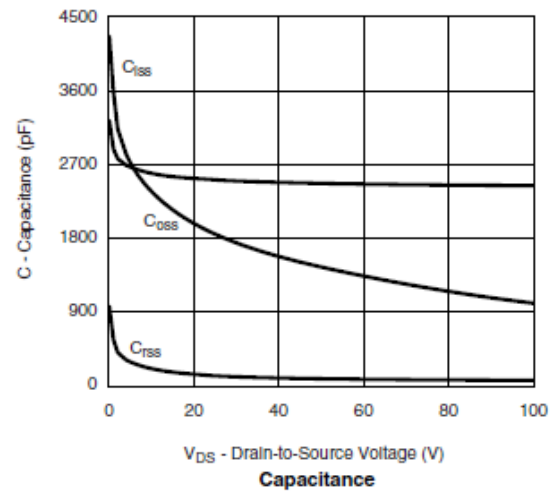
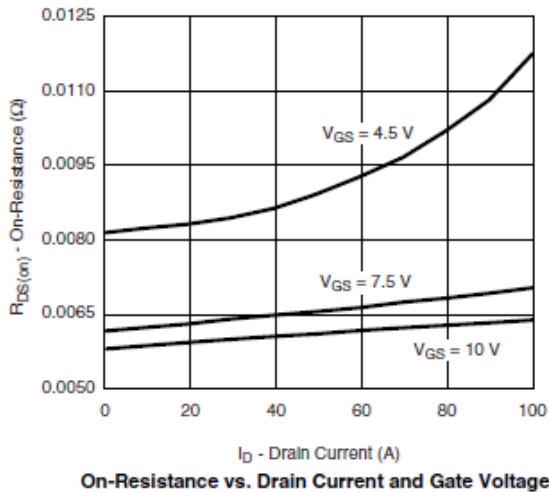
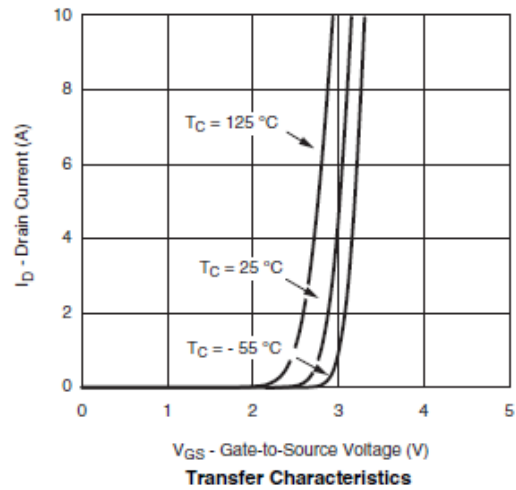
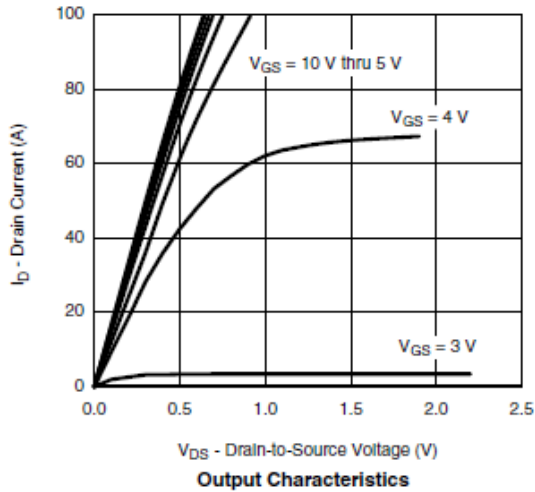
Electrical Characteristics

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

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0\text{V}, I_D=250\mu\text{A}$	100			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	1.0		2.5	V
Gate Leakage Current	I_{GSS}	$V_{DS}=0\text{V}, V_{GS}=\pm 20\text{V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=100\text{V}, V_{GS}=0\text{V}$			1	uA
		$V_{DS}=100\text{V}, V_{GS}=0\text{V}$ $T_J=85^{\circ}\text{C}$			10	
On-State Drain Current	$I_{D(on)}$	$V_{DS} \geq 5\text{V}, V_{GS}=10\text{V}$	30			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10\text{V}, I_D=20\text{A}$		5.8	7.5	m Ω
		$V_{GS}=4.5\text{V}, I_D=15\text{A}$		7.5	9.5	
Forward Transconductance	g_{FS}	$V_{DS}=10\text{V}, I_D=20\text{A}$		75		S
Diode Forward Voltage	V_{SD}	$I_S=5\text{A}, V_{GS}=0\text{V}$		0.75	1.2	V
Dynamic						
Total Gate Charge	Q_g	$V_{DS}=50\text{V}, V_{GS}=4.5\text{V}$ $I_D \equiv 10\text{A}$		25	50	nC
Gate-Source Charge	Q_{gs}		8			
Gate-Drain Charge	Q_{gd}		10			
Gate Resistance	R_g	$f=1\text{MHz}$	0.4	2.0	4.0	Ω
Input Capacitance	C_{iss}	$V_{DS}=50\text{V}, V_{GS}=0\text{V}$ $f=1\text{MHz}$		2450		pF
Output Capacitance	C_{oss}		1400			
Reverse Transfer Capacitance	C_{rss}		100			
Turn-On Time	$t_{d(on)}$	$V_{DD}=50\text{V}, R_L=2.5\Omega$ $I_D \equiv 20\text{A}, V_{GEN}=10\text{V}$ $R_G=1\Omega$		12	24	ns
	t_r			10	20	
Turn-Off Time	$t_{d(off)}$			40	80	
	t_f			12	24	

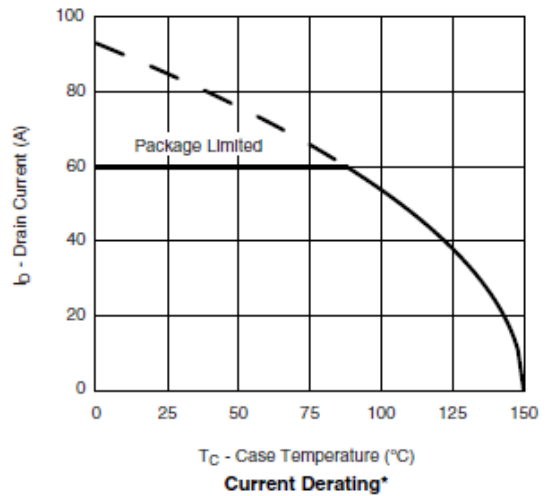
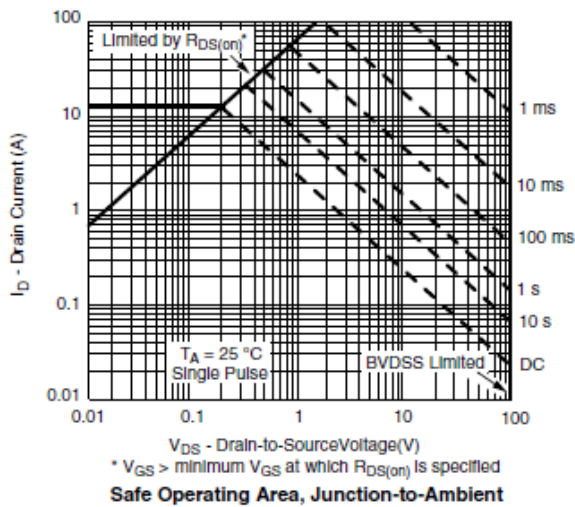
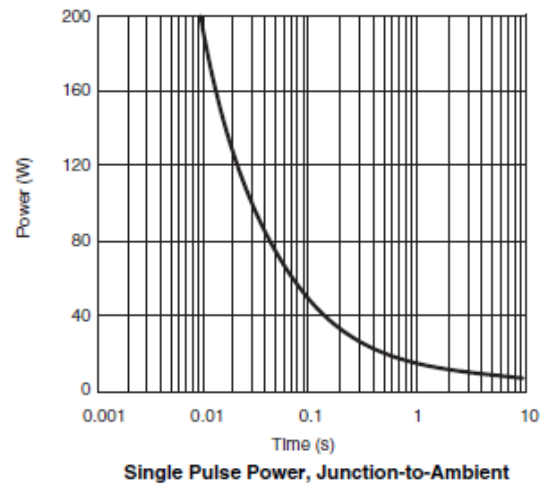
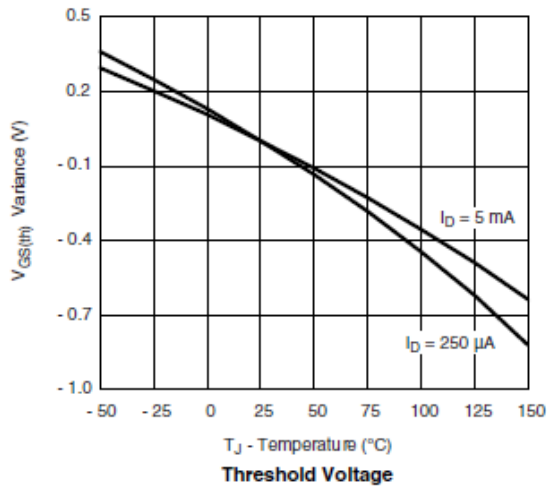
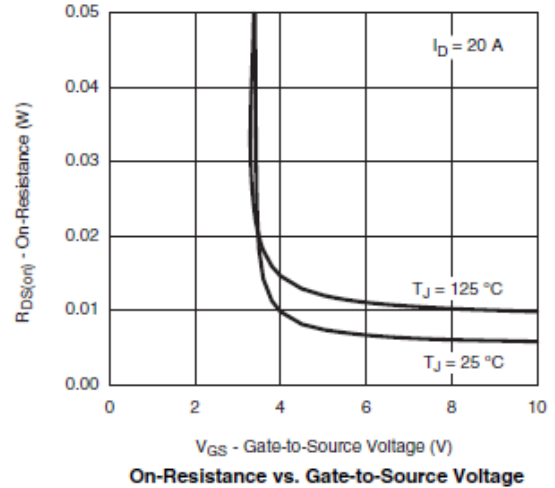
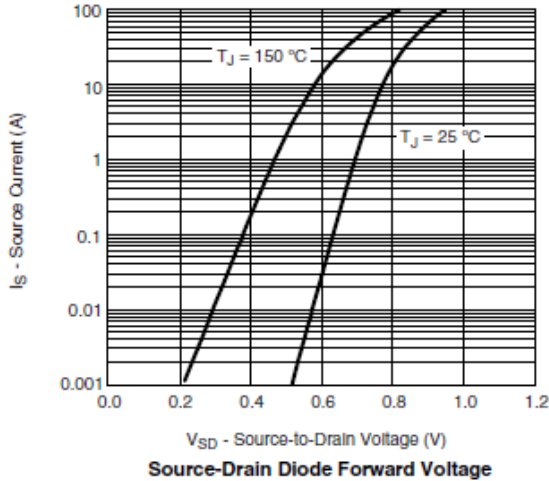


Typical Characteristics



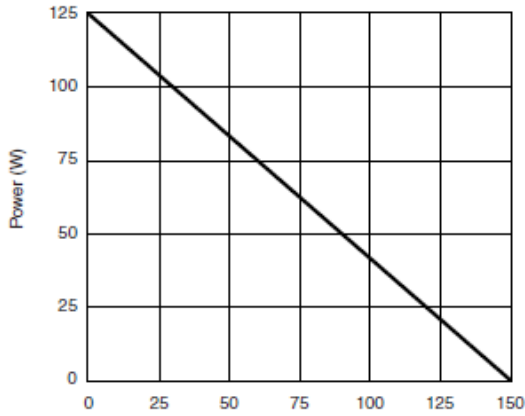


Typical Characteristics

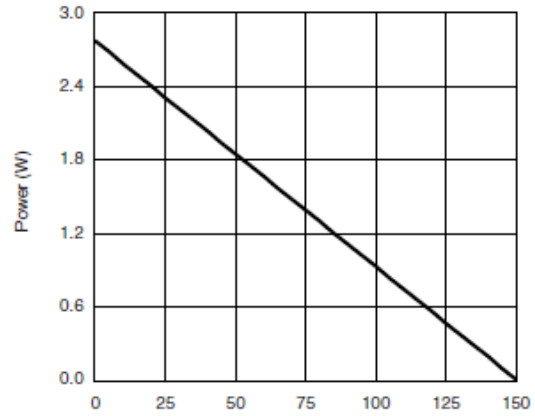




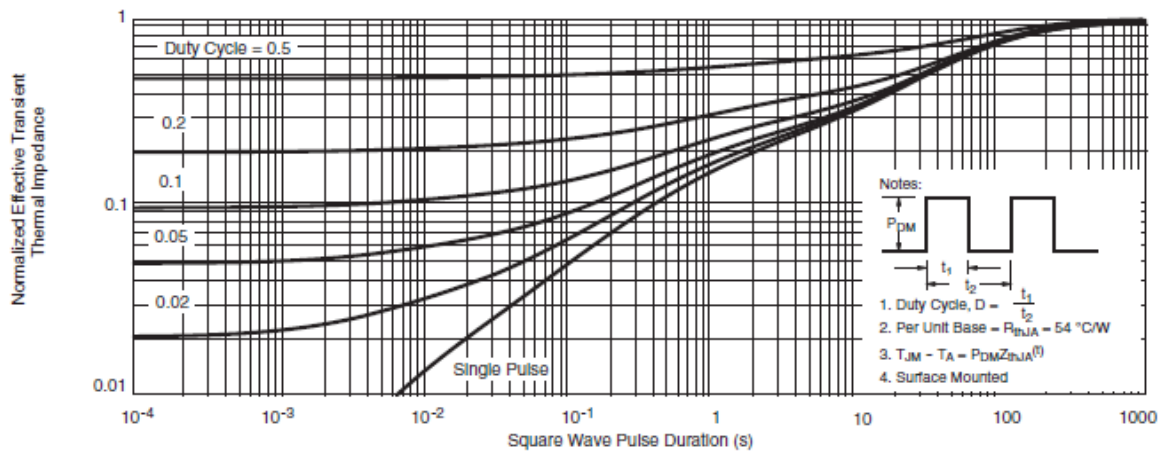
Typical Characteristics



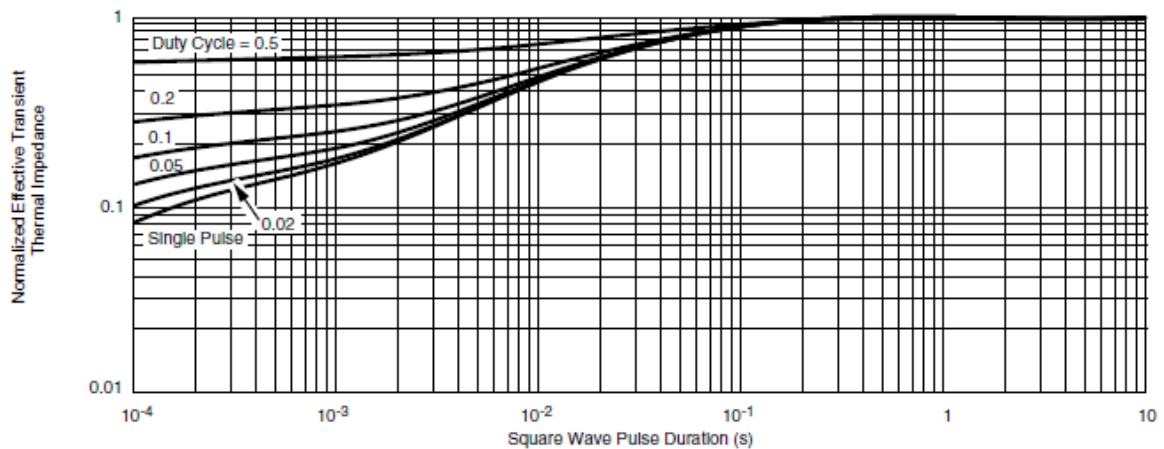
T_C - Case Temperature ($^{\circ}\text{C}$)
Power, Junction-to-Case



T_A - Ambient Temperature ($^{\circ}\text{C}$)
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

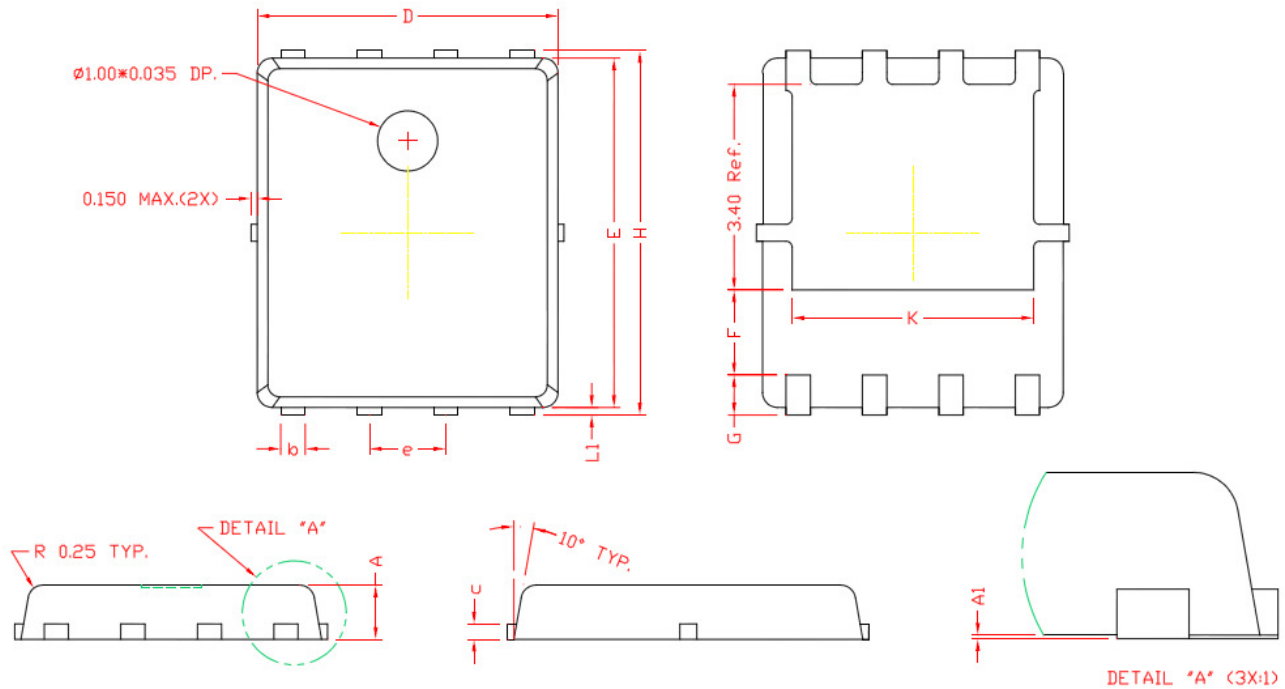


Unclamped Inductive Switching Test Circuit & Waveforms





Package Information (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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