



General Description

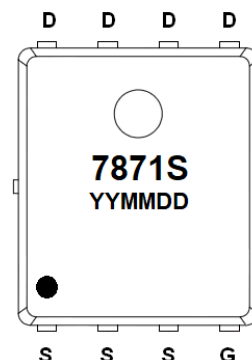
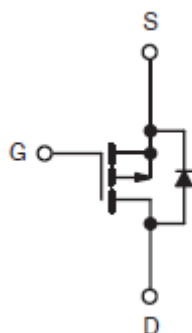
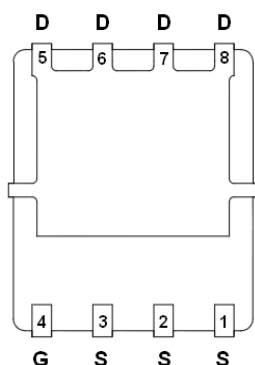
AFP7871S, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

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

- -100/-20A, $R_{DS(ON)} = 20m\Omega @ V_{GS} = -10V$
- -100/-15A, $R_{DS(ON)} = 26m\Omega @ V_{GS} = -6V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- DFN5X6-8L package design

Pin Description (DFN5X6-8L)



Application

- Load Switch
- Adaptor Switch
- Notebook PC

Pin Define

Pin	Symbol	Description
4	G	Gate
1~3	S	Source
5~8	D	Drain

Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFP7871SFN568RG	7871S	DFN5X6-8L	Tape & Reel	2500 EA

※ A Lot code

※ B Date code

※ AFP7871SFN568RG : 13" Tape & Reel ; Pb- Free ; Halogen- Free



Absolute Maximum Ratings (T_A=25°C Unless otherwise noted)

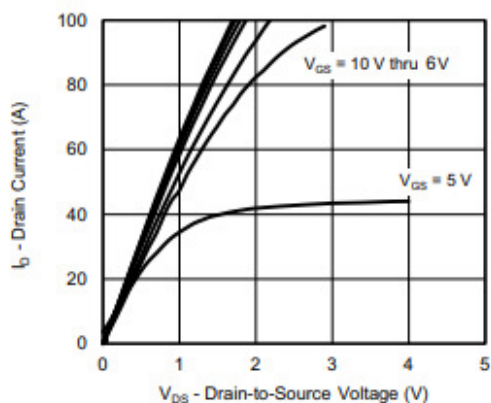
Parameter	Symbol	Typical	Unit
Drain-Source Voltage	V _{DSS}	-100	V
Gate –Source Voltage	V _{GSS}	±20	V
Continuous Drain Current(T _J =150°C)	T _C =25°C	-50	A
	T _C =70°C	-35	
	T _A =25°C	-10	
	T _A =70°C	-8	
Pulsed Drain Current	I _{DM}	-280	
Continuous Source Current(Diode Conduction)	T _C =25°C	-45	
	T _A =25°C	-4.5	
Avalanche Current	L=0.1 mH	-35	
Single Pulse avalanche energy	E _{AS}	60	mJ
Power Dissipation	T _C =25°C	90	W
	T _C =75°C	60	
	T _A =25°C	5.2	
	T _A =75°C	3.3	
Operating Junction Temperature	T _J	150	°C
Storage Temperature Range	T _{STG}	-55/150	°C
Thermal Resistance-Junction to Ambient	t ≤ 10 s	24	°C/W
Thermal Resistance-Junction to Case	Steady-State	1.4	

Electrical Characteristics (T_A=25°C Unless otherwise noted)

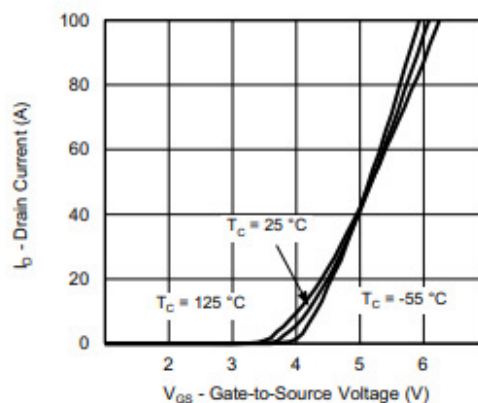
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D = -250uA	-100			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D = -250uA	-2.0		-4.0	
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -80V, V _{GS} =0V			-1	uA
		V _{DS} = -80V, V _{GS} =0V T _J =85°C			-30	
On-State Drain Current	I _{D(on)}	V _{DS} ≥ -6V, V _{GS} = -10V	-40			A
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = -10V, I _D =-20A		17	20	mΩ
		V _{GS} = -6V, I _D =-15A		22	26	
Forward Transconductance	g _{FS}	V _{DS} = -15V, I _D = -20A		35		S
Diode Forward Voltage	V _{SD}	I _S = -1A, V _{GS} =0V		-0.8	-1.2	V
Dynamic						
Total Gate Charge	Q _g	V _{DS} =-50V, V _{GS} =-6V I _D = -20A		34	68	nC
Gate-Source Charge	Q _{gs}			18		
Gate-Drain Charge	Q _{gd}			14		
Gate resistance	R _g	f=1MHz	1.0	3.5	5.5	Ω
Input Capacitance	C _{iss}	V _{DS} =-50V, V _{GS} =0V f=1MHz		3400		pF
Output Capacitance	C _{oss}			900		
Reverse Transfer Capacitance	C _{rss}			60		
Turn-On Time	t _{d(on)}	V _{DD} =-50V, R _L =8.1Ω I _D ≡ -6.2A, V _{GEN} = -10V R _G =1Ω		15	30	ns
	t _r			20	40	
Turn-Off Time	t _{d(off)}			60	120	
	t _f			15	30	



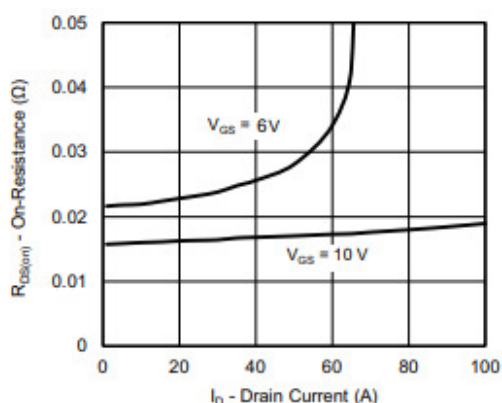
Typical Characteristics



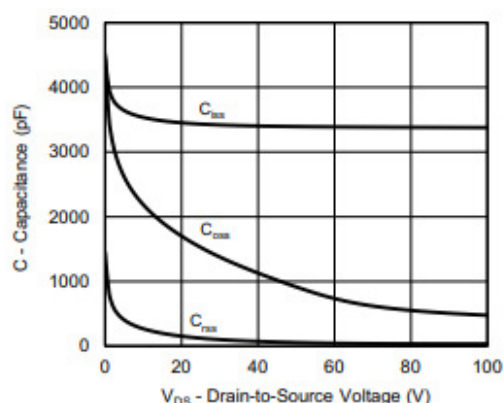
Output Characteristics



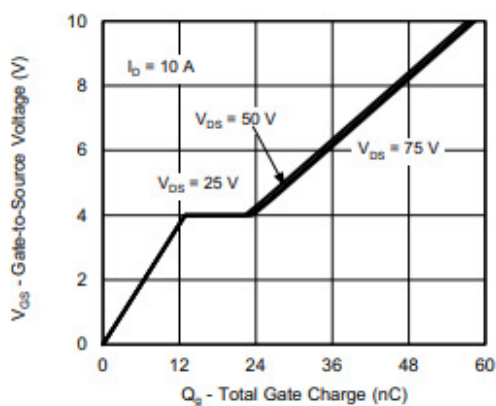
Transfer Characteristics



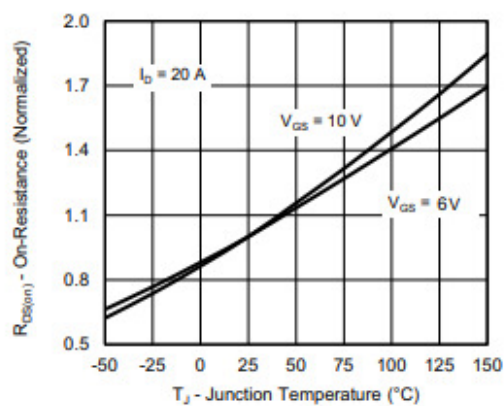
On-Resistance vs. Drain Current



Capacitance



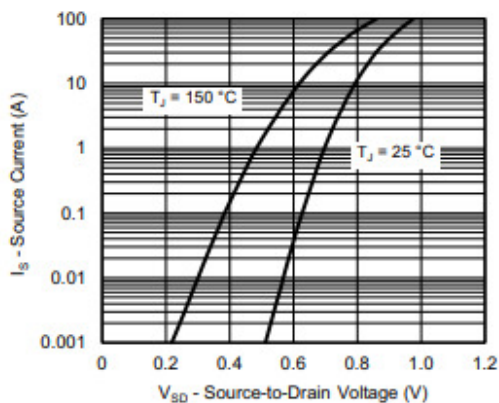
Gate Charge



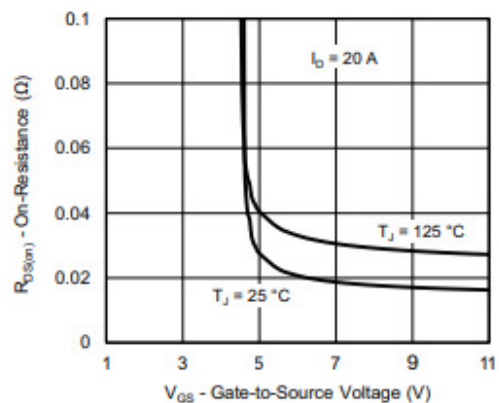
On-Resistance vs. Junction Temperature



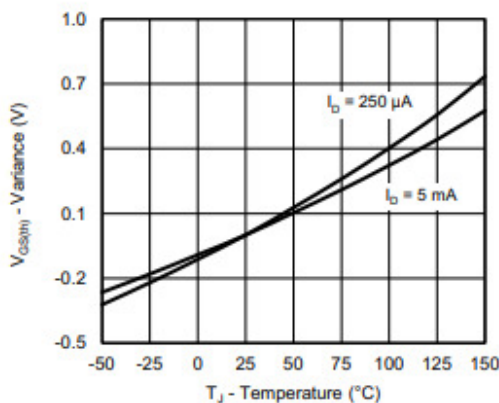
Typical Characteristics



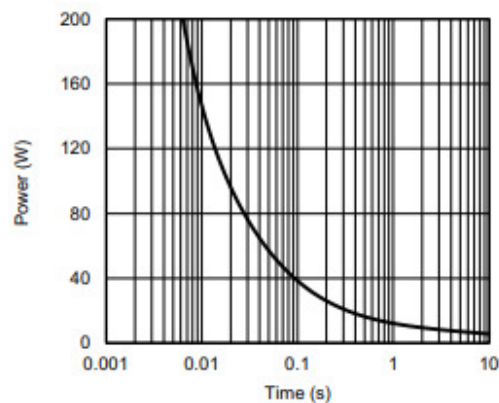
Source-Drain Diode Forward Voltage



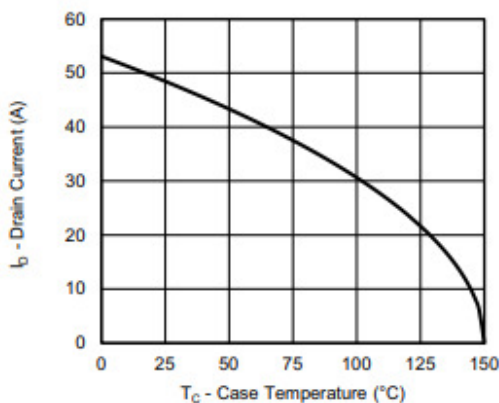
On-Resistance vs. Gate-to-Source Voltage



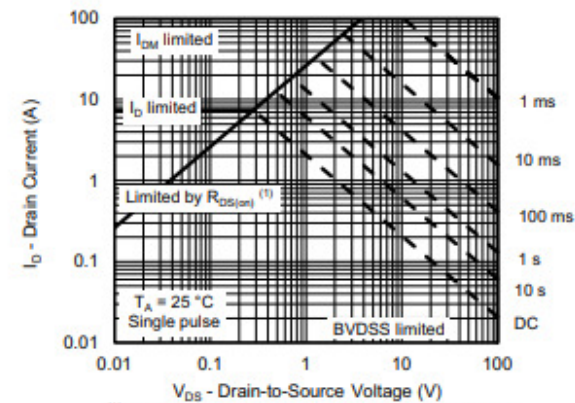
Threshold Voltage



Single Pulse Power, Junction-to-Ambient



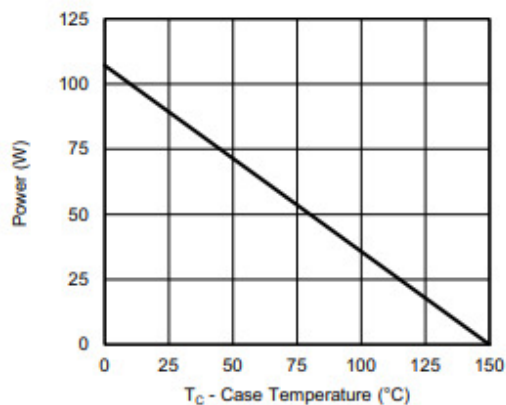
Current Derating ^a



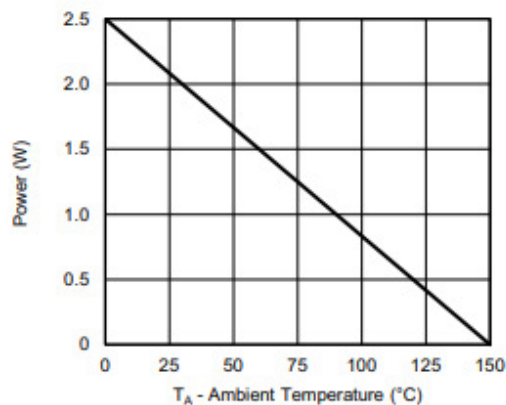
Safe Operating Area, Junction-to-Ambient



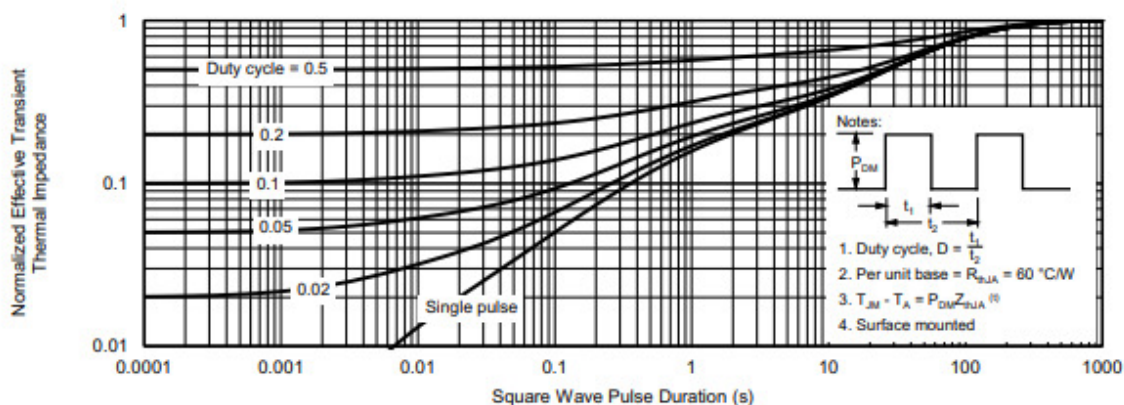
Typical Characteristics



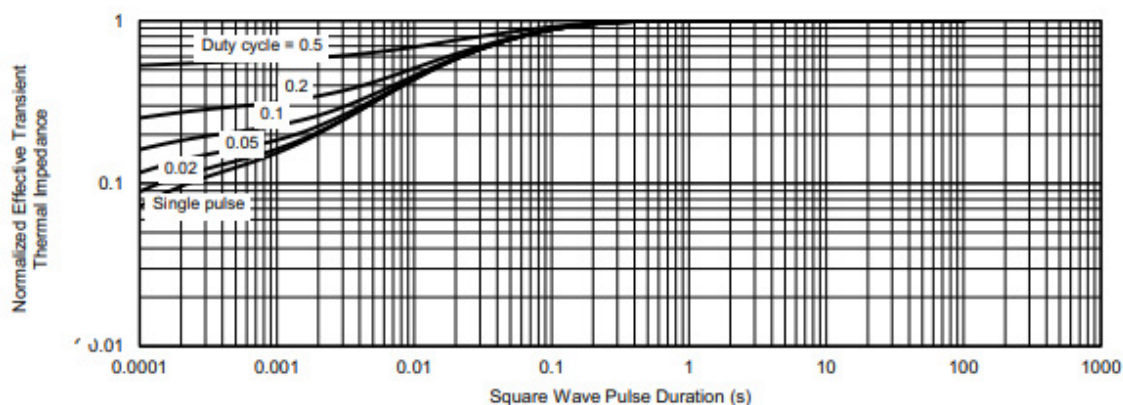
Power, Junction-to-Case



Power, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Ambient

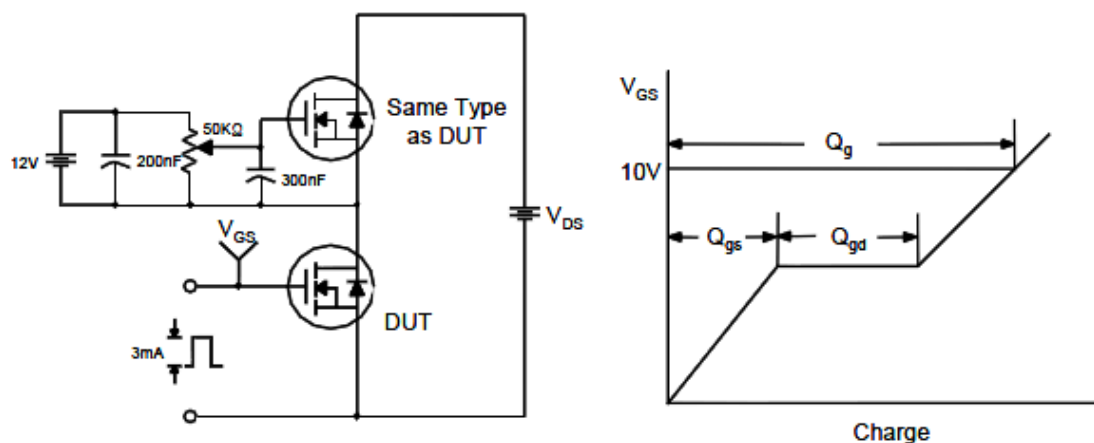


Normalized Thermal Transient Impedance, Junction-to-Case

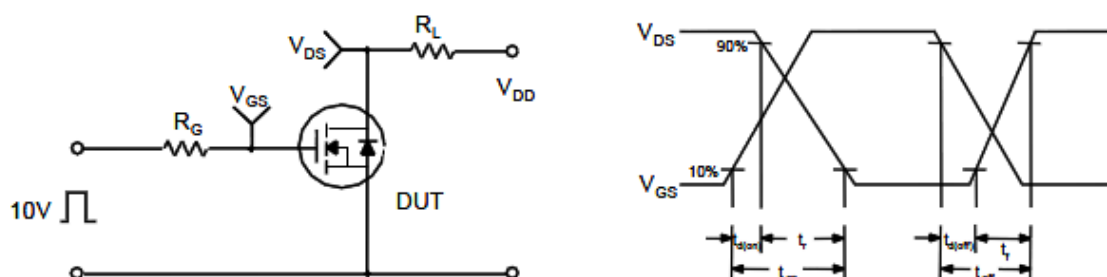


Typical Characteristics

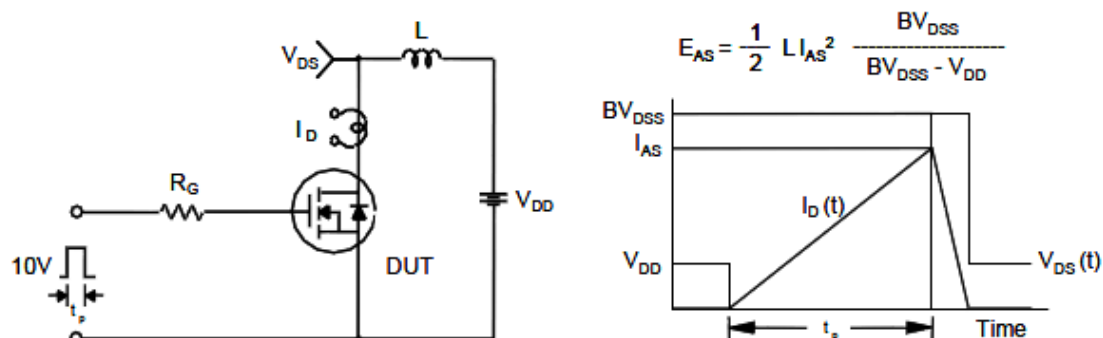
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

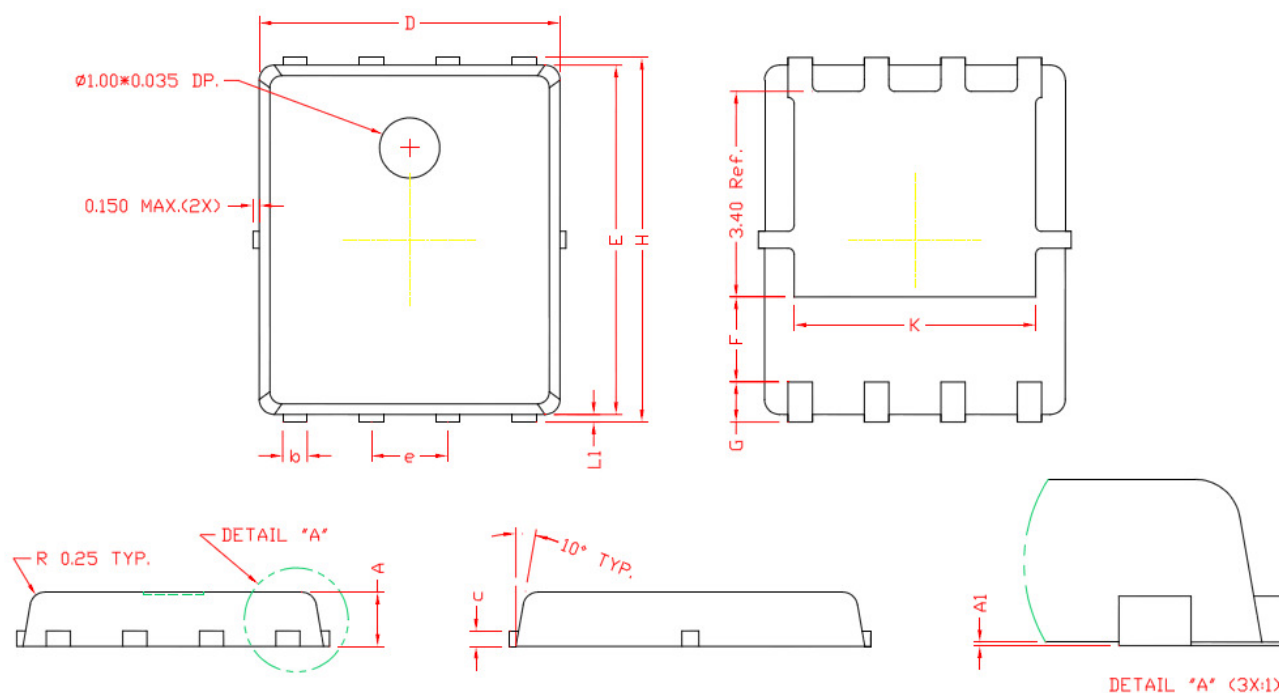


Unclamped Inductive Switching Test Circuit & Waveforms





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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