



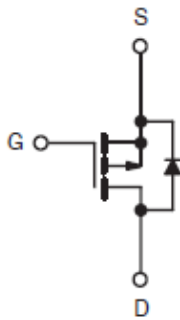
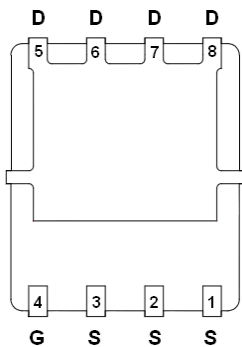
General Description

AFP7431S, 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

- -200V/-3.8A, $R_{DS(ON)} = 175m\Omega @ V_{GS} = -10V$
- -200V/-3.6A, $R_{DS(ON)} = 180m\Omega @ V_{GS} = -6V$
- 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
AFP7431SFN568RG	7431S	DFN5X6-8L	Tape & Reel	2500 EA

- ※ 7431S : Parts code
- ※ YYMMDD : Date code
- ※ AFP7431SFN568RG : 13" Tape & Reel ; Pb- Free ; Halogen- Free



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

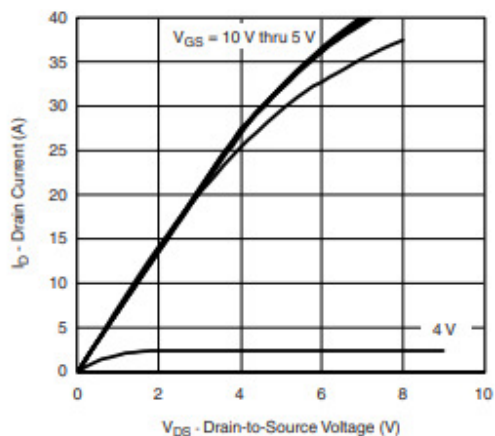
Parameter	Symbol	Typical	Unit
Drain-Source Voltage	V _{DSS}	-200	V
Gate –Source Voltage	V _{GSS}	±20	V
Continuous Drain Current(T _J =150°C)	I _D	-3.8	A
		-3.0	
Pulsed Drain Current	I _{DM}	-30	
Continuous Source Current(Diode Conduction)	I _S	-4.2	
Avalanche Current	I _{AS}	-30	
Single Pulse avalanche energy	E _{AS}	11	mJ
Power Dissipation	P _D	5.4	W
		3.4	
Operating Junction Temperature	T _J	-55/150	°C
Storage Temperature Range	T _{STG}	-55/150	
Thermal Resistance-Junction to Ambient	t ≤ 10 s	18	°C/W
Thermal Resistance-Junction to Case	Steady-State	1.0	

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

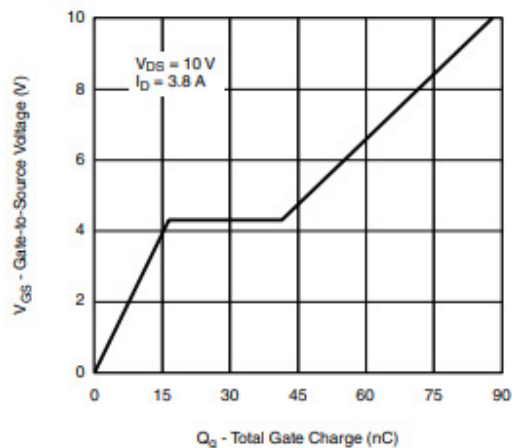
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D = -250uA	-200			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D = -250uA	-2.0		-4.0	
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -160V, V _{GS} =0V			-1	uA
		V _{DS} = -160V, V _{GS} =0V T _J =70°C			-10	
On-State Drain Current	I _{D(on)}	V _{DS} ≥ -10V, V _{GS} = -10V	-20			A
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = -10V, I _D =-3.8A		142	175	mΩ
		V _{GS} = -6V, I _D =-3.6A		148	180	
Forward Transconductance	g _{FS}	V _{DS} = -15V, I _D = -3.8A		17		S
Diode Forward Voltage	V _{SD}	I _S = -4.2A, V _{GS} =0V		-0.8	-1.2	V
Dynamic						
Total Gate Charge	Q _g	V _{DS} =-75V, V _{GS} =-10V I _D = -5.2A		85	150	nC
Gate-Source Charge	Q _{gs}			15		
Gate-Drain Charge	Q _{gd}			25		
Gate resistance	R _g	f=1MHz	1.5	3.0	4.5	Ω
Input Capacitance	C _{iss}	V _{DS} =-60V, V _{GS} =0V f=1MHz		4450		pF
Output Capacitance	C _{oss}			185		
Reverse Transfer Capacitance	C _{rss}			120		
Turn-On Time	t _{d(on)}	V _{DD} =-75V, R _L =15.5Ω I _D ≡-4.8A, V _{GEN} =-10V R _G =6Ω		25	50	ns
	t _r			50	100	
Turn-Off Time	t _{d(off)}			100	200	
	t _f			65	130	



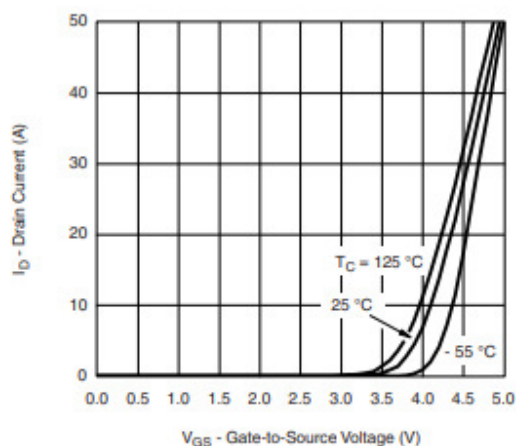
Typical Characteristics



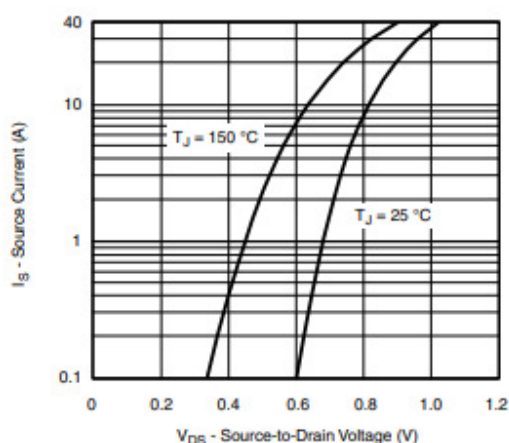
Output Characteristics



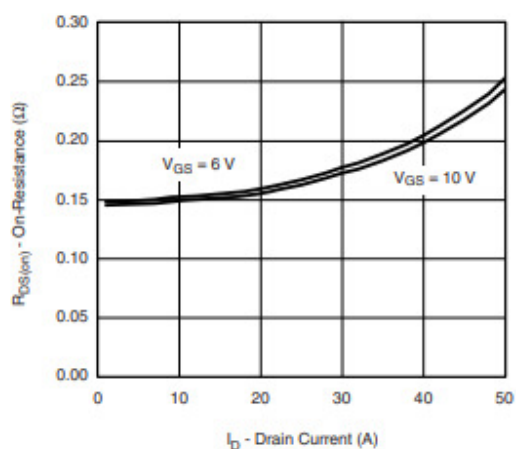
Gate Charge



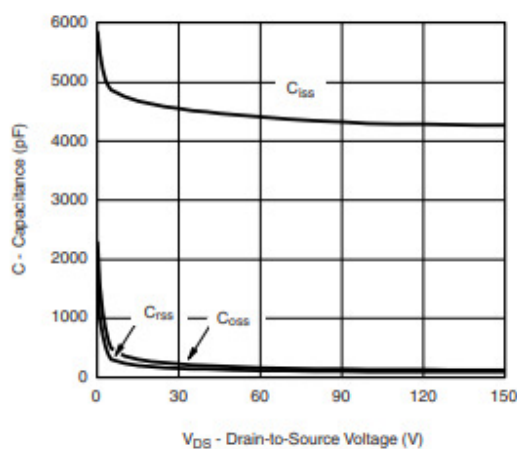
Transfer Characteristics



Source-Drain Diode Forward Voltage



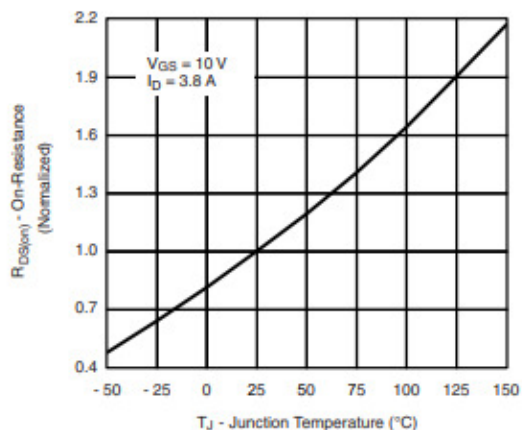
On-Resistance vs. Drain Current



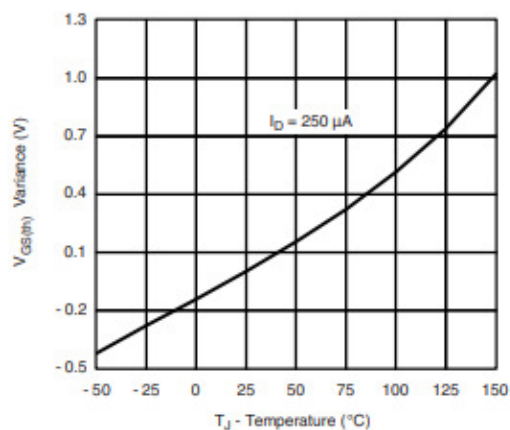
Capacitance



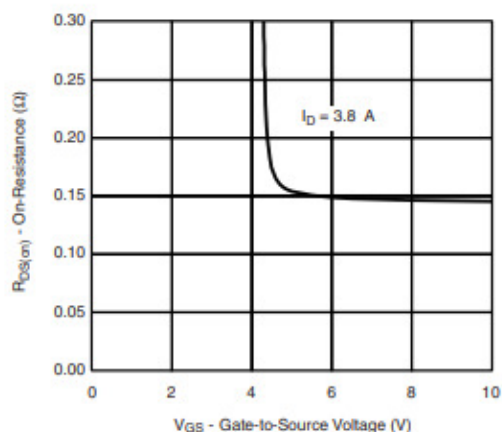
Typical Characteristics



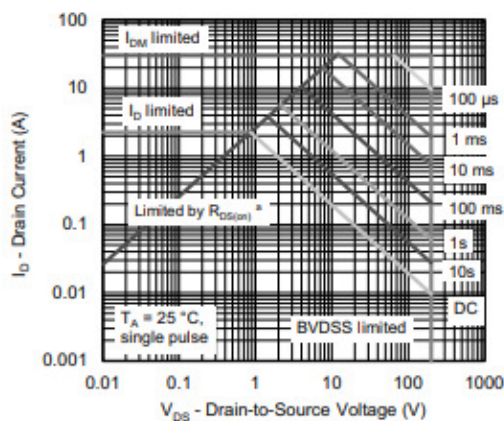
On-Resistance vs. Junction Temperature



Threshold Voltage



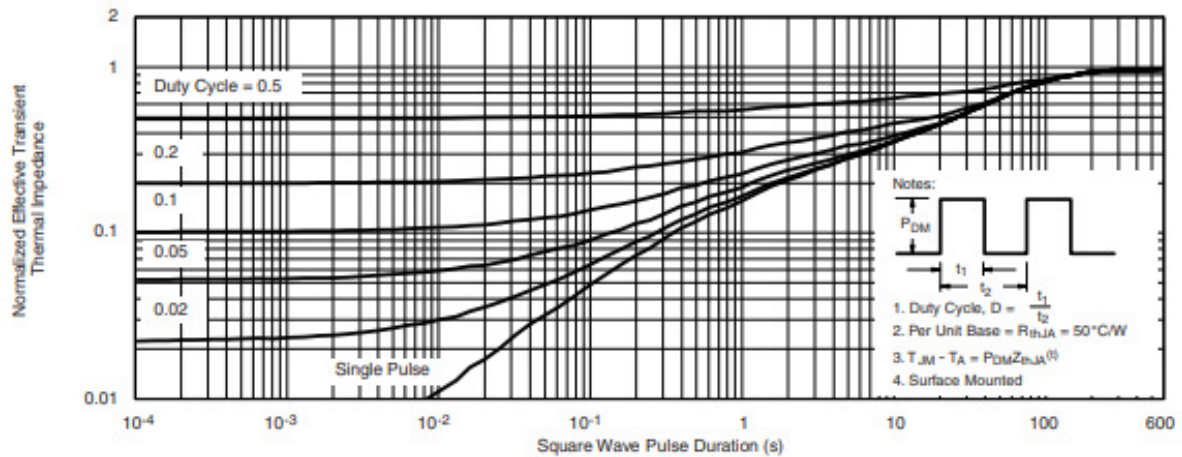
On-Resistance vs. Gate-to-Source Voltage



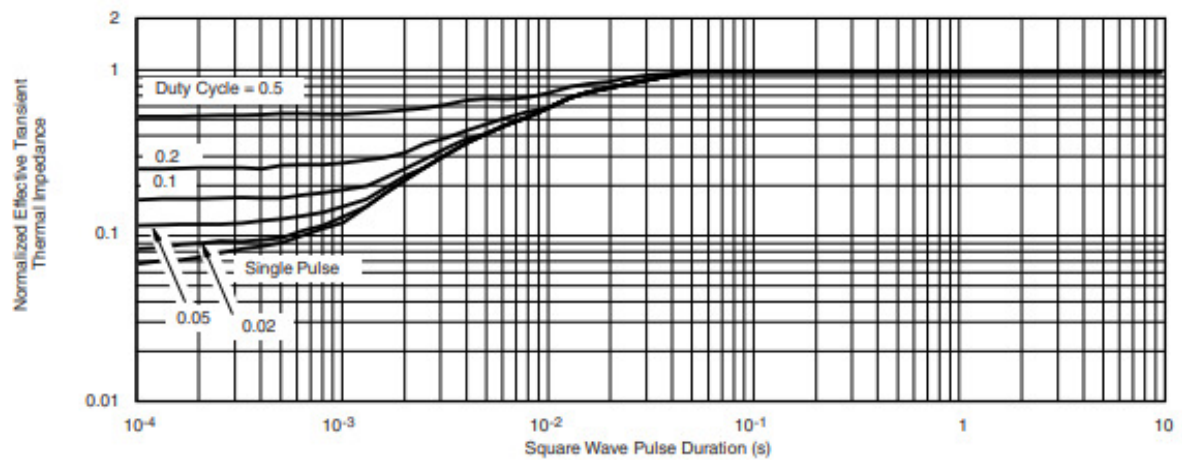
Safe Operating Area



Typical Characteristics



Normalized Thermal Transient Impedance, Junction-to-Ambient

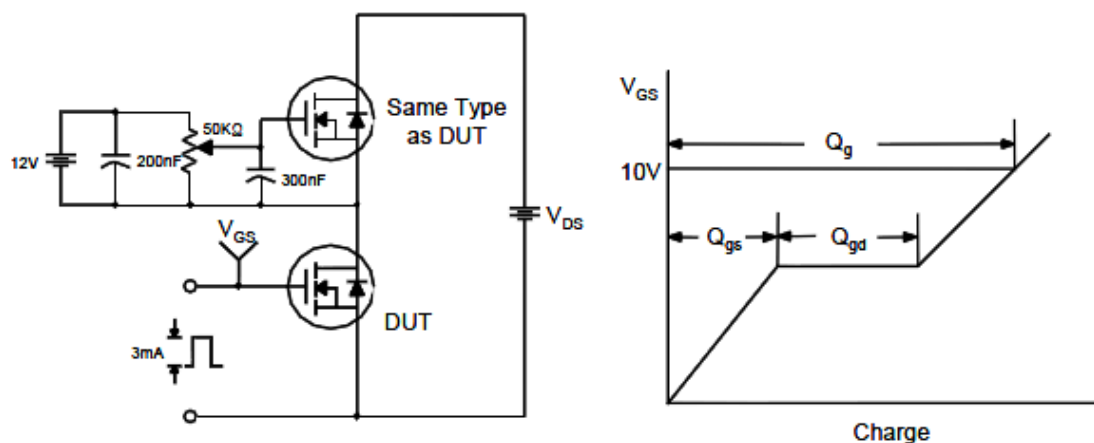


Normalized Thermal Transient Impedance, Junction-to-Case

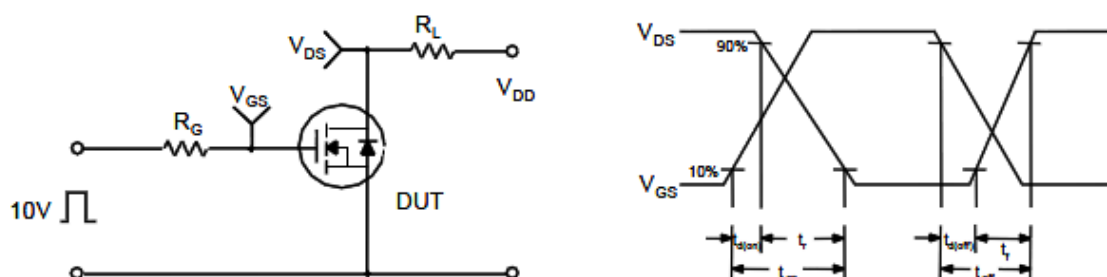


Typical Characteristics

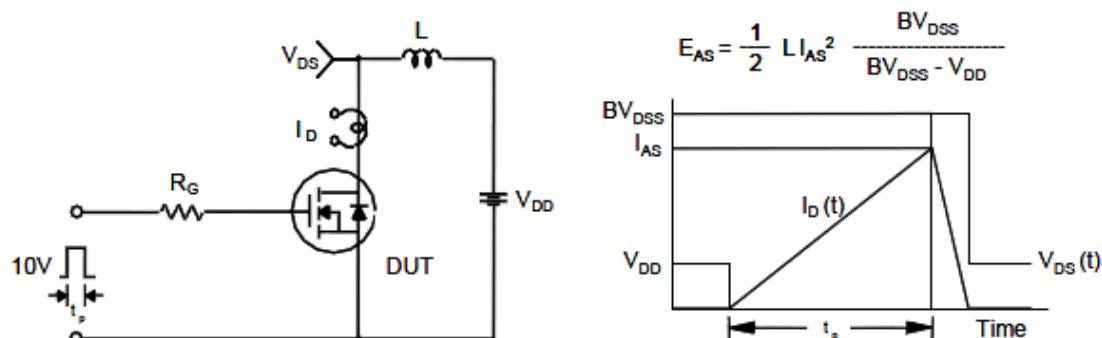
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

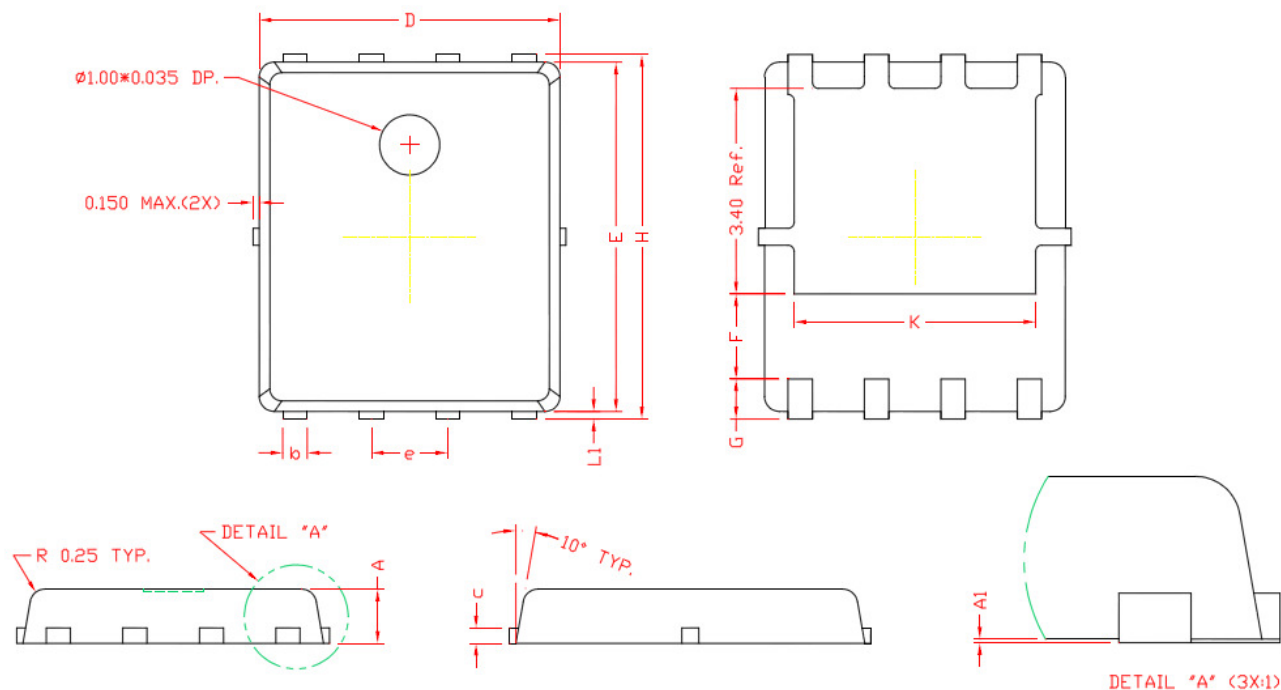


Unclamped Inductive Switching Test Circuit & Waveforms





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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