



General Description

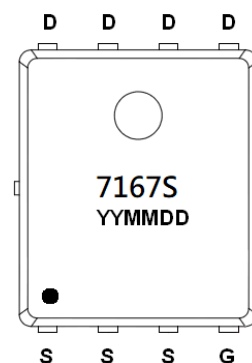
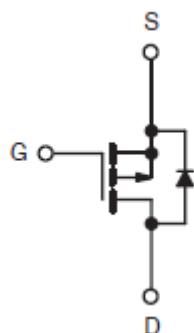
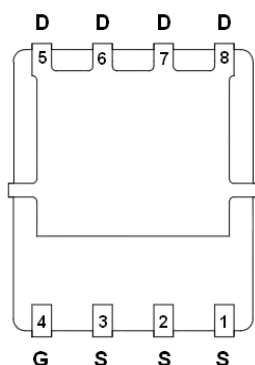
AFP7167S, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

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

- $I_D = -18A, R_{DS(ON)} = 6m\Omega @ V_{GS} = -10V$
- $I_D = -10A, R_{DS(ON)} = 8m\Omega @ V_{GS} = -4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- DFN5X6-8L package design

Pin Description (DFN5X6-8L)



Application

- Adapter and charger switch
- Load switch
- Battery management

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
AFP7167SFN568RG	7167S	DFN5X6-8L	Tape & Reel	2500 EA

※ 7167S : Parts Code

※ YYMMDD : Date Code

※ AFP7167SFN568RG : 13" Tape & Reel ; Pb- Free ; Halogen- Free



Absolute Maximum Ratings

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

Parameter	Symbol	Value	Unit	
Drain-Source Voltage	V_{DSS}	-30	V	
Gate –Source Voltage	V_{GSS}	± 20	V	
Continuous Drain Current($T_J=150^{\circ}\text{C}$)	I_{DSM}	$T_c=25^{\circ}\text{C}$	-80	A
		$T_c=70^{\circ}\text{C}$	-60	
		$T_A=25^{\circ}\text{C}$	-24	
		$T_A=70^{\circ}\text{C}$	-20	
Pulsed Drain Current	I_{DM}	-120		
Continuous Source Current(Diode Conduction)	I_S	-4.2		
Single Pulse Avalanche Current	I_{AS}	-20		
Single Pulse Avalanche Energy	E_{AS}	-20	mJ	
Power Dissipation	P_{DSM}	$T_A=25^{\circ}\text{C}$	5.1	W
		$T_A=75^{\circ}\text{C}$	3.2	
Operating Junction Temperature	T_J	150	$^{\circ}\text{C}$	
Storage Temperature Range	T_{STG}	-55/150	$^{\circ}\text{C}$	
Thermal Resistance-Junction to Ambient	$R_{\theta JA}$	25	$^{\circ}\text{C}/\text{W}$	
Thermal Resistance-Junction to Case	$R_{\theta JC}$	2.9		

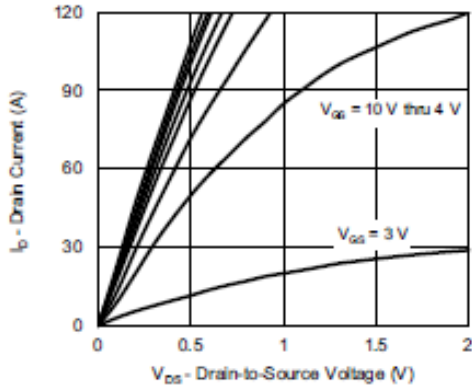
Electrical Characteristics

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

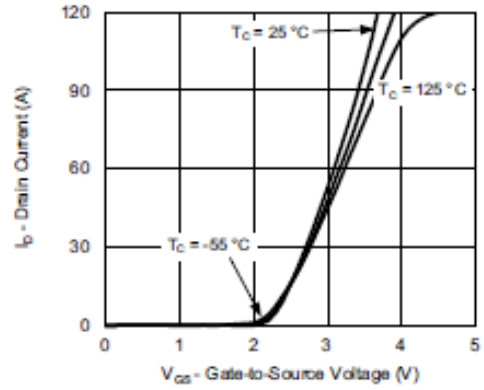
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	-1.6	-2.0	
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 25V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-24V, V_{GS}=0V$			-1	uA
		$V_{DS}=-24V, V_{GS}=0V$ $T_J=85^{\circ}\text{C}$			-30	
On-State Drain Current	$I_{D(on)}$	$V_{DS} \leq -10V, V_{GS}=-10V$	-30			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-18A$		4.6	6	m Ω
		$V_{GS}=-4.5V, I_D=-10A$		6.8	8	
Forward Transconductance	g_{FS}	$V_{DS}=-15V, I_D=-20A$		60		S
Diode Forward Voltage	V_{SD}	$I_S=-3.0A, V_{GS}=0V$		-0.7	-1.3	V
Dynamic						
Total Gate Charge	Q_g	$V_{DS}=-15V, V_{GS}=-4.5V$ $I_D \equiv -23.8A$		40	80	nC
Gate-Source Charge	Q_{gs}			12		
Gate-Drain Charge	Q_{gd}			12		
Input Capacitance	C_{iss}	$V_{DS}=-15V, V_{GS}=0V$ $f=1\text{MHz}$		4500		pF
Output Capacitance	C_{oss}			550		
Reverse Transfer Capacitance	C_{rss}			450		
Turn-On Time	$t_{d(on)}$	$V_{DD}=-15V, R_L=0.79\Omega$ $I_D \equiv -19.1A, V_{GEN}=-10V$ $R_G=1\Omega$		20	40	ns
	t_r			25	50	
Turn-Off Time	$t_{d(off)}$			35	70	
	t_f			20	40	



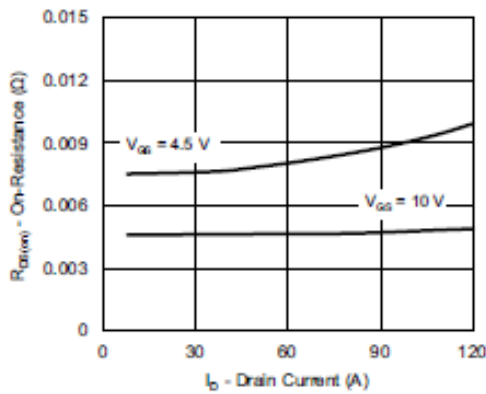
Typical Characteristics



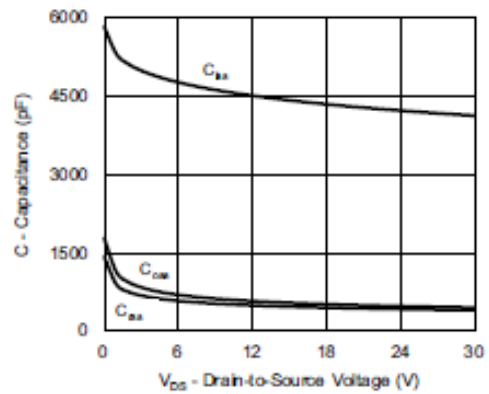
Output Characteristics



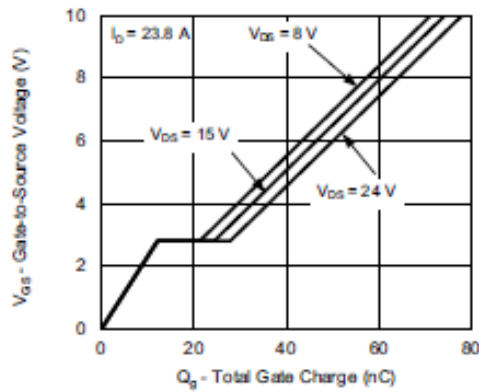
Transfer Characteristics



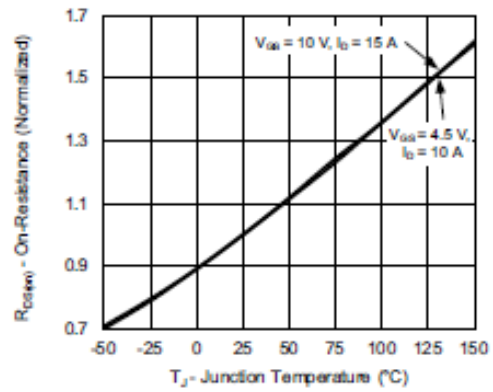
On-Resistance vs. Drain Current and Gate Voltage



Capacitance



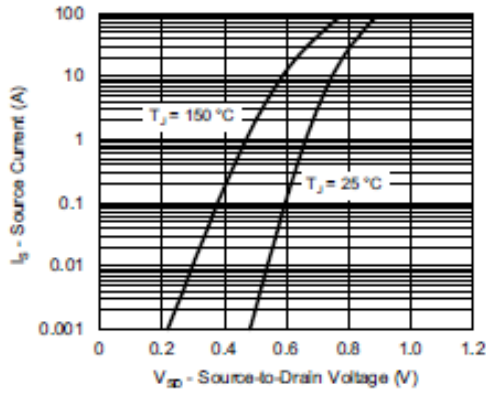
Gate Charge



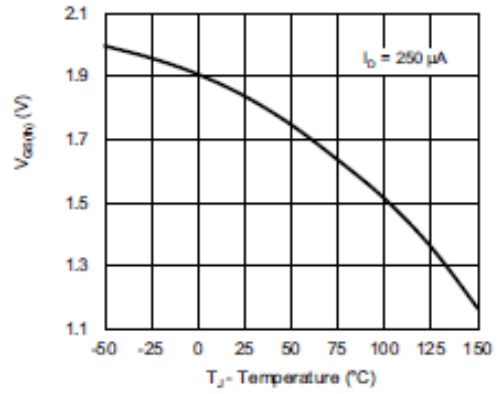
On-Resistance vs. Junction Temperature



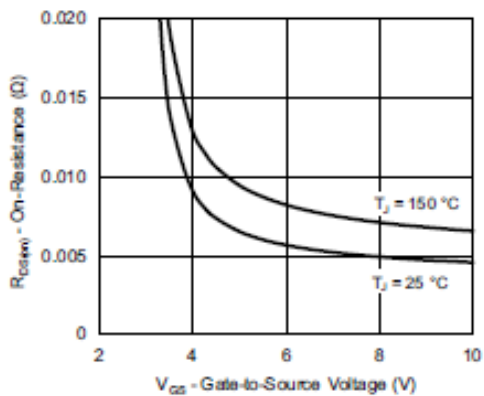
Typical Characteristics



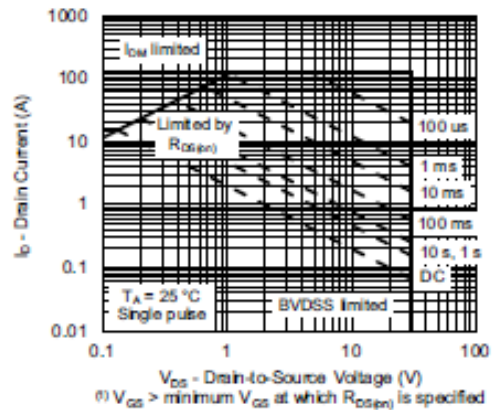
Source-Drain Diode Forward Voltage



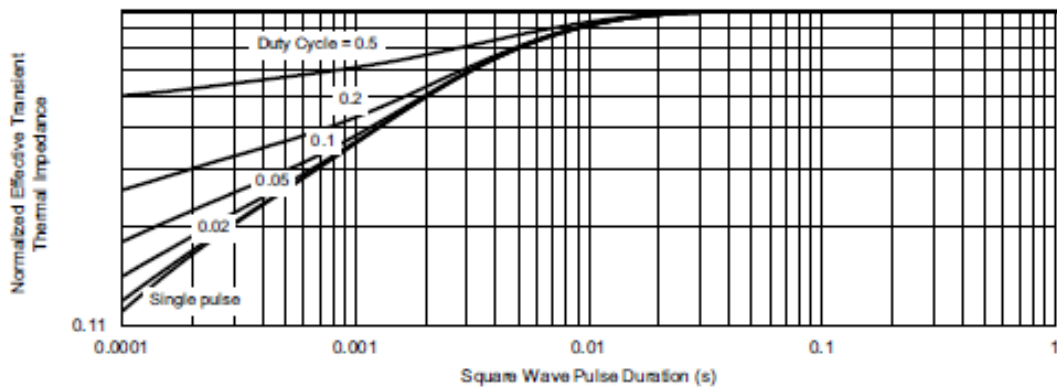
Threshold Voltage



On-Resistance vs. Gate-to-Source Voltage



Safe Operating Area, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Case



Typical Characteristics

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

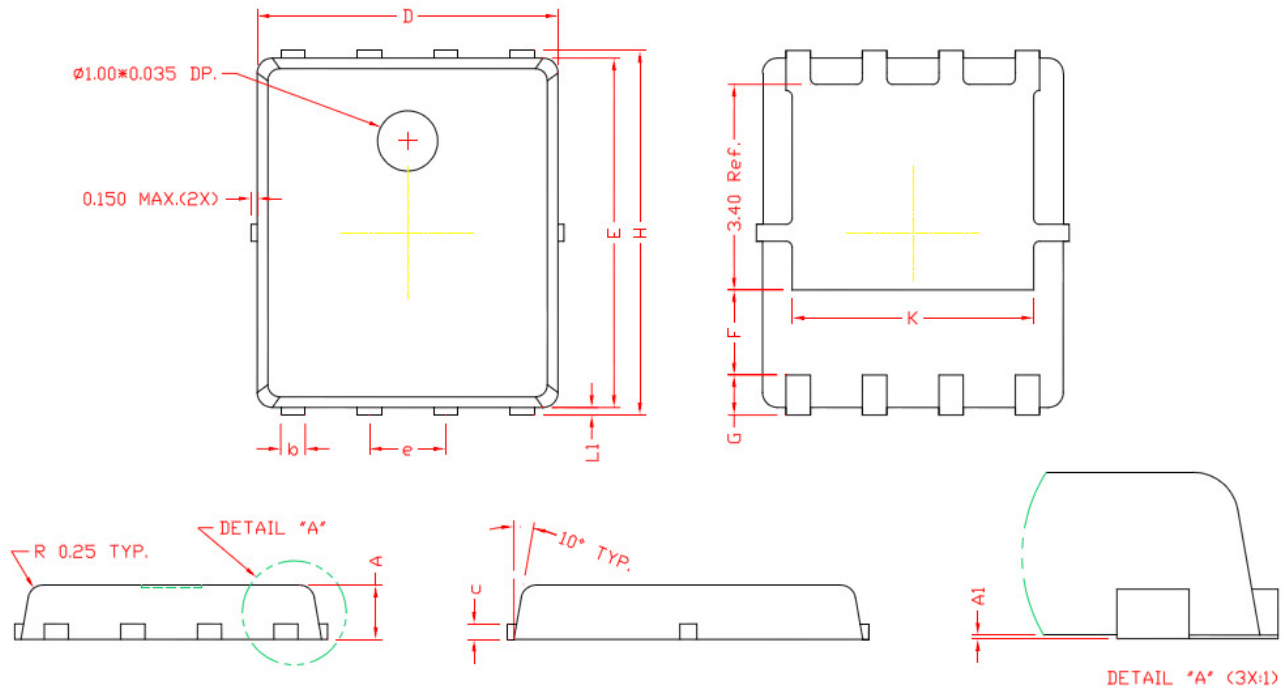


Unclamped Inductive Switching Test Circuit & Waveforms





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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