



## General Description

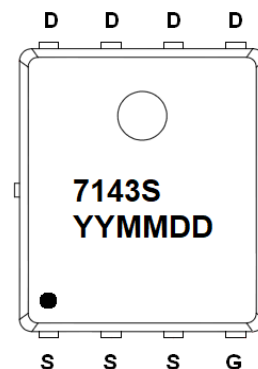
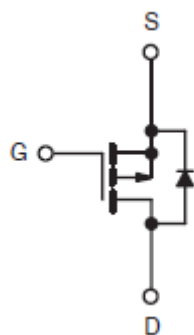
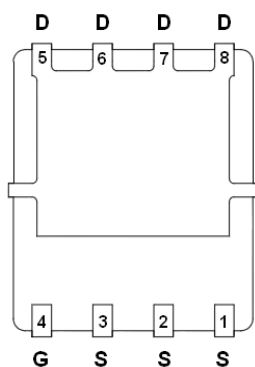
AFP7143S, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent  $R_{DS(ON)}$ , low gate charge.

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

- $I_D = -17A, R_{DS(ON)} = 10m\Omega @ V_{GS} = -10V$
- $I_D = -13A, R_{DS(ON)} = 14m\Omega @ V_{GS} = -4.5V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- DFN5X6-8L package design

## Pin Description ( DFN5X6-8L )



## Application

- 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
AFP7143SFN568RG	7143S	DFN5X6-8L	Tape & Reel	2500 EA

※ 7143S : Parts Code

※ YYMMDD : Date code

※ AFP7143SFN568RG : 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	$V_{GSS}$	$\pm 20$	V
Continuous Drain Current( $T_J=150^{\circ}\text{C}$ )	$I_{DSM}$	$T_A=25^{\circ}\text{C}$	-17
		$T_A=70^{\circ}\text{C}$	-13
Pulsed Drain Current	$I_{DM}$	-60	A
Continuous Source Current(Diode Conduction)	$I_S$	-3.5	
Single Pulse Avalanche Current	$I_{AS}$	-25	
Power Dissipation	$P_{DSM}$	$T_A=25^{\circ}\text{C}$	4.2
		$T_A=75^{\circ}\text{C}$	2.7
Operating Junction Temperature	$T_J$	150	$^{\circ}\text{C}$
Storage Temperature Range	$T_{STG}$	-55/150	$^{\circ}\text{C}$
Thermal Resistance-Junction to Ambient	$t \leq 10 \text{ s}$	$R_{\theta JA}$	25
Thermal Resistance-Junction to Case	Steady-State	$R_{\theta JC}$	2.9

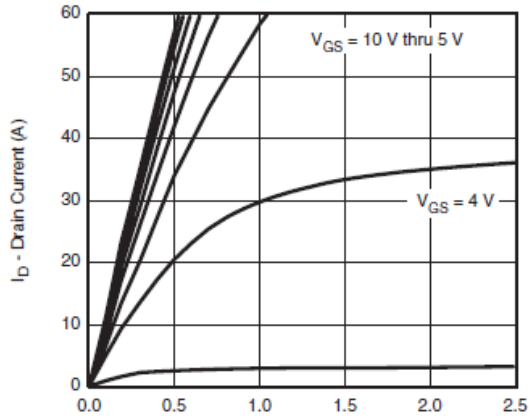
### Electrical Characteristics

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

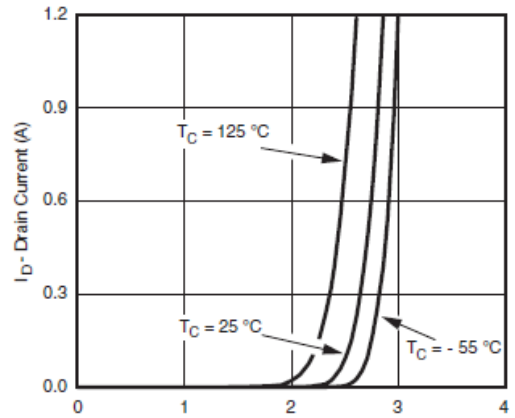
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0		-3.0	
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-24V, V_{GS}=0V$			-1	uA
		$V_{DS}=-24V, V_{GS}=0V$ $T_A=85^{\circ}\text{C}$			-30	
On-State Drain Current	$I_{D(on)}$	$V_{DS} \leq -5V, V_{GS}=-10V$	-20			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10.0V, I_D=-17A$		8.5	10	m $\Omega$
		$V_{GS}=-4.5V, I_D=-13A$		12	14	
Forward Transconductance	$g_{FS}$	$V_{DS}=-15V, I_D=-16A$		37		S
Diode Forward Voltage	$V_{SD}$	$I_S=-1.0A, V_{GS}=0V$		-0.7	-1.3	V
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS}=-15V, V_{GS}=-4.5V$ $I_D \equiv -15A$		25	38	nC
Gate-Source Charge	$Q_{gs}$			8		
Gate-Drain Charge	$Q_{gd}$			12		
Input Capacitance	$C_{iss}$	$V_{DS}=-15V, V_{GS}=0V$ $f=1\text{MHz}$		2250		pF
Output Capacitance	$C_{oss}$			395		
Reverse Transfer Capacitance	$C_{rss}$			320		
Turn-On Time	$t_{d(on)}$	$V_{DD}=-15V, R_L=1.5\Omega$ $I_D \equiv -10A, V_{GEN}=-10V$ $R_G=1\Omega$		15	30	ns
	$t_r$			10	20	
Turn-Off Time	$t_{d(off)}$			35	70	
	$t_f$			10	20	



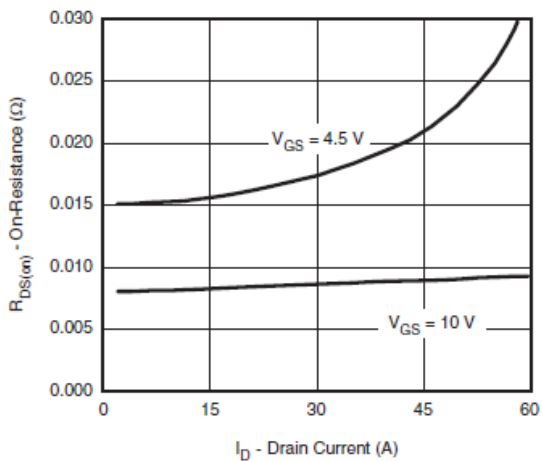
## Typical Characteristics



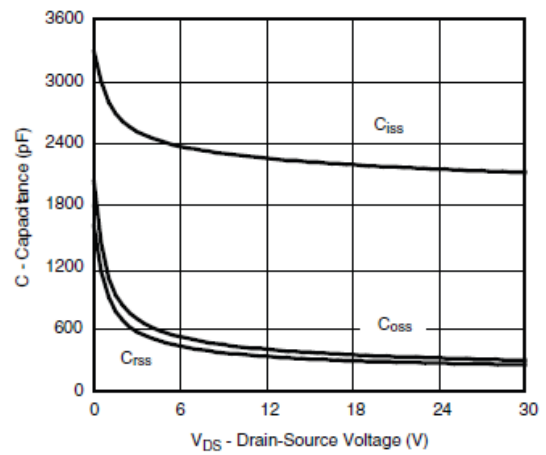
Output Characteristics



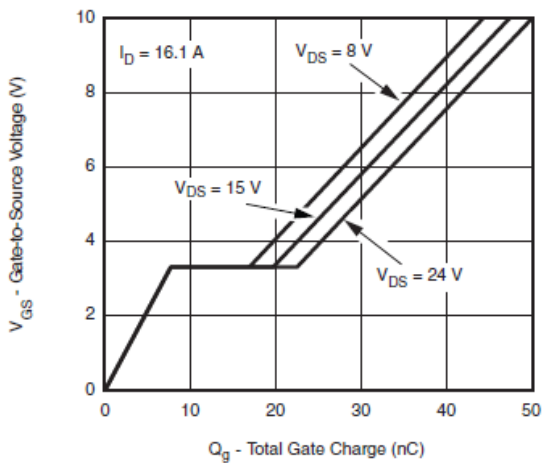
Transfer Characteristics



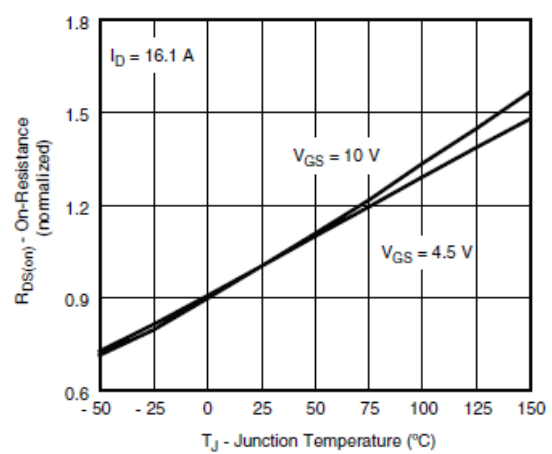
On-Resistance vs. Drain Current and Gate Voltage



Capacitance



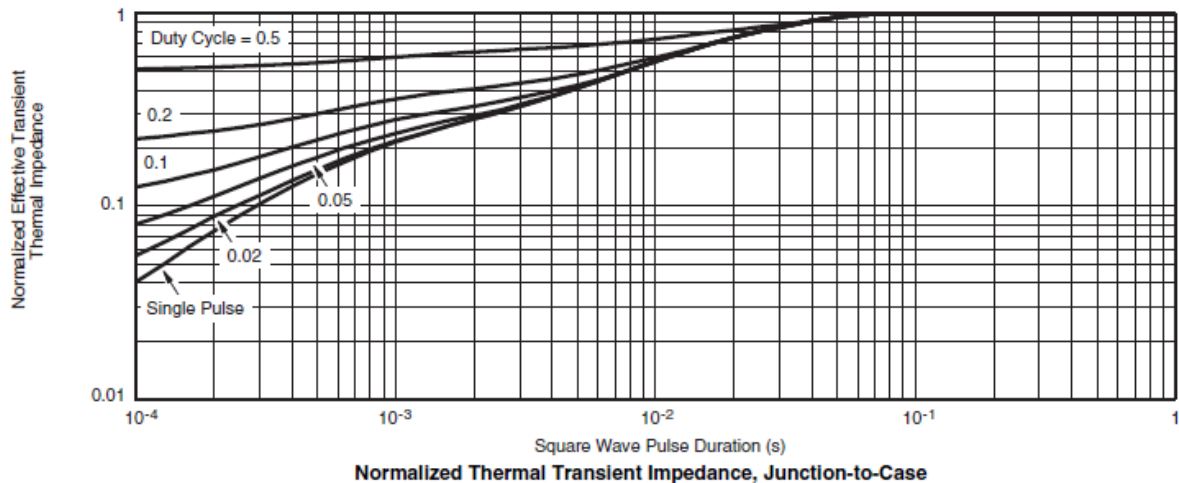
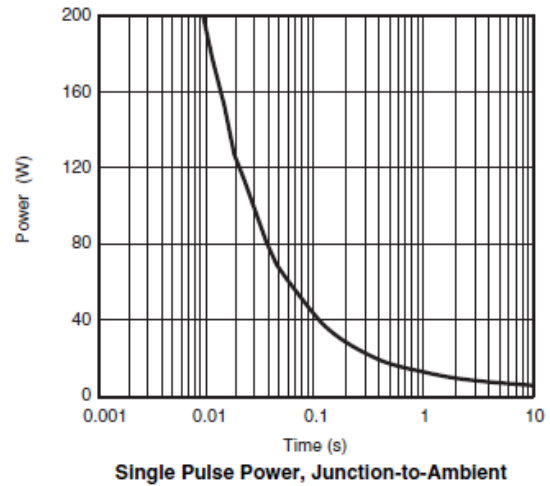
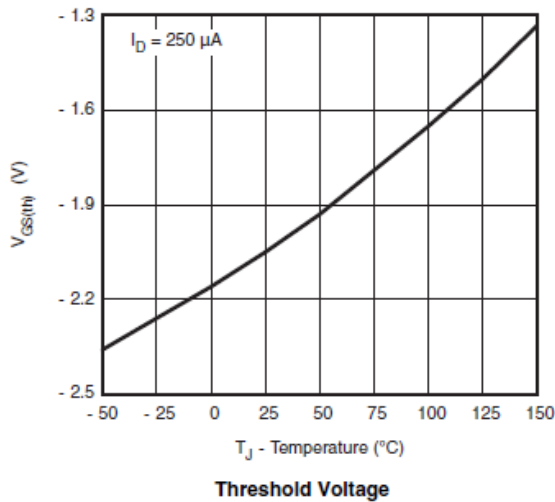
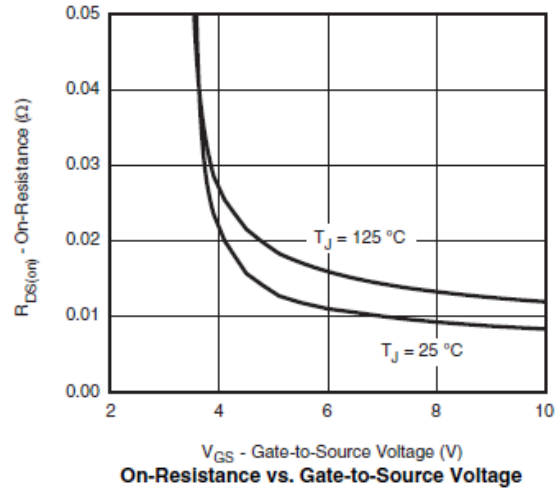
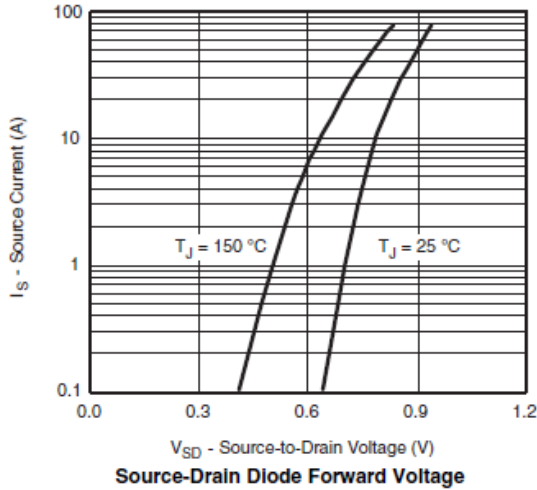
Gate Charge



On-Resistance vs. Junction Temperature



## Typical Characteristics





**Typical Characteristics**

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

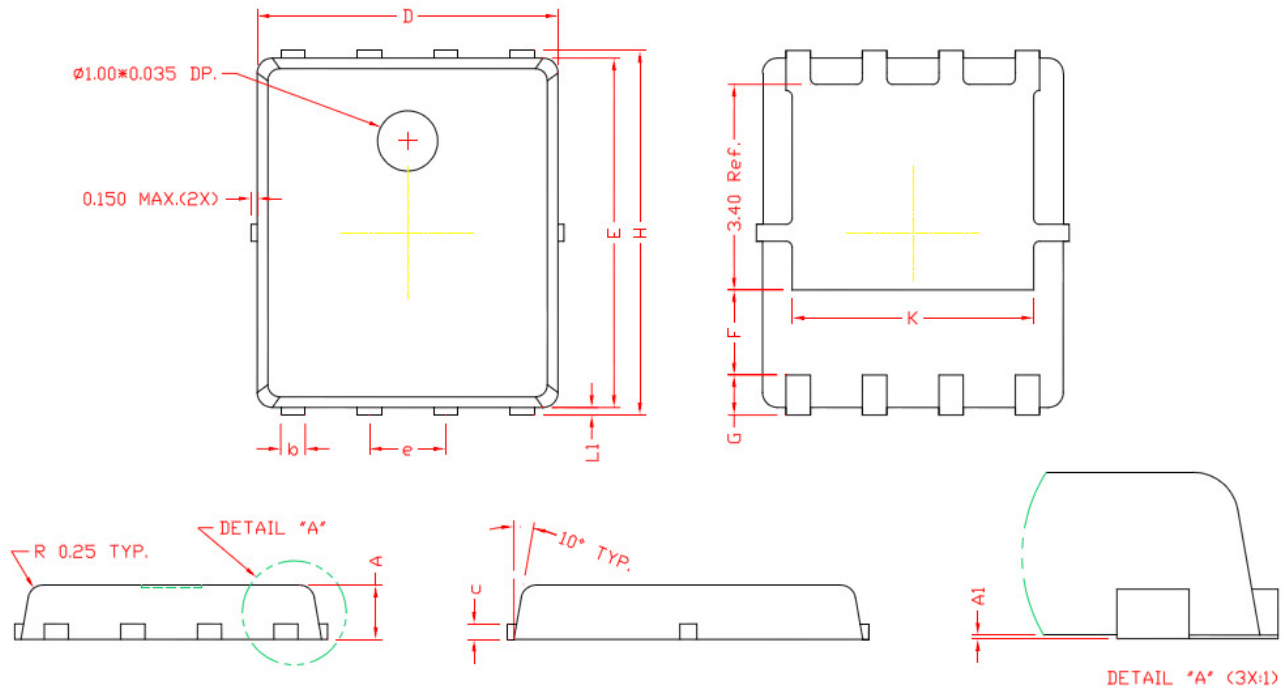


Unclamped Inductive Switching Test Circuit & Waveforms





**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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