



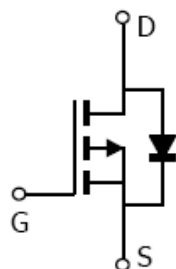
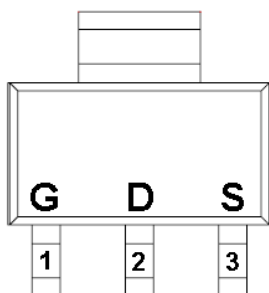
General Description

AFP8434S, 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

- -20V/-6.0A, $R_{DS(ON)}=50m\Omega@V_{GS}=4.5V$
- -20V/-4.0A, $R_{DS(ON)}=67m\Omega@V_{GS}=2.5V$
- -20V/-2.0A, $R_{DS(ON)}=90m\Omega@V_{GS}=1.8V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-223 package design

Pin Description (SOT-223)



Application

- Low Dropout Regulator
- DC/DC converter
- Load switch
- Motor driving

Pin Define

Pin	Symbol	Description
1	G	Gate
2	D	Drain
3	S	Source

Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFP8434SS223RG	8434S	SOT-223	Tape & Reel	2500 EA

- ※ YY year code
- ※ WW week code
- ※ AFP8434SS223RG : 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}	-20	V
Gate-Source Voltage	V_{GSS}	± 12	V
Continuous Drain Current($T_J=150^\circ\text{C}$)	I_D	$T_A=25^\circ\text{C}$	-6.0
		$T_A=70^\circ\text{C}$	-4.0
Pulsed Drain Current	I_{DM}	-20	A
Continuous Source Current(Diode Conduction)	I_S	-1.5	A
Power Dissipation	P_D	$T_A=25^\circ\text{C}$	2.8
		$T_A=70^\circ\text{C}$	1.2
Operating Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55/150	$^\circ\text{C}$
Thermal Resistance-Junction to Ambient	$R_{\theta JA}$	120	$^\circ\text{C/W}$

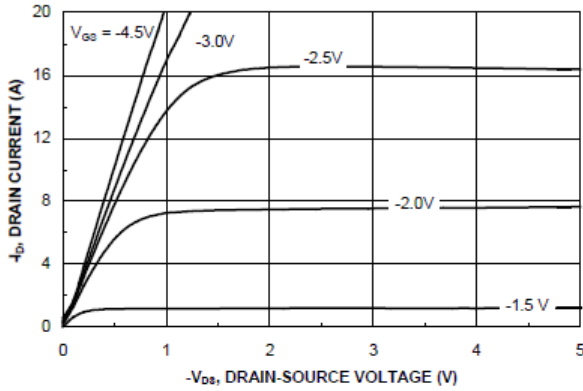
Electrical Characteristics

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

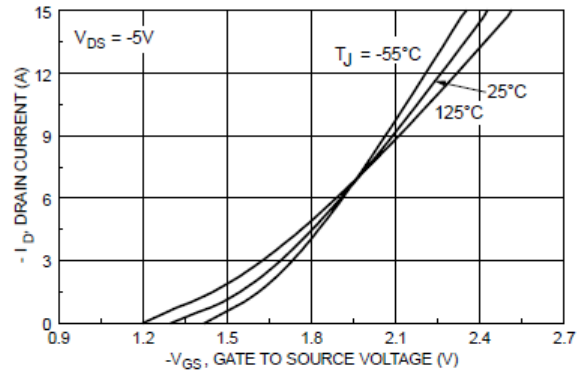
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu\text{A}$	-20			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu\text{A}$	-0.5	-0.7	-1.0	
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 12V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-16V, V_{GS}=0V$			-1	uA
		$V_{DS}=-16V, V_{GS}=0V$ $T_A=85^\circ\text{C}$			-30	
On-State Drain Current	$I_{D(on)}$	$V_{DS} \leq -5V, V_{GS}=-4.5V$	-20			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-6.0A$		40	50	m Ω
		$V_{GS}=-2.5V, I_D=-4.0A$		52	67	
		$V_{GS}=-1.8V, I_D=-2.0A$		75	90	
Forward Transconductance	g_{FS}	$V_{DS}=-10V, I_D=-6.0A$		7		S
Diode Forward Voltage	V_{SD}	$I_S=-2.0A, V_{GS}=0V$		-0.7	-1.3	V
Dynamic						
Total Gate Charge	Q_g	$V_{DS}=-10V, V_{GS}=-4.5V$ $I_D \equiv -6.0A$		12	20	nC
Gate-Source Charge	Q_{gs}			1.9		
Gate-Drain Charge	Q_{gd}			3.2		
Input Capacitance	C_{iss}	$V_{DS}=-10V, V_{GS}=0V$ $f=1\text{MHz}$		1185		pF
Output Capacitance	C_{oss}			235		
Reverse Transfer Capacitance	C_{rss}			100		
Turn-On Time	$t_{d(on)}$	$V_{DD}=-5V, V_{GEN}=-4.5V$ $I_D \equiv -1.0A, R_G=6\Omega$		10	20	ns
	t_r			15	30	
Turn-Off Time	$t_{d(off)}$			45	90	
	t_f			25	50	



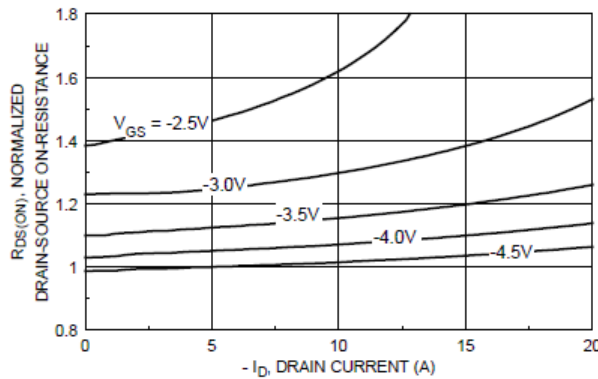
Typical Characteristics



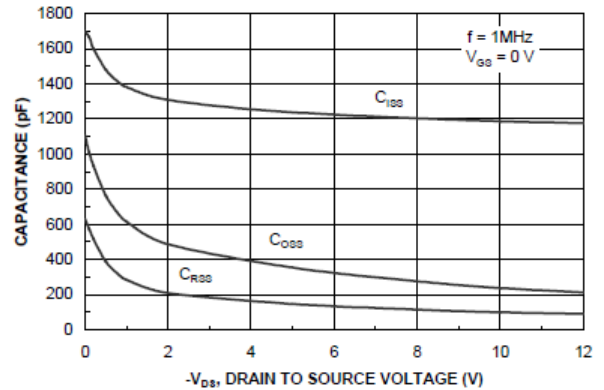
On-Region Characteristics



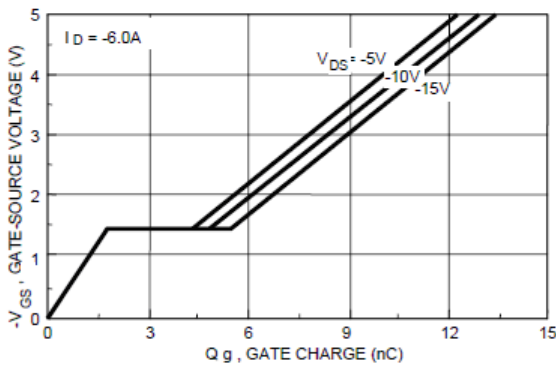
Transfer Characteristics



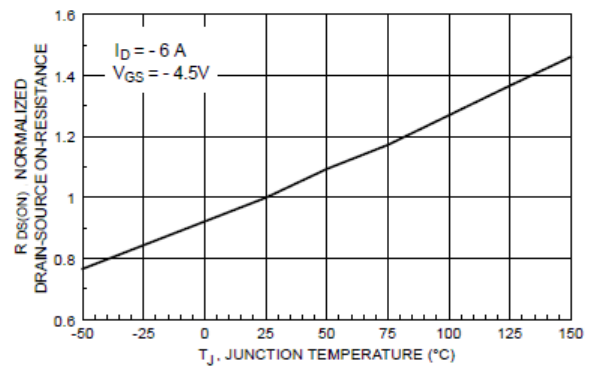
On-Resistance Variation with
Drain Current and Gate Voltage



Capacitance Characteristics



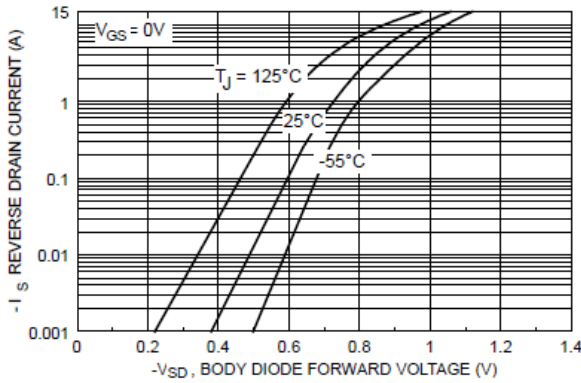
Gate Charge Characteristics



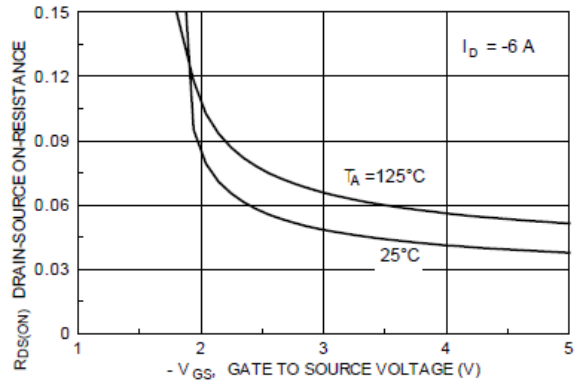
On-Resistance Variation
with Temperature



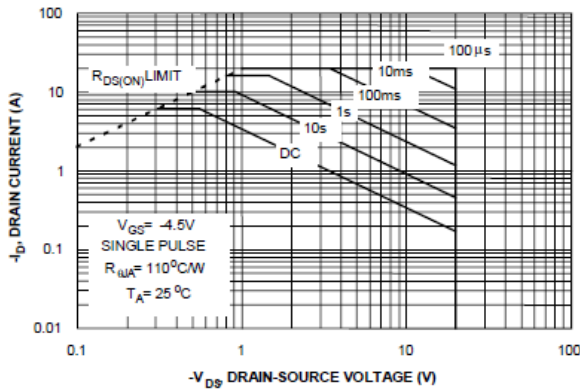
Typical Characteristics



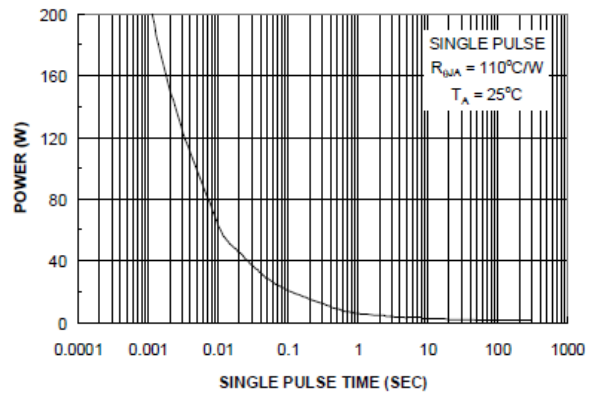
Body Diode Forward Voltage Variation with Source Current and Temperature



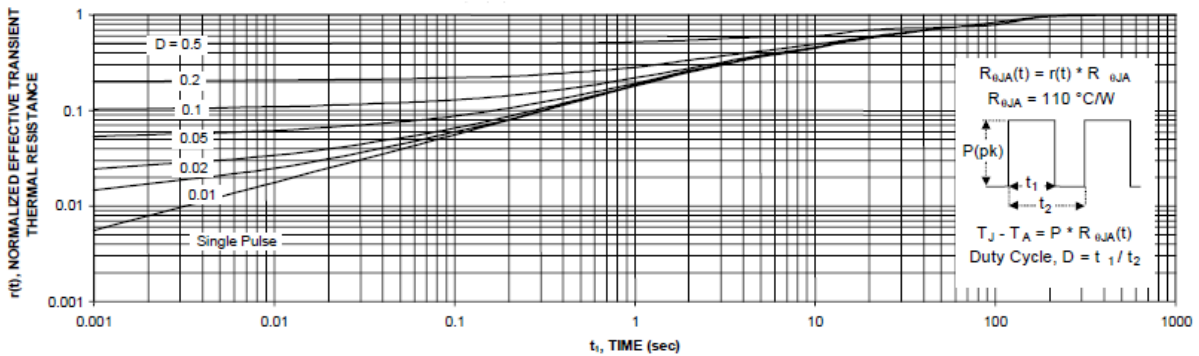
On-Resistance Variation with Gate-to-Source Voltage



Maximum Safe Operating Area



Single Pulse Maximum Power Dissipation

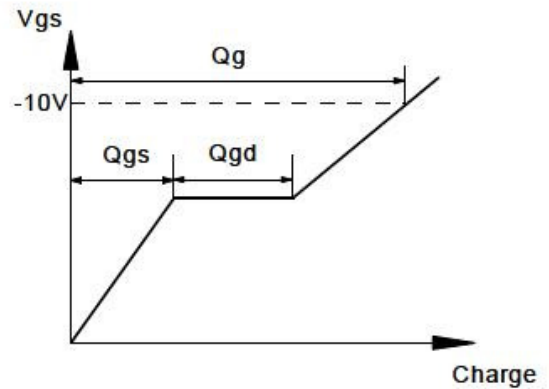
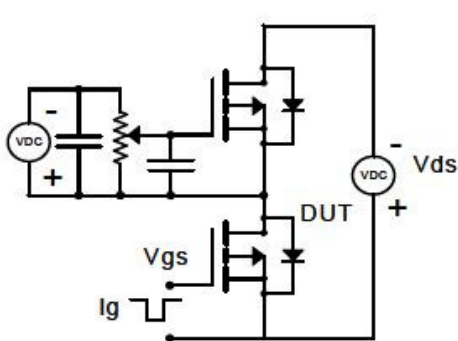


Transient Thermal Response Curve

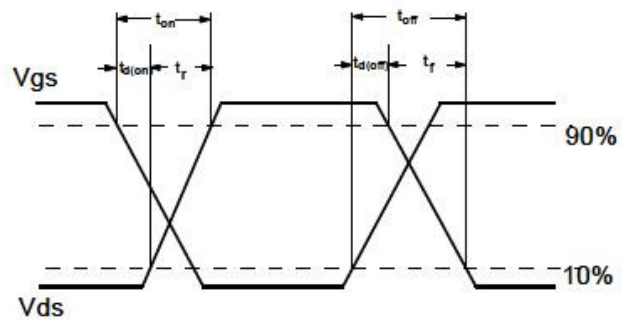
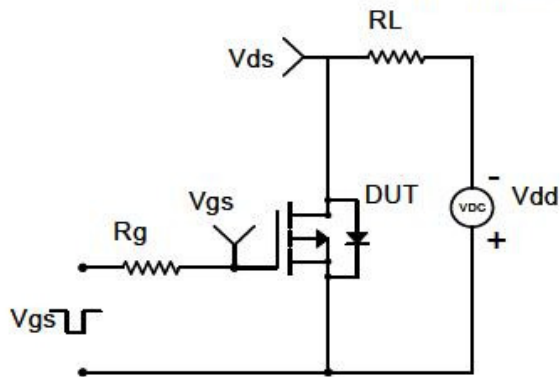


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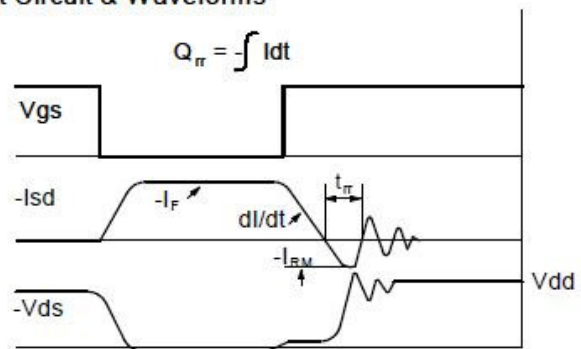
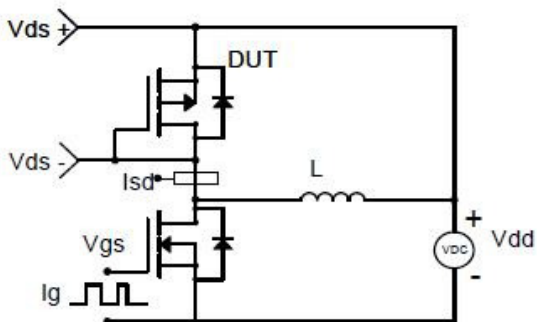
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

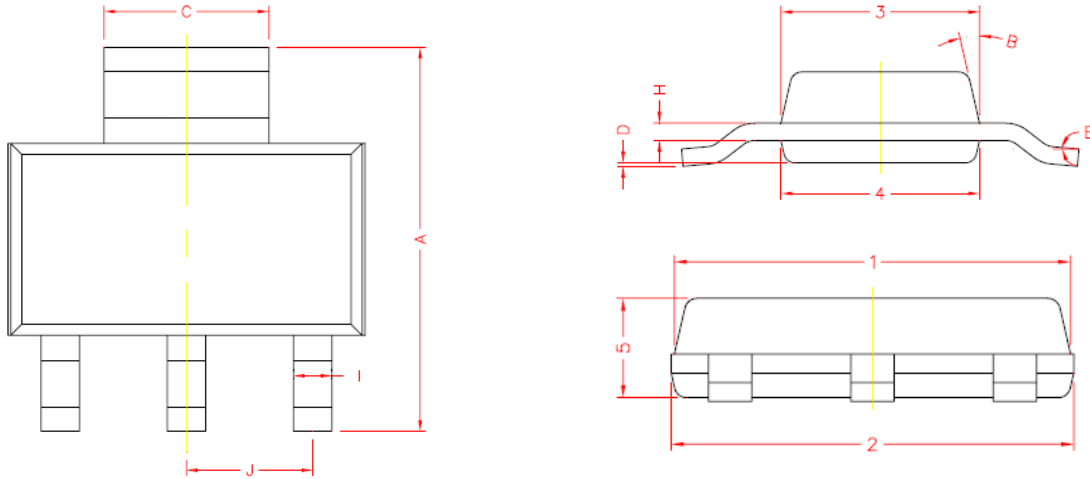


Diode Recovery Test Circuit & Waveforms





Package Information (SOT-223)



REF.	DIMENSIONS	
	Millimeters	
	Min.	Max.
A	6.70	7.30
C	2.90	3.10
D	0.02	0.10
E	0°	10°
I	0.60	0.80
H	0.25	0.35
B	13° TYP.	
J	2.30 REF.	
1	6.30	6.70
2	6.30	6.70
3	3.30	3.70
4	3.30	3.70
5	1.40	1.80

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