



General Description

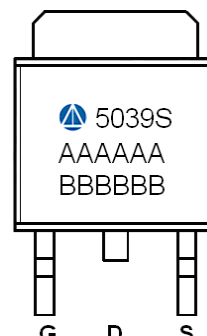
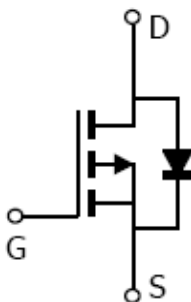
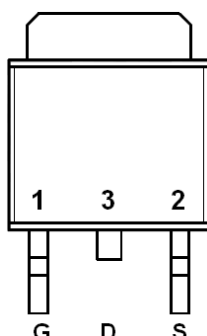
AFP5039S, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

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/-12A, $R_{DS(ON)} = 90m\Omega @ V_{GS} = -10V$
- -100/-8A, $R_{DS(ON)} = 100m\Omega @ V_{GS} = -4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- TO-252-2L package design

Pin Description (TO-252-2L)



Application

- Power Switch
- DC/DC Converters
- Active Clamp in Intermediate DC/DC Power Supplies

Pin Define

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

Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFP5039ST252RG	5039S	TO-252-2L	Tape & Reel	2500 EA

※ A Lot code

※ B Date code

※ AFP5039ST252RG : 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)	I _D	T _C =25°C -25	A
		T _C =70°C -15	
Pulsed Drain Current	I _{DM}	-50	A
Continuous Source-Drain Diode Current	I _S	-8	A
Power Dissipation	P _D	T _A =25°C 40	W
		T _A =70°C 15	
Operating Junction Temperature	T _J	150	°C
Storage Temperature Range	T _{STG}	-55/150	°C
Thermal Resistance-Junction to Ambient	R _{θJA}	62.5	°C/W

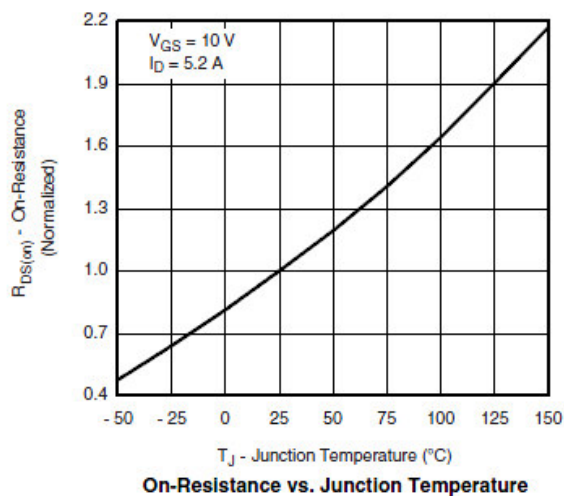
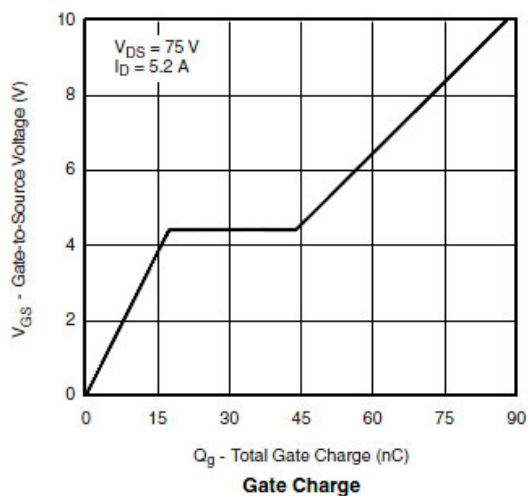
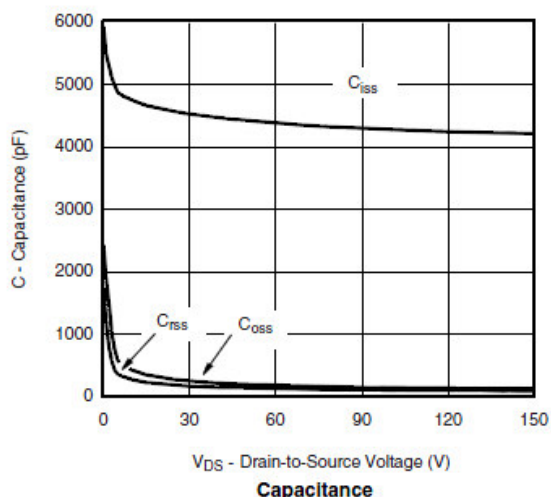
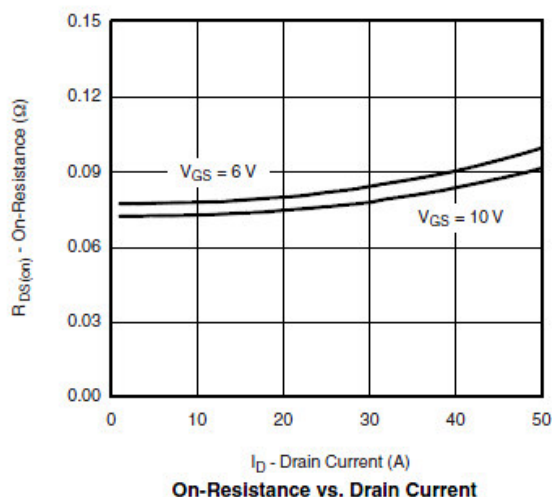
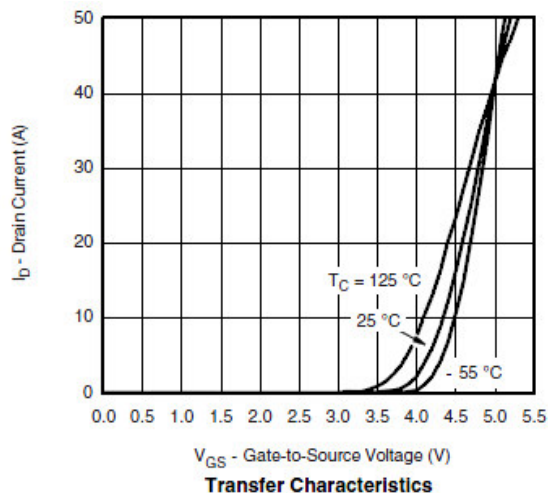
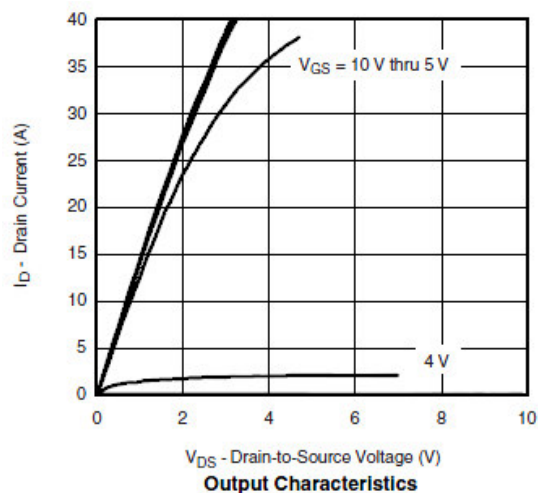
Electrical Characteristics

(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	-1.0		-2.5	
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} ≥ -10V, V _{GS} = -10V	-25			A
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = -10V, I _D =-12A		80	90	mΩ
		V _{GS} = -4.5V, I _D =-8A		88	100	
Forward Transconductance	g _{FS}	V _{DS} = -15V, I _D = -5.2A		19		S
Diode Forward Voltage	V _{SD}	I _S = -2A, V _{GS} =0V		-0.8	-1.3	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}			18		
Gate-Drain Charge	Q _{gd}			28		
Input Capacitance	C _{iss}	V _{DS} =-60V, V _{GS} =0V f=1MHz		4300		pF
Output Capacitance	C _{oss}			280		
Reverse Transfer Capacitance	C _{rss}			220		
Turn-On Time	t _{d(on)}	V _{DD} =-75V, R _L =16Ω I _D ≡ -4.8A, V _{GEN} =-10V R _G =6Ω		25	50	ns
	t _r			45	85	
Turn-Off Time	t _{d(off)}			115	200	
	t _f			65	130	

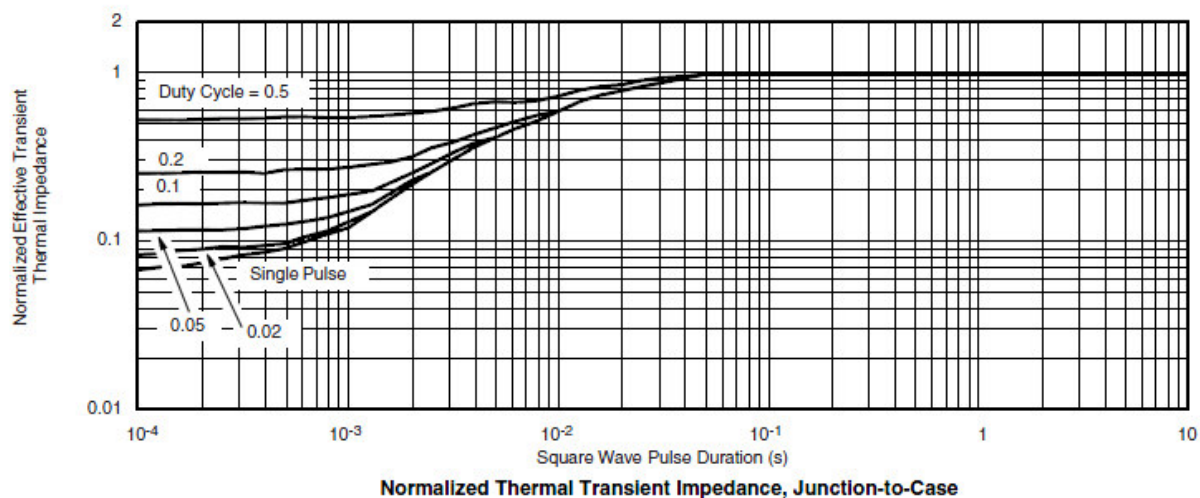
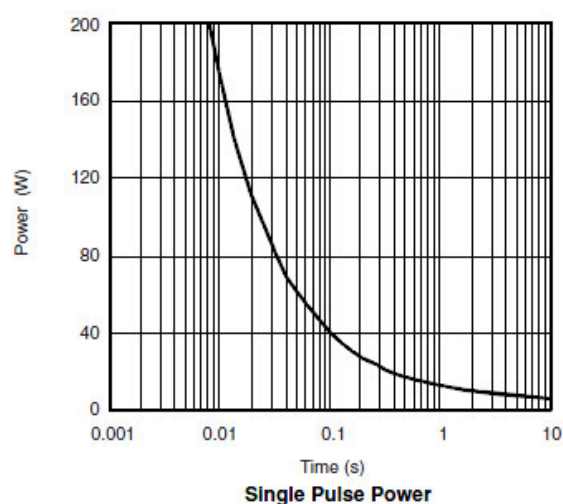
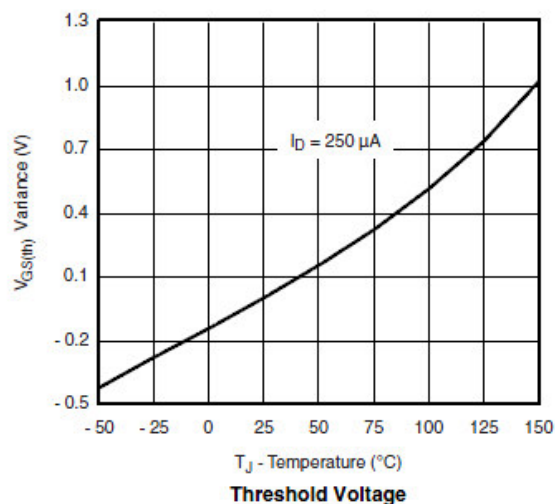
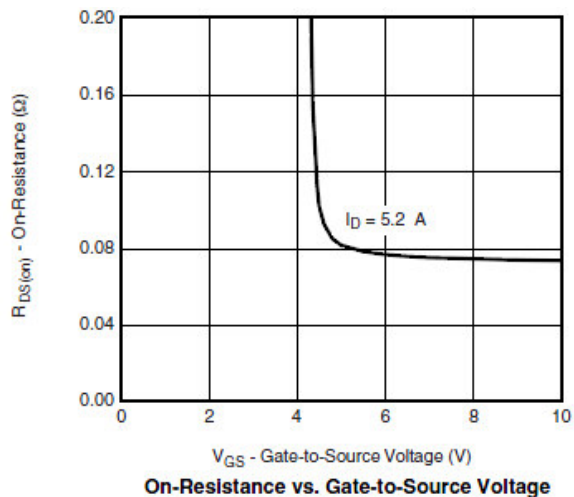
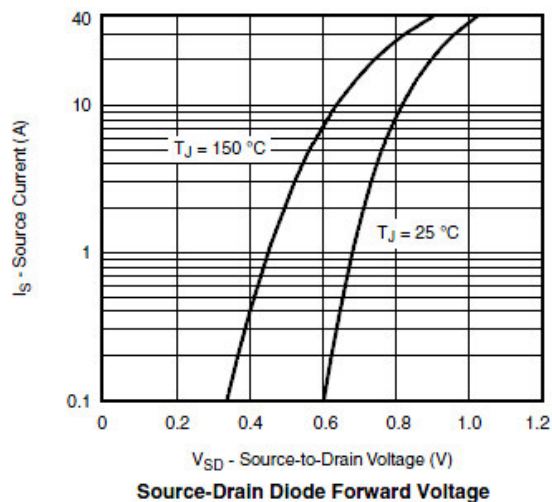


Typical Characteristics





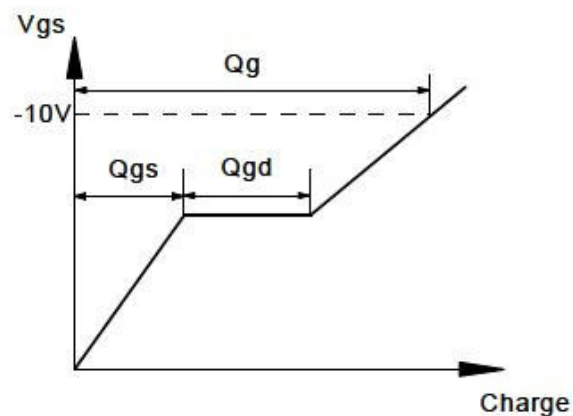
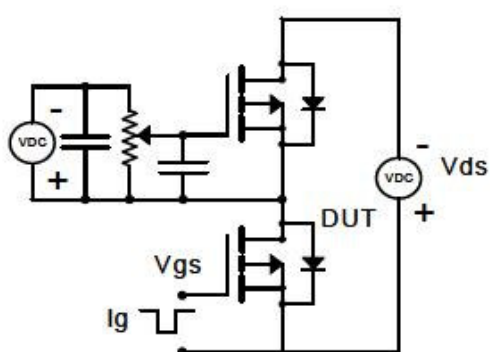
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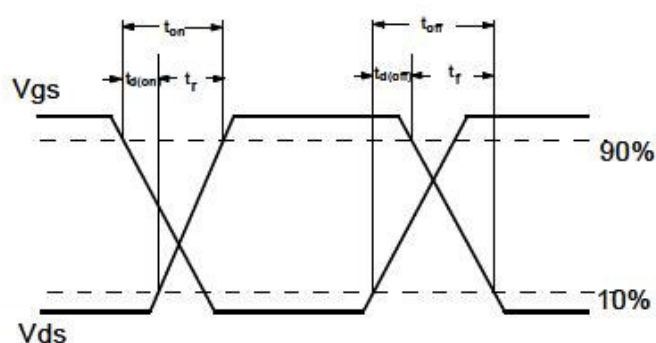
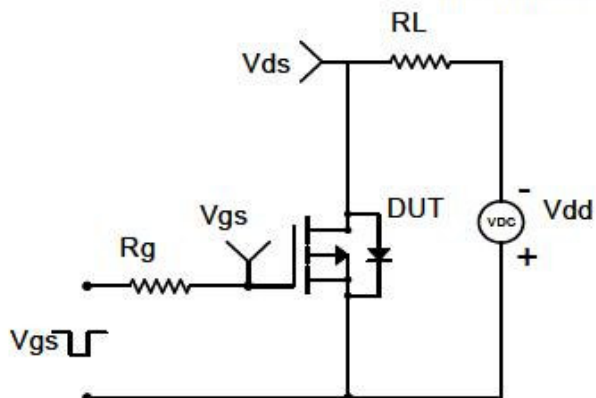


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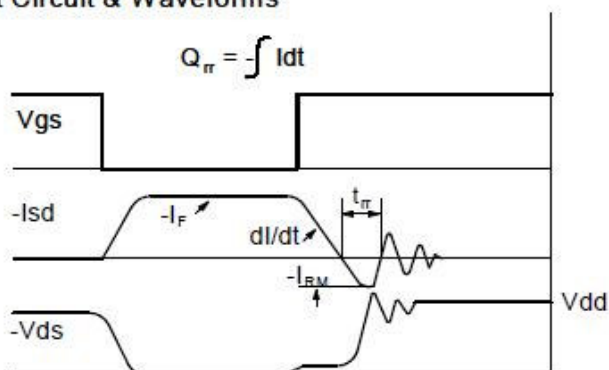
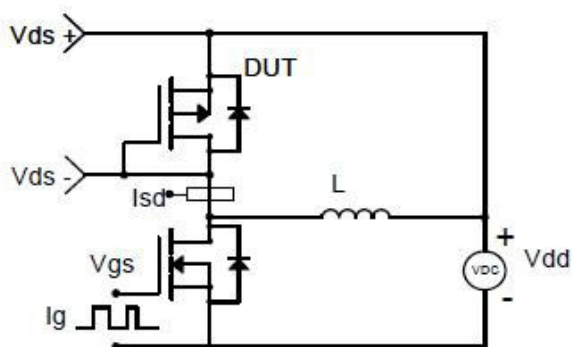
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

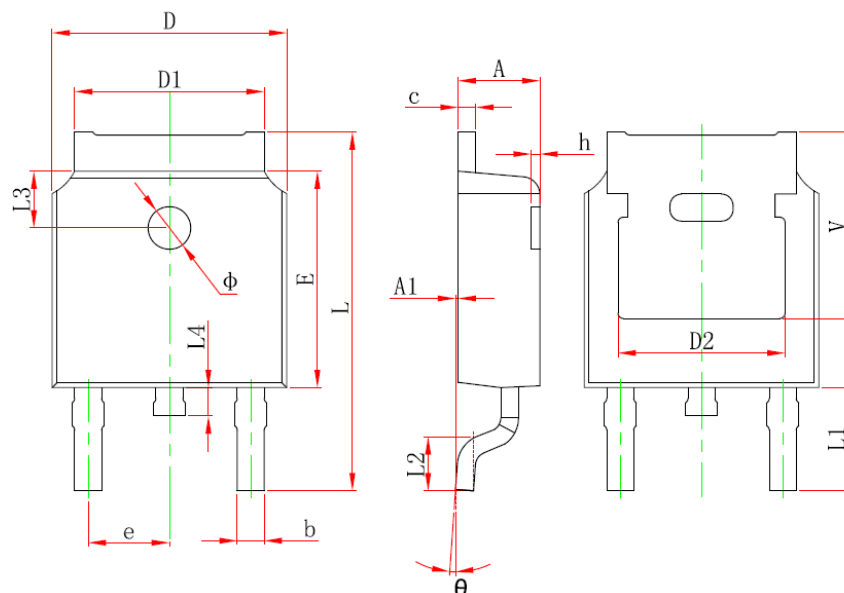


Diode Recovery Test Circuit & Waveforms





Package Information (TO-252-2L)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 REF.		0.211 REF.	

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