



General Description

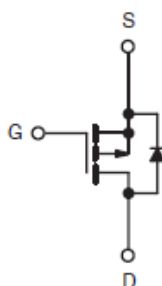
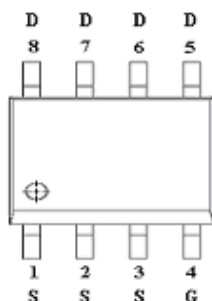
AFP4101S, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

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 $R_{DS(ON)}$
- SOP-8P package design

Pin Description (SOP-8P)



Application

- LED Display
- Adaptor Switch, Load Switch
- Power Management
- Notebook Computers and
- Portable Battery Packs

Pin Define

Pin	Symbol	Description
1	S	Source
2	S	Source
3	S	Source
4	G	Gate
5	D	Drain
6	D	Drain
7	D	Drain
8	D	Drain

Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFP4101SS8RG	4101S	SOP-8P	Tape & Reel	2500 EA

※ A Lot code

※ B Date code

※ AFP4101SS8RG : 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_D	$T_A=25^\circ\text{C}$	-18
		$T_A=70^\circ\text{C}$	-14
Pulsed Drain Current	I_{DM}	-70	A
Continuous Source Current(Diode Conduction)	I_S	-2.4	A
Single Pulse Avalanche Current	I_{AS}	-30	A
Avalanche Energy	E_{AS}	45	mJ
Power Dissipation	P_D	$T_A=25^\circ\text{C}$	2.8
		$T_A=70^\circ\text{C}$	1.8
Operating Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55/150	$^\circ\text{C}$
Thermal Resistance-Junction to Ambient	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$
Thermal Resistance-Junction to Case	$R_{\theta JC}$	19	$^\circ\text{C/W}$

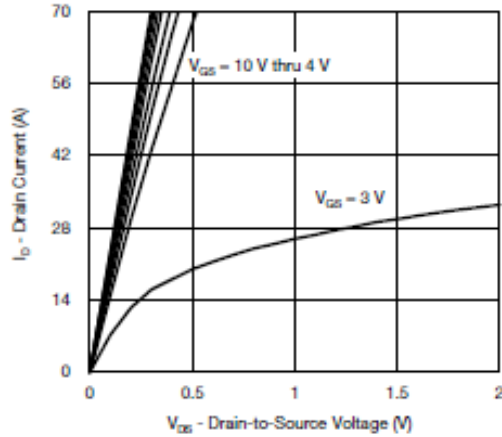
Electrical Characteristics

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

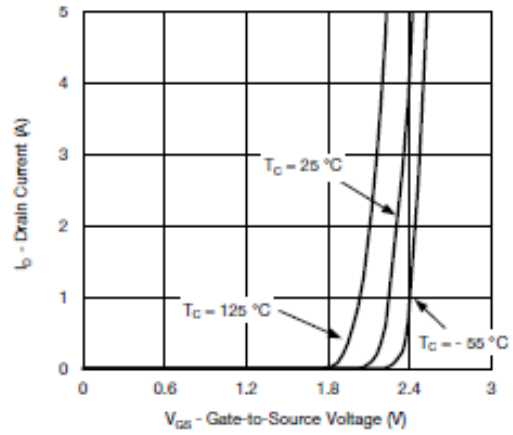
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	-1.6	-2.0	
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 25V$			± 100	nA
Zero Gate 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}	$V_{DS}=-10V, I_D=-15A$		70		S
Diode Forward Voltage	V_{SD}	$I_S=-3.0A, V_{GS}=0V$		-0.7	-1.3	V
Dynamic						
Total Gate Charge	Q_g	$V_{DS}=-15V, V_{GS}=-4.5V$ $I_D=-18A$		64	85	nC
Gate-Source Charge	Q_{gs}			25		
Gate-Drain Charge	Q_{gd}			18		
Input Capacitance	C_{iss}	$V_{DS}=-15V, V_{GS}=0V$ $f=1\text{MHz}$		8000		pF
Output Capacitance	C_{oss}			750		
Reverse Transfer Capacitance	C_{rss}			715		
Turn-On Time	$t_{d(on)}$	$V_{DD}=-15V, R_L=1.5\Omega$ $I_D=-10A, V_{GEN}=-10V$ $R_G=1\Omega$		20	40	ns
	t_r			10	25	
Turn-Off Time	$t_{d(off)}$			80	150	
	t_f			10	20	



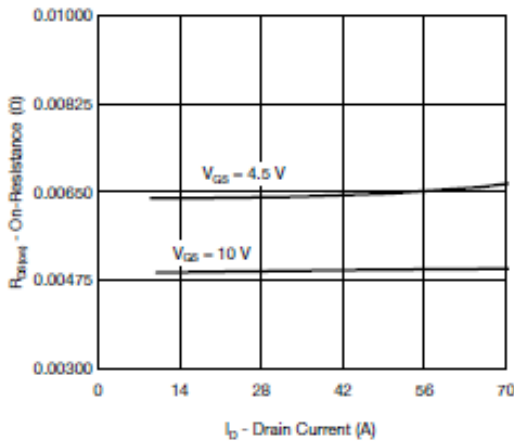
Typical Characteristics



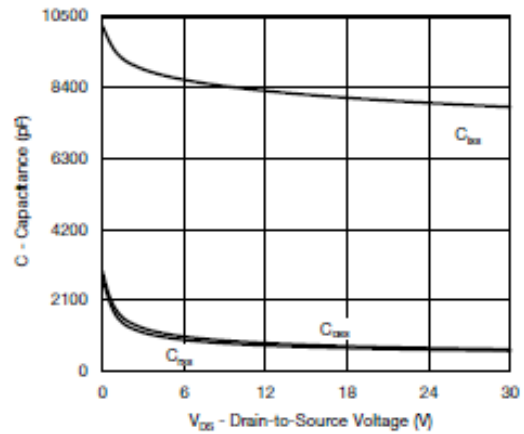
Output Characteristics



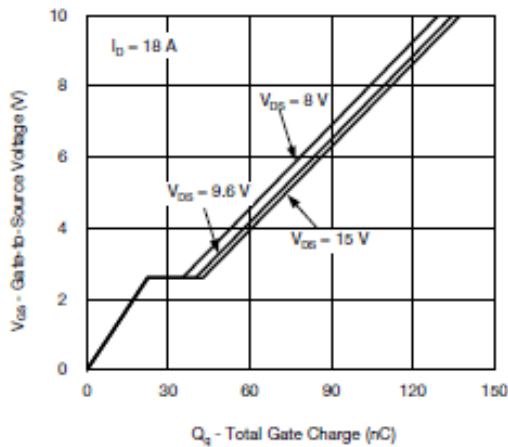
Transfer Characteristics



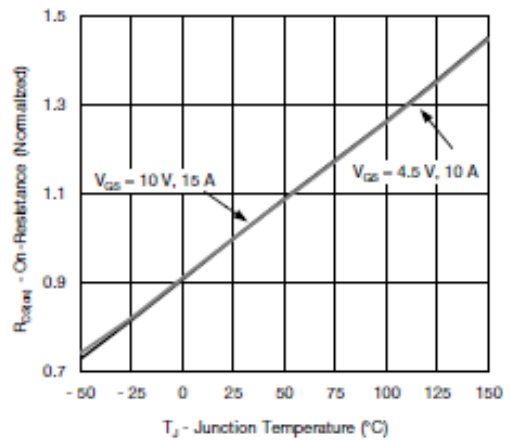
On-Resistance vs. Drain Current



Capacitance



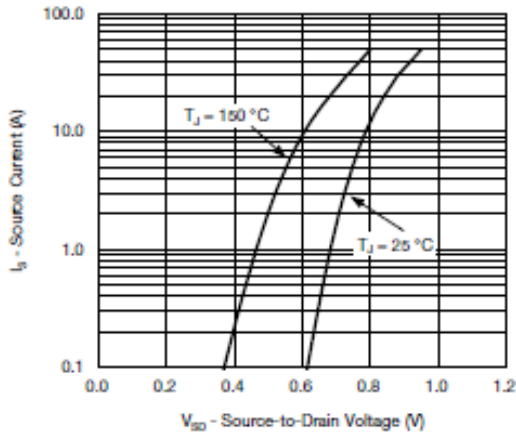
Gate Charge



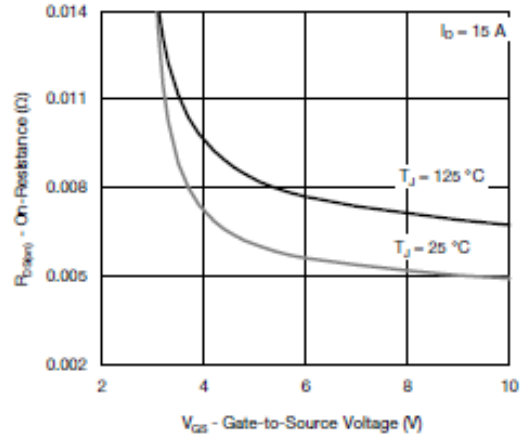
On-Resistance vs. Junction Temperature



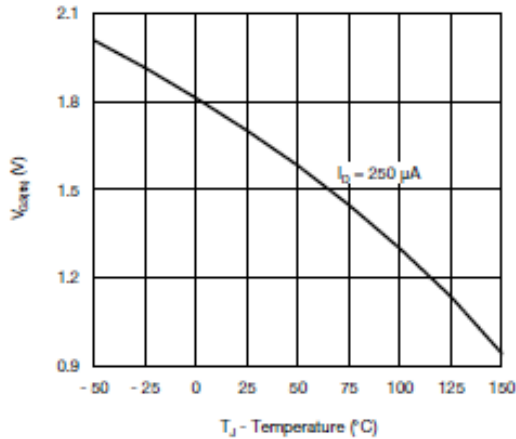
Typical Characteristics



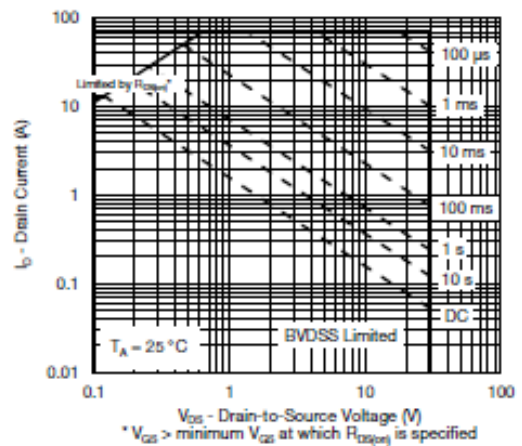
Source-Drain Diode Forward Voltage



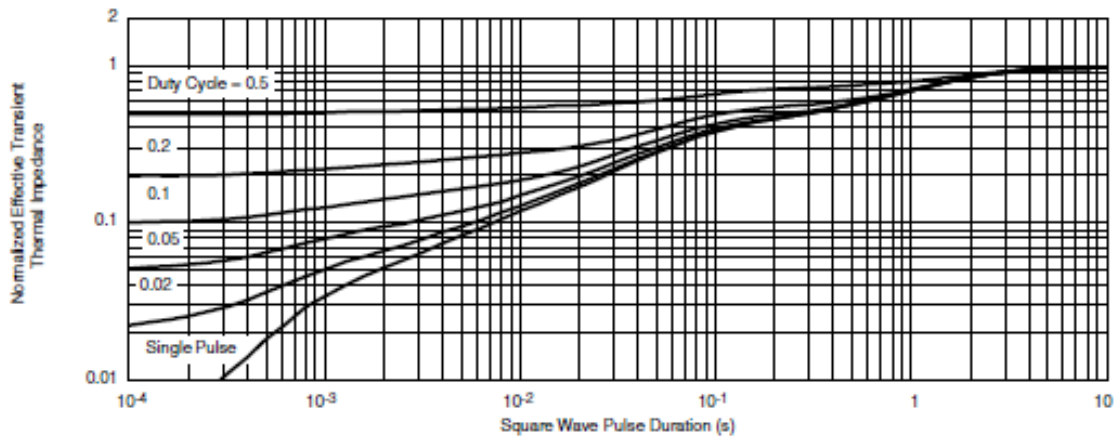
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Safe Operating Area

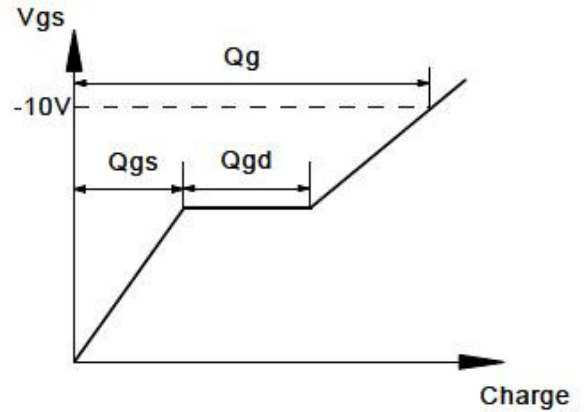
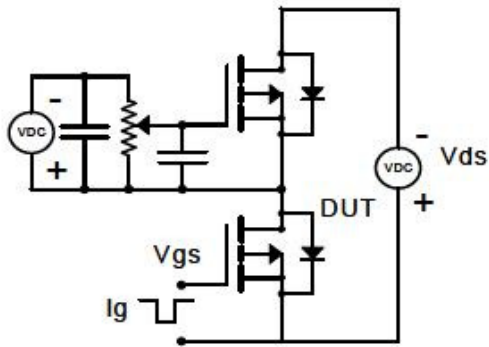


Normalized Thermal Transient Impedance, Junction-to-Foot

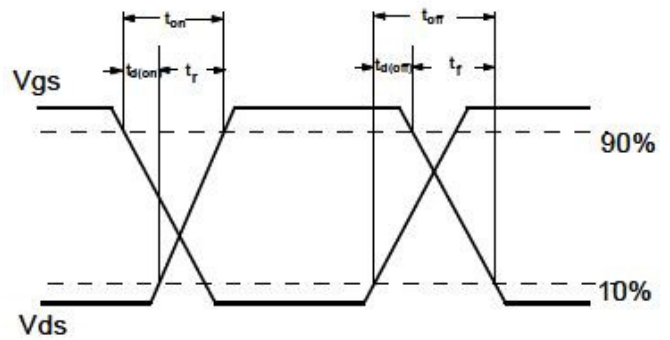
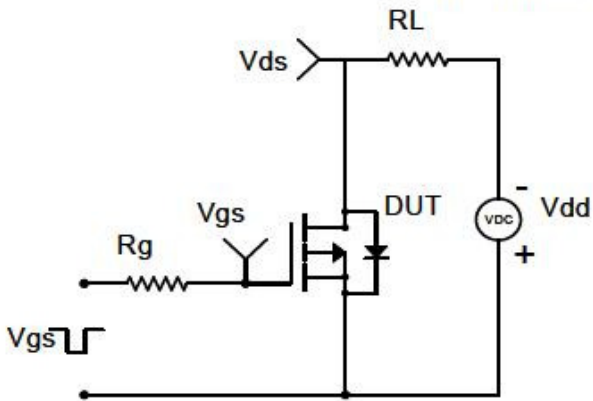


Typical Characteristics

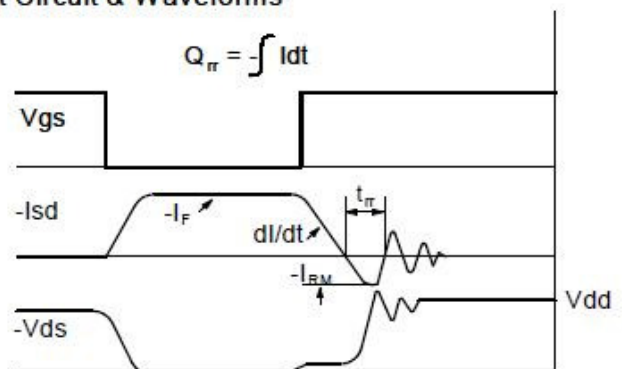
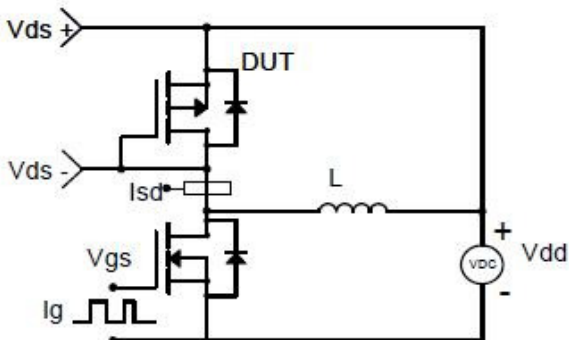
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

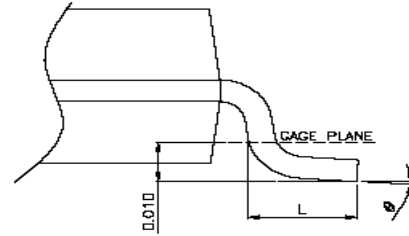
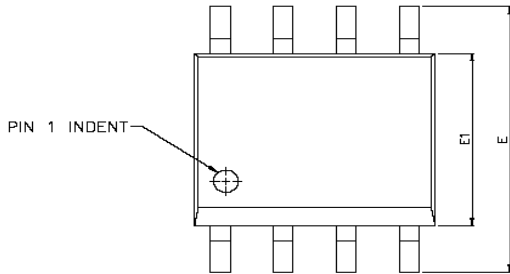


Diode Recovery Test Circuit & Waveforms

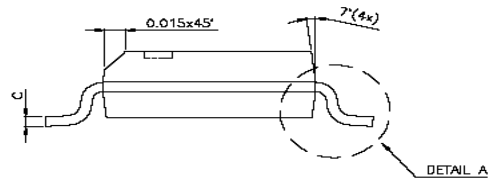
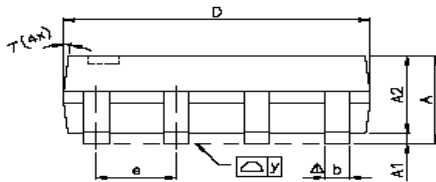




Package Information (SOP-8P)



DETAIL A



DETAIL A

SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.47	1.60	1.73	0.058	0.063	0.068
A1	0.10	—	0.25	0.004	—	0.010
A2	—	1.45	—	—	0.057	—
b	0.33	0.41	0.51	0.013	0.016	0.020
C	0.19	0.20	0.25	0.0075	0.008	0.0098
D	4.80	4.85	4.95	0.189	0.191	0.195
E	5.80	6.00	6.20	0.228	0.236	0.244
E1	3.80	3.90	4.00	0.150	0.154	0.157
e	—	1.27	—	—	0.050	—
L	0.38	0.71	1.27	0.015	0.028	0.050
Δ y	—	—	0.076	—	—	0.003
θ	0°	—	8°	0°	—	8°

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