



## General Description

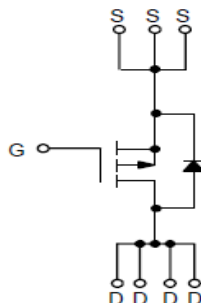
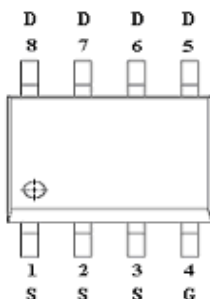
AFP4403, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent  $R_{DS(ON)}$ , low gate charge.

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/-9A,  $R_{DS(ON)}=26m\Omega@V_{GS}=4.5V$
- -20V/-8A,  $R_{DS(ON)}=34m\Omega@V_{GS}=2.5V$
- -20V/-6A,  $R_{DS(ON)}=48m\Omega@V_{GS}=1.8V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- SOP-8P package design

## Pin Description ( SOP-8P )



## Application

- LED Display
- Load Switch
- CCFL Inverter
- Power Management in Notebook Computer,

## 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
AFP4403S8RG	4403	SOP-8P	Tape & Reel	3000 EA

- ※ A Lot code
- ※ B Date code
- ※ AFP4403S8RG : 13" Tape & Reel ; Pb- Free ; Halogen- Free



## Absolute Maximum Ratings

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

Parameter	Symbol	Typical	Unit
Drain-Source Voltage	$V_{DSS}$	-20	V
Gate –Source Voltage	$V_{GSS}$	$\pm 12$	V
Continuous Drain Current( $T_J=150^\circ\text{C}$ )	$I_D$	$T_A=25^\circ\text{C}$	-9.0
		$T_A=70^\circ\text{C}$	-6.0
Pulsed Drain Current	$I_{DM}$	-40	A
Continuous Source Current(Diode Conduction)	$I_S$	-2	A
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	$^\circ\text{C/W}$

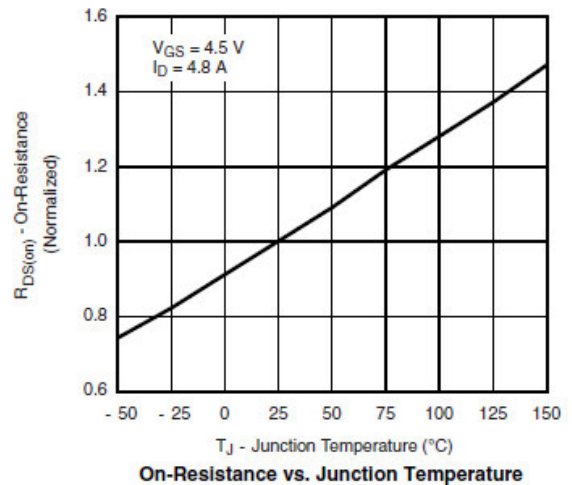
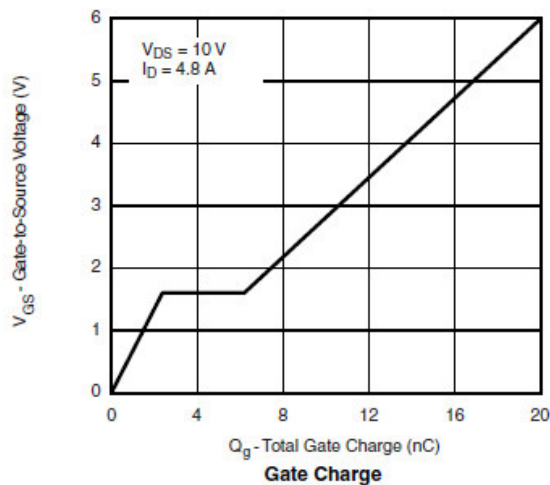
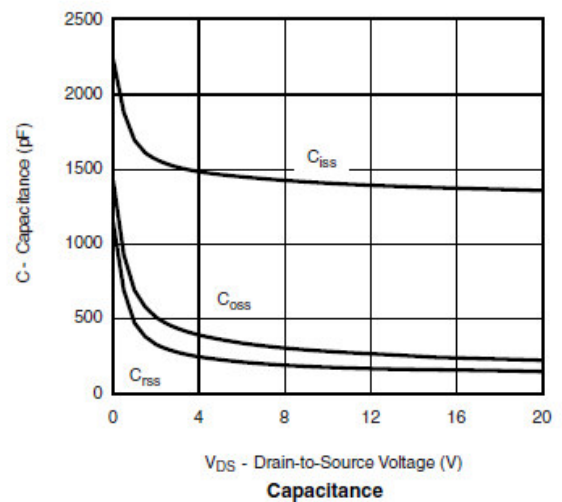
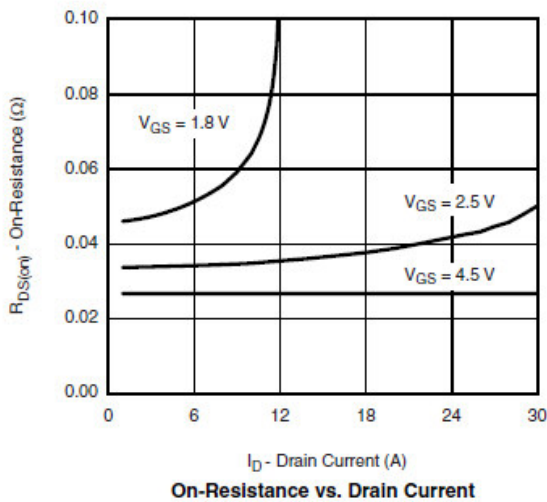
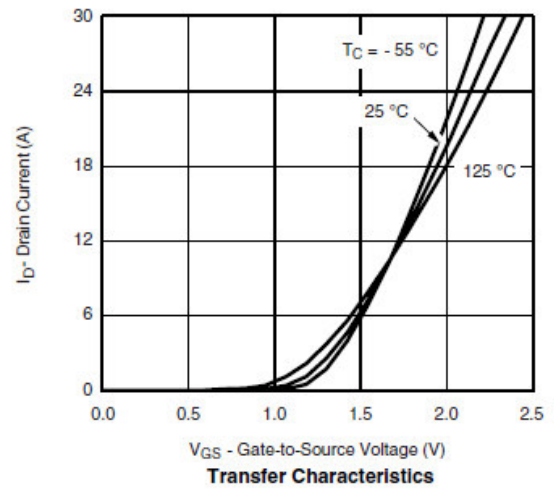
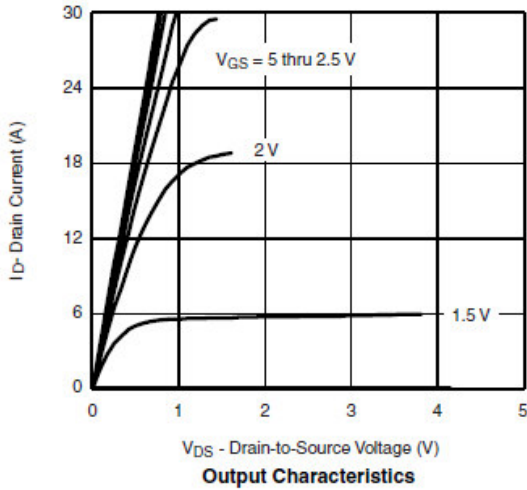
## Electrical Characteristics

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

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-20			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.4		-0.9	
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 12V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-16V, V_{GS}=0V$			-1	uA
		$V_{DS}=-16V, V_{GS}=0V$ $T_J=85^\circ\text{C}$			-10	
On-State Drain Current	$I_{D(on)}$	$V_{DS}\leq -10V, V_{GS}=-10V$	-30			A
		$V_{DS}\leq -5V, V_{GS}=-4.5V$	-5			
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-9.0A$		18	26	m $\Omega$
		$V_{GS}=-2.5V, I_D=-8.0A$		24	34	
		$V_{GS}=-1.8V, I_D=-6.0A$		38	48	
Forward Transconductance	$g_{FS}$	$V_{DS}=-5V, I_D=-3.6A$		10		S
Diode Forward Voltage	$V_{SD}$	$I_S=-1.6A, V_{GS}=0V$		-0.85	-1.2	V
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS}=-10V, V_{GS}=-5.0V$ $I_D\equiv -4.8A$		17	35	nC
Gate-Source Charge	$Q_{gs}$			2.5		
Gate-Drain Charge	$Q_{gd}$			5.0		
Input Capacitance	$C_{iss}$	$V_{DS}=-10V, V_{GS}=0V$ $f=1\text{MHz}$		1450		pF
Output Capacitance	$C_{oss}$			350		
Reverse Transfer Capacitance	$C_{rss}$			215		
Turn-On Time	$t_{d(on)}$	$V_{DD}=-10V, R_L=15\Omega$ $I_D\equiv -5.0A, V_{GEN}=-10V$ $R_G=6\Omega$		18	30	ns
	$t_r$			30	50	
Turn-Off Time	$t_{d(off)}$			100	150	
	$t_f$			55	80	

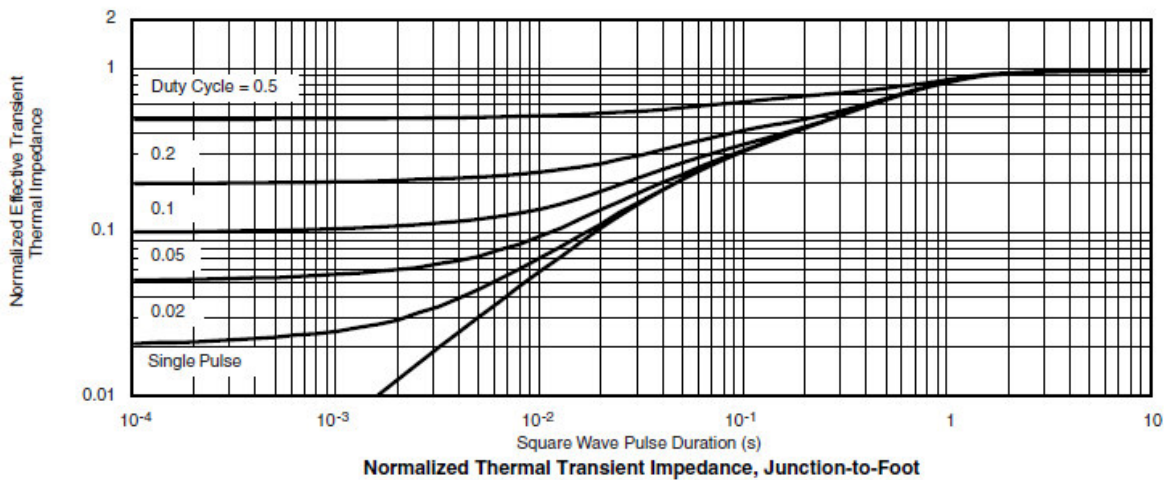
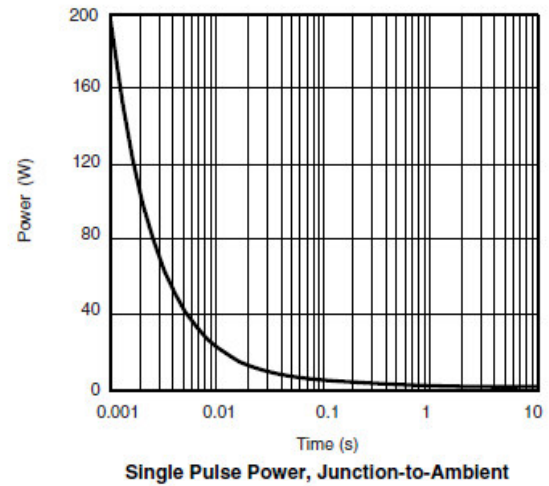
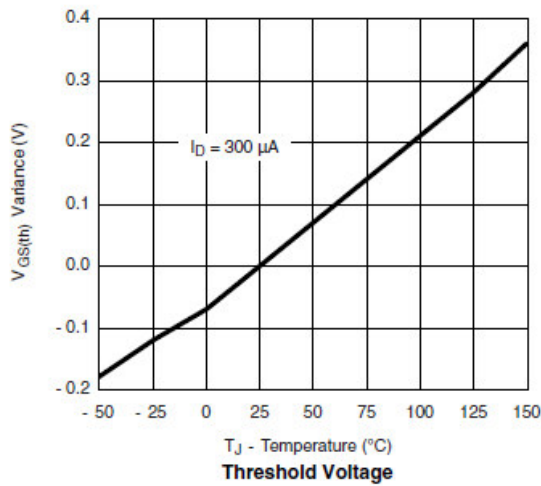
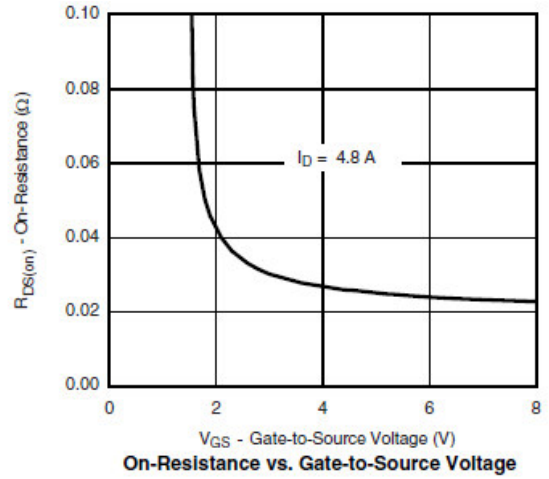
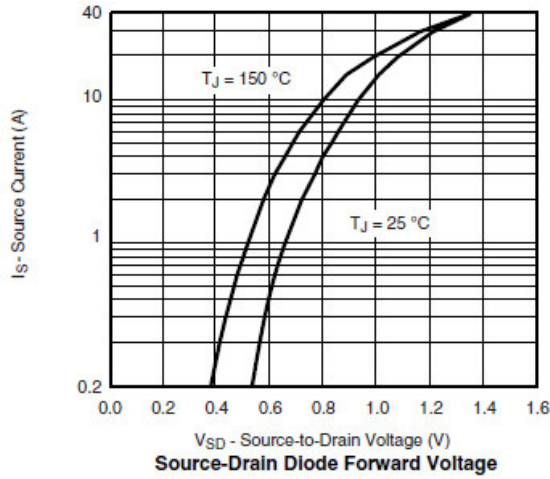


## Typical Characteristics





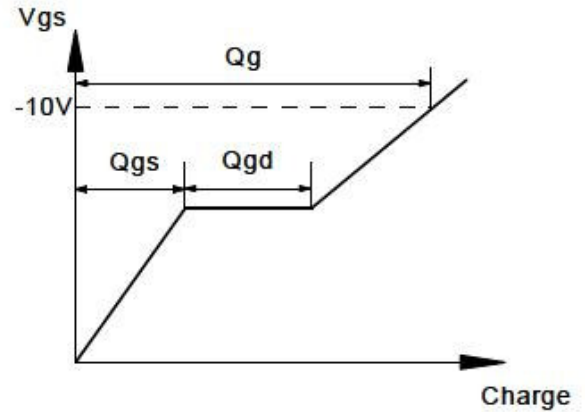
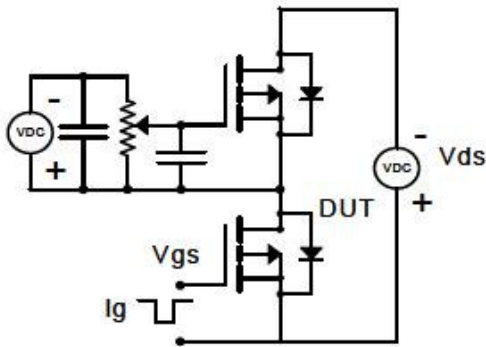
## Typical Characteristics



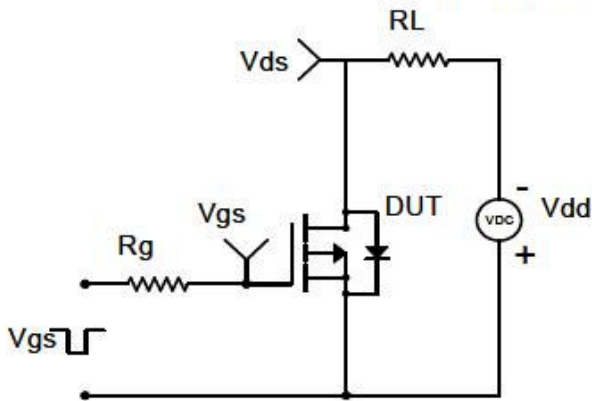


## Typical Characteristics

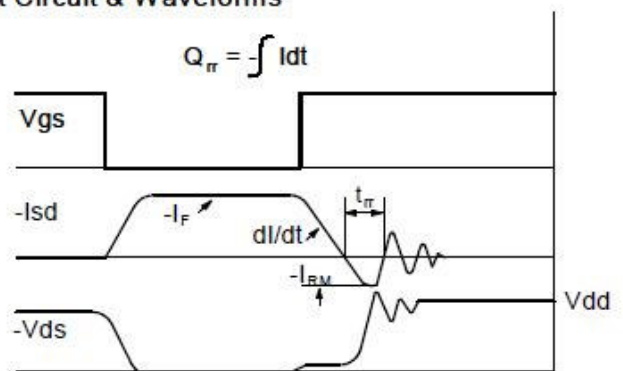
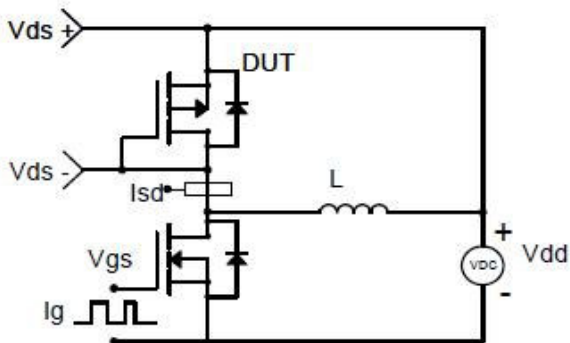
### Gate Charge Test Circuit & Waveform



### Resistive Switching Test Circuit & Waveforms

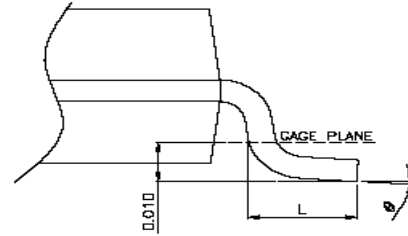
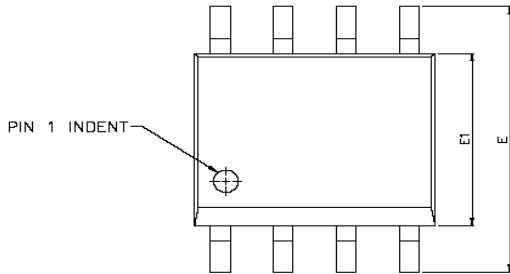


### Diode Recovery Test Circuit & Waveforms

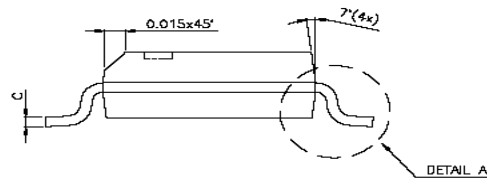
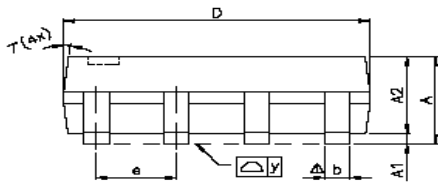




**Package Information (SOP-8P )**



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
$\Delta$ y	—	—	0.076	—	—	0.003
$\theta$	0°	—	8°	0°	—	8°

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