



General Description

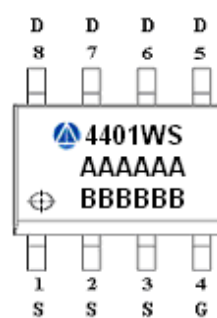
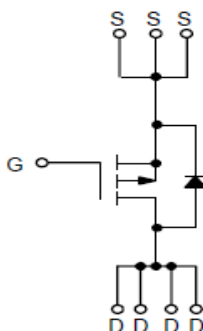
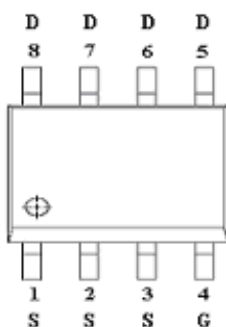
AFP4401WS, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

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

- -40V/-10.2A, $R_{DS(ON)} = 14m\Omega @ V_{GS} = -10V$
- -40V/ -8.4A, $R_{DS(ON)} = 17m\Omega @ V_{GS} = -4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- SOP-8P package design

Pin Description (SOP-8P)



Application

- Load Switch
- POL

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
AFP4401WSS8RG	4401WS	SOP-8P	Tape & Reel	2500 EA

※ A Lot code

※ B Date code

※ AFP4401WSS8RG : 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}	-40	V
Gate –Source Voltage	V _{GSS}	±20	V
Continuous Drain Current(T _J =150°C)	I _D	T _A =25°C -10.2	A
		T _A =70°C -8.4	
Pulsed Drain Current	I _{DM}	-50	A
Continuous Source Current(Diode Conduction)	I _S	-2.1	A
Power Dissipation	P _D	T _A =25°C 2.8	W
		T _A =70°C 1.8	
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

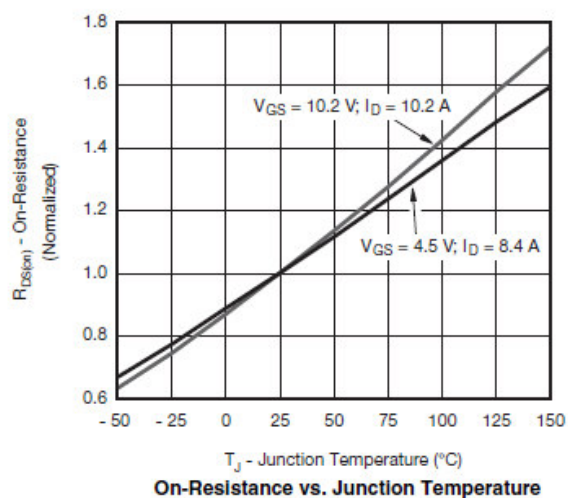
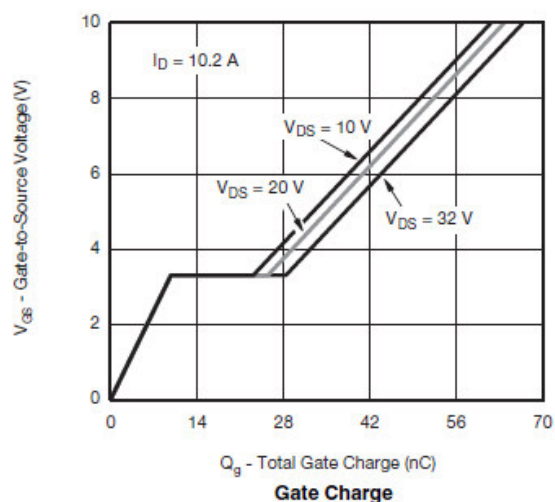
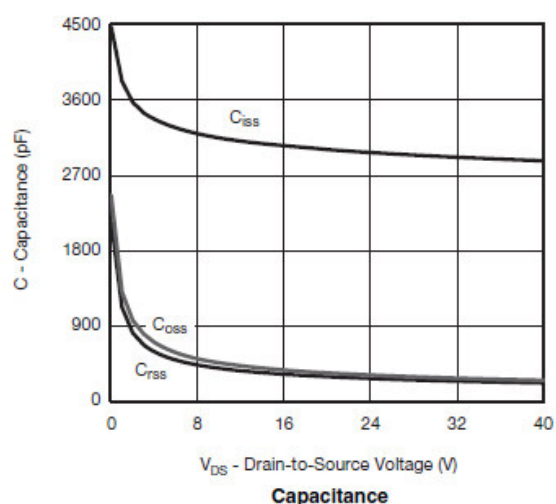
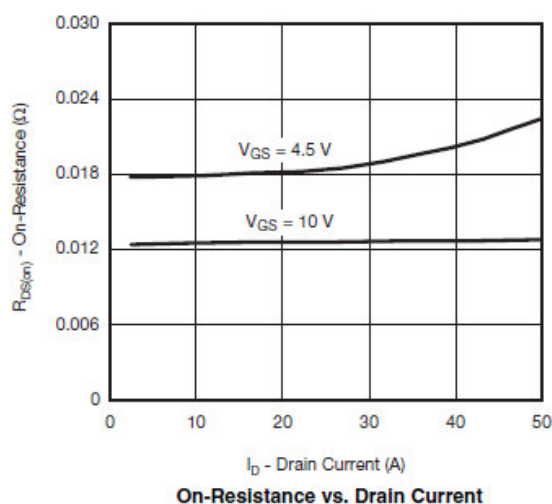
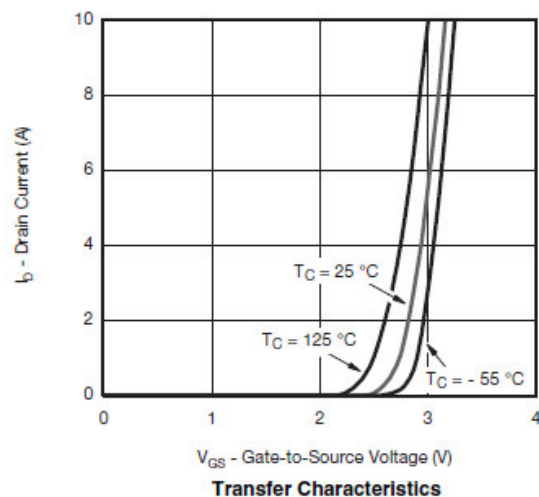
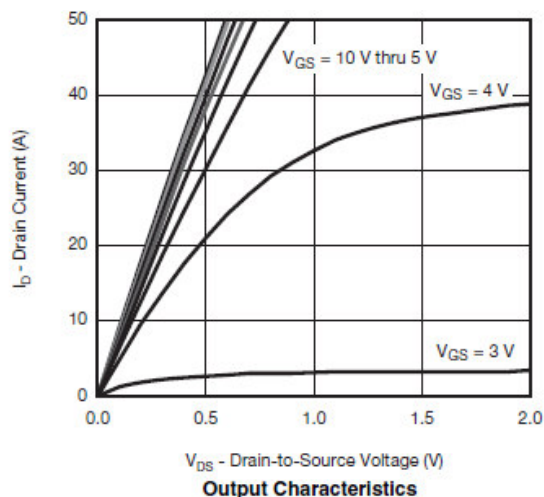
Electrical Characteristics

(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	-40			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D = -250uA	-1.0		-2.0	
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -32V, V _{GS} =0V			-1	uA
		V _{DS} = -32V, V _{GS} =0V			-20	
		T _J =85°C				
On-State Drain Current	I _{D(on)}	V _{DS} ≥ -5V, V _{GS} = -10V	-25			A
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = -10V, I _D =-10.2A		12	14	mΩ
		V _{GS} = -4.5V, I _D =-8.4A		15	17	
Forward Transconductance	g _{FS}	V _{DS} = -15V, I _D = -10.2A		37		S
Diode Forward Voltage	V _{SD}	I _S = -1A, V _{GS} =0V		-0.7	-1.3	V
Dynamic						
Total Gate Charge	Q _g	V _{DS} =-20V, V _{GS} =-4.5V I _D = -10.2A		30	50	nC
Gate-Source Charge	Q _{gs}			10		
Gate-Drain Charge	Q _{gd}			16		
Input Capacitance	C _{iss}	V _{DS} =-20V, V _{GS} =0V f=1MHz		3000		pF
Output Capacitance	C _{oss}			350		
Reverse Transfer Capacitance	C _{rss}			300		
Turn-On Time	t _{d(on)}	V _{DD} =-20V, R _L =2.4Ω I _D ≡ -8.2A, V _{GEN} =-10V R _G =1Ω		15	30	ns
	t _r			10	20	
Turn-Off Time	t _{d(off)}			45	80	
	t _f			10	20	

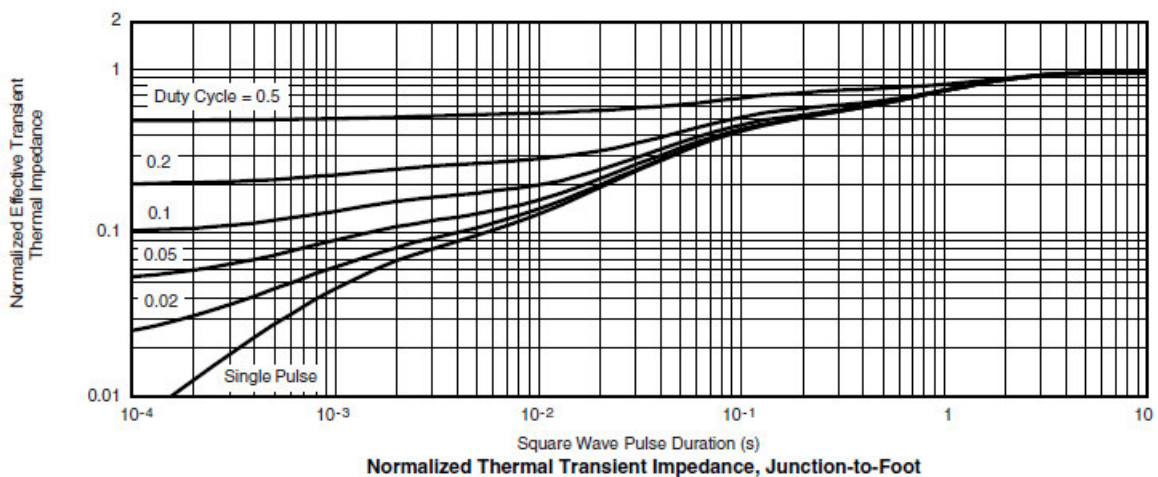
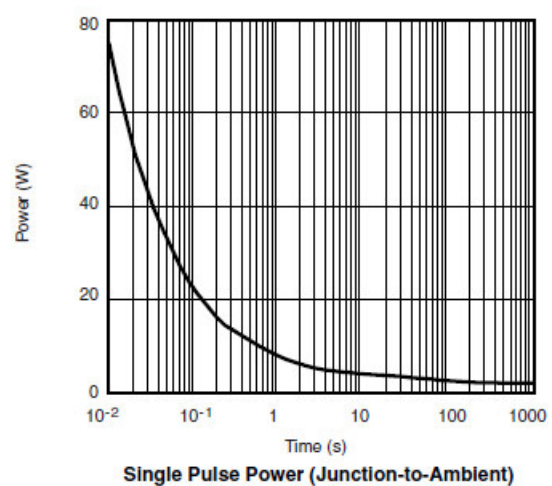
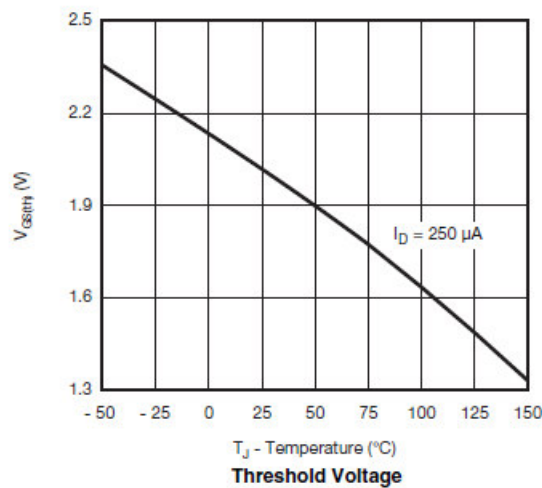
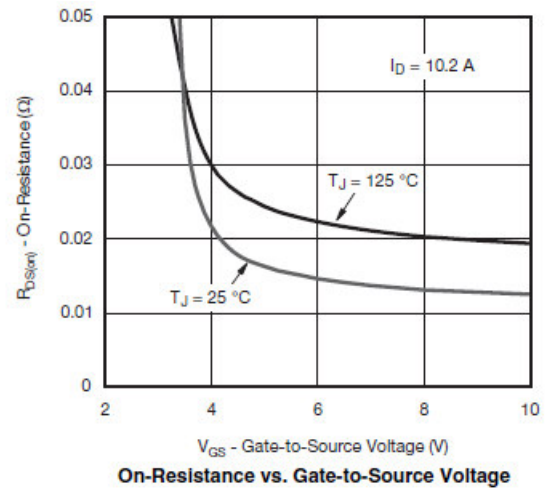
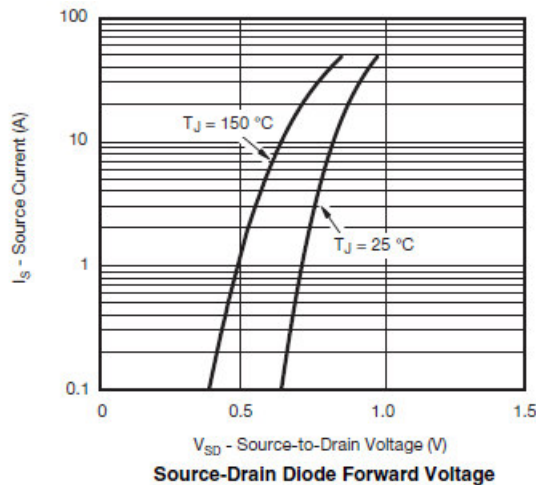


Typical Characteristics





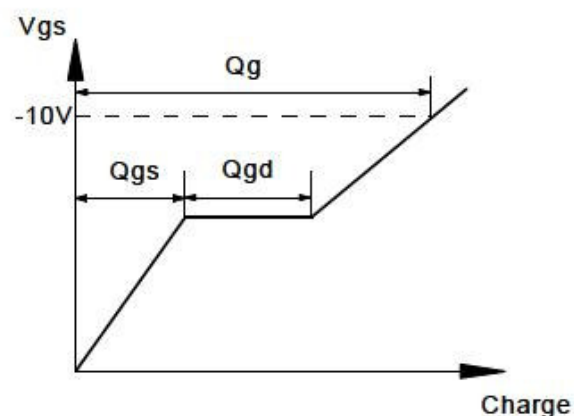
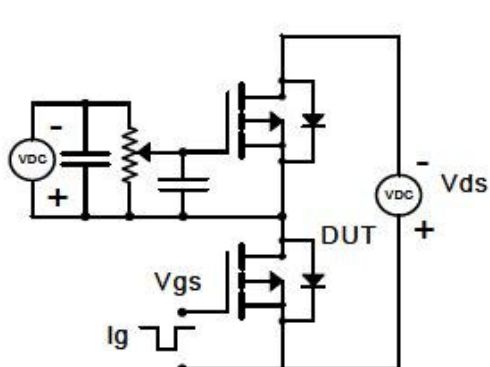
Typical Characteristics



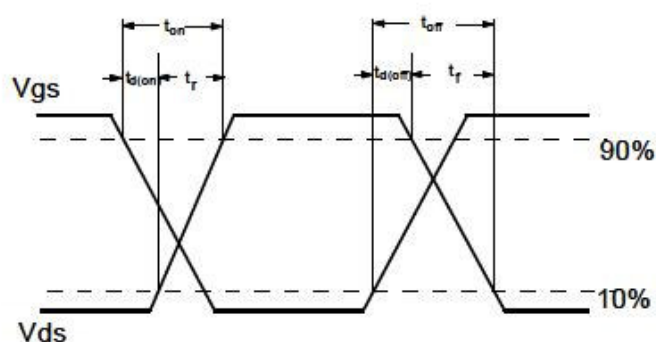
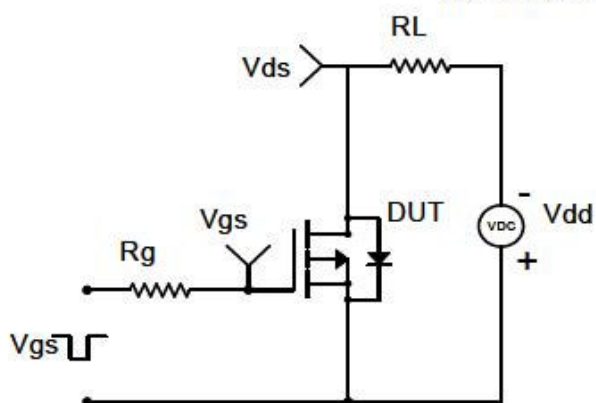


Typical Characteristics

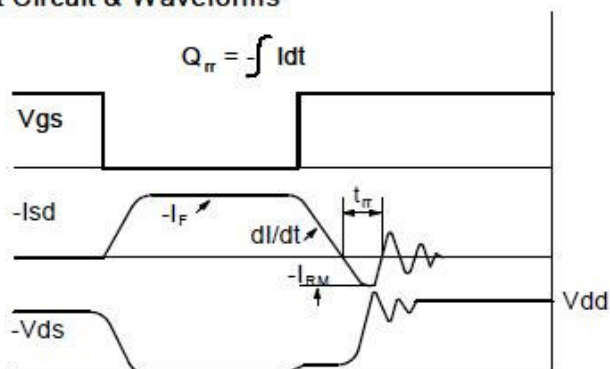
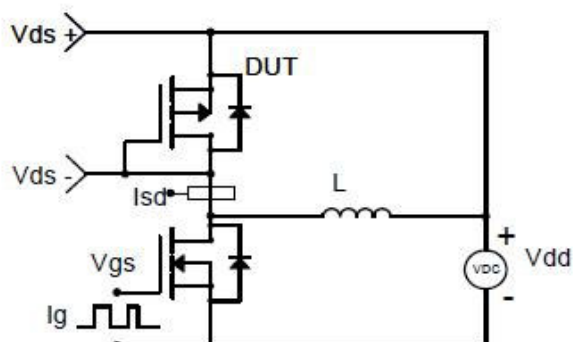
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

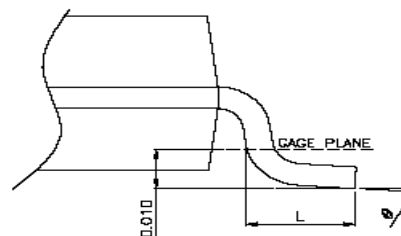
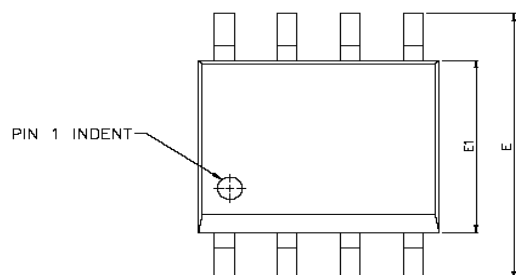


Diode Recovery Test Circuit & Waveforms

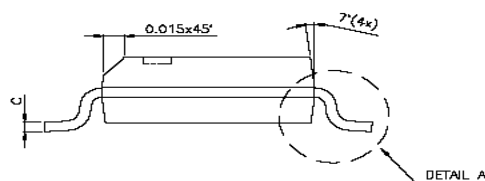
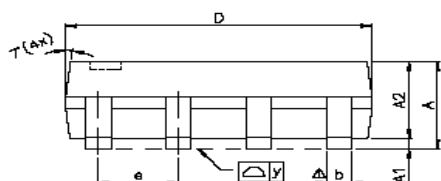




Package Information (SOP-8P)



DETAIL A



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
Δy	—	—	0.076	—	—	0.003
θ	0°	—	8°	0°	—	8°

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