Alfa-MOS Technology

AFP2125S

200V P-Channel Enhancement Mode MOSFET

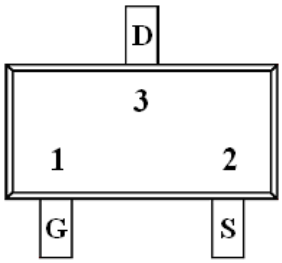
General Description

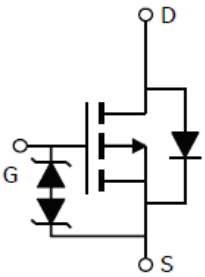
AFP2125S, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.
These devices are particularly suited for low voltage power management, and low in-line power loss are needed in commercial industrial surface mount applications.

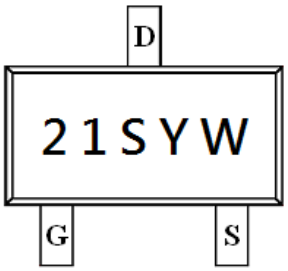
Features

- I_D= -0.5A,$R_{DS(ON)}$=2400 mΩ@V_{GS}=-10V
- I_D= -0.3A,$R_{DS(ON)}$=2600 mΩ@V_{GS}=-4.5V
- Super high density cell design for extremely low $R_{DS\ (ON)}$
- Exceptional on-resistance and maximum DC current capability
- ESD Protection (>2KV) Diode design–in
- SOT-23-3L package design

Pin Description (SOT-23-3L)







Application

- Active Clamp Circuits in DC/DC Power Supplies
- Load switch

Pin Define

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

Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFP2125SS23RG	21SYW	SOT-23-3L	Tape & Reel	3000 EA

※ 21S parts code
※ Y year code (0 ~ 9)
※ W week code (A ~ Z = 1 ~ 26 / a ~ z = 27 ~ 52)
※ AFP2125SS23RG : 7” Tape & Reel ; Pb- Free ; Halogen –Free

Absolute Maximum Ratings

(T_A=25℃ Unless otherwise noted)

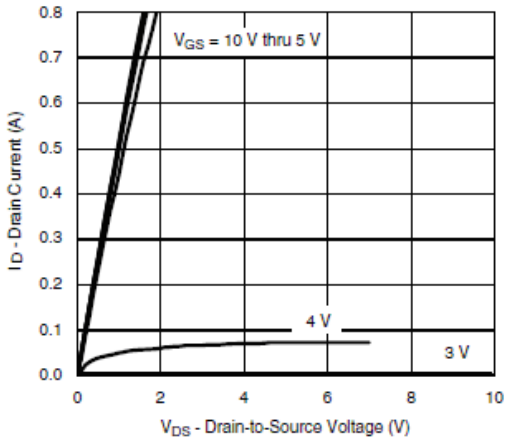
Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	-200	V
Gate –Source Voltage		V_{GSS}	±20	V
Continuous Drain Current(T_J=150℃)	T_c=25℃	I_D	-0.5	A
	T_c=70℃		-0.3	
Pulsed Drain Current		I_{DM}	-1.0	A
Continuous Source Current(Diode Conduction)		I_S	-1.0	A
Power Dissipation	T_C=25℃	P_D	3.2	W
	T_C=70℃		2.1	
Operating Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{STG}	-55/150	℃
Thermal Resistance-Junction to Ambient		$R_{\theta JA}$	120	℃/W

Electrical Characteristics

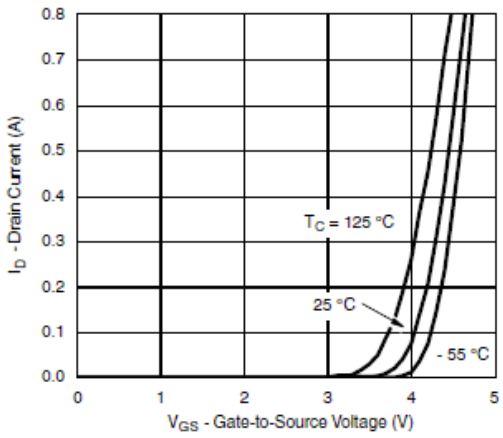
(T_A=25℃ Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=-250uA	-200			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			±10	uA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-160V,V_{GS}=0V			-1	uA
		V_{DS}=-160V,V_{GS}=0V T_J=85℃			-30	
On-State Drain Current	$I_{D(on)}$	V_{DS}≧-10V,V_{GS}=-10V	-0.6			A
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=-10V,I_D=-0.5A		2000	2400	mΩ
		V_{GS}=-4.5V,I_D=-0.3A		2100	2600	
Forward Transconductance	g_{FS}	V_{DS}=-10V,I_D=-0.5A		1.5		S
Diode Forward Voltage	V_{SD}	I_S=-0.3A,V_{GS}=0V		-0.75	-1.2	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=-75V,V_{GS}=-10V I_D≡-0.5A		10	15	nC
Gate-Source Charge	Q_{gs}			2.5		
Gate-Drain Charge	Q_{gd}			5.0		
Input Capacitance	C_{iss}	V_{DS}=-75V,V_{GS}=0V f=1MHz		520	700	pF
Output Capacitance	C_{oss}			30		
Reverse Transfer Capacitance	C_{rss}			20		
Turn-On Time	$t_{d(on)}$	V_{DD}=-75V,R_L=75Ω I_D≡-1.0A,V_{GEN}=-10V R_G=1.0Ω		10	20	ns
	t_r			12	25	
Turn-Off Time	$t_{d(off)}$			30	60	
	t_f			12	25	

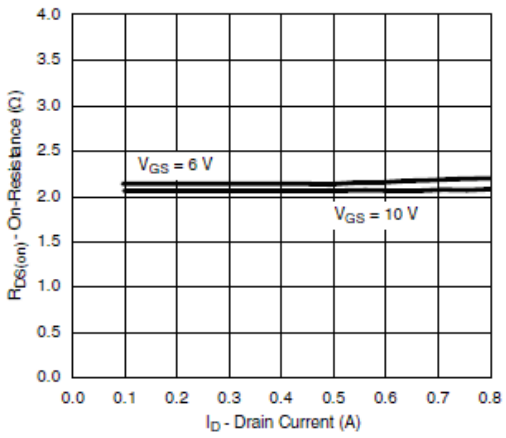
Typical Characteristics



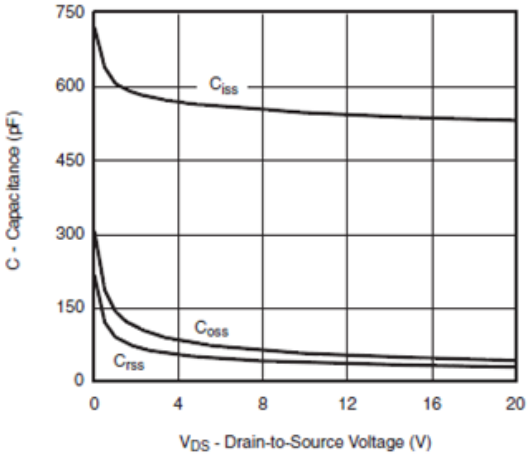
Output Characteristics



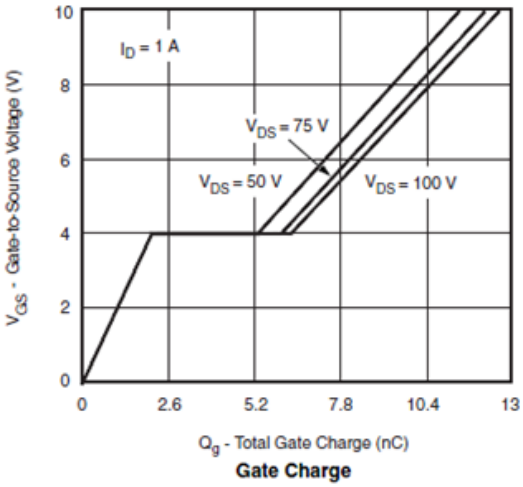
Transfer Characteristics



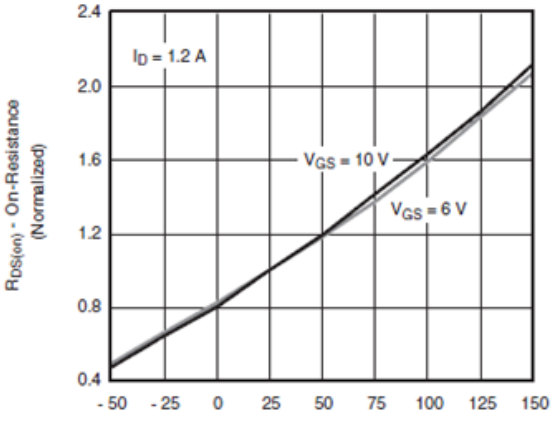
On-Resistance vs. Drain Current and Gate Voltage



Capacitance

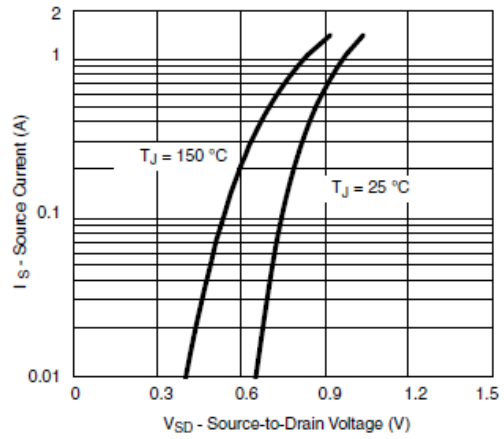


Gate Charge

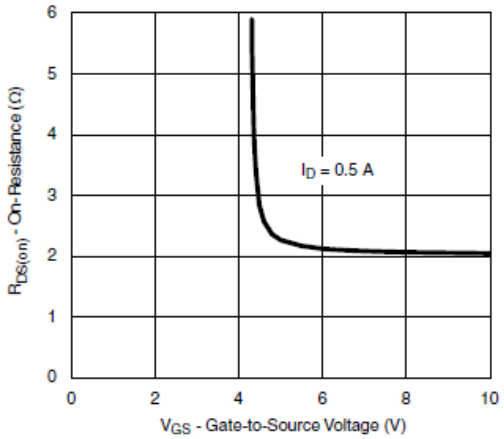


On-Resistance vs. Junction Temperature

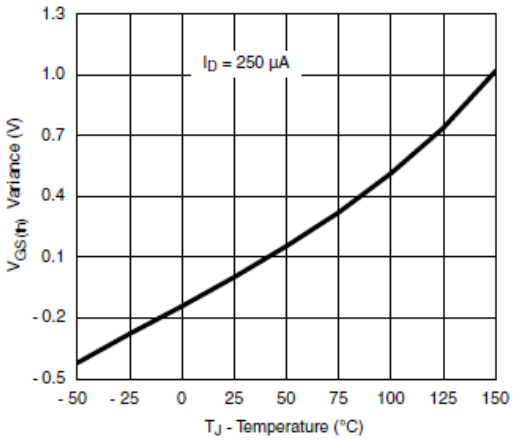
Typical Characteristics



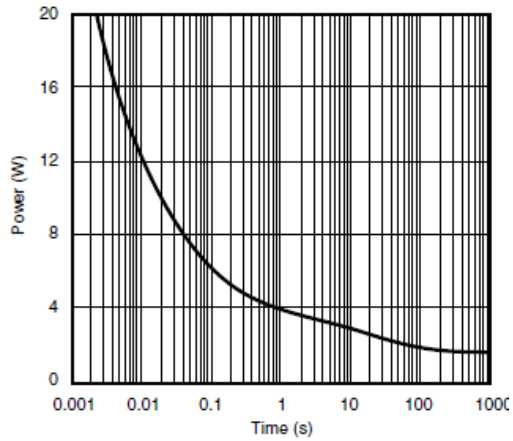
Source-Drain Diode Forward Voltage



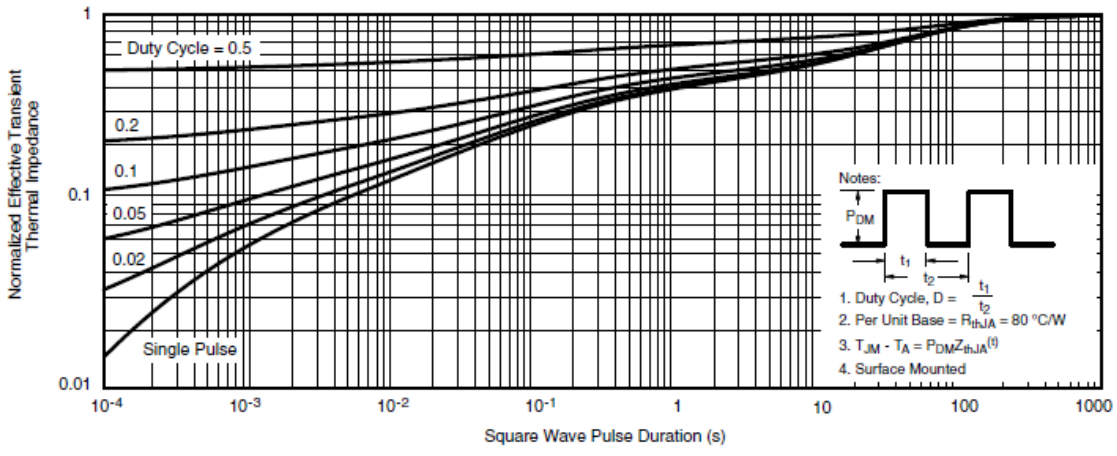
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



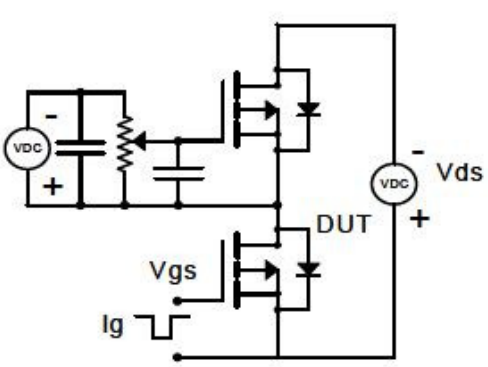
Single Pulse Power, Junction-to-Ambient

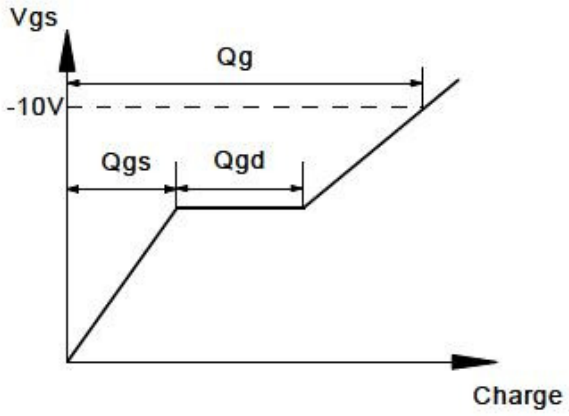


Normalized Thermal Transient Impedance, Junction-to-Ambient

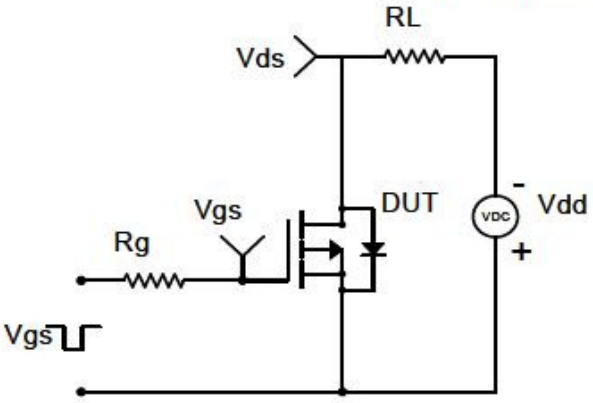
Typical Characteristics

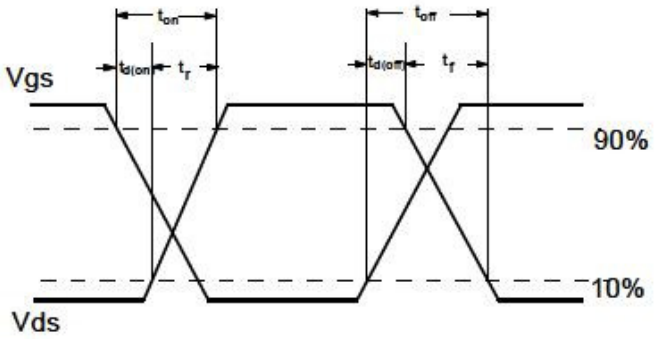
Gate Charge Test Circuit & Waveform



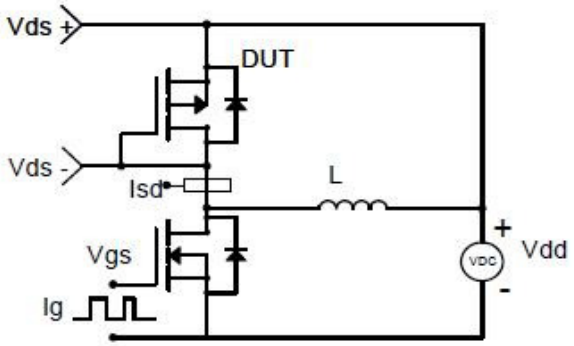


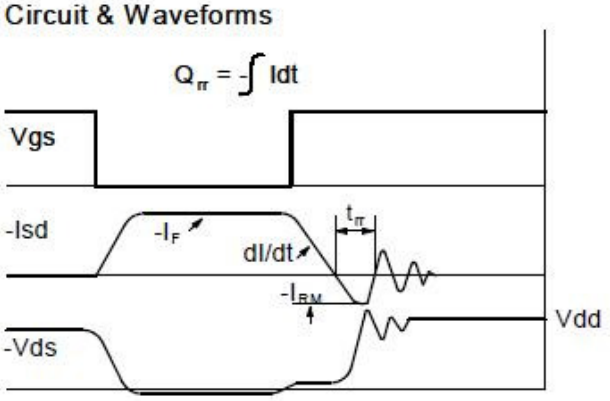
Resistive Switching Test Circuit & Waveforms



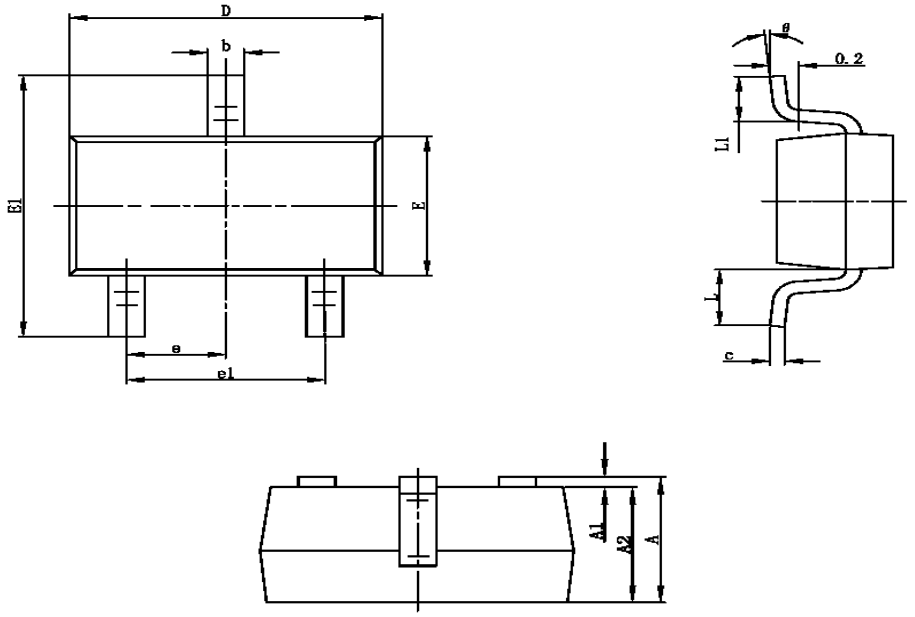


Diode Recovery Test Circuit & Waveforms





Package Information (SOT-23-3L)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.400	0.012	0.016
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.700REF		0.028REF	
L1	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

2F, No.80, Sec.1, Cheng Kung Rd., Nan Kang Dist., Taipei City 115, Taiwan (R.O.C.)
Tel : 886 2) 2651 3928
Fax : 886 2) 2786 8483
©http://www.alfa-mos.com