



General Description

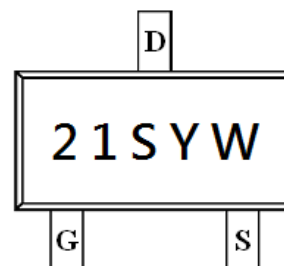
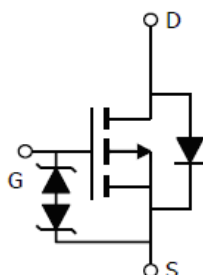
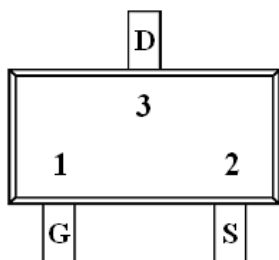
AFP2125S, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

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

- -200V/-0.5A, $R_{DS(ON)}=2400\text{ m}\Omega@V_{GS}=-10\text{V}$
- -200V/-0.3A, $R_{DS(ON)}=2600\text{ m}\Omega@V_{GS}=-4.5\text{V}$
- 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°C Unless otherwise noted)

Parameter	Symbol	Typical	Unit
Drain-Source Voltage	V _{DSS}	-200	V
Gate –Source Voltage	V _{GSS}	±20	V
Continuous Drain Current(T _J =150°C)	I _D	T _c =25°C -0.5	A
		T _c =70°C -0.3	
Pulsed Drain Current	I _{DM}	-1.0	A
Continuous Source Current(Diode Conduction)	I _S	-1.0	A
Power Dissipation	P _D	T _c =25°C 3.2	W
		T _c =70°C 2.1	
Operating Junction Temperature	T _J	150	°C
Storage Temperature Range	T _{STG}	-55/150	°C
Thermal Resistance-Junction to Ambient	R _{θJA}	120	°C/W

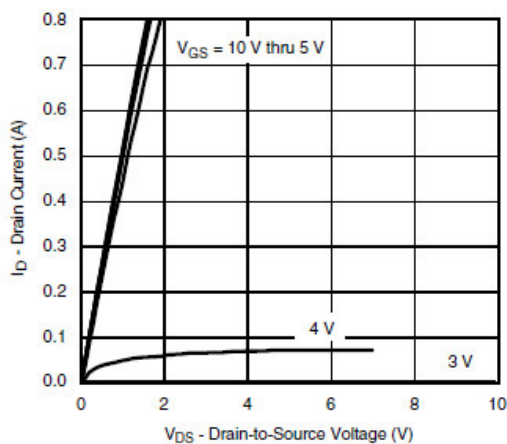
Electrical Characteristics

(T_A=25°C Unless otherwise noted)

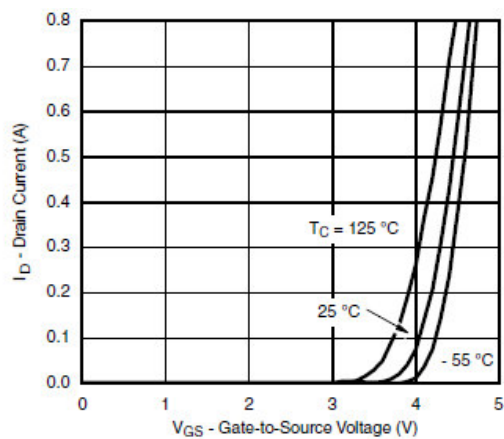
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =-250uA	-200			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250uA	-1.0		-2.5	
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±10	uA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-160V, V _{GS} =0V			-1	uA
		V _{DS} =-160V, V _{GS} =0V T _J =85°C			-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		4.2	8	nC
Gate-Source Charge	Q _{gs}			0.98		
Gate-Drain Charge	Q _{gd}			1.32		
Input Capacitance	C _{iss}	V _{DS} =-75V, V _{GS} =0V f=1MHz		155		pF
Output Capacitance	C _{oss}			8		
Reverse Transfer Capacitance	C _{rss}			6		
Turn-On Time	t _{d(on)}	V _{DD} =-75V, R _L =75Ω I _D ≡-1.0A, V _{GEN} =-10V R _G =1.0Ω		5	10	ns
	t _r			10	20	
Turn-Off Time	t _{d(off)}			20	40	
	t _f			10	20	



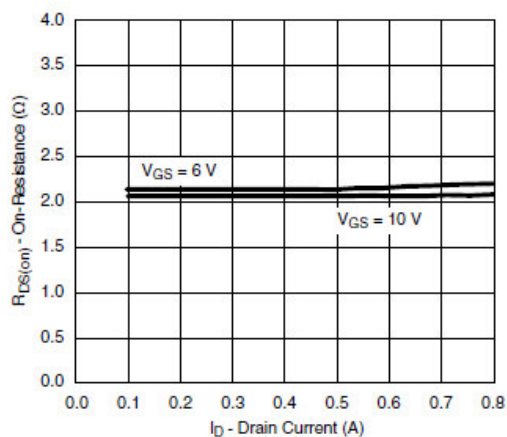
Typical Characteristics



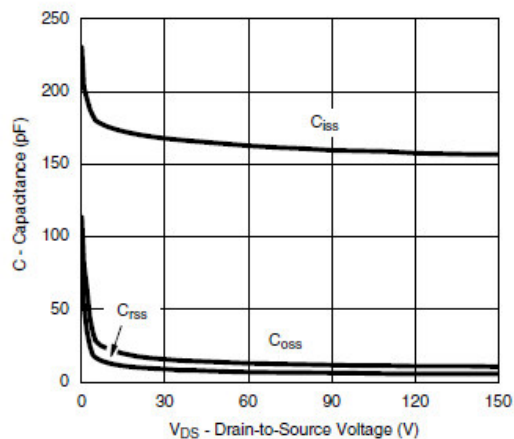
Output Characteristics



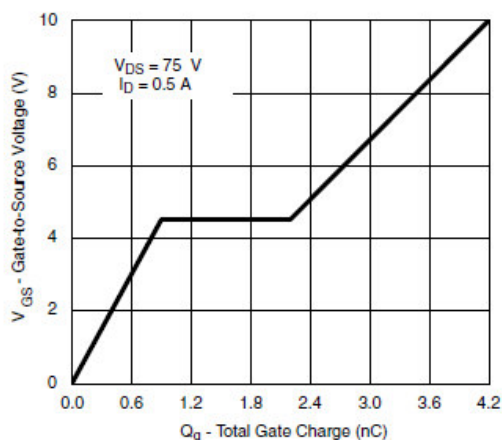
Transfer Characteristics



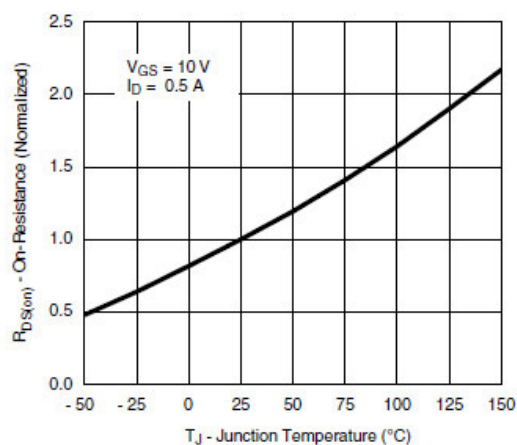
On-Resistance vs. Drain Current and Gate Voltage



Capacitance



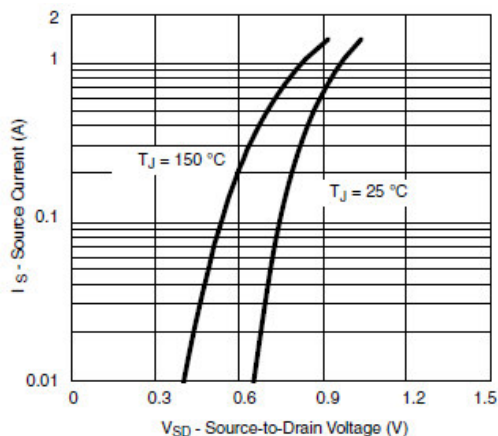
Gate Charge



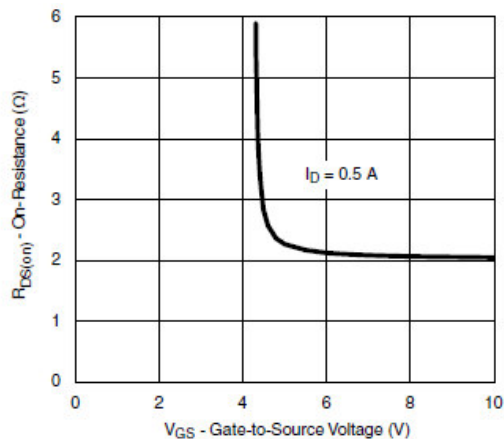
On-Resistance vs. Junction Temperature



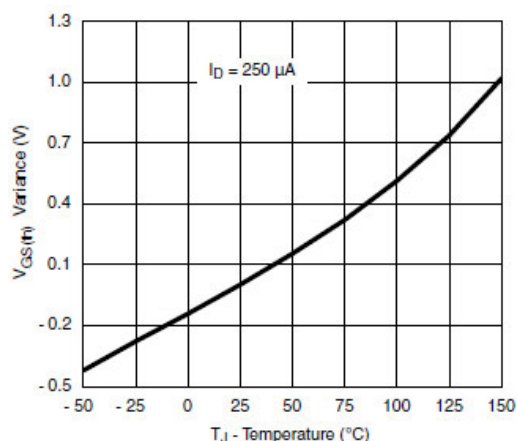
Typical Characteristics



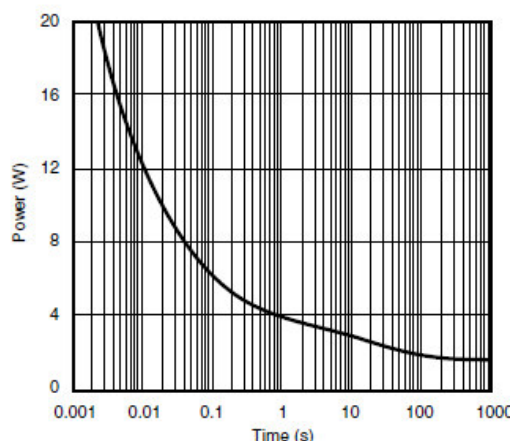
Source-Drain Diode Forward Voltage



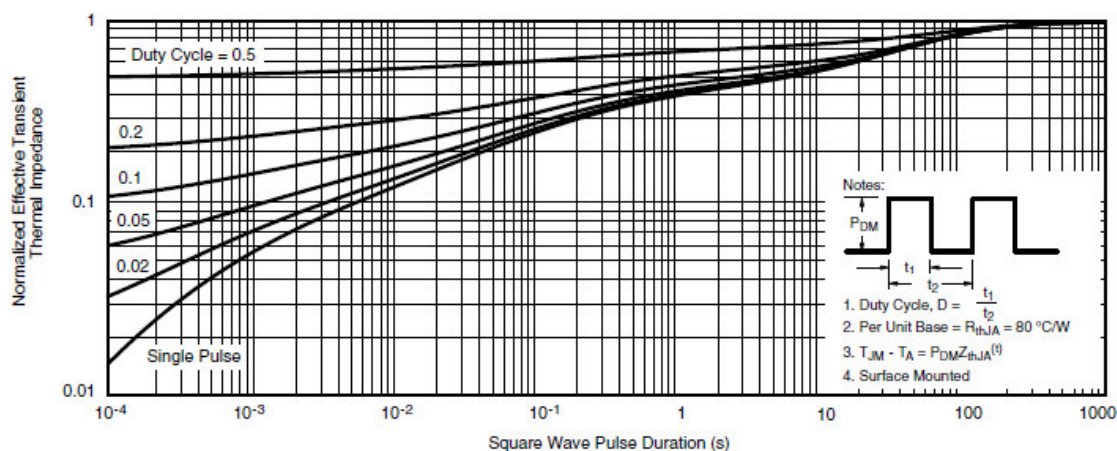
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power, Junction-to-Ambient

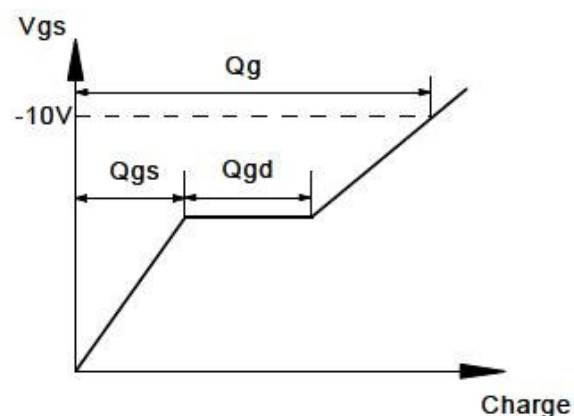
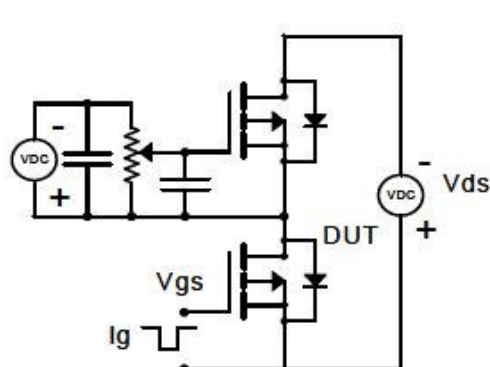


Normalized Thermal Transient Impedance, Junction-to-Ambient

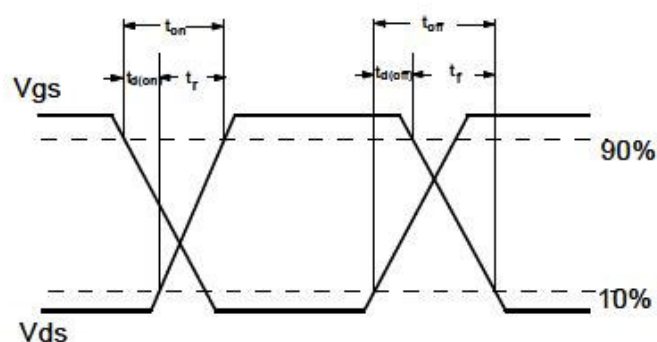
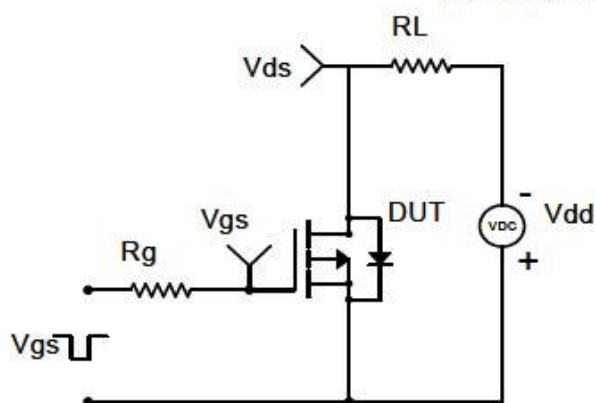


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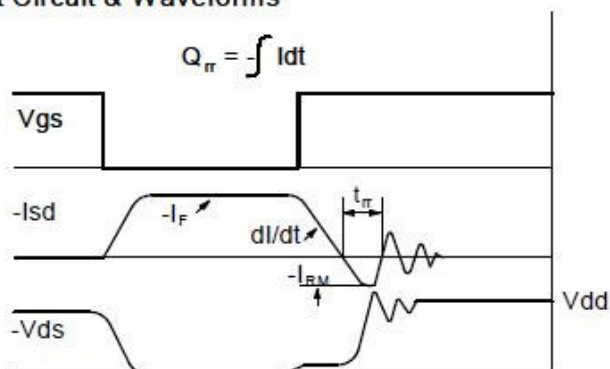
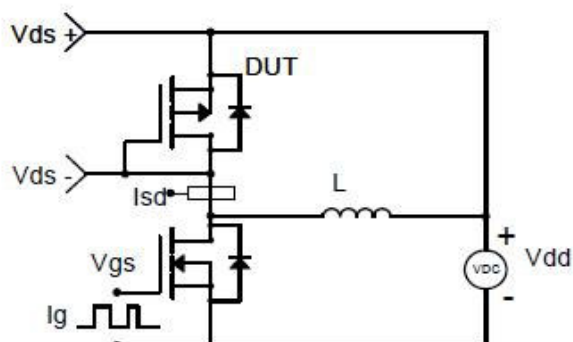
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

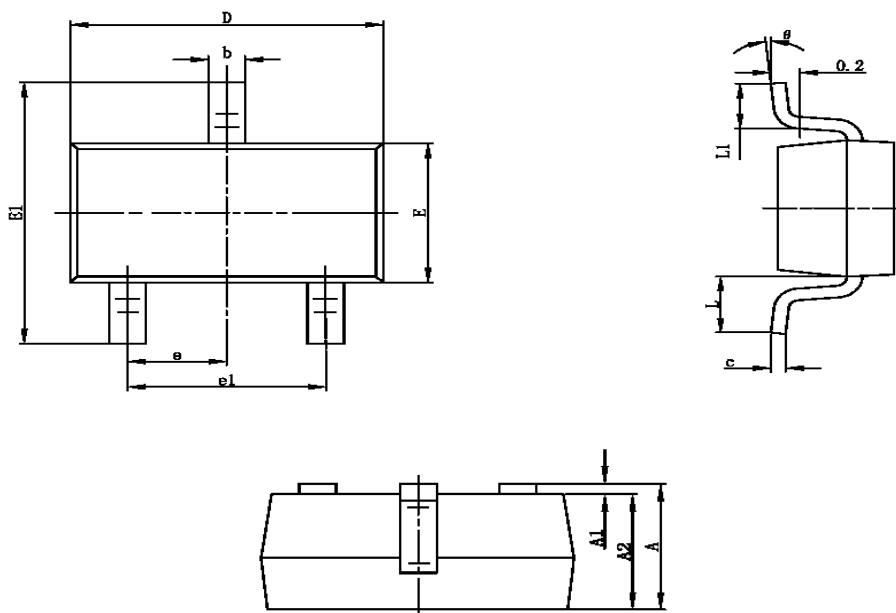


Diode Recovery Test Circuit & Waveforms





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°

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