Alfa-MOS Technology

AFP2337A

100V P-Channel Enhancement Mode MOSFET

General Description

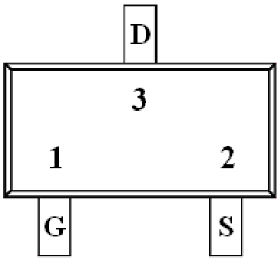
AFP2337A, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

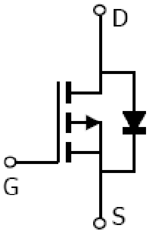
These devices are particularly suited for low voltage power management, and low in-line power loss are needed in commercial industrial surface mount applications.

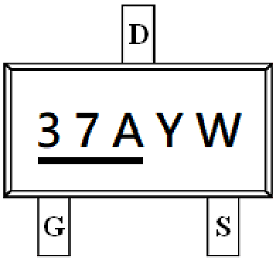
Features

- I_D=-3.8A,$R_{DS(ON)}$= 295mΩ@V_{GS}= -10V
- I_D=-2.6A,$R_{DS(ON)}$= 325mΩ@V_{GS}= -4.5V
- Super high density cell design for extremely low $R_{DS\ (ON)}$
- SOT-23 package design

Pin Description (SOT-23)







Application

- Active Clamp Circuits in DC/DC Power Supplies

Pin Define

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

Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFP2337AS23RG	37AYW	SOT-23	Tape & Reel	3000 EA

※ 37A parts code
※ Y year code (0 ~ 9)
※ W week code (A ~ Z = 1 ~ 26 / a ~ z = 27 ~ 52)
※ AFP2337AS23RG : 7” Tape & Reel ; Pb- Free ; Halogen –Free

Absolute Maximum Ratings

(T_A=25℃ Unless otherwise noted)

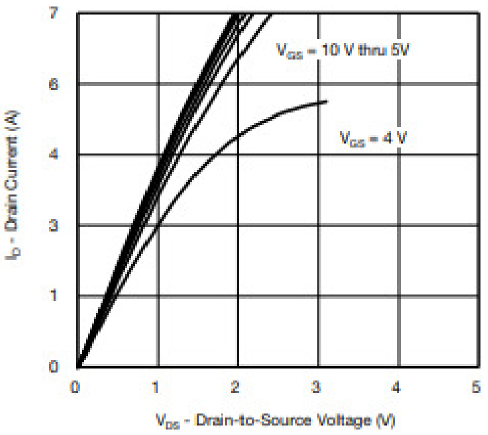
Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V_{DSS}	-100	V
Gate –Source Voltage		V_{GSS}	±20	V
Continuous Drain Current(T_J=150℃)	T_A=25℃	I_D	-3.8	A
	T_A=70℃		-2.6	
Pulsed Drain Current		I_{DM}	-10	A
Continuous Source Current(Diode Conduction)		I_S	-4.0	A
Power Dissipation	T_A=25℃	P_D	2.8	W
	T_A=70℃		1.2	
Operating Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{STG}	-55/150	℃
Thermal Resistance-Junction to Ambient		$R_{θJA}$	120	℃/W

Electrical Characteristics

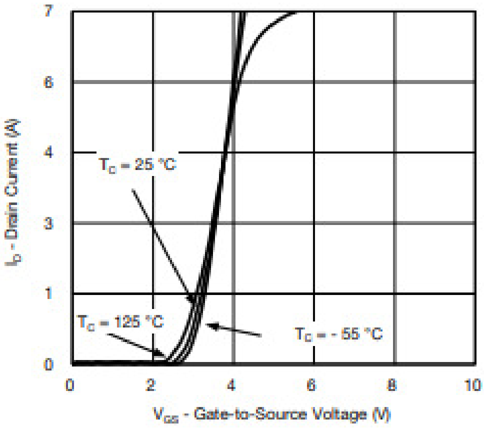
(T_A=25℃ Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D= -250uA	-100			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D= -250uA	-1.0	-1.78	-2.5	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}= ±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= -80V,V_{GS}=0V			-1	uA
		V_{DS}= -80V,V_{GS}=0V T_J=85℃			-30	
On-State Drain Current	$I_{D(on)}$	V_{DS}≧ -10V,V_{GS}= -10V	-8			A
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = -10V,I_D=-3.8A		270	295	mΩ
		V_{GS} = -4.5V,I_D=-2.6A		300	325	
Forward Transconductance	g_{FS}	V_{DS}= -15V,I_D= -3.2A		12		S
Diode Forward Voltage	V_{SD}	I_S= -2A,V_{GS}=0V		-0.8	-1.3	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=-40V,V_{GS}=-4.5V I_D= -1.2A		12	20	Nc
Gate-Source Charge	Q_{gs}			2.0		
Gate-Drain Charge	Q_{gd}			3.5		
Input Capacitance	C_{iss}	V_{DS}=-40V,V_{GS}=0V f=1MHz		520	650	pF
Output Capacitance	C_{oss}			45	60	
Reverse Transfer Capacitance	C_{rss}			30	45	
Turn-On Time	$t_{d(on)}$	V_{DD}=-40V,R_L=42Ω I_D≡-1.0A,V_{GEN}=-10V R_G=1Ω		7	15	ns
	t_r			10	20	
Turn-Off Time	$t_{d(off)}$			20	40	
	t_f			7	15	

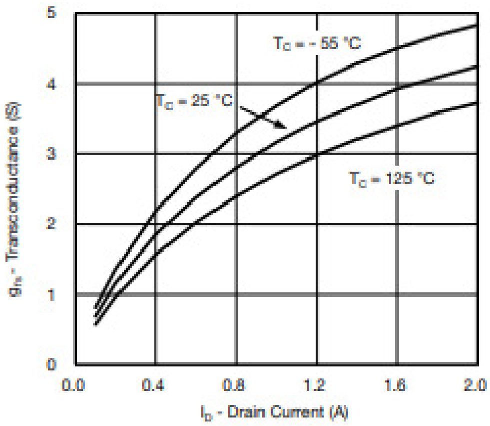
Typical Characteristics



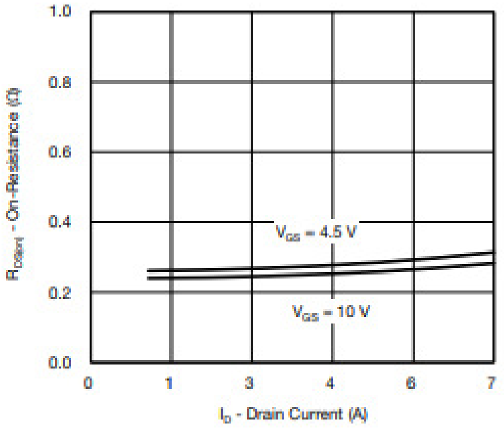
Output Characteristics



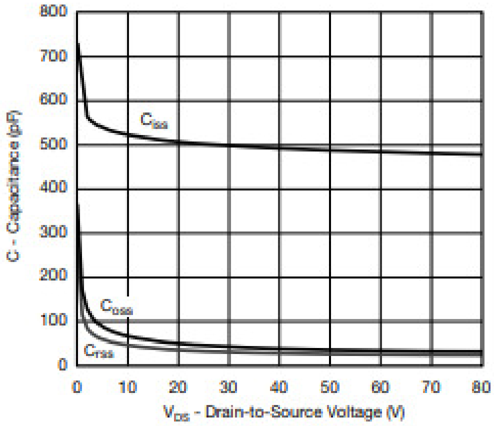
Transfer Characteristics



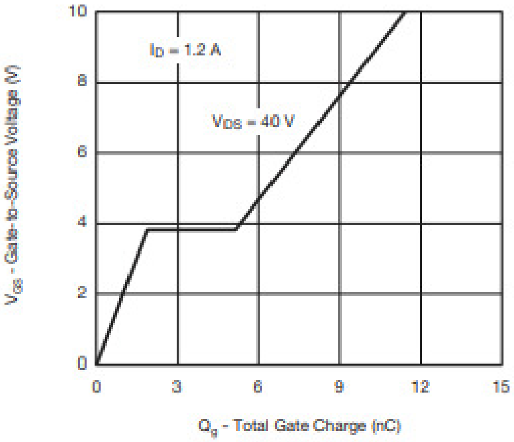
Transconductance



On-Resistance vs. Drain Current

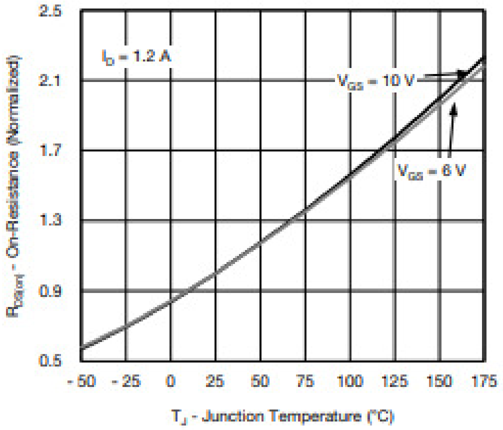


Capacitance

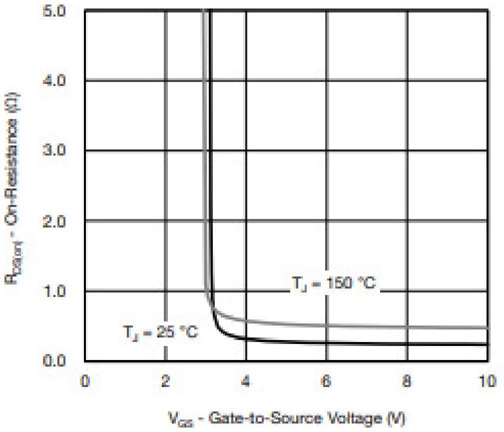


Gate Charge

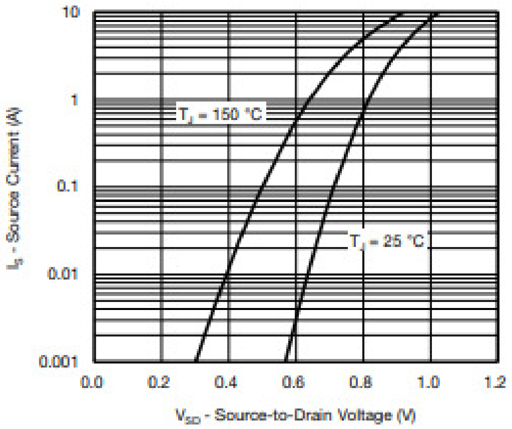
Typical Characteristics



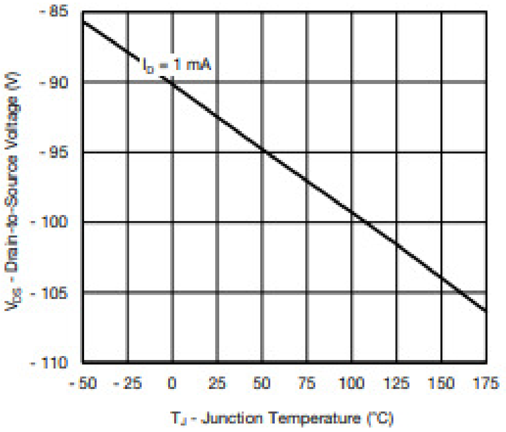
On-Resistance vs. Junction Temperature



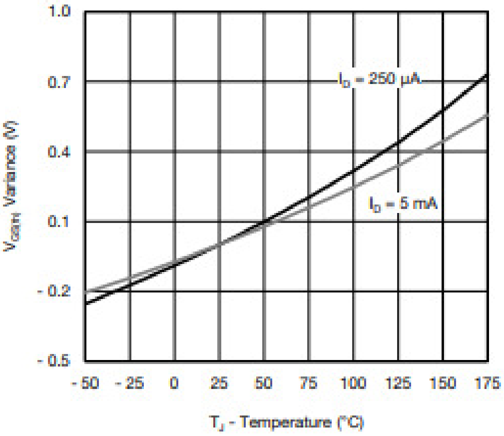
On-Resistance vs. Gate-to-Source Voltage



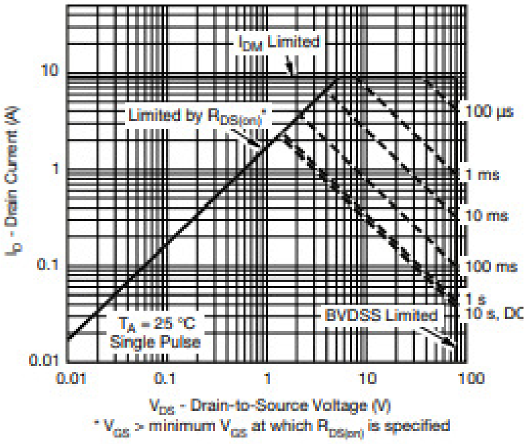
Source-Drain Diode Forward Voltage



Drain Source Breakdown vs. Junction Temperature

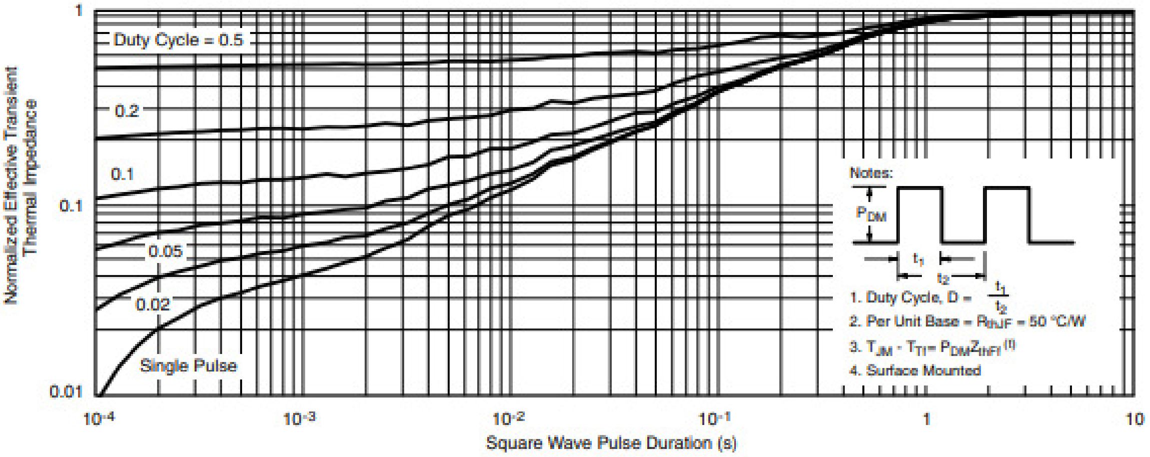


Threshold Voltage

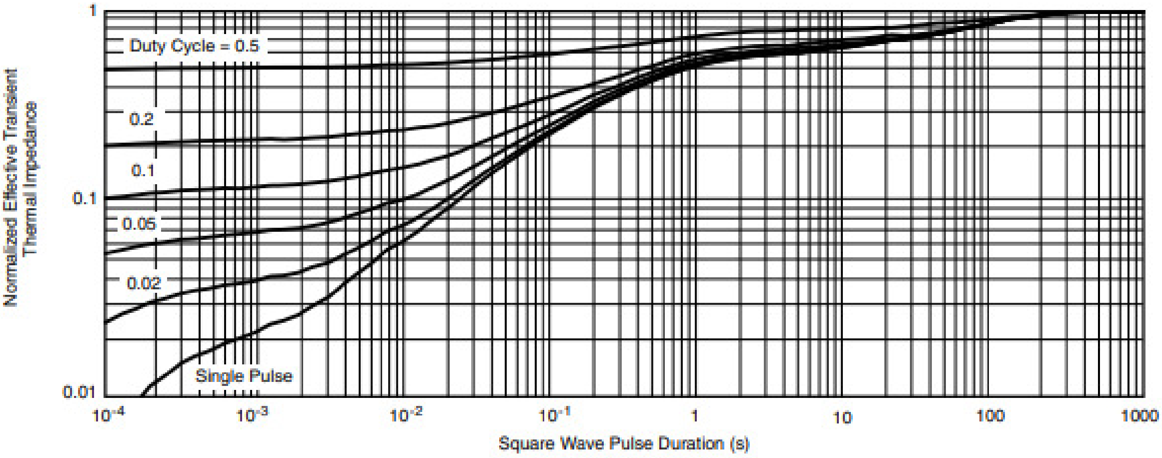


Safe Operating Area

Typical Characteristics



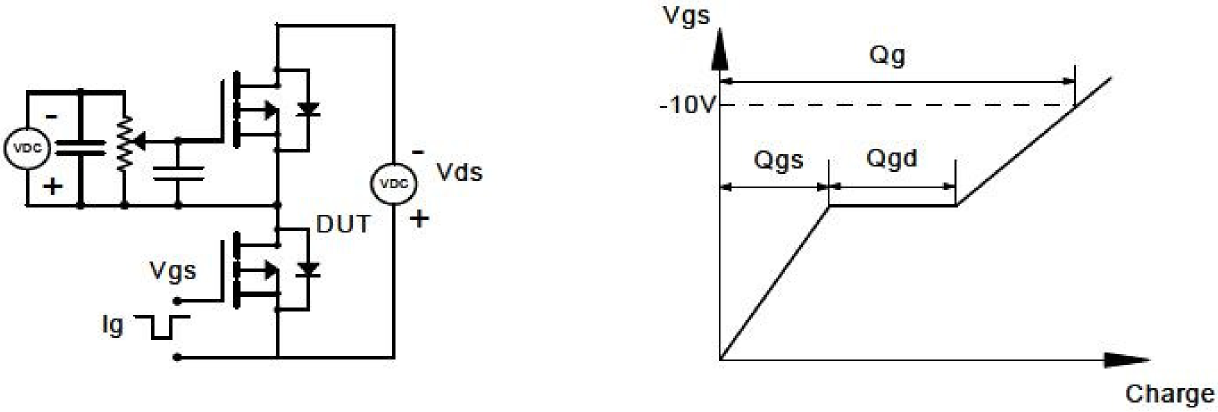
Normalized Thermal Transient Impedance, Junction-to-Foot



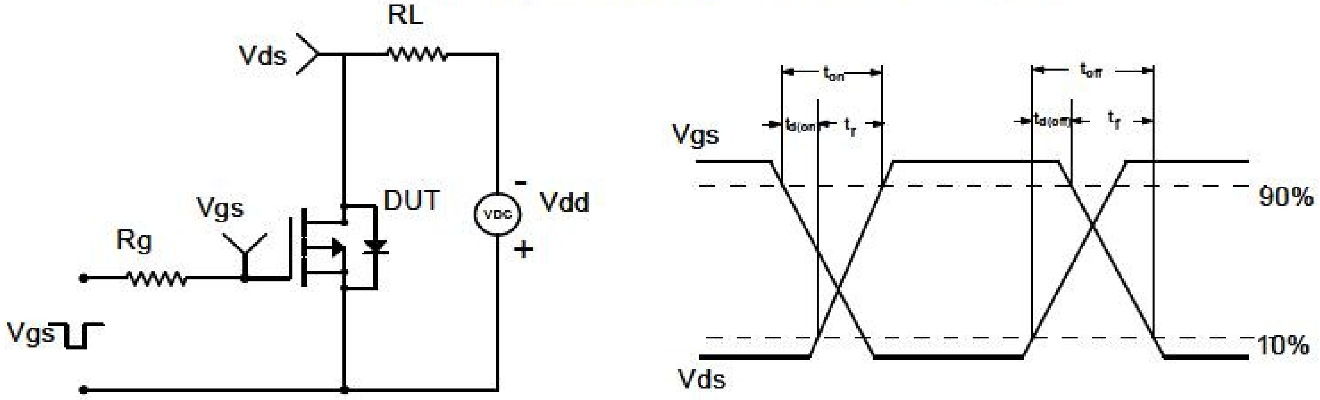
Normalized Thermal Transient Impedance, Junction-to-Ambient

Typical Characteristics

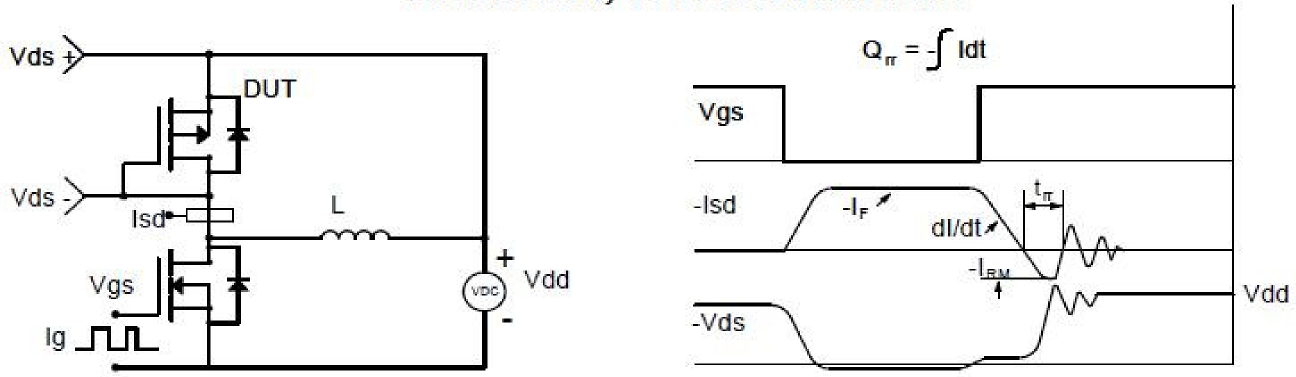
Gate Charge Test Circuit & Waveform



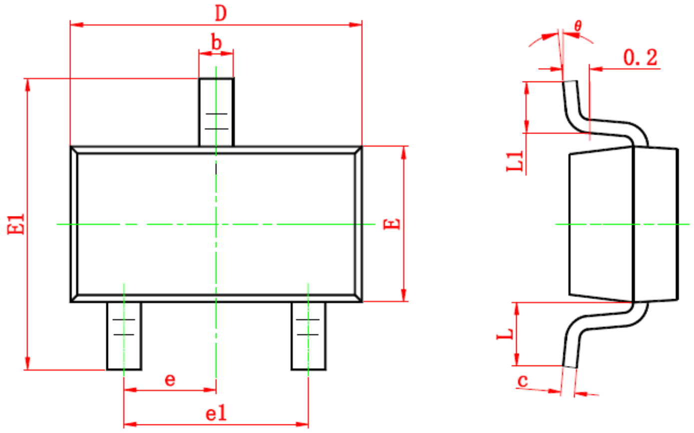
Resistive Switching Test Circuit & Waveforms

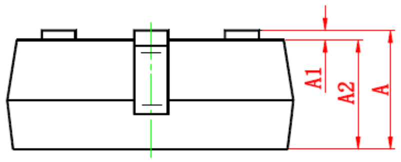


Diode Recovery Test Circuit & Waveforms



Package Information (SOT-23)





Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.200	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.100	0.035	0.039
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	6°

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