Alfa-MOS Technology

AFP1427
20V P-Channel Enhancement Mode MOSFET

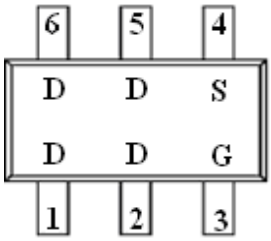
General Description

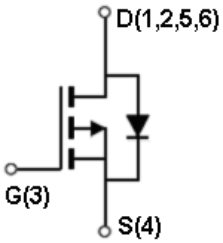
AFP1427, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.
These devices are particularly suited for low voltage power management, such as smart phone and notebook computer and other battery powered circuits, and low in-line power loss are needed in commercial industrial surface mount applications.

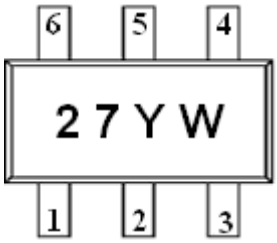
Features

- -20V/-4.0A,$R_{DS(ON)}$=48mΩ@V_{GS}=4.5V
- -20V/-3.2A,$R_{DS(ON)}$=58mΩ@V_{GS}=2.5V
- -20V/-2.8A,$R_{DS(ON)}$=78mΩ@V_{GS}=1.8V
- Super high density cell design for extremely low $R_{DS\ (ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-363 package design

Pin Description (SOT-363)







Application

- Power Management in Note book
- Portable Equipment
- Battery Powered System
- Net Working System

Pin Define

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

Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFP1427S36RG	27YW	SOT-363	Tape & Reel	3000 EA

※ 27 parts code
※ Y year code (0 ~ 9)
※ W week code (A ~ Z = 1 ~ 26 / a ~ z = 27 ~ 52)
※ AFP1427S36RG : 7” Tape & Reel ; Pb- Free ; Halogen- Free

Absolute Maximum Ratings

(T_A=25℃ Unless otherwise noted)

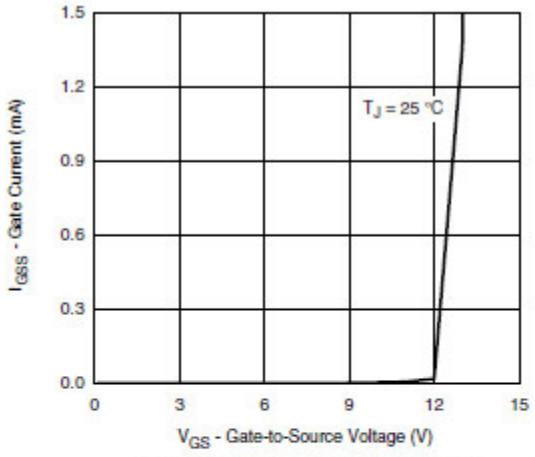
Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V_{DSS}	-20	V
Gate –Source Voltage		V_{GSS}	±12	V
Continuous Drain Current(T_J=150℃)	T_A=25℃	I_D	-3.0	A
	T_A=70℃		-2.0	
Pulsed Drain Current		I_{DM}	-8	A
Continuous Source Current(Diode Conduction)		I_S	-1.4	A
Power Dissipation	T_A=25℃	P_D	1.5	W
	T_A=70℃		1.0	
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

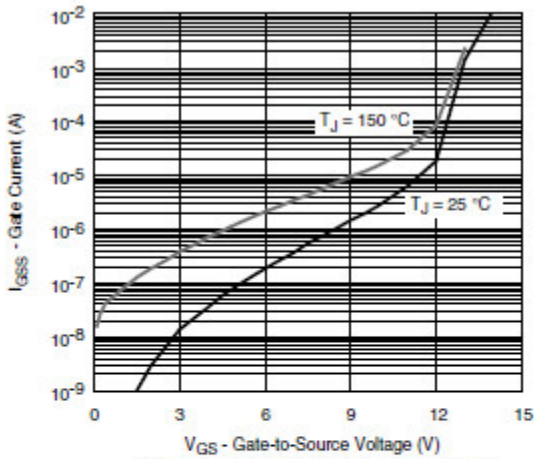
(T_A=25℃ Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=-250uA	-20			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250uA	-0.4		-0.8	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±12V			±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℃			-10	
On-State Drain Current	$I_{D(on)}$	V_{DS}≧-5V,V_{GS}=-4.5V	-6			A
		V_{DS}≧-5V,V_{GS}=-2.5V	-4			
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=-4.5V,I_D=-4.0A		38	48	mΩ
		V_{GS}=-2.5V,I_D=-3.2A		48	58	
		V_{GS}=-1.8V,I_D=-2.8A		63	78	
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
Dynamic						
Total Gate Charge	Q_g	V_{DS}=-10V,V_{GS}=-4.5V I_D≡-4.0A		8.0	12	nC
Gate-Source Charge	Q_{gs}			0.9		
Gate-Drain Charge	Q_{gd}			3.0		
Input Capacitance	C_{iss}	V_{DS}=-10V,V_{GS}=0V f=1MHz		780		pF
Output Capacitance	C_{oss}			115		
Reverse Transfer Capacitance	C_{rss}			55		
Turn-On Time	$t_{d(on)}$	V_{DD}=-10V,R_L=2.3Ω I_D≡-4.0A,V_{GEN}=-4.5V R_G=1Ω		0.2	0.3	us
	t_r			1.0	1.5	
Turn-Off Time	$t_{d(off)}$			4.0	6.0	
	t_f			2.0	3.0	

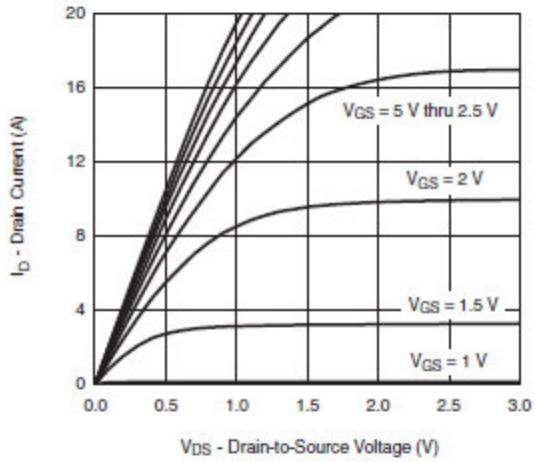
Typical Characteristics



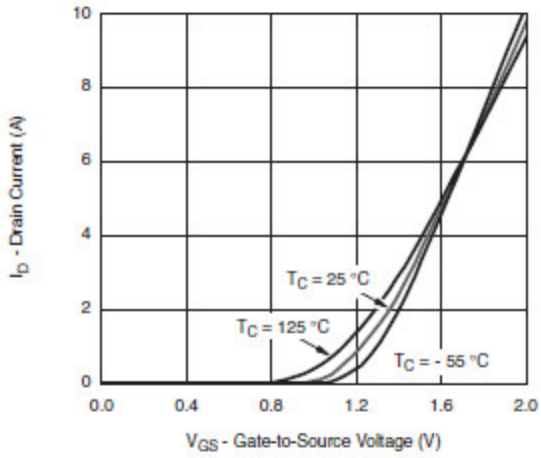
Gate Current vs. Gate-Source Voltage



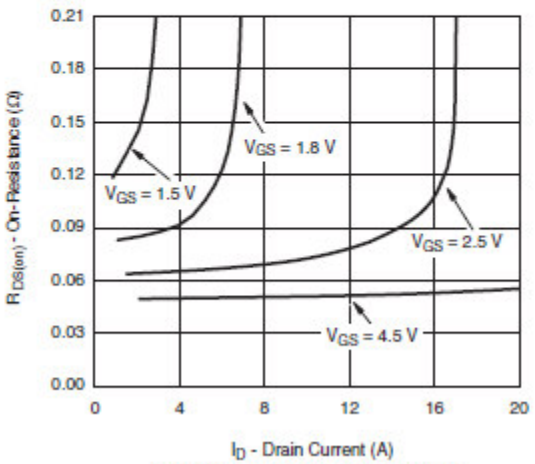
Gate Current vs. Gate-Source Voltage



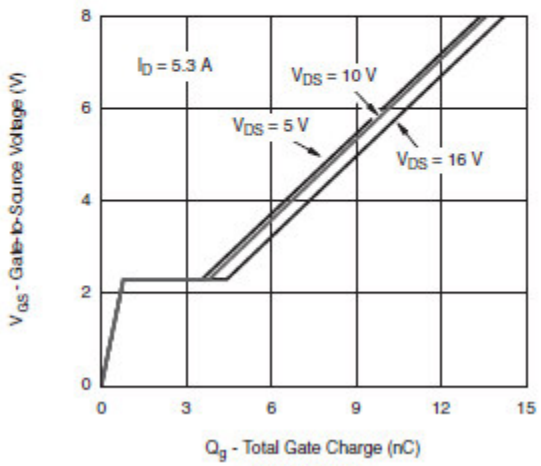
Output Characteristics



Transfer Characteristics

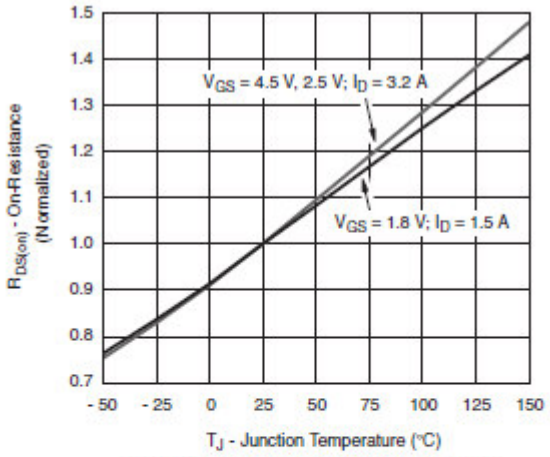


On-Resistance vs. Drain Current

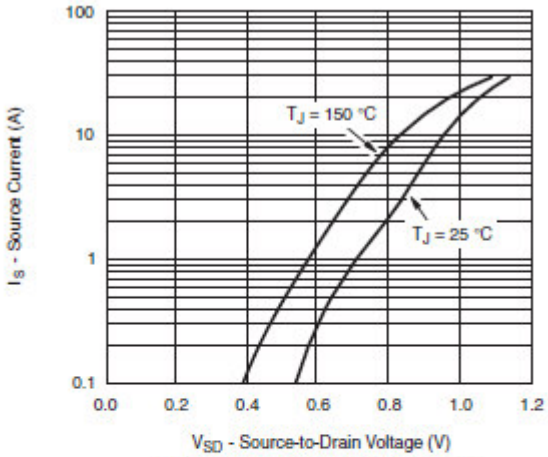


Gate Charge

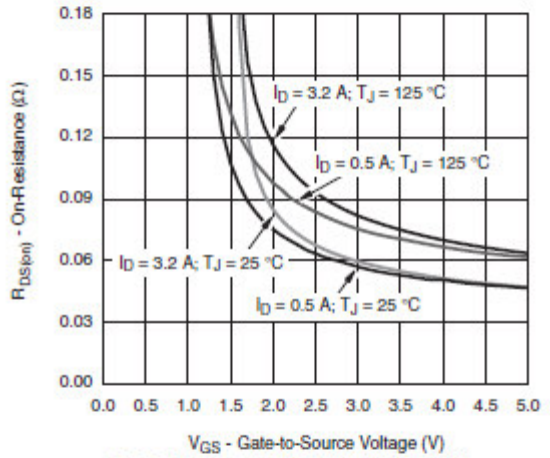
Typical Characteristics



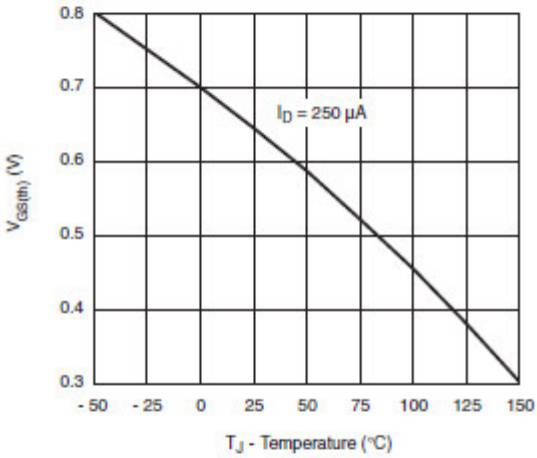
On-Resistance vs. Junction Temperature



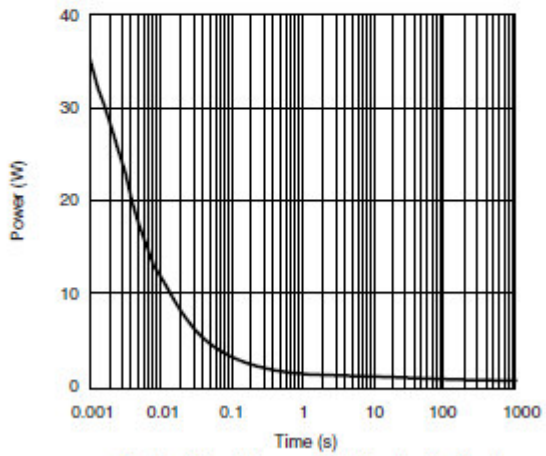
Soure-Drain Diode Forward Voltage



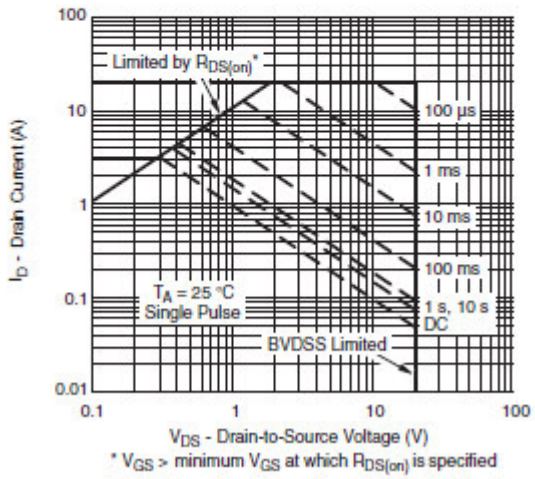
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



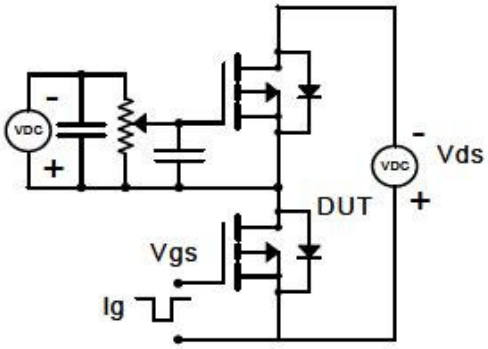
Single Pulse Power, Junction-to-Ambient

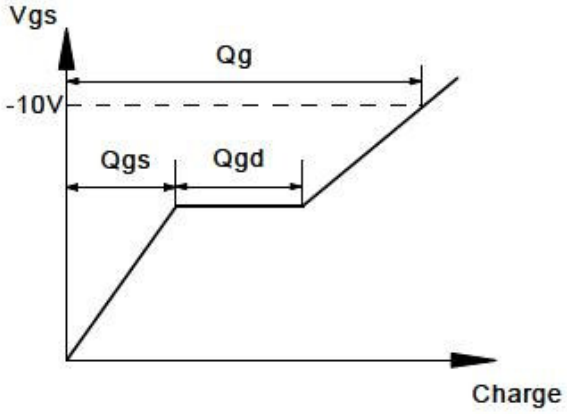


Safe Operating Area, Junction-to-Ambient

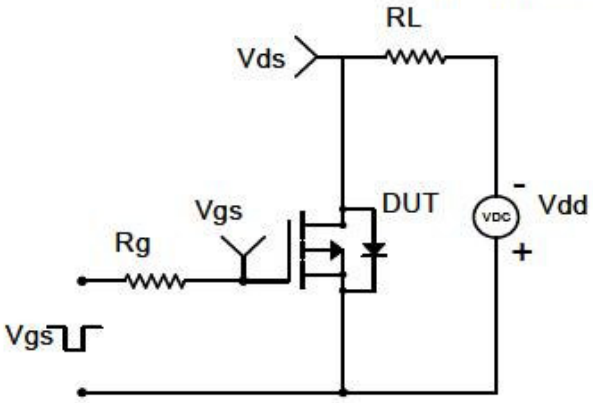
Typical Characteristics

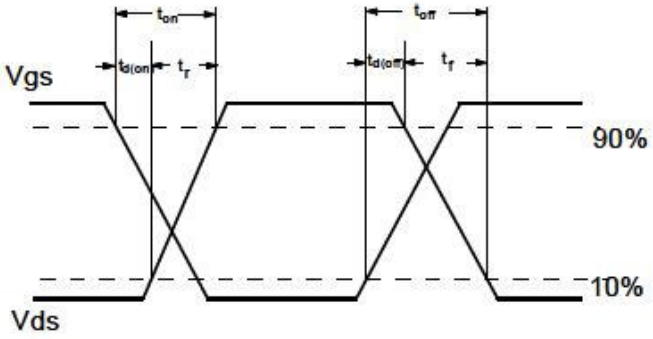
Gate Charge Test Circuit & Waveform



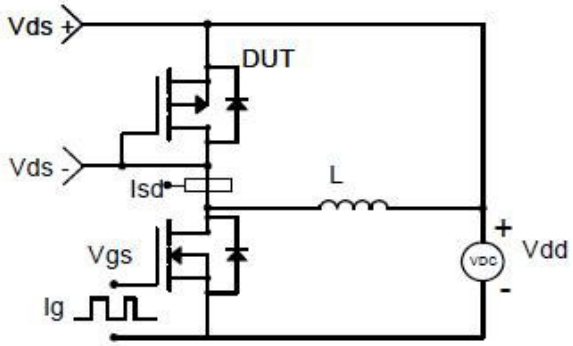


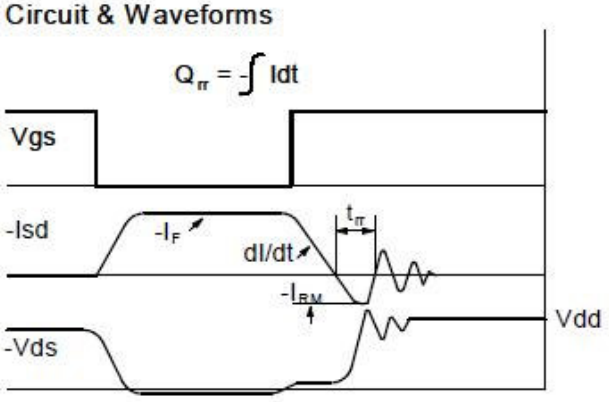
Resistive Switching Test Circuit & Waveforms



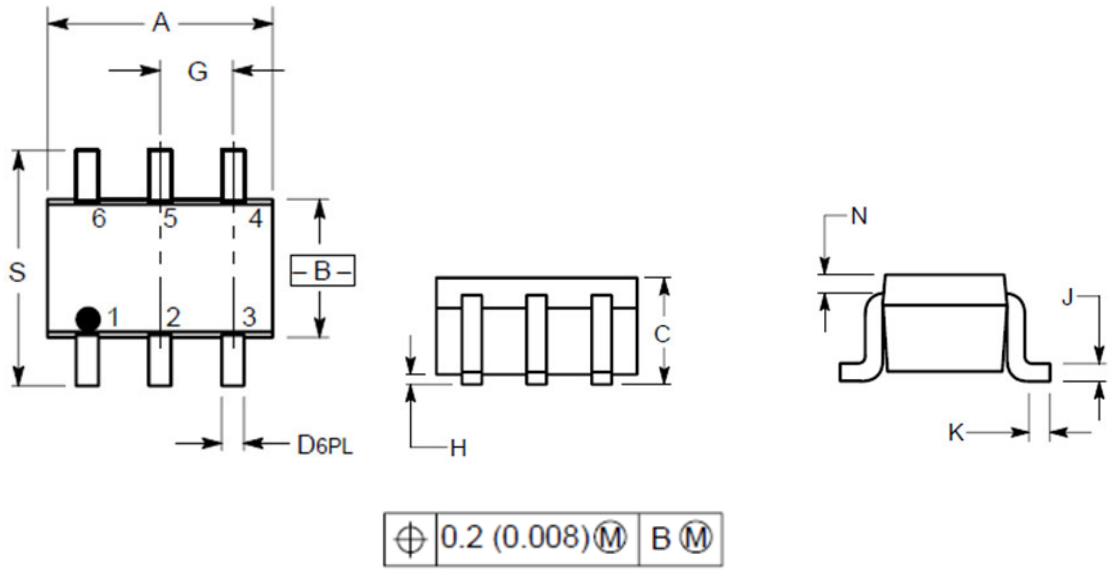


Diode Recovery Test Circuit & Waveforms





Package Information (SOT-363)



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.071	0.087	1.80	2.20
B	0.045	0.053	1.15	1.35
C	0.031	0.043	0.80	1.10
D	0.004	0.012	0.10	0.30
G	0.026 BSC		0.65 BSC	
H	---	0.004	---	0.10
J	0.004	0.010	0.10	0.25
K	0.004	0.012	0.10	0.30
N	0.008 REF		0.20 REF	
S	0.079	0.087	2.00	2.20

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