Alfa-MOS Technology

AFP7129S

60V P-Channel Enhancement Mode MOSFET

General Description

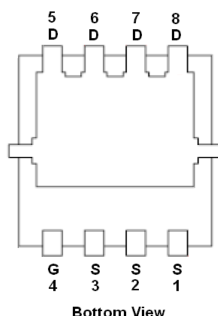
AFP7129S, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

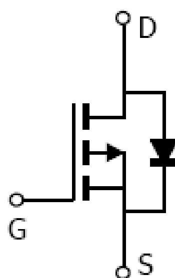
These devices are particularly suited for low voltage power management, such as smart phone and notebook computer and other battery powered circuits, and low in-line power loss are needed in commercial industrial surface mount applications.

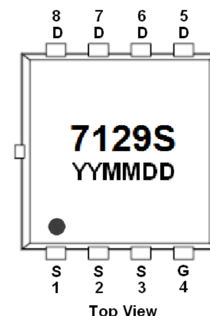
Features

- I_D=-7A,$R_{DS(ON)}$= 40mΩ@V_{GS}= -10V
- I_D=-6A,$R_{DS(ON)}$= 50mΩ@V_{GS}= -4.5V
- Super high density cell design for extremely low $R_{DS\ (ON)}$
- Exceptional on-resistance and maximum DC current capability
- DFN3.3X3.3-8L package design

Pin Description (DFN3.3X3.3-8L)







Application

- DC-DC Converter
- 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
AFP7129SFN308RG	7129S	DFN3.3X3.3-8L	Tape & Reel	5000 EA

※ YY year code
※ MM month code
※ DD date code
※ AFP7129SFN308RG : 13”Tape & Reel ; Pb- Free ; Halogen –Free

Alfa-MOS Technology

AFP7129S

60V P-Channel Enhancement Mode MOSFET

Absolute Maximum Ratings

(T_A=25℃ Unless otherwise noted)

Parameter			Symbol	Value		Unit
Drain-Source Voltage			V_{DSS}	-60		V
Gate –Source Voltage			V_{GSS}	±20		V
Continuous Drain Current(T_J=150℃)		T_A=25℃	I_D	-7		A
		T_A=70℃		-6		
Pulsed Drain Current			I_{DM}	-20		A
Continuous Source Current(Diode Conduction)		T_C=25℃	I_S	-2		A
Power Dissipation	T_C=25℃	T_C=70℃	P_D	28	15	W
	T_A=25℃	T_A=70℃		3.1	2.0	
Operating Junction Temperature			T_J	150		℃
Storage Temperature Range			T_{STG}	-55/150		℃
Thermal Resistance Junction-to-Case (Drain)			$R_{θJC}$	5		℃/W
Thermal Resistance-Junction to Ambient			$R_{θJA}$	40		

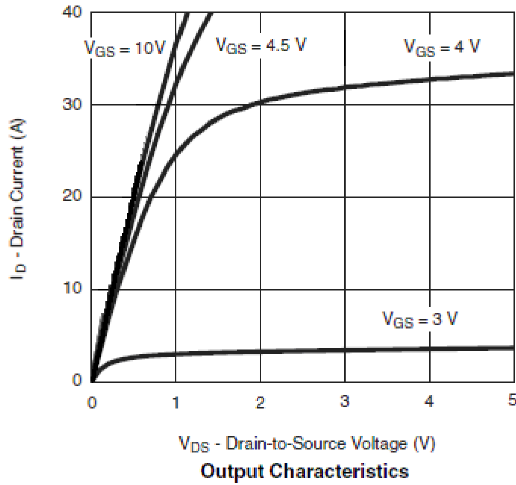
Electrical Characteristics

(T_A=25℃ Unless otherwise noted)

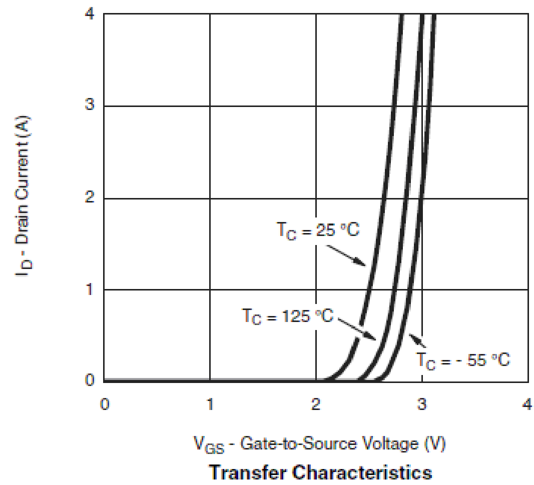
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D= -250uA	-60			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D= -250uA	-1.0		-2.0	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}= ±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= -48V,V_{GS}=0V			-1	uA
		V_{DS}= -48V,V_{GS}=0V T_J=85℃			-20	
On-State Drain Current	$I_{D(on)}$	V_{DS}≧ -5V,V_{GS}= -10V	-7			A
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = -10V,I_D=-7A		32	40	mΩ
		V_{GS} = -4.5V,I_D=-6A		40	50	
Forward Transconductance	g_{FS}	V_{DS}= -15V,I_D= -6A		25		S
Diode Forward Voltage	V_{SD}	I_S= -3A,V_{GS}=0V		-0.8	-1.3	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=-30V,V_{GS}=-4.5V I_D= -6.0A		20	38	nC
Gate-Source Charge	Q_{gs}			8		
Gate-Drain Charge	Q_{gd}			10		
Input Capacitance	C_{iss}	V_{DS}=-30V,V_{GS}=0V f=1MHz		1900	2900	pF
Output Capacitance	C_{oss}			210		
Reverse Transfer Capacitance	C_{rss}			170		
Turn-On Time	$t_{d(on)}$	V_{DD}=-30V,R_L=5.0Ω I_D≡-6.0A,V_{GEN}=-10V R_G=1.0Ω		10	20	ns
	t_r			12	25	
Turn-Off Time	$t_{d(off)}$			30	60	
	t_f			10	20	
Body Diode Reverse Recovery Time	t_{rr}	I_F=- 6.2A, dI/dt=100 A/μs, T_J = 25 ℃		48	68	ns
Body Diode Reverse Recovery Charge	Q_{rr}			60	120	nC
Reverse recovery fall time	t_a			36		ns
Reverse recovery rise time	t_b			10		nC

©Alfa-MOS Technology Corp.

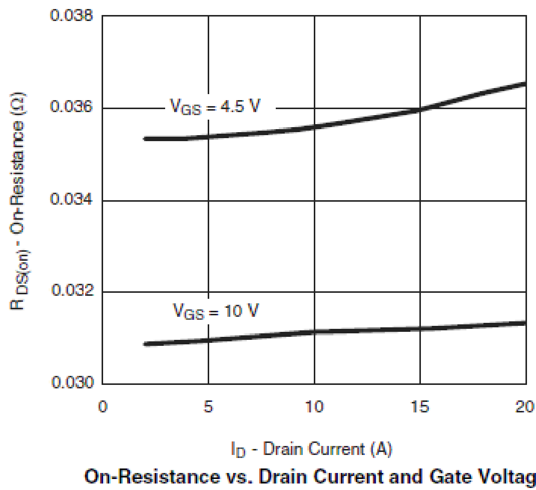
Typical Characteristics



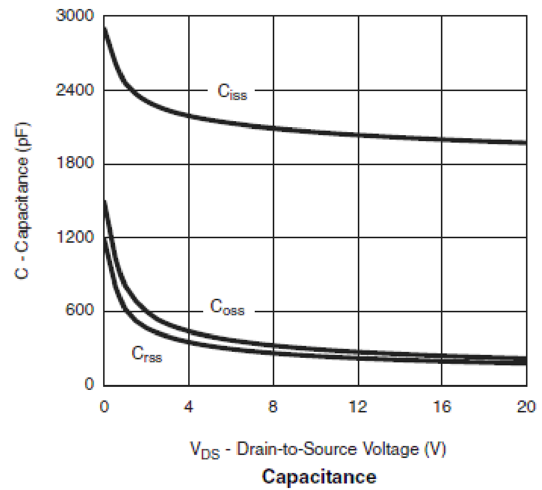
Output Characteristics



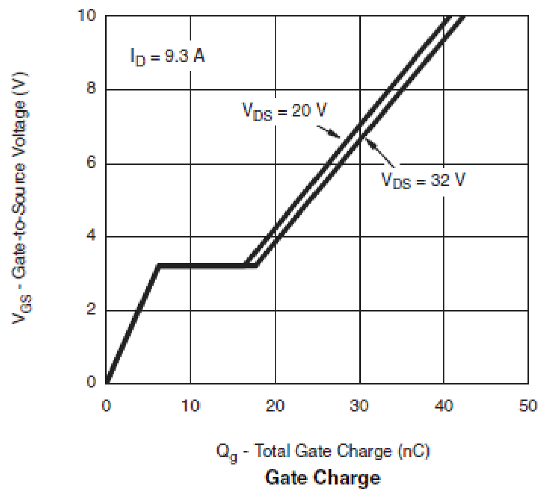
Transfer Characteristics



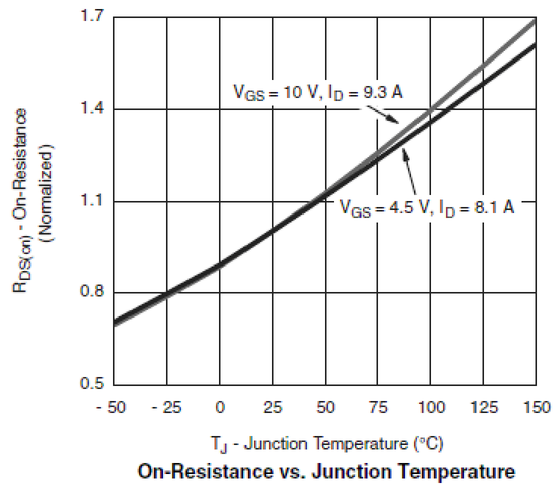
On-Resistance vs. Drain Current and Gate Voltage



Capacitance

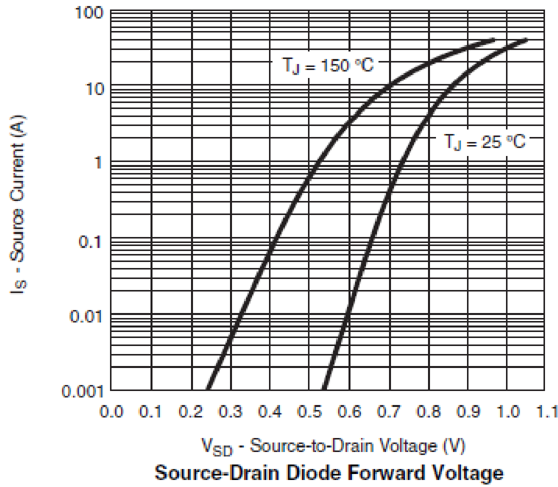


Gate Charge

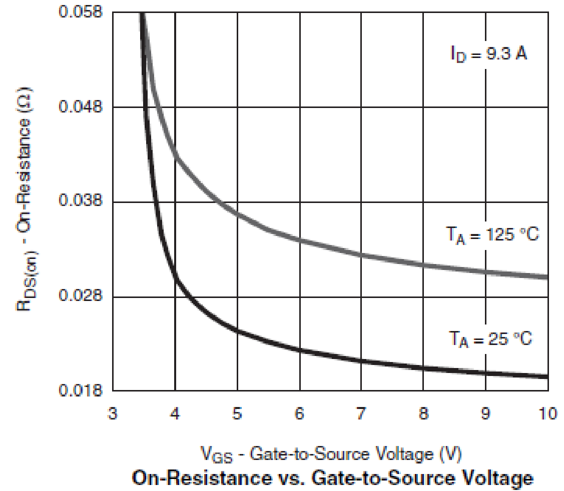


On-Resistance vs. Junction Temperature

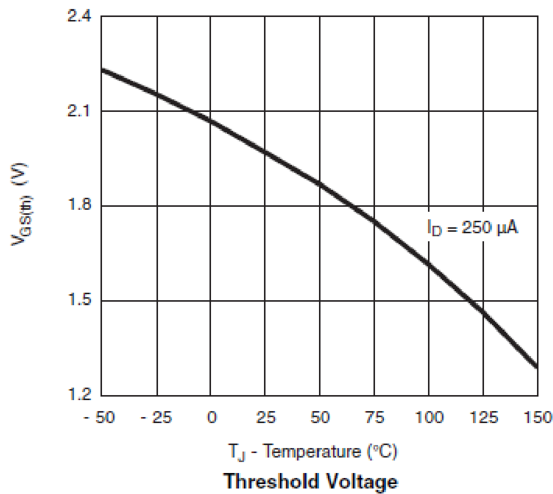
Typical Characteristics



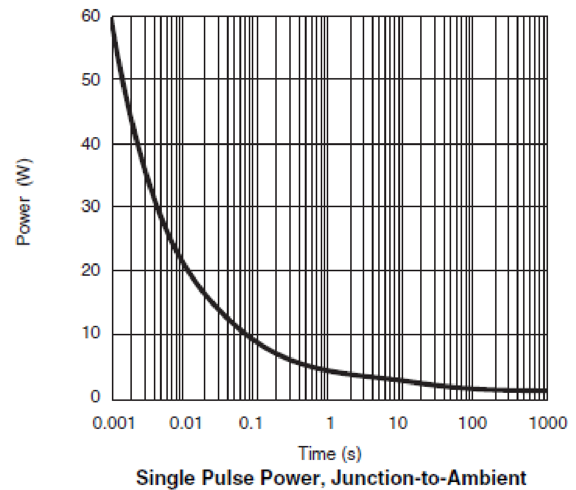
Source-Drain Diode Forward Voltage



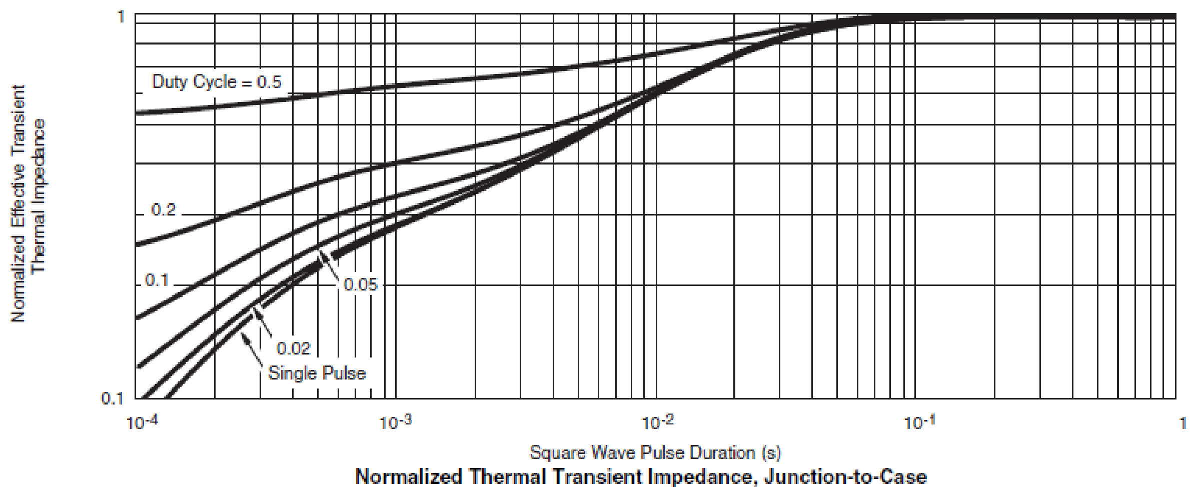
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power, Junction-to-Ambient

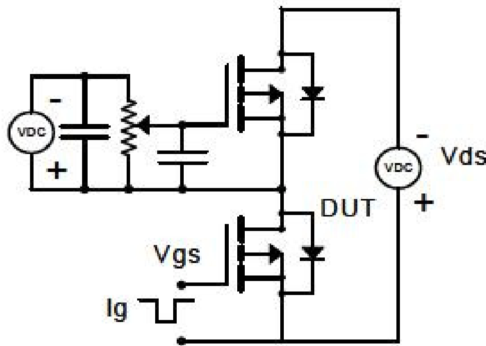


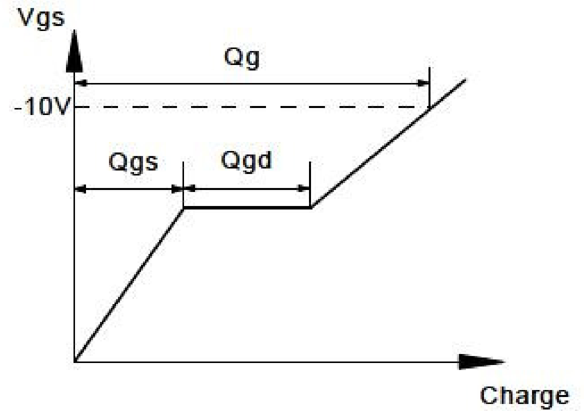
Normalized Thermal Transient Impedance, Junction-to-Case

©Alfa-MOS Technology Corp.

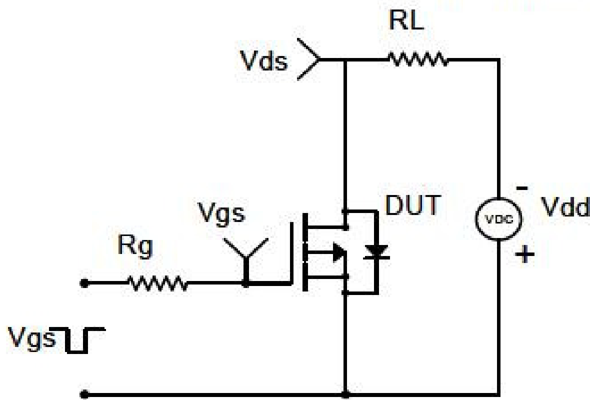
Typical Characteristics

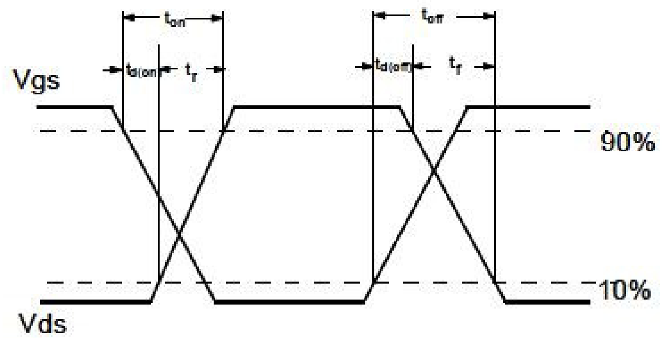
Gate Charge Test Circuit & Waveform



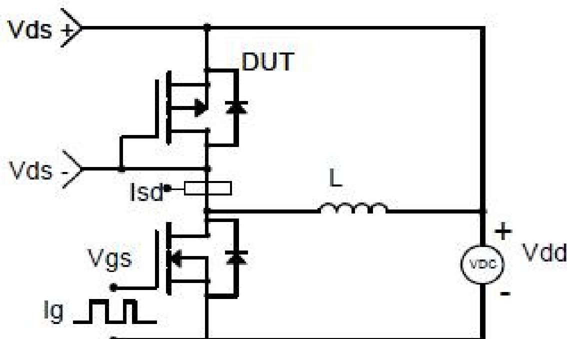


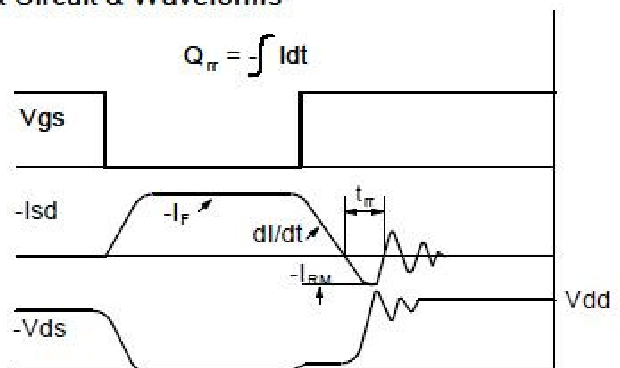
Resistive Switching Test Circuit & Waveforms





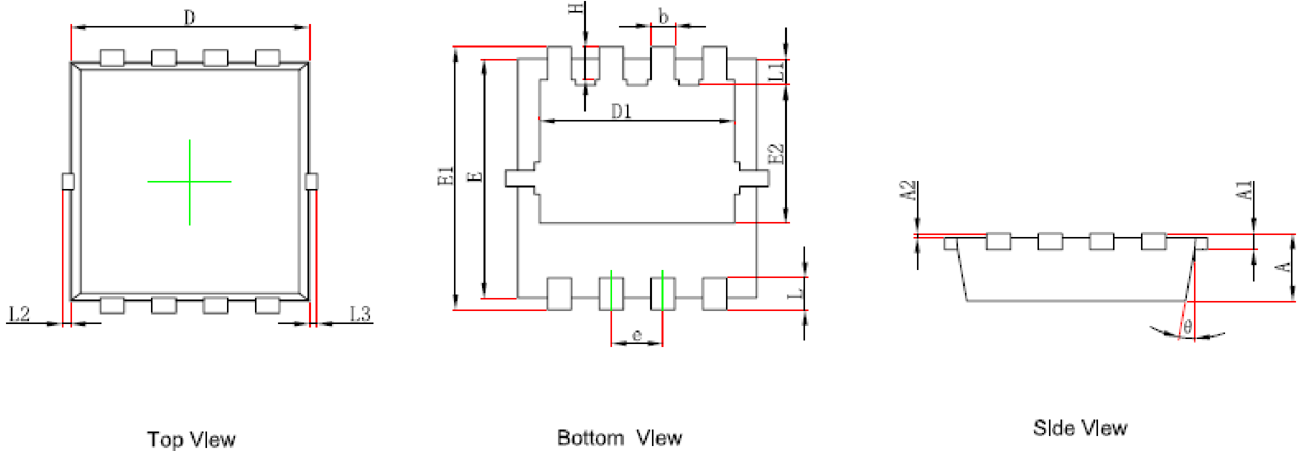
Diode Recovery Test Circuit & Waveforms





©Alfa-MOS Technology Corp.

Package Information (DFN3.3X3.3-8L)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.650	0.850	0.026	0.033
A1	0.152 REF.		0.006 REF.	
A2	0~0.05		0~0.002	
D	2.900	3.100	0.114	0.122
D1	2.300	2.600	0.091	0.102
E	2.900	3.100	0.114	0.122
E1	3.150	3.450	0.124	0.136
E2	1.535	1.935	0.060	0.076
b	0.200	0.400	0.008	0.016
e	0.550	0.750	0.022	0.030
L	0.300	0.500	0.012	0.020
L1	0.180	0.480	0.007	0.019
L2	0~0.100		0~0.004	
L3	0~0.100		0~0.004	
H	0.315	0.515	0.012	0.020
θ	9°	13°	9°	13°

©2010 Alfa-MOS Technology Corp.
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