



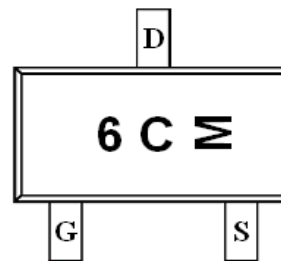
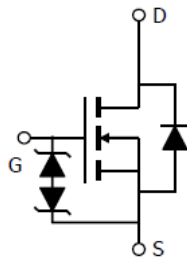
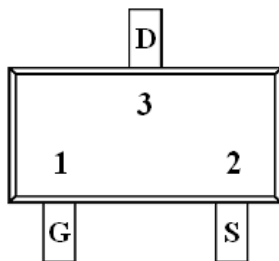
## General Description

AFN1330S, N-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

- 60V/0.5A ,  $R_{DS(ON)}=7500m\Omega@V_{GS}=10V$
- 60V/0.05A ,  $R_{DS(ON)}=7500m\Omega@V_{GS}=5V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- ESD Protection ( 1KV ) Diode design-in
- SOT-323 package design

## Pin Description ( SOT-323 )



## Application

- Drivers: Relays, Solenoids, Lamps, Hammers, Display, Memories, Transistors, etc.
- High saturation current capability. Direct Logic-Level Interface: TTL/CMOS
- Battery Operated Systems
- Solid-State Relays

## Pin Define

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

## Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFN1330SS32RG	6CM	SOT-323	Tape & Reel	3000 EA

- ※ 6C Parts code
- ※ M Month code
- ※ AFN1330SS32RG : 7" Tape & Reel ; Pb- Free ; Halogen -Free



**Absolute Maximum Ratings**

(T<sub>A</sub>=25°C Unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DSS</sub>	60	V
Gate –Source Voltage	V <sub>GSS</sub>	±20	V
Continuous Drain Current(T <sub>J</sub> =150°C)	I <sub>D</sub>	T <sub>A</sub> =25°C	0.115
		T <sub>A</sub> =70°C	0.075
Pulsed Drain Current	I <sub>DM</sub>	0.8	A
Continuous Source Current(Diode Conduction)	I <sub>S</sub>	0.115	A
Power Dissipation	P <sub>D</sub>	225	mW
Operating Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature Range	T <sub>STG</sub>	-55/150	°C
Thermal Resistance-Junction to Ambient	R <sub>θJA</sub>	417	°C/W

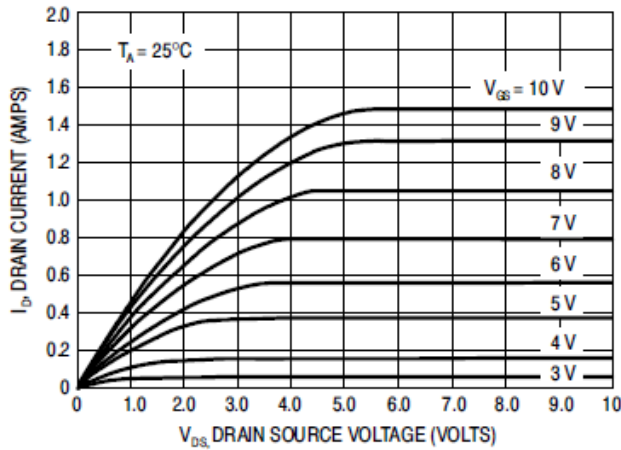
**Electrical Characteristics**

(T<sub>A</sub>=25°C Unless otherwise noted)

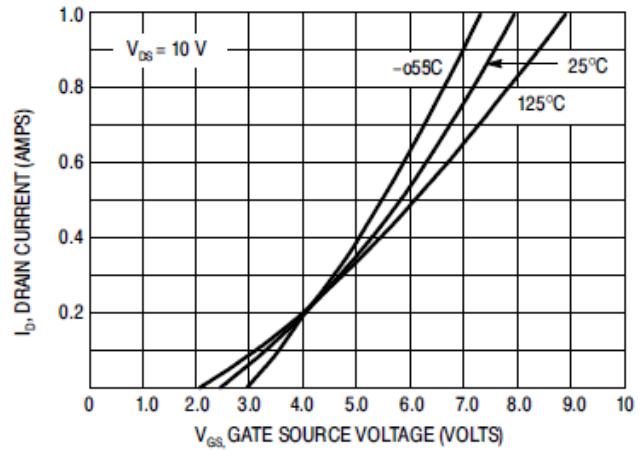
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	60			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	1.0	1.6	2.0	
Gate Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V			3	uA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =60V, V <sub>GS</sub> =0V			1	uA
		V <sub>DS</sub> =60V, V <sub>GS</sub> =0V T <sub>J</sub> =85°C			10	
Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =0.5A		1400	7500	mΩ
		V <sub>GS</sub> = 5V, I <sub>D</sub> =0.05A		1800	7500	
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =0.2A	80			mS
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =0.115A, V <sub>GS</sub> =0V			1.5	V
<b>Dynamic</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V f=1MHz		17	50	pF
Output Capacitance	C <sub>oss</sub>			10	25	
Reverse Transfer Capacitance	C <sub>rss</sub>			3	5	
Turn-On Time	t <sub>d(on)</sub>	V <sub>DD</sub> =25V, R <sub>L</sub> =50Ω		7	20	ns
Turn-Off Time	t <sub>d(off)</sub>	I <sub>D</sub> ≅0.5A, V <sub>GEN</sub> =10V, R <sub>G</sub> =25Ω		11	40	



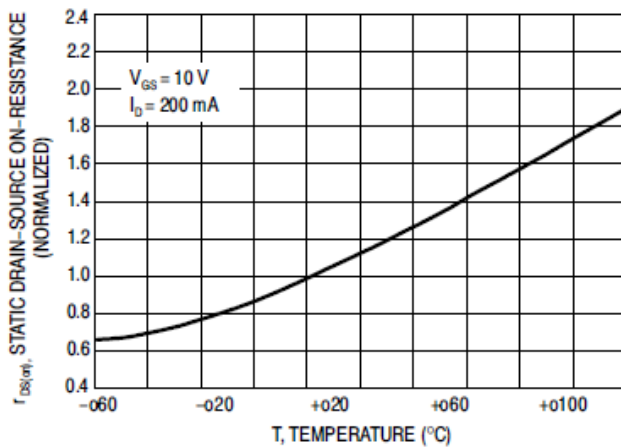
**Typical Characteristics**



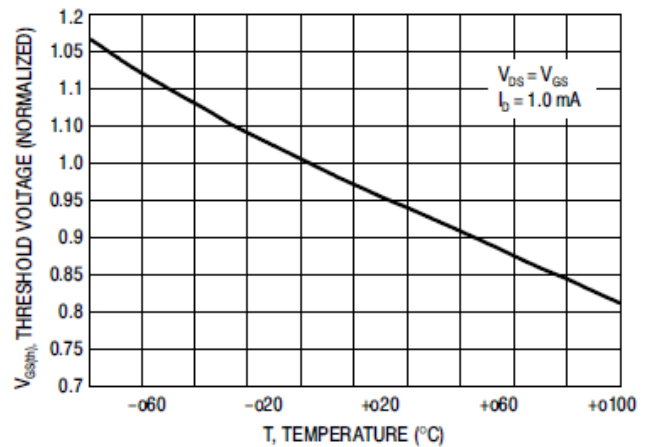
**Figure 1. Ohmic Region**



**Figure 2. Transfer Characteristics**



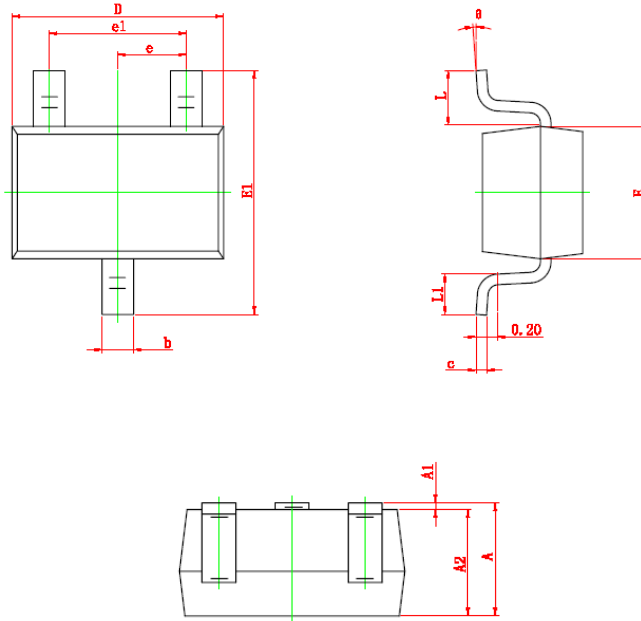
**Figure 3. Temperature versus Static Drain-Source On-Resistance**



**Figure 4. Temperature versus Gate Threshold Voltage**



**Package Information ( SOT-323 )**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

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