



## General Description

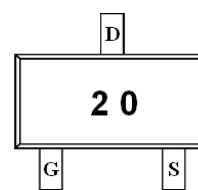
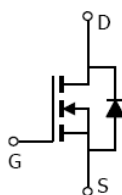
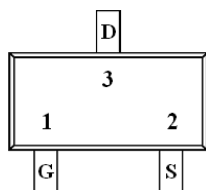
AFN1072, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent  $R_{DS(ON)}$ , low gate charge.

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

## Features

- 20V/0.8A,  $R_{DS(ON)}=360m\Omega@V_{GS}=4.5V$
- 20V/0.7A,  $R_{DS(ON)}=420m\Omega@V_{GS}=2.5V$
- 20V/0.6A,  $R_{DS(ON)}=560m\Omega@V_{GS}=1.8V$
- Low Offset (Error) Voltage
- Low-Voltage Operation
- High-Speed Circuits
- Low Battery Voltage Operation
- SOT-723 package design

## Pin Description ( SOT-723 )



## Application

- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories
- Battery Operated Systems
- Power Supply Converter Circuits
- Load/Power Switching Smart Phones, Pagers

## Pin Define

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

## Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFN1072S72RG	20	SOT-723	Tape & Reel	8000 EA

※ AFN1072S72RG : 7" Tape & Reel ; Pb- Free ; Halogen- Free



## Absolute Maximum Ratings

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

Parameter	Symbol	Typical	Unit
Drain-Source Voltage	V <sub>DSS</sub>	20	V
Gate –Source Voltage	V <sub>GSS</sub>	±12	V
Continuous Drain Current(T <sub>J</sub> =150°C)	I <sub>D</sub>	T <sub>A</sub> =25°C	0.7
		T <sub>A</sub> =70°C	0.4
Pulsed Drain Current	I <sub>DM</sub>	1.0	A
Continuous Source Current(Diode Conduction)	I <sub>S</sub>	0.3	A
Power Dissipation	P <sub>D</sub>	T <sub>A</sub> =25°C	0.27
		T <sub>A</sub> =70°C	0.16
Operating Junction Temperature	T <sub>J</sub>	-55/150	°C
Storage Temperature Range	T <sub>STG</sub>	-55/150	°C

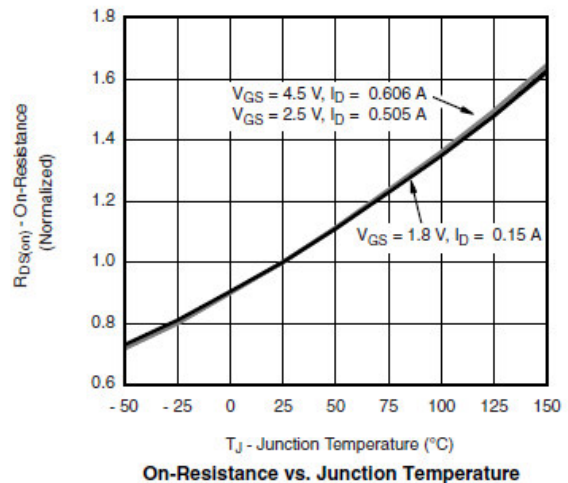
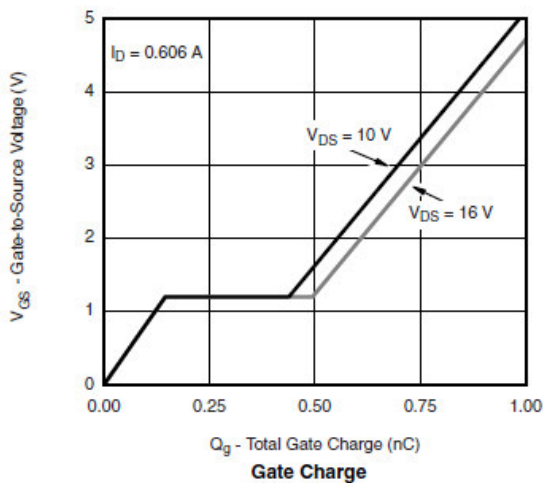
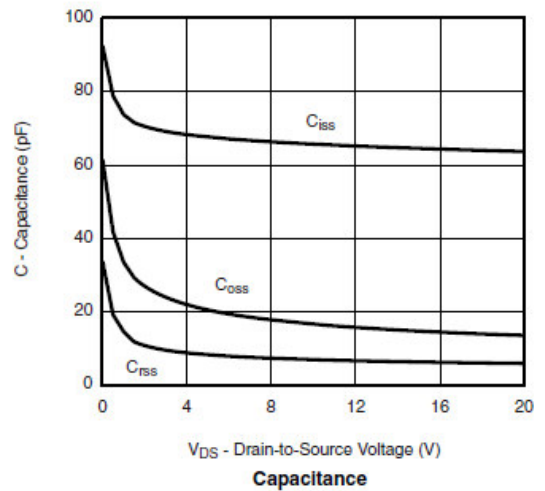
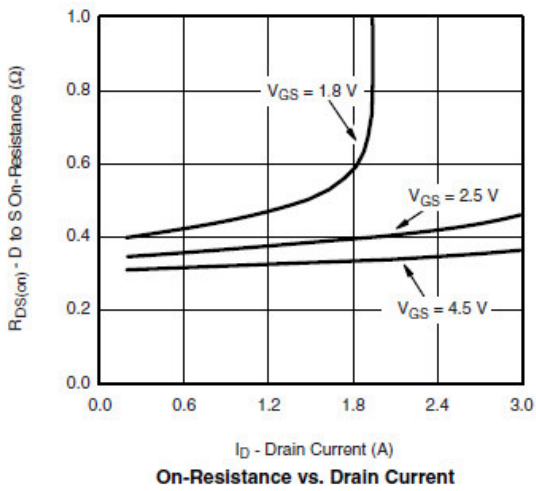
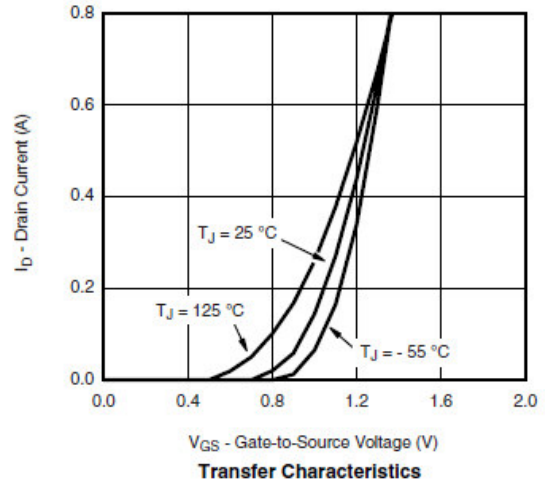
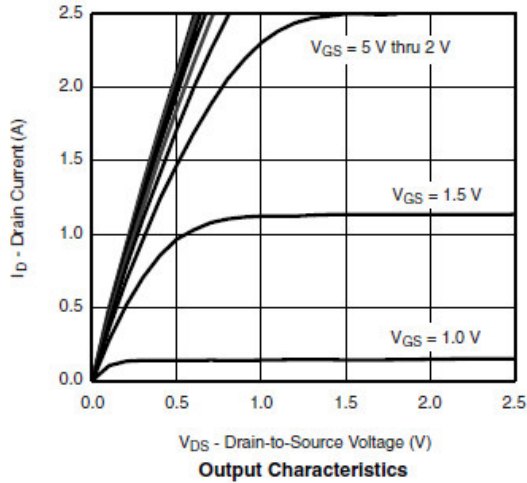
## Electrical Characteristics

(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	20			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	0.4		1.0	
Gate Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±12V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =20V, V <sub>GS</sub> =0V			1	uA
		V <sub>DS</sub> =20V, V <sub>GS</sub> =0V T <sub>J</sub> =85°C			5	
On-State Drain Current	I <sub>D(on)</sub>	V <sub>DS</sub> ≥ 5V, V <sub>GS</sub> =4.5V	0.7			A
Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =0.8A		300	360	mΩ
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =0.7A		240	420	
		V <sub>GS</sub> =1.8V, I <sub>D</sub> =0.6A		420	560	
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =0.4A		1		S
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =0.15A, V <sub>GS</sub> =0V		0.65	1.2	V
<b>Dynamic</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =0V f=1MHz		70		pF
Output Capacitance	C <sub>oss</sub>			20		
Reverse Transfer Capacitance	C <sub>rss</sub>			8		
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =4.5V I <sub>D</sub> ≅0.6A		1.06	1.38	nC
Gate-Source Charge	Q <sub>gs</sub>			0.18		
Gate-Drain Charge	Q <sub>gd</sub>			0.32		
Turn-On Time	t <sub>d(on)</sub>	V <sub>DD</sub> =10V, R <sub>L</sub> =20Ω I <sub>D</sub> ≅0.5A, V <sub>GEN</sub> =4.5V R <sub>G</sub> =1Ω		18	26	ns
	t <sub>r</sub>			20	28	
Turn-Off Time	t <sub>d(off)</sub>			70	110	
	t <sub>f</sub>			25	40	

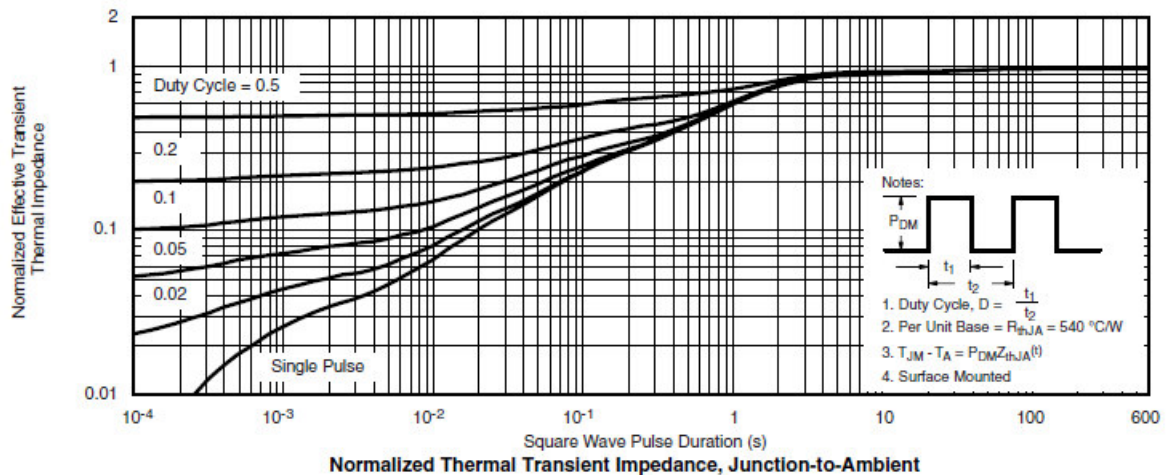
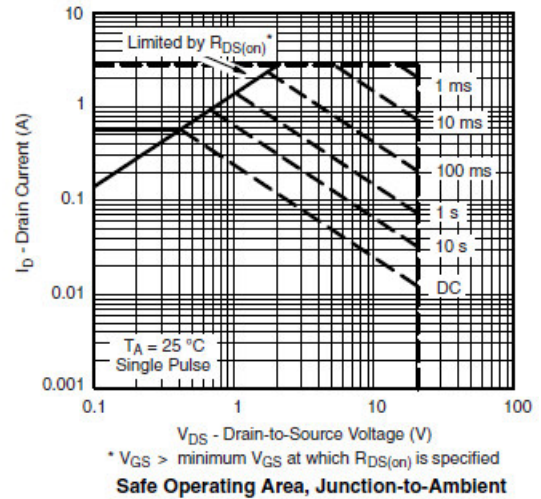
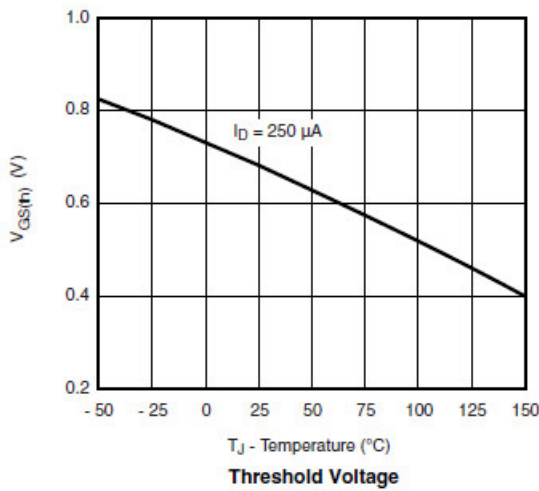
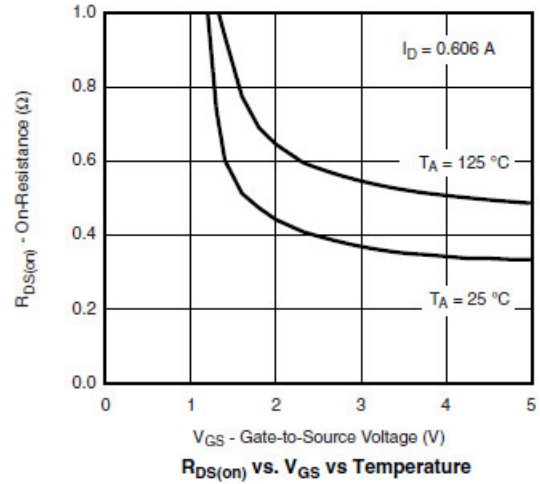
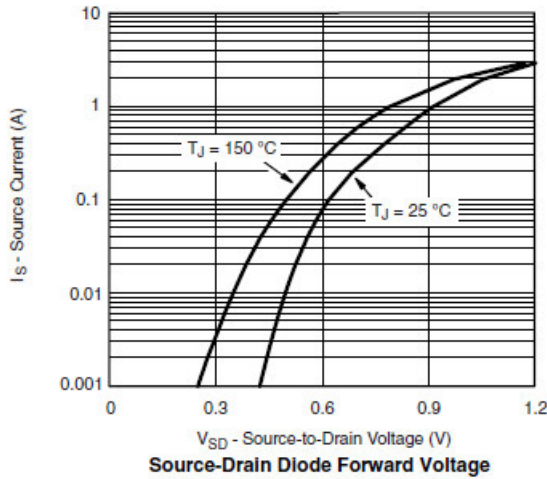


## Typical Characteristics





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**Typical Characteristics**

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

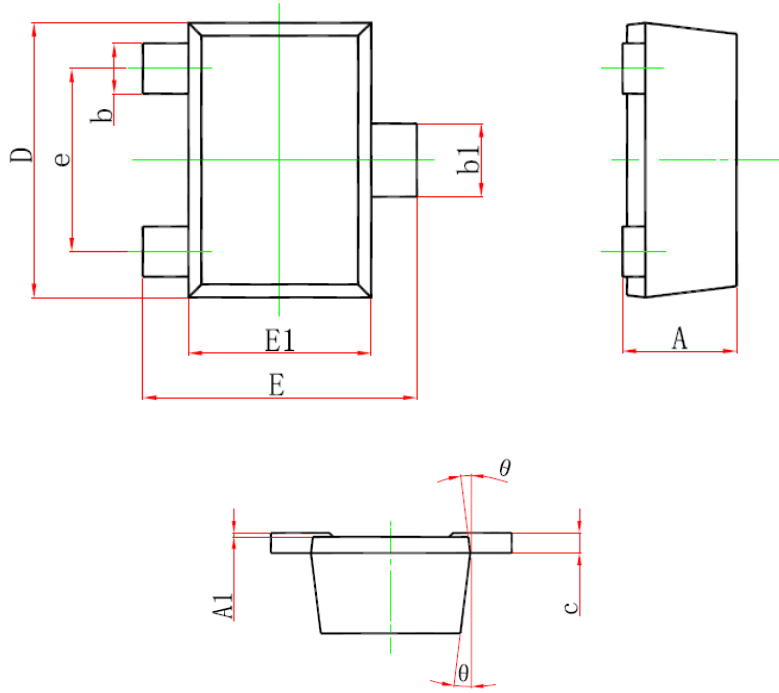


Unclamped Inductive Switching Test Circuit & Waveforms





**Package Information ( SOT-723 )**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A		0.500		0.020
A1	0.000	0.050	0.000	0.002
b	0.170	0.270	0.007	0.011
b1	0.270	0.370	0.011	0.015
c		0.150		0.006
D	1.150	1.250	0.045	0.049
E	1.150	1.250	0.045	0.049
E1	0.750	0.850	0.030	0.033
e	0.800TYP.		0.031TYP.	
θ	7° REF.		7° REF.	

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