



General Description

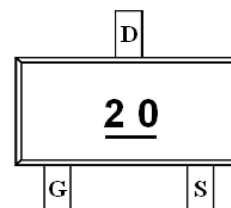
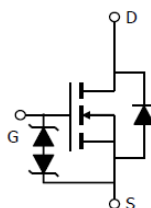
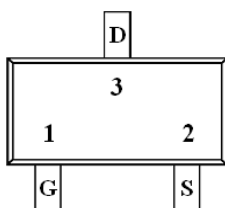
AFN1072E, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

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
- **ESD Protected**
- 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
AFN1072ES72RG	<u>20</u>	SOT-723	Tape & Reel	8000 EA

※ AFN1072ES72RG : 7" Tape & Reel ; Pb- Free ; Halogen- Free



Absolute Maximum Ratings

(T_A=25°C 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°C)	I _D	T _A =25°C 0.7	A
		T _A =70°C 0.4	
Pulsed Drain Current	I _{DM}	1.0	A
Continuous Source Current(Diode Conduction)	I _S	0.3	A
Power Dissipation	P _D	T _A =25°C 0.27	W
		T _A =70°C 0.16	
Operating Junction Temperature	T _J	-55/150	°C
Storage Temperature Range	T _{STG}	-55/150	°C

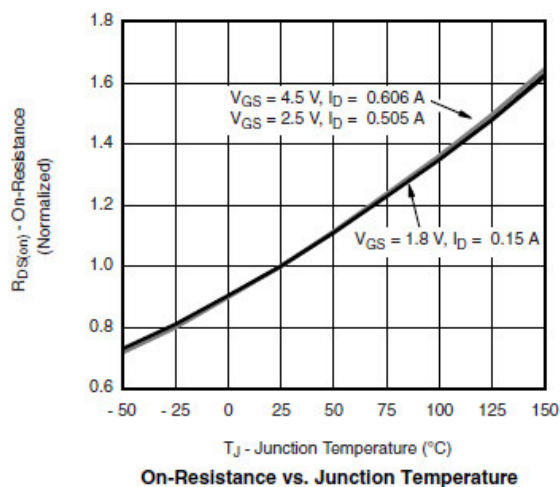
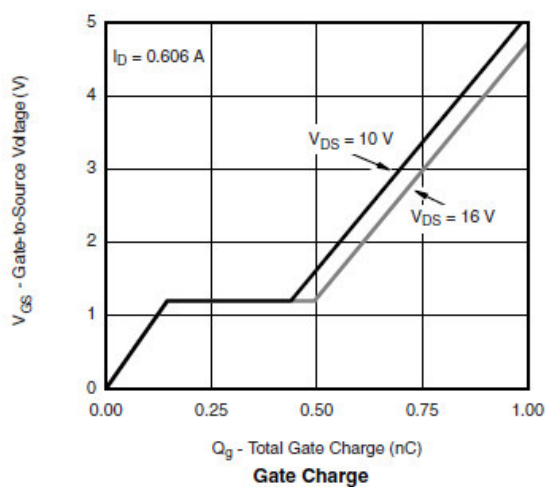
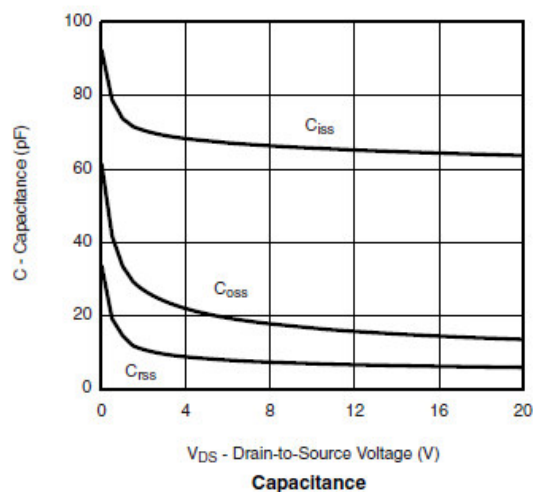
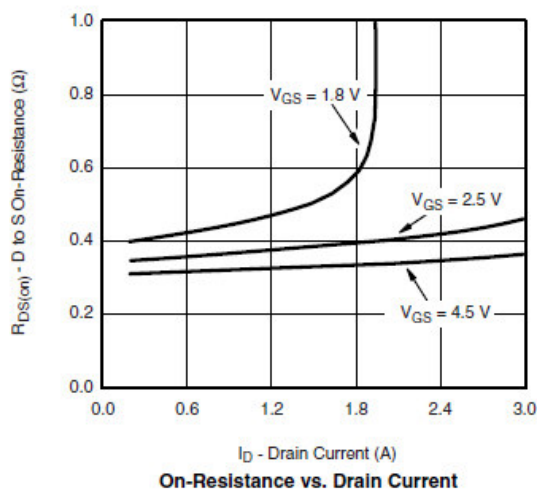
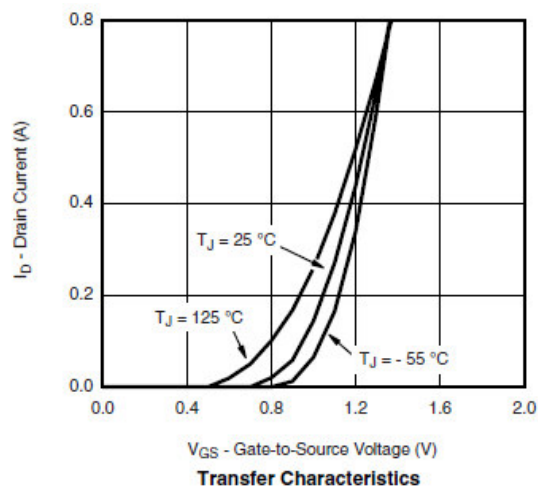
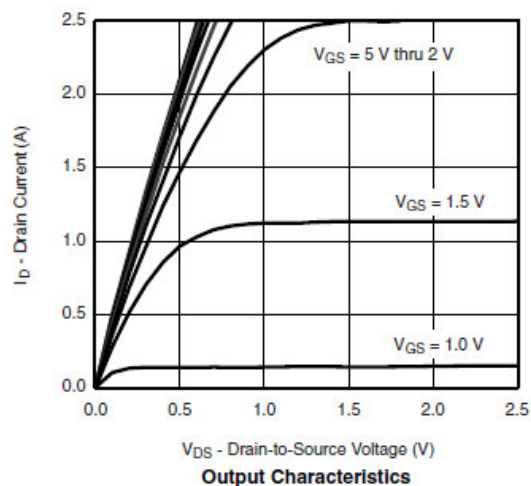
Electrical Characteristics

(T_A=25°C 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	0.3		1.0	
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±12V			±1	mA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V			1	uA
		V _{DS} =20V, V _{GS} =0V T _J =85°C			5	
On-State Drain Current	I _{D(on)}	V _{DS} ≥ 5V, V _{GS} =4.5V	0.7			A
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =4.5V, I _D =0.8A		300	360	mΩ
		V _{GS} =2.5V, I _D =0.7A		340	420	
		V _{GS} =1.8V, I _D =0.6A		420	560	
Forward Transconductance	g _{FS}	V _{DS} =10V, I _D =0.4A		1		S
Diode Forward Voltage	V _{SD}	I _S =0.15A, V _{GS} =0V		0.65	1.2	V
Dynamic						
Input Capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V f=1MHz		70		pF
Output Capacitance	C _{oss}			20		
Reverse Transfer Capacitance	C _{rss}			8		
Total Gate Charge	Q _g	V _{DS} =10V, V _{GS} =4.5V I _D ≅0.6A		1.06	1.38	nC
Gate-Source Charge	Q _{gs}			0.18		
Gate-Drain Charge	Q _{gd}			0.32		
Turn-On Time	t _{d(on)}	V _{DD} =10V, R _L =20Ω I _D ≅0.5A, V _{GEN} =4.5V R _G =1Ω		18	26	ns
	t _r			20	28	
Turn-Off Time	t _{d(off)}			70	110	
	t _f			25	40	

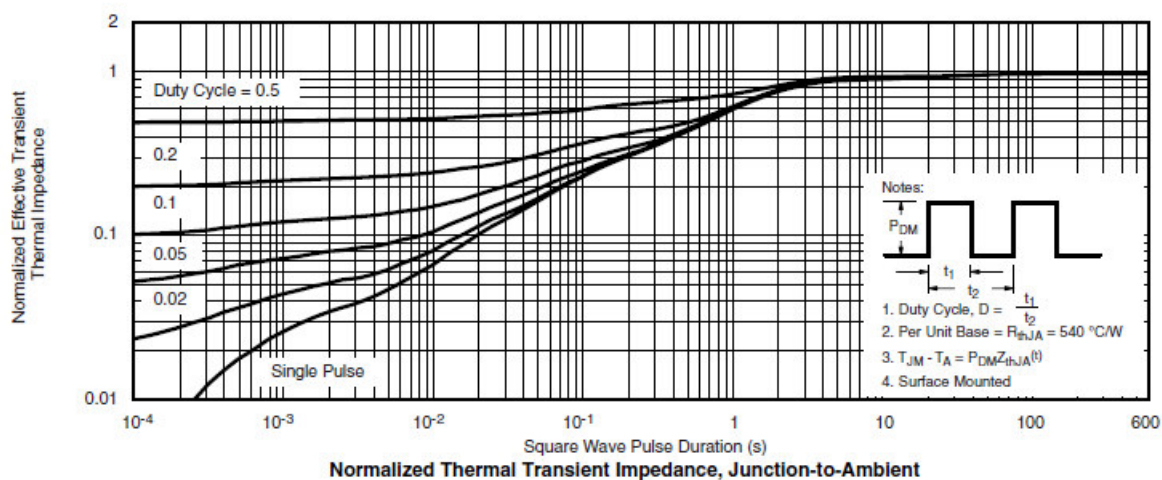
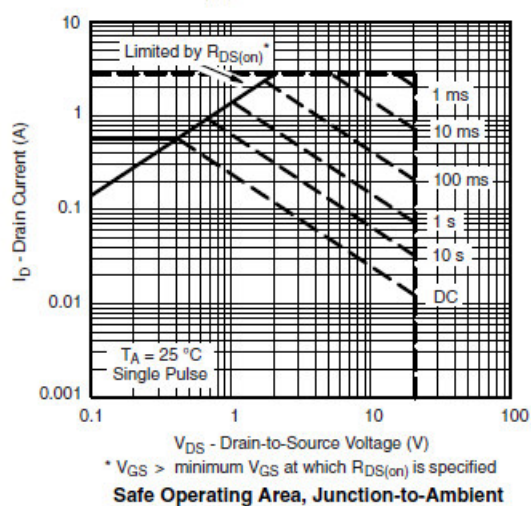
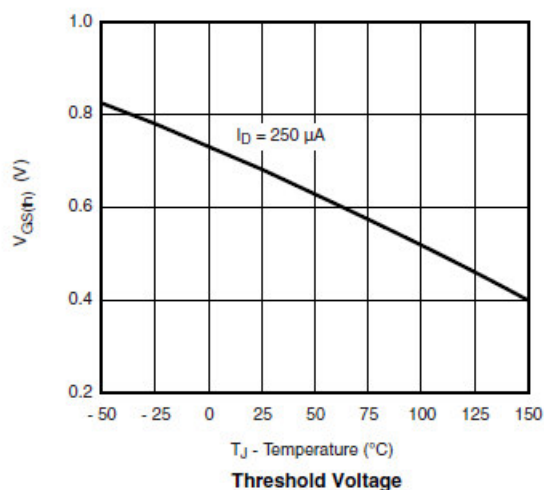
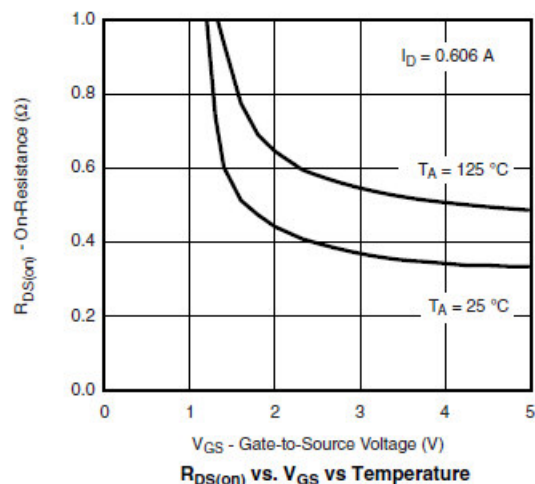
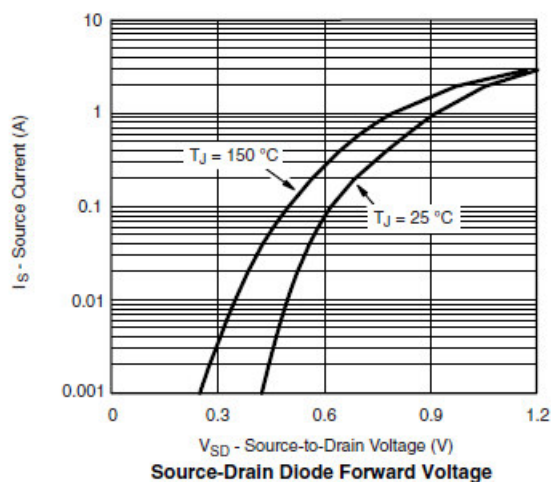


Typical Characteristics





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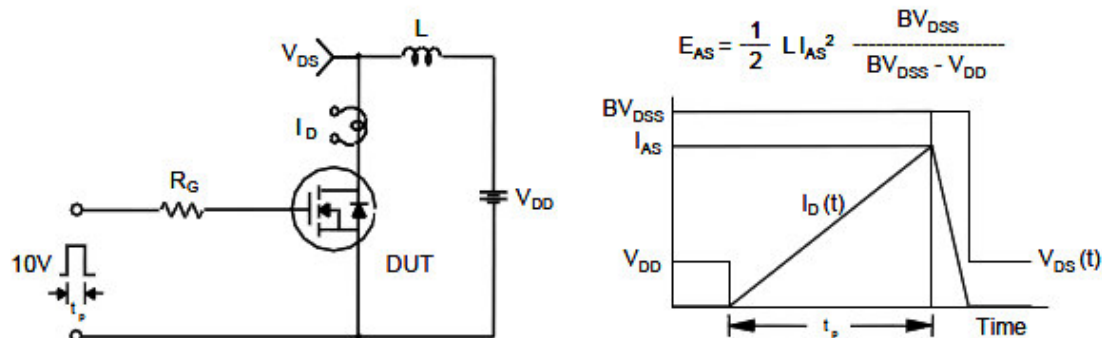
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

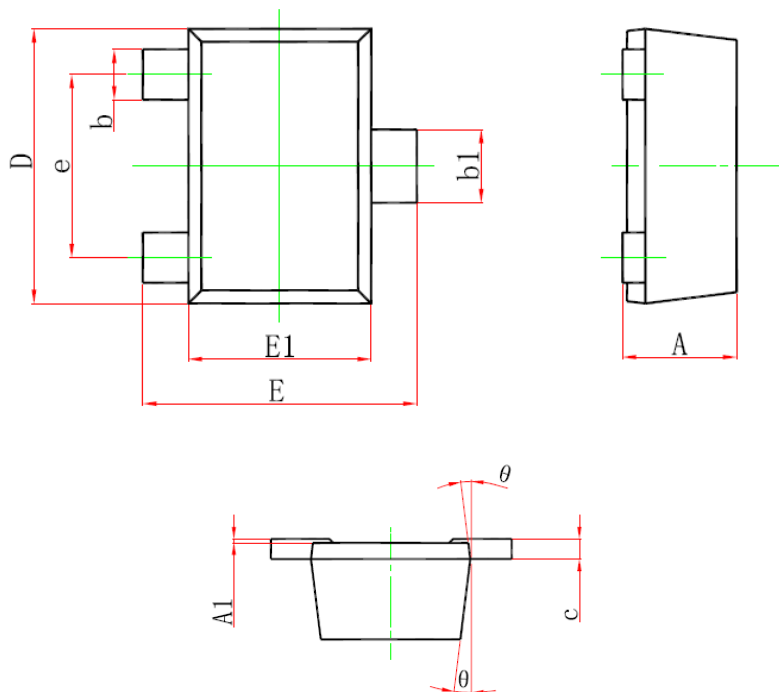


Unclamped Inductive Switching Test Circuit & Waveforms





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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