



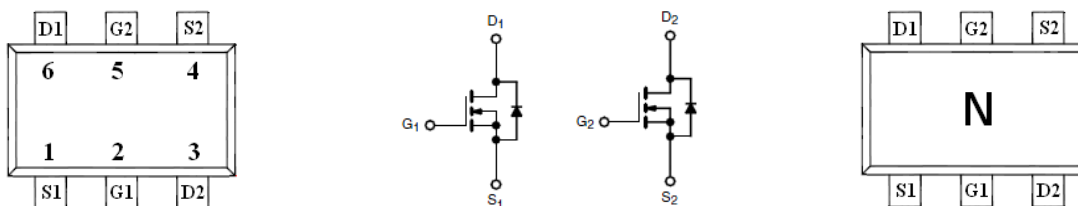
General Description

AFN1034, 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

- 30V/0.6A, $R_{DS(ON)}=440m\Omega@V_{GS}=4.5V$
- 30V/0.5A, $R_{DS(ON)}=500m\Omega@V_{GS}=2.5V$
- 30V/0.4A, $R_{DS(ON)}=720m\Omega@V_{GS}=1.8V$
- Low Offset (Error) Voltage
- Low-Voltage Operation
- High-Speed Circuits
- Low Battery Voltage Operation
- SOT-563 package design

Pin Description (SOT-563)



Application

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

Pin Define

Pin	Symbol	Description
1	S1	Source 1
2	G1	Gate 1
3	D2	Drain 2
4	S2	Source 2
5	G2	Gate 2
6	D1	Drain1

Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFN1034S56RG	N	SOT-563	Tape & Reel	3000 EA

※ AFN1034S56RG : 7" Tape & Reel ; Pb- Free ; Halogen -Free



Absolute Maximum Ratings

($T_A=25^\circ\text{C}$ Unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	30	V
Gate-Source Voltage	V_{GSS}	± 12	V
Continuous Drain Current($T_J=150^\circ\text{C}$)	I_D	$T_A=25^\circ\text{C}$	0.7
		$T_A=70^\circ\text{C}$	0.4
Pulsed Drain Current	I_{DM}	1.0	A
Continuous Source Current(Diode Conduction)	I_S	0.3	A
Power Dissipation	P_D	$T_A=25^\circ\text{C}$	0.27
		$T_A=70^\circ\text{C}$	0.16
Operating Junction Temperature	T_J	-55/150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55/150	$^\circ\text{C}$

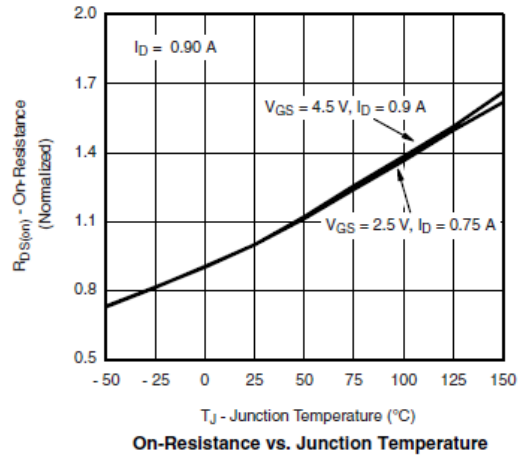
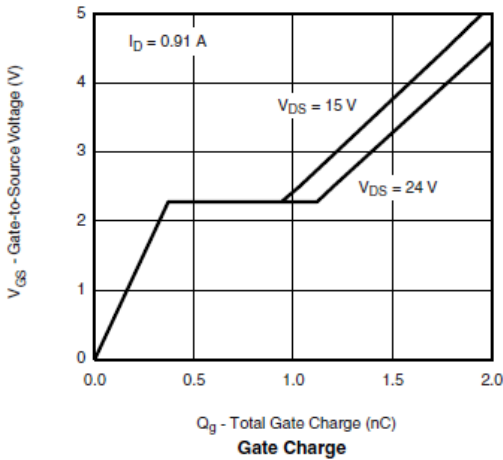
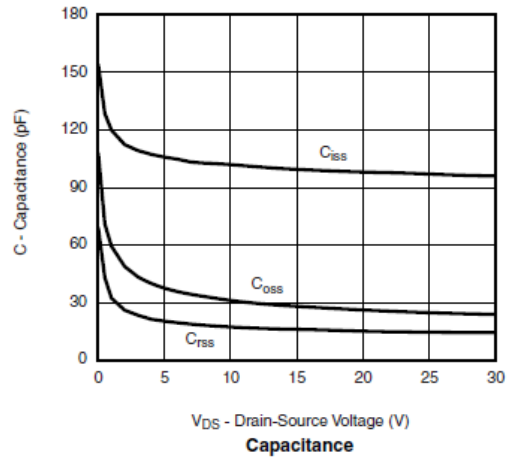
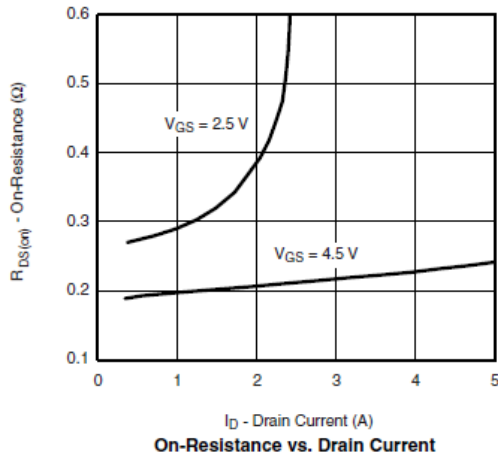
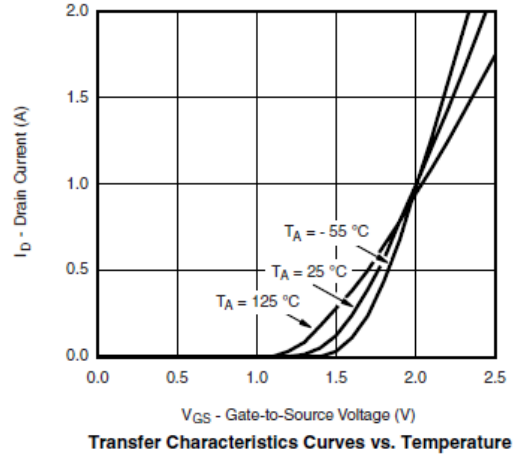
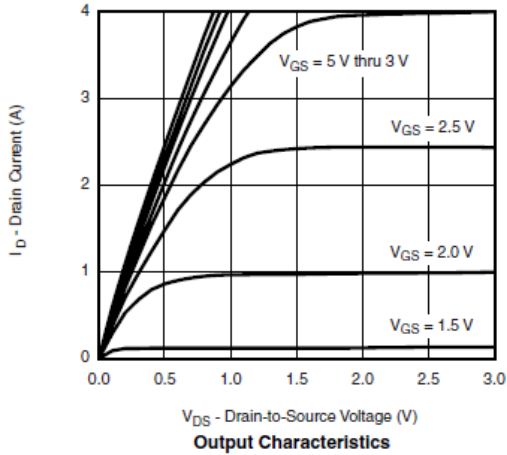
Electrical Characteristics

($T_A=25^\circ\text{C}$ Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu\text{A}$	30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	0.5		1.0	V
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 12V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=24V, V_{GS}=0V$			1	uA
		$V_{DS}=24V, V_{GS}=0V$ $T_J=85^\circ\text{C}$			5	
On-State Drain Current	$I_{D(on)}$	$V_{DS} \geq 5V, V_{GS}=4.5V$	0.7			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=0.6A$		352	440	m Ω
		$V_{GS}=2.5V, I_D=0.5A$		432	500	
		$V_{GS}=1.8V, I_D=0.4A$		620	720	
Forward Transconductance	g_{FS}	$V_{DS}=10V, I_D=0.4A$		1		S
Diode Forward Voltage	V_{SD}	$I_S=0.15A, V_{GS}=0V$		0.6	1.2	V
Dynamic						
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V$ $f=1\text{MHz}$		85		pF
Output Capacitance	C_{oss}			25		
Reverse Transfer Capacitance	C_{rss}			15		
Total Gate Charge	Q_g	$V_{DS}=15V, V_{GS}=4.5V$ $I_D \equiv 0.6A$		1.4	1.8	nC
Gate-Source Charge	Q_{gs}			0.3		
Gate-Drain Charge	Q_{gd}			0.6		
Turn-On Time	$t_{d(on)}$	$V_{DD}=15V, R_L=20\Omega$ $I_D \equiv 0.5A, V_{GEN}=4.5V$ $R_G=1\Omega$		15	25	ns
	t_r			25	45	
Turn-Off Time	$t_{d(off)}$			15	25	
	t_f			10	20	

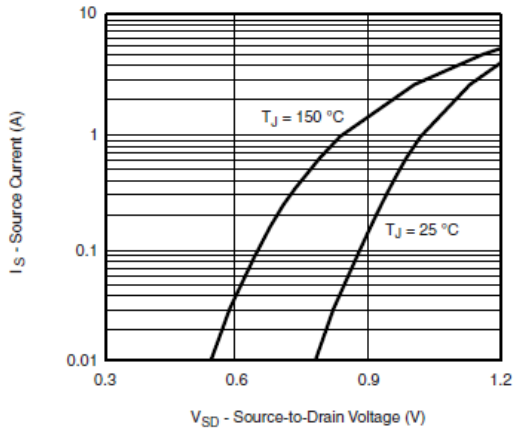


Typical Characteristics

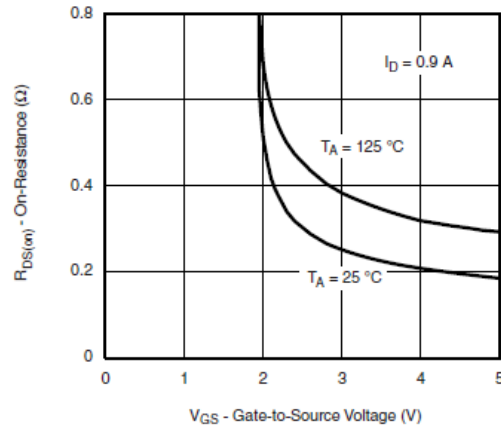




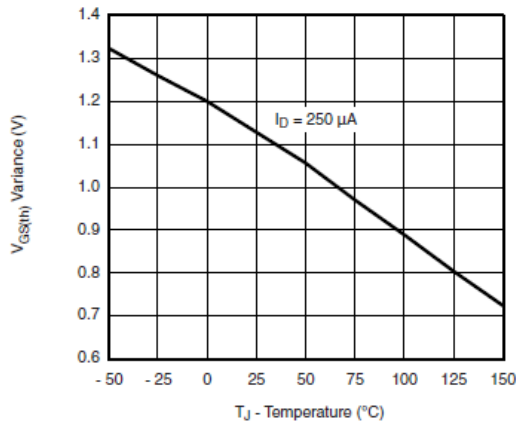
Typical Characteristics



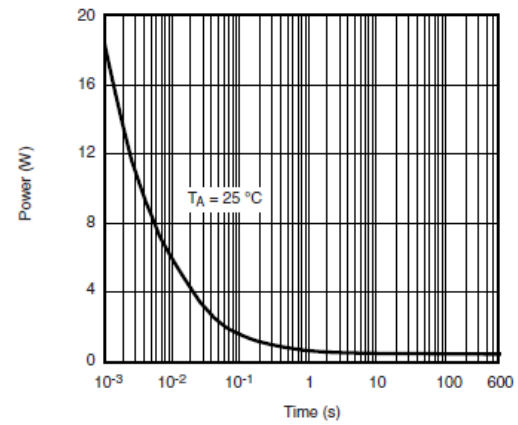
Forward Diode Voltage vs. Temperature



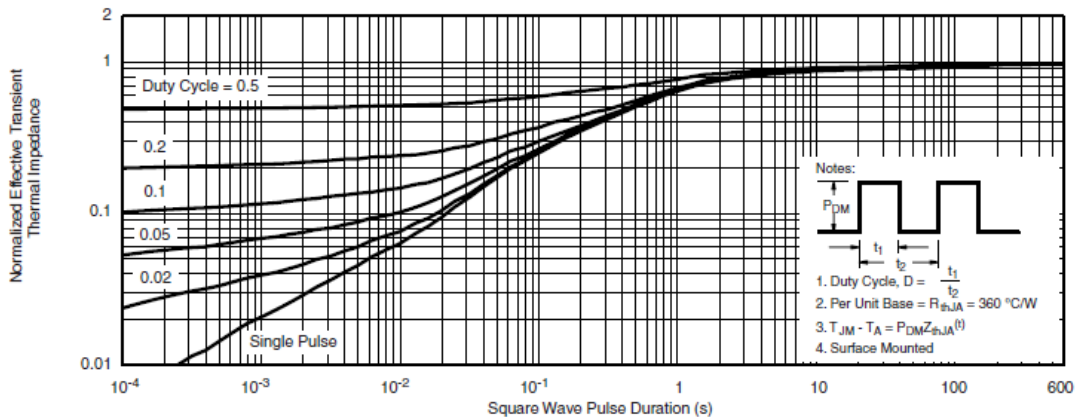
R_{DS(on)} vs. V_{GS} vs. Temperature



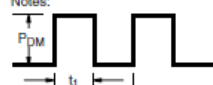
Threshold Voltage



Single Pulse Power, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Ambient

Notes:

 1. Duty Cycle, $D = \frac{t_1}{t_2}$
 2. Per Unit Base = $R_{\theta JA} = 360 \text{ } ^\circ\text{C/W}$
 3. $T_{JM} - T_A = P_{DM} Z_{\theta JA}(t)$
 4. Surface Mounted

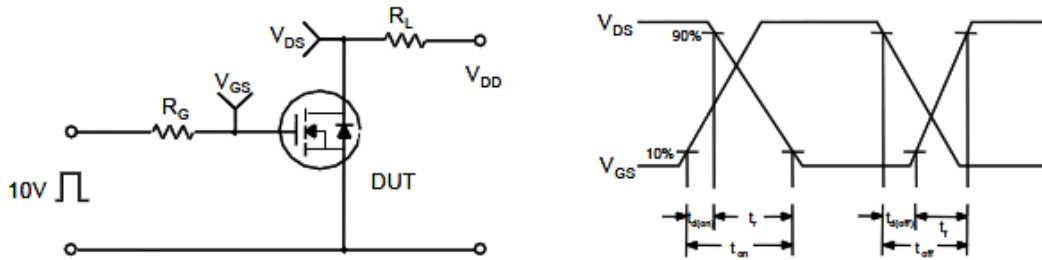


Typical Characteristics

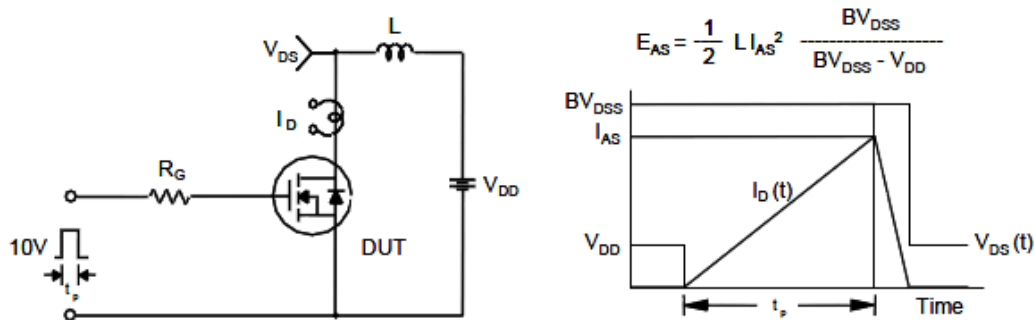
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

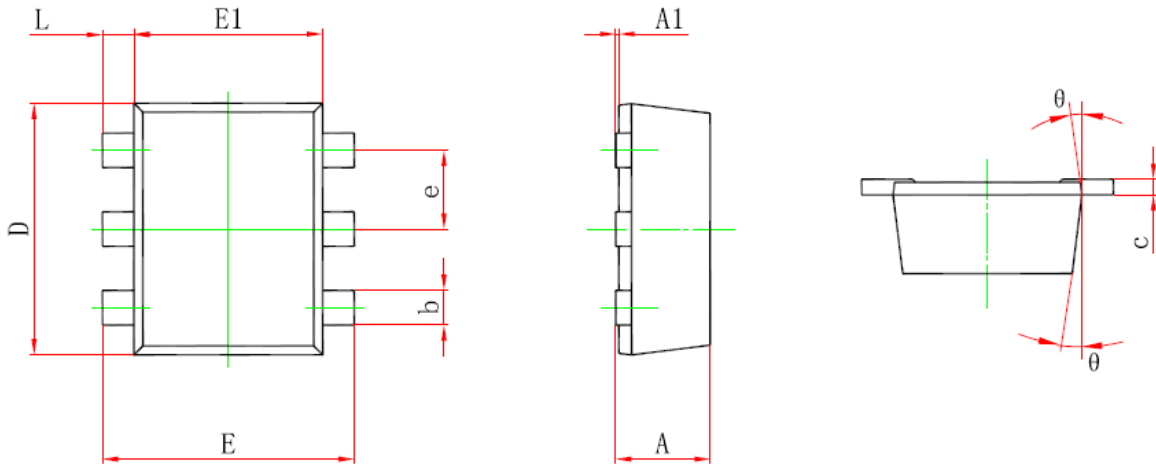


Unclamped Inductive Switching Test Circuit & Waveforms





Package Information (SOT-563)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.525	0.600	0.021	0.024
A1	0.000	0.050	0.000	0.002
e	0.450	0.550	0.018	0.022
c	0.090	0.160	0.004	0.006
D	1.500	1.700	0.059	0.067
b	0.170	0.270	0.007	0.011
E1	1.100	1.300	0.043	0.051
E	1.500	1.700	0.059	0.067
L	0.100	0.300	0.004	0.012
θ	7° REF.		7° REF.	

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