Alfa-MOS Technology

AFN7002DS

60V N-Channel Enhancement Mode MOSFET

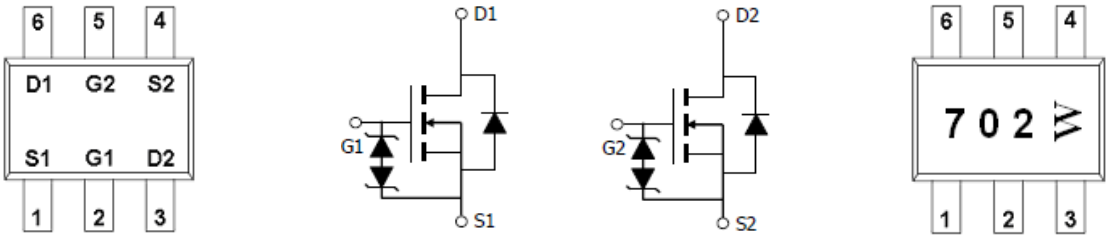
General Description

AFN7002DS, 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

- 60V/0.5A,$R_{DS(ON)}$=3000mΩ@V_{GS}=10V
- 60V/0.3A,$R_{DS(ON)}$=4000mΩ@V_{GS}=5V
- Low Offset (Error) Voltage
- Low-Voltage Operation
- High-Speed Circuits
- Low Battery Voltage Operation
- **ESD (1KV) Protected**
- SOT-363 package design

Pin Description (SOT-363)



Application

- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories
- Battery Operated Systems
- Load/Power Switching Smart Phones, Pagers
- PA Switch
- Level Switch

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
AFN7002DSS36RG	702	SOT-363	Tape & Reel	3000 EA

※ 702 parts code
※ W Month code
※ AFN7002DSS36RG : 7" Tape & Reel ; Pb- Free ; Halogen- Free

Absolute Maximum Ratings

(T_A=25℃ Unless otherwise noted)

Parameter		Symbol	Typical	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	0.64	A
	T_A=70℃		0.35	
Pulsed Drain Current		I_{DM}	0.8	A
Continuous Source Current(Diode Conduction)		I_S	0.64	A
Power Dissipation	T_A=25℃	P_D	0.3	W
	T_A=70℃		0.2	
Operating Junction Temperature		T_J	-55/150	℃
Storage Temperature Range		T_{STG}	-55/150	℃

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			±1	mA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V,V_{GS}=0V			1	uA
		V_{DS}=60V,V_{GS}=0V T_J=125℃			500	
On-State Drain Current	$I_{D(on)}$	V_{DS}≧2V,V_{GS}=10V	0.5			A
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=0.5A		1900	3000	mΩ
		V_{GS}=5V,I_D=0.3A		2400	4000	
Forward Transconductance	g_{FS}	V_{DS}=2V,I_D=0.2A	0.08			S
Diode Forward Voltage	V_{SD}	I_S=0.115A,V_{GS}=0V			1.5	V
Dynamic						
Input Capacitance	C_{iss}	V_{DS}=25V,V_{GS}=0V f=1MHz		17	50	pF
Output Capacitance	C_{oss}			10	25	
Reverse Transfer Capacitance	C_{rss}			3	5	
Turn-On Time	$t_{d(on)}$	V_{DD}=25V,R_L=50Ω I_D≡0.5A,V_{GEN}=10V,R_G=25Ω		7	20	ns
Turn-Off Time	$t_{d(off)}$			11	40	

Typical Characteristics

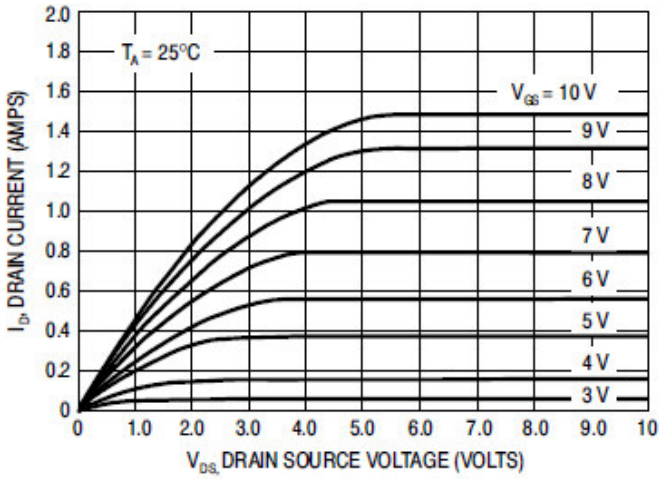


Figure 1. Ohmic Region

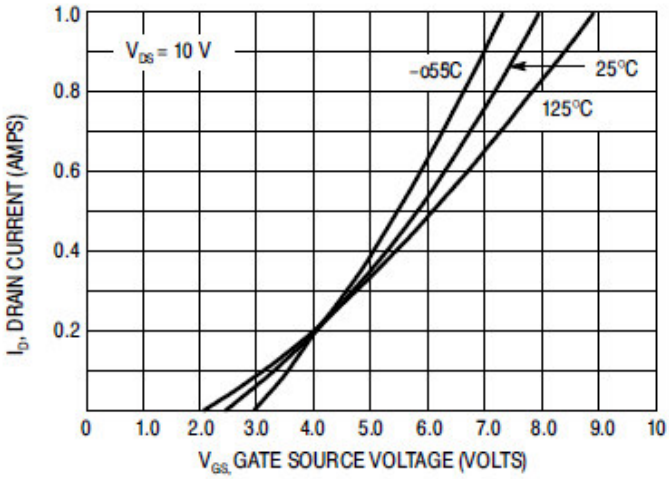


Figure 2. Transfer Characteristics

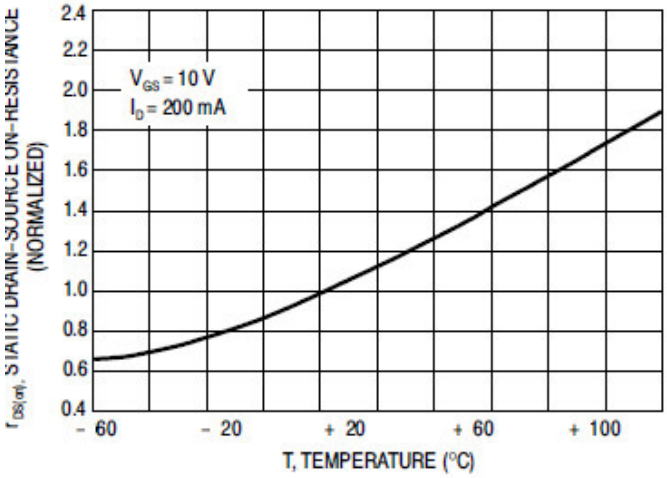


Figure 3. Temperature versus Static Drain–Source On–Resistance

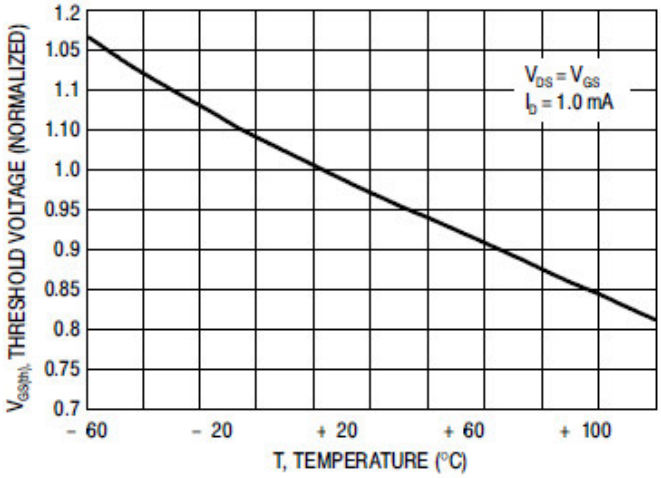
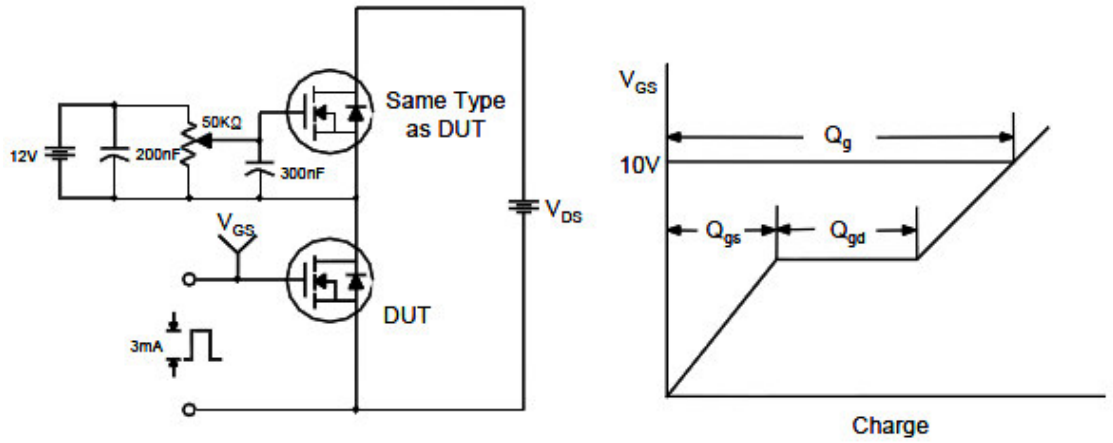


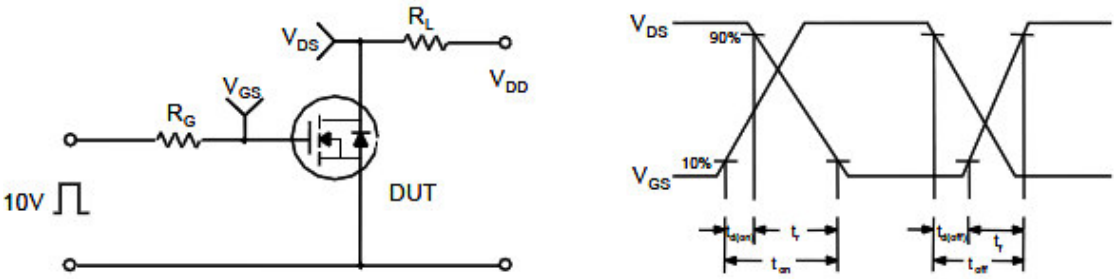
Figure 4. Temperature versus Gate Threshold Voltage

Typical Characteristics

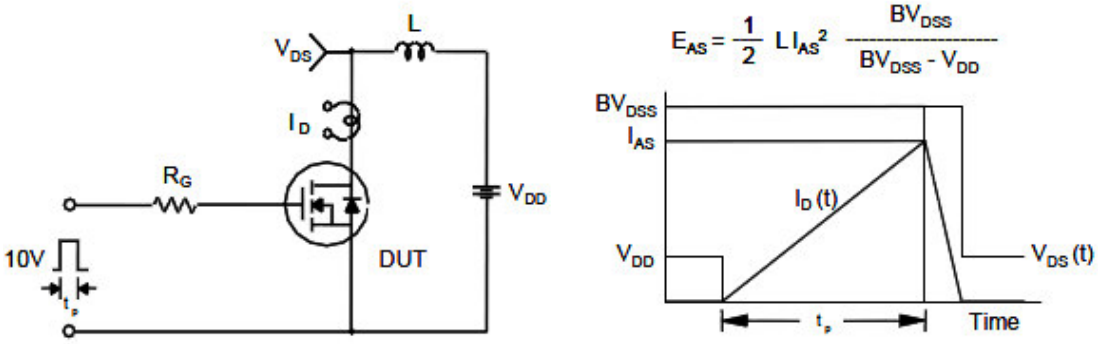
Gate Charge Test Circuit & Waveform



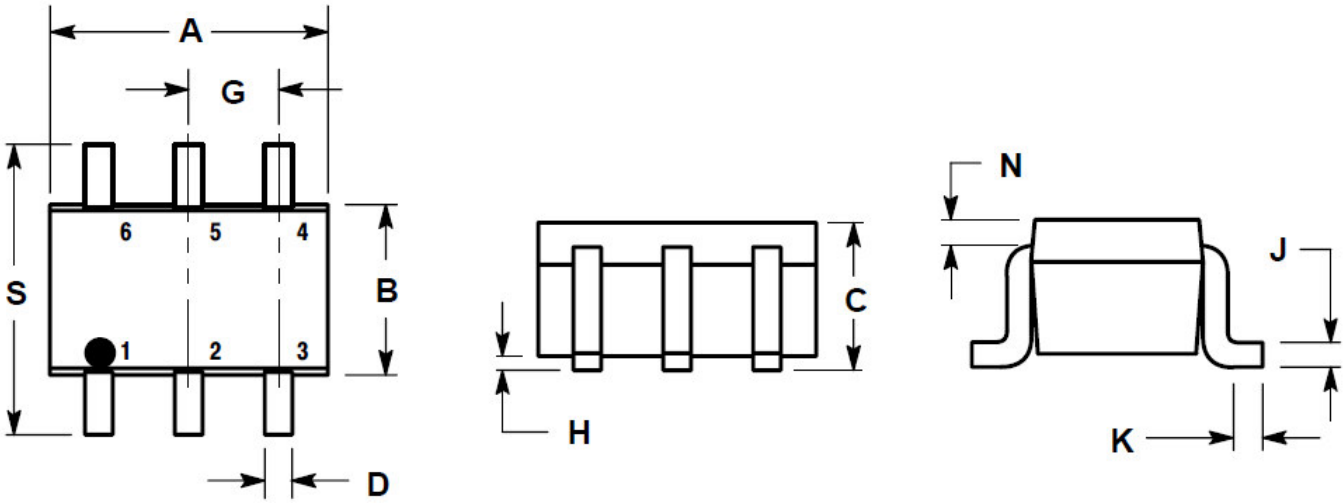
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms



Package Information (SOT-363)



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.071	0.087	1.80	2.20
B	0.045	0.053	1.15	1.35
C	0.031	0.043	0.80	1.10
D	0.004	0.012	0.10	0.30
G	0.026 BSC		0.65 BSC	
H	---	0.004	---	0.10
J	0.004	0.010	0.10	0.25
K	0.004	0.012	0.10	0.30
N	0.008 REF		0.20 REF	
S	0.079	0.087	2.00	2.20

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