



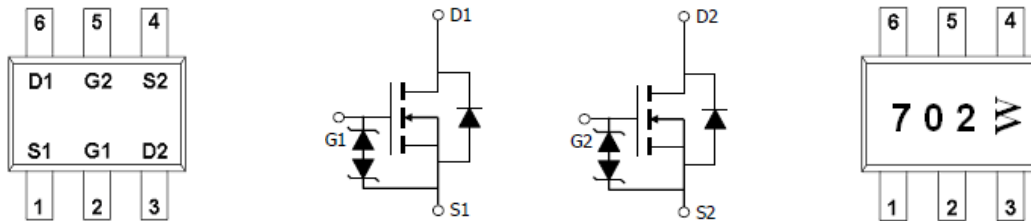
General Description

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, $R_{DS(ON)}=3000m\Omega@V_{GS}=10V$
- 60V/0.3A, $R_{DS(ON)}=4000m\Omega@V_{GS}=5V$
- 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

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	60	V
Gate –Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current($T_J=150^\circ\text{C}$)	I_D	$T_A=25^\circ\text{C}$	0.64
		$T_A=70^\circ\text{C}$	0.35
Pulsed Drain Current	I_{DM}	0.8	A
Continuous Source Current(Diode Conduction)	I_S	0.64	A
Power Dissipation	P_D	$T_A=25^\circ\text{C}$	0.3
		$T_A=70^\circ\text{C}$	0.2
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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu\text{A}$	60			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	1.0	1.4	1.8	V
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 1	mA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V$			1	uA
		$V_{DS}=60V, V_{GS}=0V$ $T_J=125^\circ\text{C}$			500	
On-State Drain Current	$I_{D(on)}$	$V_{DS} \geq 2V, V_{GS}=10V$	0.5			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=0.5A$		1900	3000	m Ω
		$V_{GS}=5V, I_D=0.3A$		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}	$V_{DS}=25V, V_{GS}=0V$ $f=1\text{MHz}$		17	50	pF
Output Capacitance	C_{oss}			10	25	
Reverse Transfer Capacitance	C_{rss}			3	5	
Turn-On Time	$t_{d(on)}$	$V_{DD}=25V, R_L=50\Omega$		7	20	ns
Turn-Off Time	$t_{d(off)}$	$I_D \cong 0.5A, V_{GEN}=10V, R_G=25\Omega$		11	40	



Typical Characteristics

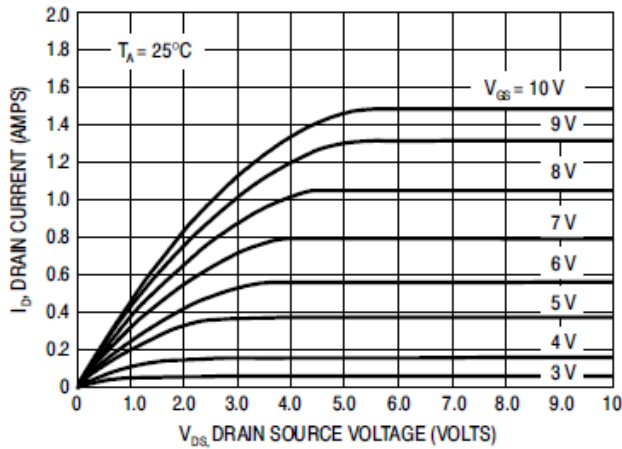


Figure 1. Ohmic Region

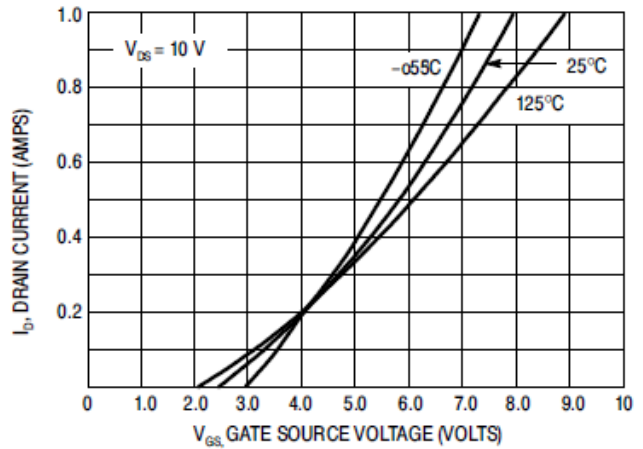


Figure 2. Transfer Characteristics

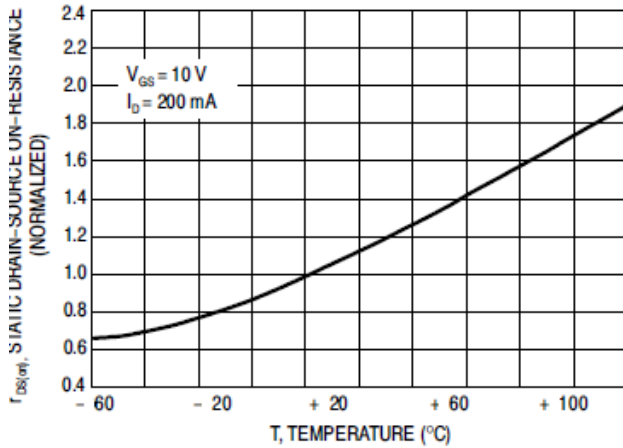


Figure 3. Temperature versus Static Drain-Source On-Resistance

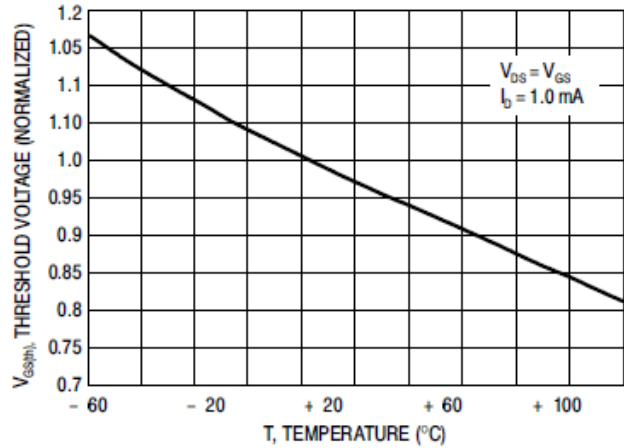
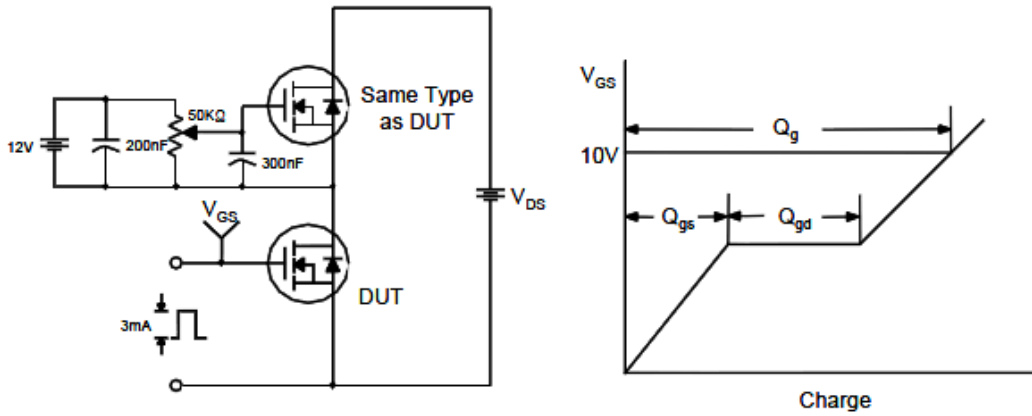


Figure 4. Temperature versus Gate Threshold Voltage

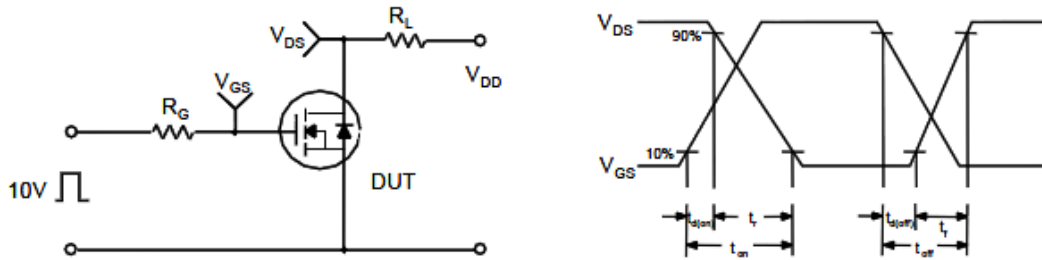


Typical Characteristics

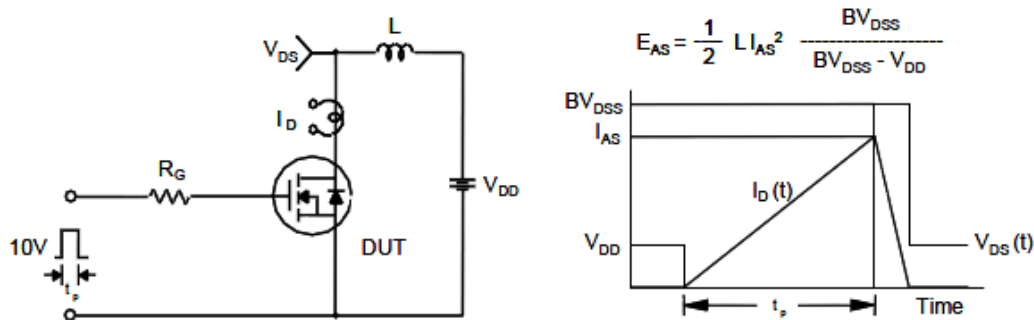
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

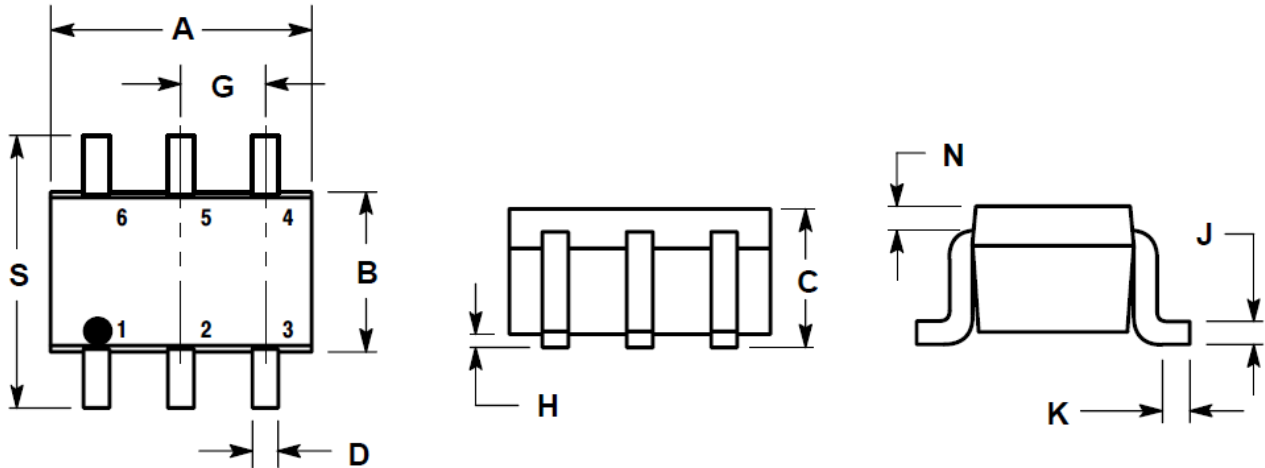


Unclamped Inductive Switching Test Circuit & Waveforms





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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