



### General Description

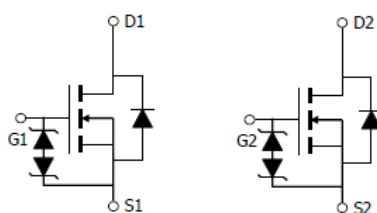
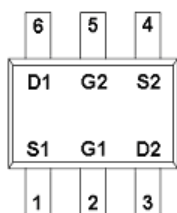
AFN7002LDS, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent  $R_{DS(ON)}$ , low gate charge.

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 ,  $R_{DS(ON)}=2400m\Omega@V_{GS}=10V$
- 60V/0.4A ,  $R_{DS(ON)}=3000m\Omega@V_{GS}=4.5V$
- 60V/0.3A ,  $R_{DS(ON)}=6500m\Omega@V_{GS}=2.5V$
- 60V/0.2A ,  $R_{DS(ON)}=9000m\Omega@V_{GS}=1.8V$
- Super high density cell design for extremely low RDS (ON)
- Exceptional on-resistance and maximum DC current capability
- ESD Protection Diode design-in
- SOT-363 package design

### Pin Description ( SOT-363 )



### Application

- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories
- Battery Operated Systems
- 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
AFN7002LDSS36RG	72LW	SOT-363	Tape & Reel	3000 EA

※ 72L Parts code

※ W Month code

※ AFN7002LDSS36RG : 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	$V_{GSS}$	$\pm 20$	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)	$I_S$	0.8	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	$^\circ\text{C}$

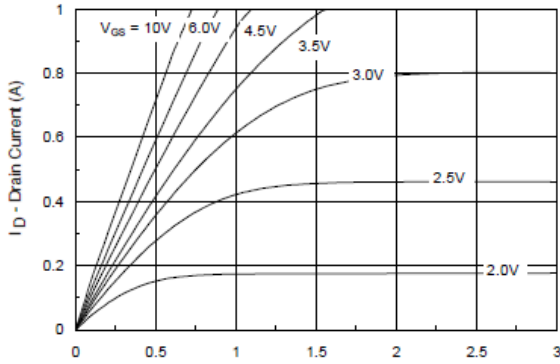
### Electrical Characteristics

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

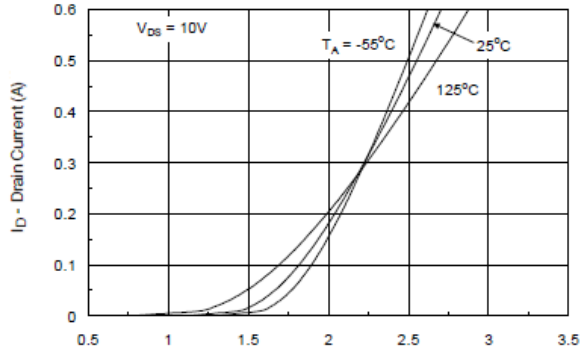
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	60			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.7	1.1	1.5	V
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			5	$\mu A$
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=48V, V_{GS}=0V$			1	$\mu A$
		$V_{DS}=48V, V_{GS}=0V$ $T_J=85^\circ\text{C}$			10	
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=0.5A$		1050	2400	m $\Omega$
		$V_{GS}=4.5V, I_D=0.4A$		1350	3000	
		$V_{GS}=2.5V, I_D=0.3A$		3520	6500	
		$V_{GS}=1.8V, I_D=0.2A$		7560	9000	
Forward Transconductance	$g_{FS}$	$V_{DS}=10V, I_D=0.2A$		0.2		S
Diode Forward Voltage	$V_{SD}$	$I_S=0.2A, V_{GS}=0V$		0.75	1.4	V
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS}=30V, V_{GS}=10V$ $I_D=0.25A$		1.5	2.5	pC
Gate-Source Charge	$Q_{gs}$			0.2		
Gate-Drain Charge	$Q_{gd}$			0.5		
Input Capacitance	$C_{iss}$	$V_{DS}=25V, V_{GS}=0V$ $f=1\text{MHz}$		28		pF
Output Capacitance	$C_{oss}$			10		
Reverse Transfer Capacitance	$C_{rss}$			5		
Turn-On Time	$t_{d(on)}$	$V_{DD}=30V, R_G=6\Omega$ $I_D=0.25A, V_{GEN}=10V$		3	7	ns
	$t_r$			12	30	
Turn-Off Time	$t_{d(off)}$			18	40	
	$t_f$			8	15	



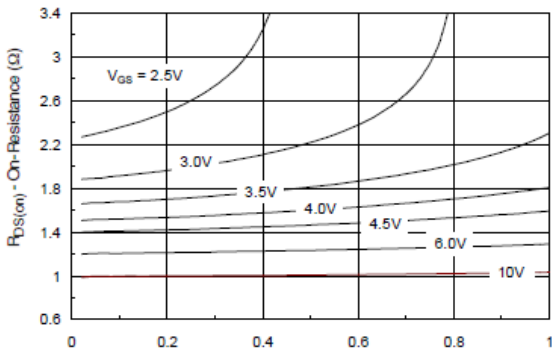
**Typical Characteristics**



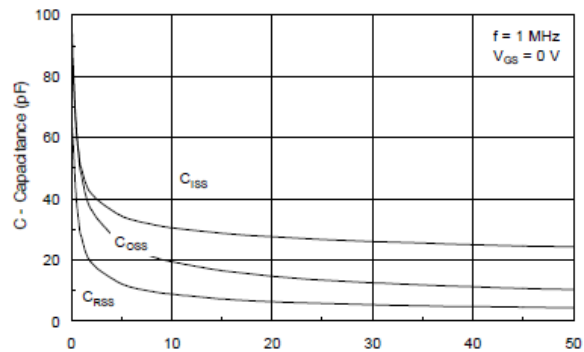
**Output Characteristics**



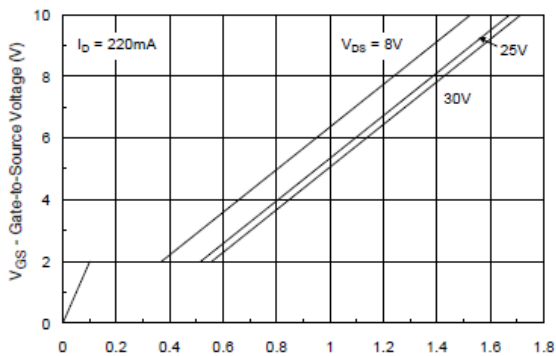
**Transfer Characteristics**



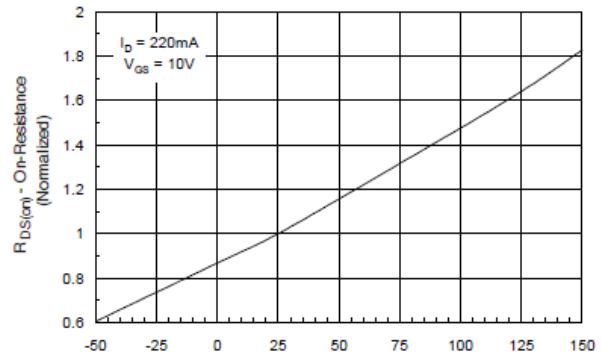
**On-Resistance vs. Drain Current**



**Capacitance**



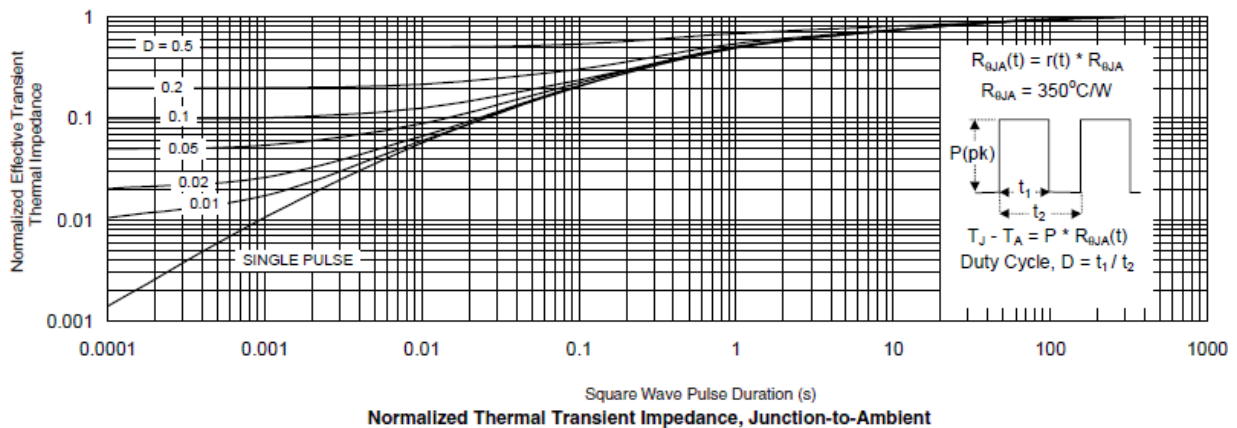
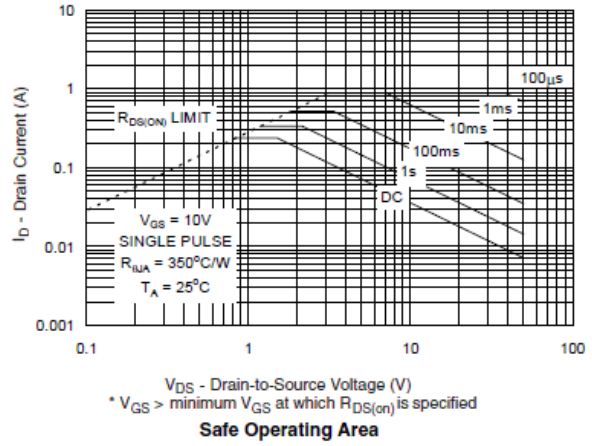
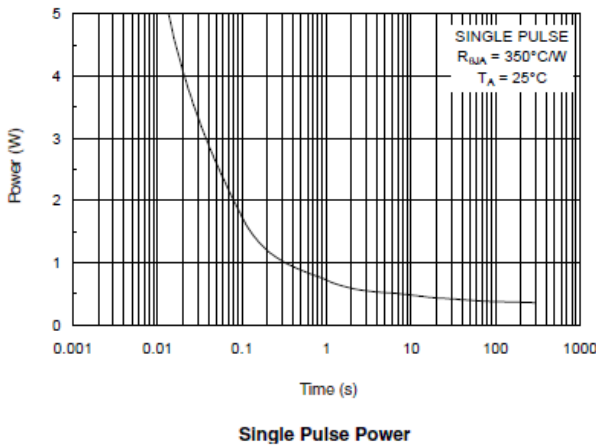
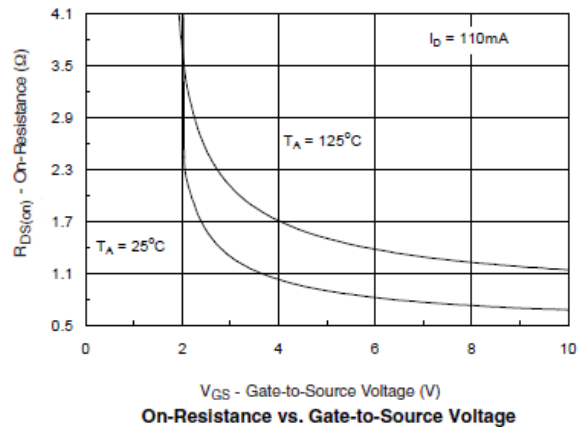
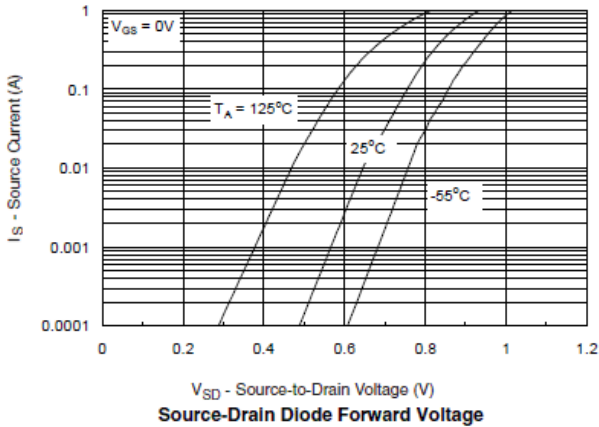
**Gate Charge**



**On-Resistance vs. Junction Temperature**



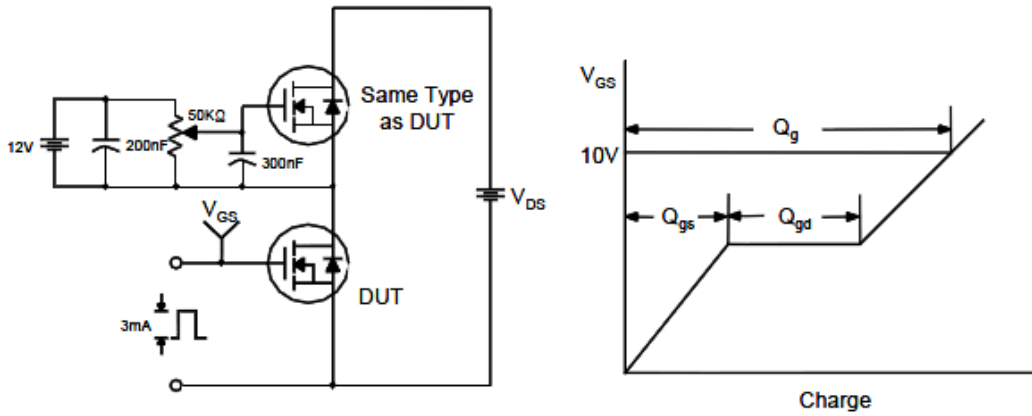
**Typical Characteristics**



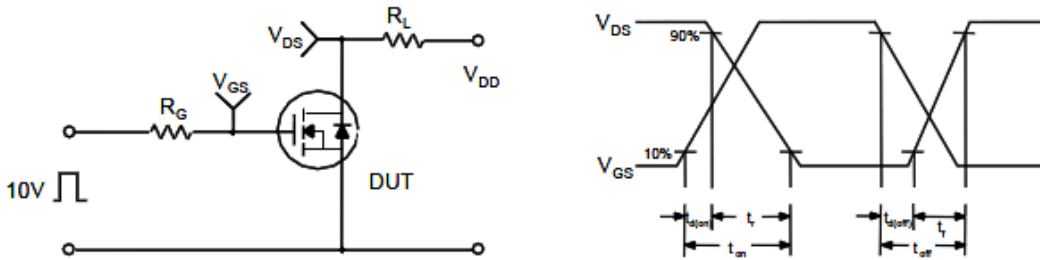


**Typical Characteristics**

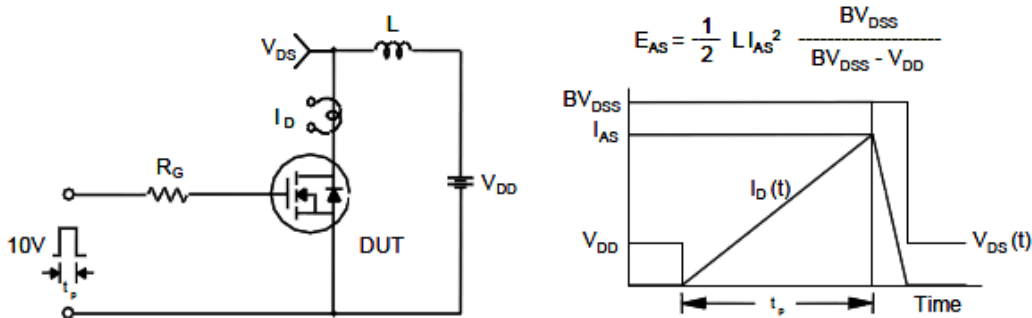
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

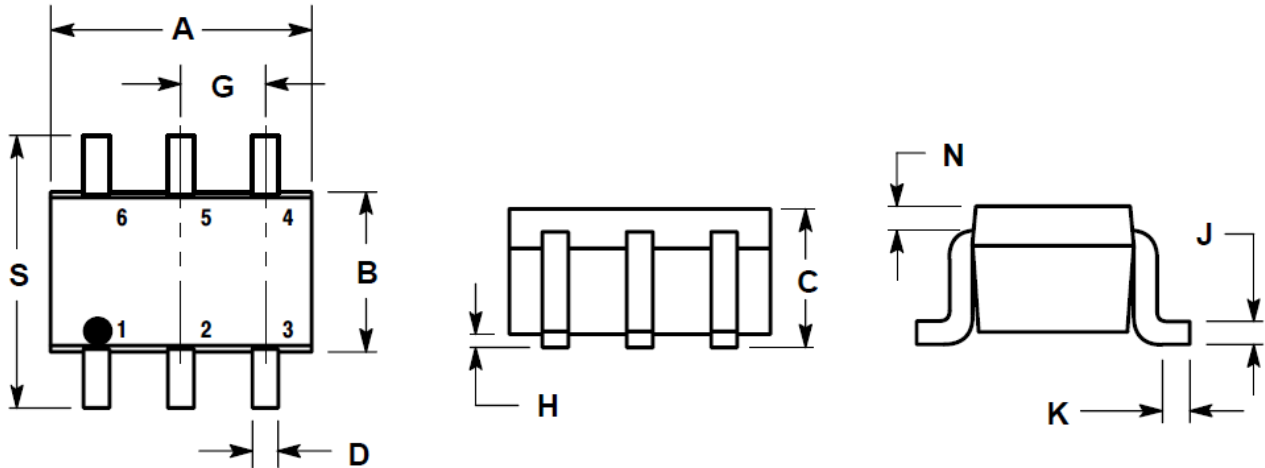


Unclamped Inductive Switching Test Circuit & Waveforms





**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

©2010 Alfa-MOS Technology Corp.  
2F, No.80, Sec.1, Cheng Kung Rd., Nan Kang Dist., Taipei City 115, Taiwan (R.O.C.)  
Tel : 886 2) 2651 3928  
Fax : 886 2) 2786 8483  
©http://www.alfa-mos.com