



1jGeneral Description

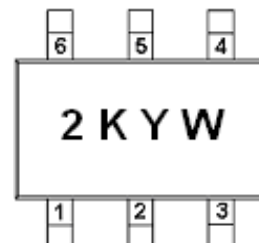
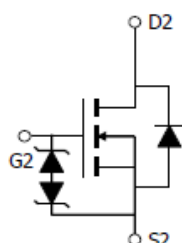
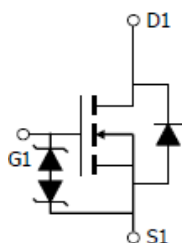
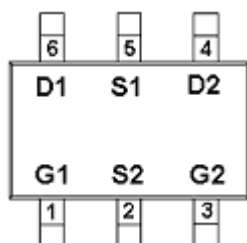
AFN7002KDS, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

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/0.6A , $R_{DS(ON)}=2.0\Omega@V_{GS}=10V$
- 60V/0.3A , $R_{DS(ON)}=3.5\Omega@V_{GS}=4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- ESD Protection (>2KV) Diode design-in
- TSOP-6 package design

Pin Description (TSOP-6)



Application

- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories
- Battery Operated Systems

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
AFN7002KDSTS6RG	2KYW	TSOP-6	Tape & Reel	3000 EA

- ※ 2K Parts code
- ※ Y Year code (0 ~ 9)
- ※ W Week code (A ~ Z = 1 ~ 26 / a ~ z = 27 ~ 52)
- ※ AFN7002KDSTS6RG : 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}	60	V
Gate –Source Voltage	V _{GSS}	±20	V
Continuous Drain Current(T _J =150°C)	I _D	T _A =25°C 0.6	A
		T _A =70°C 0.3	
Pulsed Drain Current	I _{DM}	0.6	A
Continuous Source Current(Diode Conduction)	I _S	0.2	A
Power Dissipation	P _D	T _A =25°C 2.0	W
		T _A =70°C 1.3	
Operating Junction Temperature	T _J	-55/150	°C
Storage Temperature Range	T _{STG}	-55/150	°C

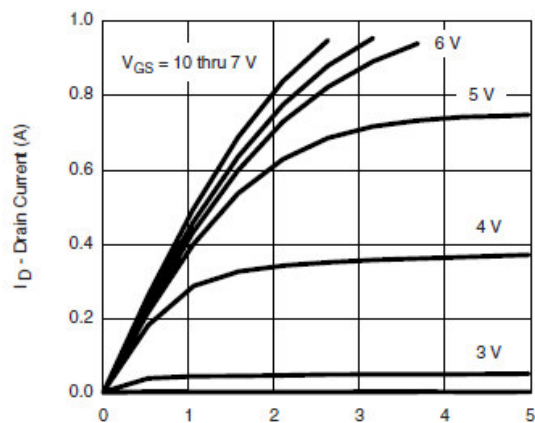
Electrical Characteristics

(T_A=25°C Unless otherwise noted)

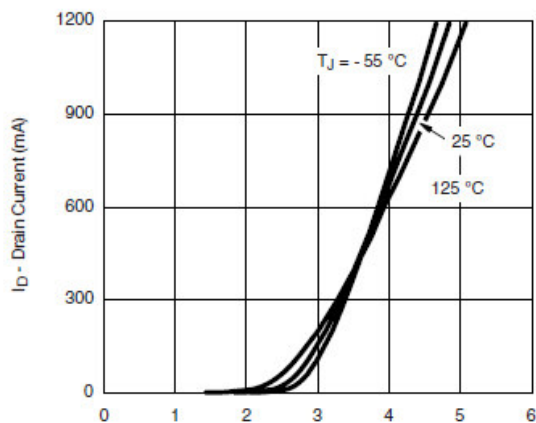
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250uA	60			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	1.0		2.5	
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			3	uA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V			1	uA
		V _{DS} =60V, V _{GS} =0V T _J =85°C			10	
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =0.6A		1.2	2.0	Ω
		V _{GS} = 4.5V, I _D =0.3A		1.7	3.5	
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
Dynamic						
Total Gate Charge	Q _g	V _{DS} =10V, V _{GS} =4.5V I _D ≅0.25A		450		pC
Gate-Source Charge	Q _{gs}			110		
Gate-Drain Charge	Q _{gd}			150		
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V f=1MHz		30		pF
Output Capacitance	C _{oss}			8		
Reverse Transfer Capacitance	C _{rss}			5		
Turn-On Time	t _{d(on)}	V _{DD} =30V, R _L =150Ω I _D ≅0.2A, V _{GEN} =10V R _G =10Ω		4	10	ns
	t _r			5	15	
Turn-Off Time	t _{d(off)}			12	20	
	t _f			10	20	



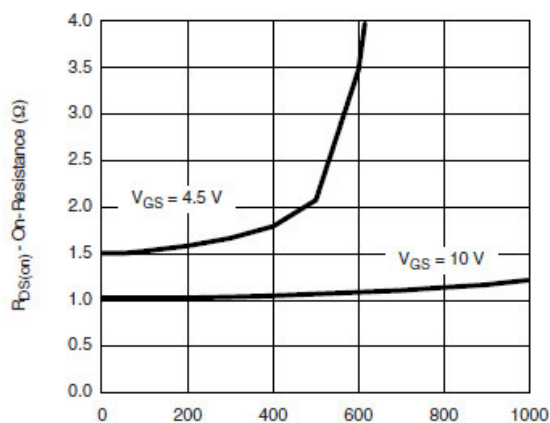
Typical Characteristics



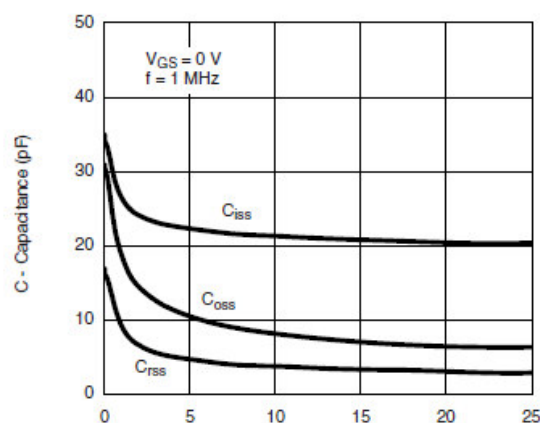
Output Characteristics



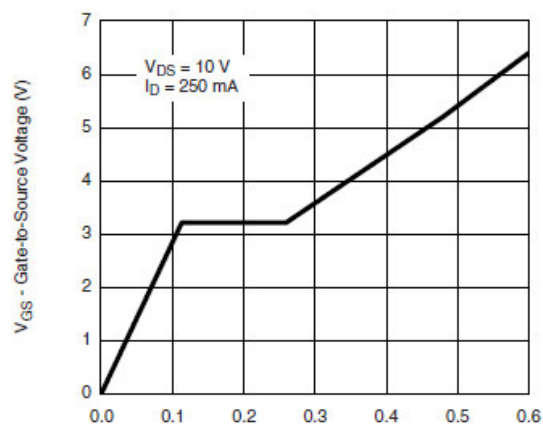
Transfer Characteristics



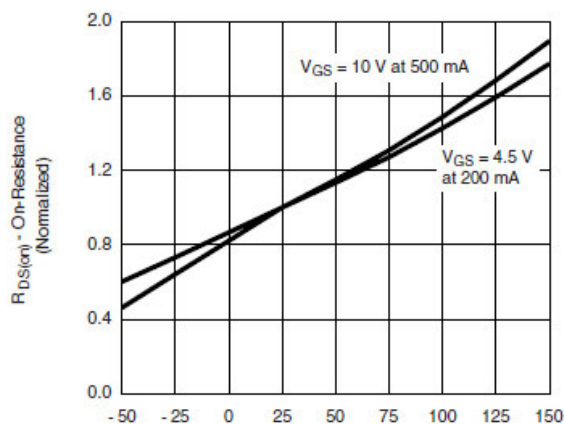
On-Resistance vs. Drain Current



Capacitance



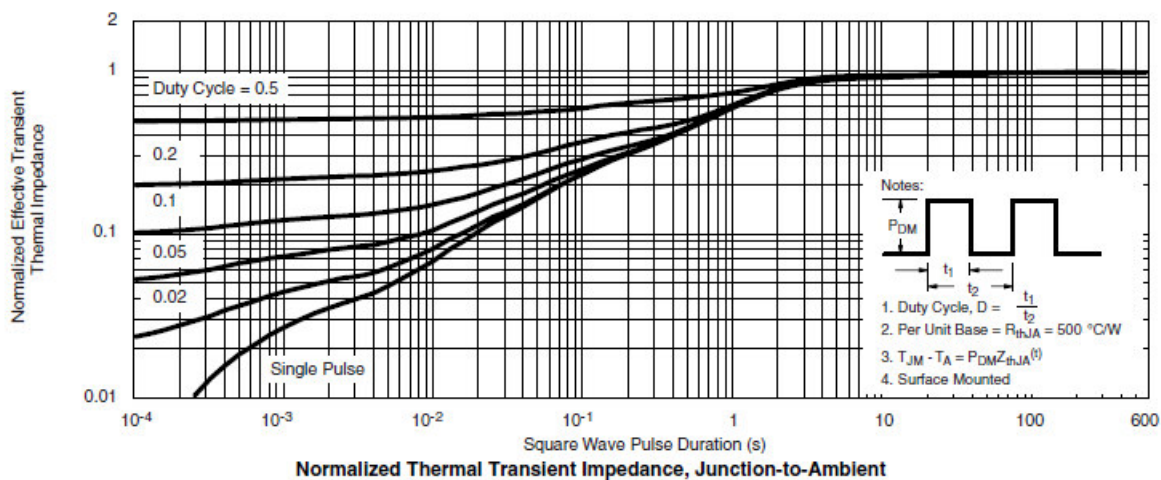
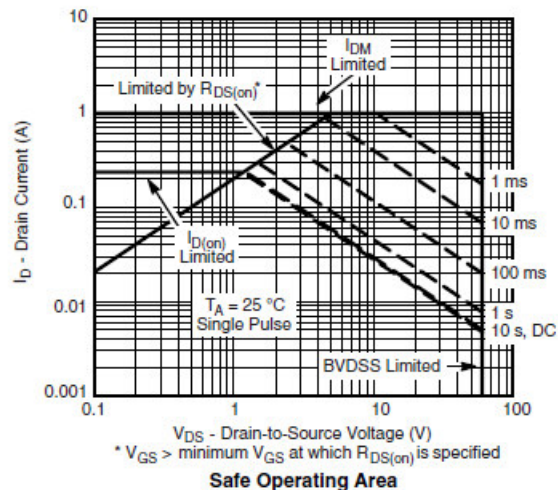
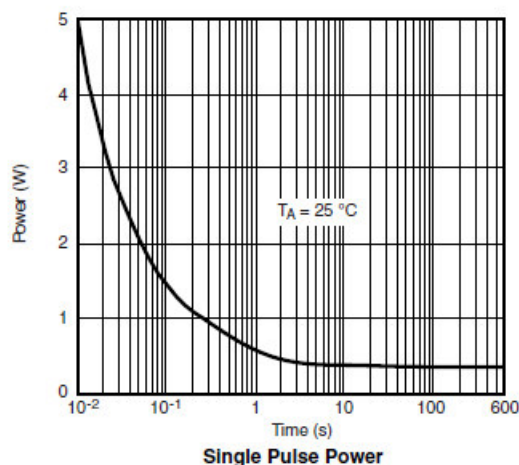
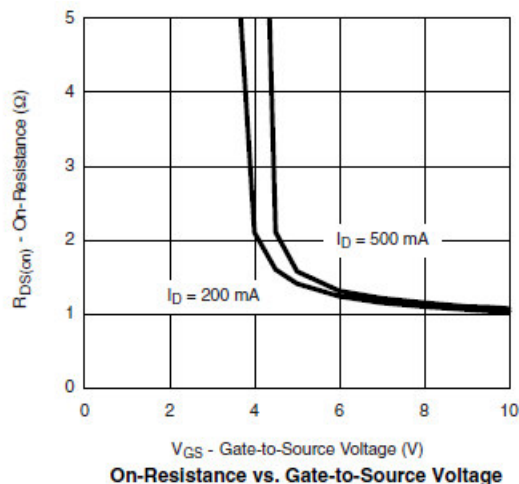
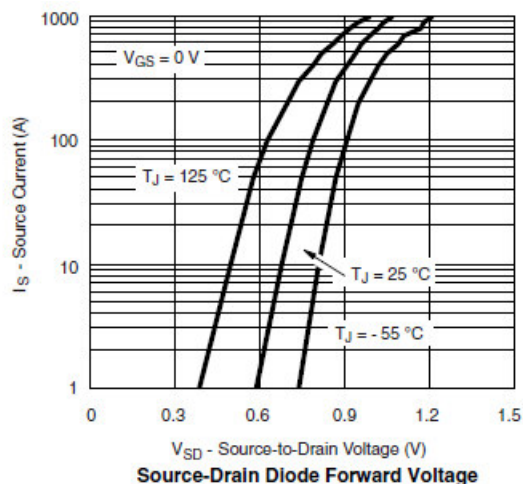
Gate Charge



On-Resistance vs. Junction Temperature



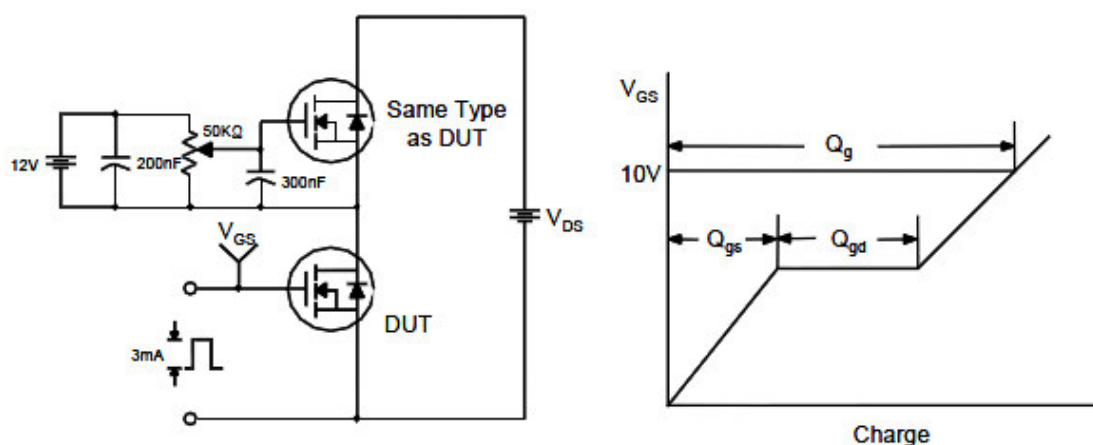
Typical Characteristics



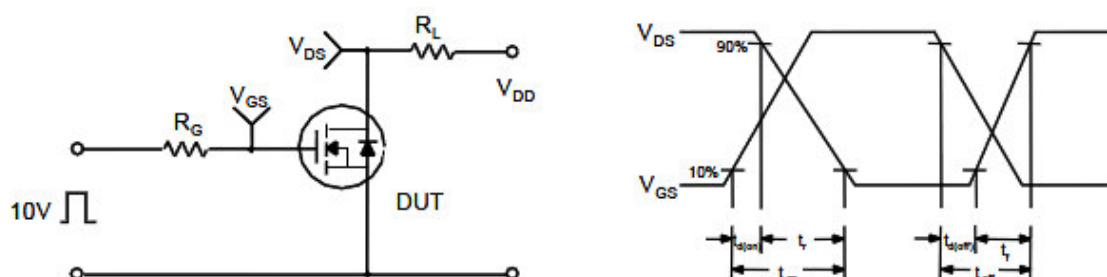


Typical Characteristics

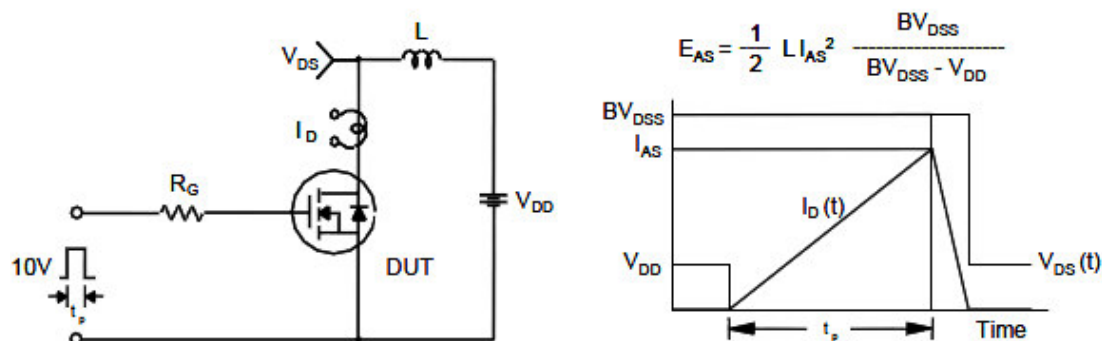
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

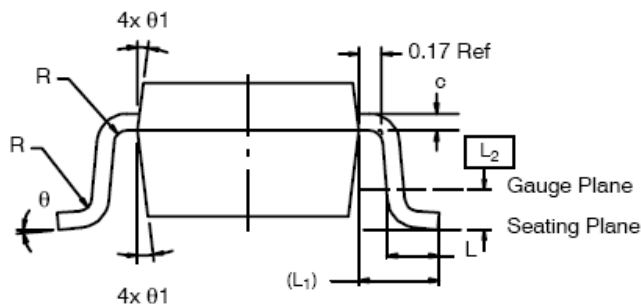
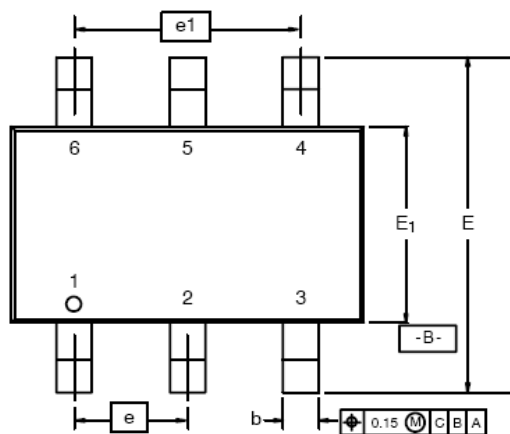


Unclamped Inductive Switching Test Circuit & Waveforms





Package Information (TSOP-6)



Dim	MILLIMETERS			INCHES		
	Min	Nom	Max	Min	Nom	Max
A	0.91	-	1.10	0.036	-	0.043
A ₁	0.01	-	0.10	0.0004	-	0.004
A ₂	0.90	-	1.00	0.035	0.038	0.039
b	0.30	0.32	0.45	0.012	0.013	0.018
c	0.10	0.15	0.20	0.004	0.006	0.008
D	2.95	3.05	3.10	0.116	0.120	0.122
E	2.70	2.85	2.96	0.106	0.112	0.117
E ₁	1.55	1.65	1.70	0.061	0.065	0.067
e	1.00 BSC			0.0394 BSC		
e ₁	1.90	2.00	2.10	0.075	0.080	0.085
L	0.35	-	0.50	0.014	-	0.020
L ₁	0.60 Ref			0.024 Ref		
L ₂	0.25 BSC			0.010 BSC		
R	0.10	-	-	0.004	-	-
θ	0°	4°	8°	0°	4°	8°
θ ₁	7° Nom			7° Nom		

©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
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