



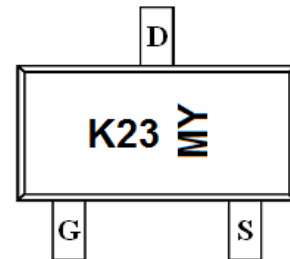
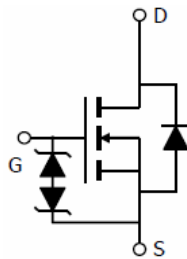
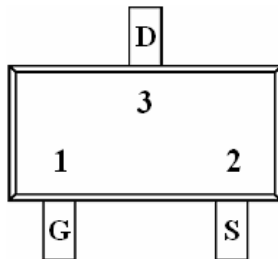
General Description

AFN123AS, 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 other battery powered circuits, and low in-line power loss are needed in commercial industrial surface mount applications.

Features

- 100V/0.17A , $R_{DS(ON)}=5.8\Omega@V_{GS}=10V$
- 100V/0.17A , $R_{DS(ON)}=6.8\Omega@V_{GS}=4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- ESD Protection Diode design-in
- SOT-23 package design

Pin Description (SOT-23)



Application

- Drivers: Relays, Solenoids, Lamps, Hammers, Display, Memories, Transistors, etc.
- High saturation current capability. Direct Logic-Level Interface: TTL/CMOS
- Battery Operated Systems
- Solid-State Relays

Pin Define

Pin	Symbol	Description
1	G	Gate
2	S	Source
3	D	Drain

Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFN123ASS23RG	K23YM	SOT-23	Tape & Reel	3000 EA

- ※ K23 Parts code
- ※ Y Year code (0 ~ 9)
- ※ M Month code (A ~ L = 1 ~ 12)
- ※ AFN123ASS23RG : 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}	100	V
Gate –Source Voltage	V _{GSS}	±20	V
Continuous Drain Current(T _J =150°C)	I _D	T _A =25°C 0.17	A
		T _A =70°C 0.17	
Pulsed Drain Current	I _{DM}	0.68	A
Continuous Source Current(Diode Conduction)	I _S	0.45	A
Power Dissipation	P _D	T _A =25°C 1.25	W
		T _A =70°C 0.8	
Operating Junction Temperature	T _J	150	°C
Storage Temperature Range	T _{STG}	-55/150	°C
Thermal Resistance-Junction to Ambient	R _{θJA}	120	°C/W

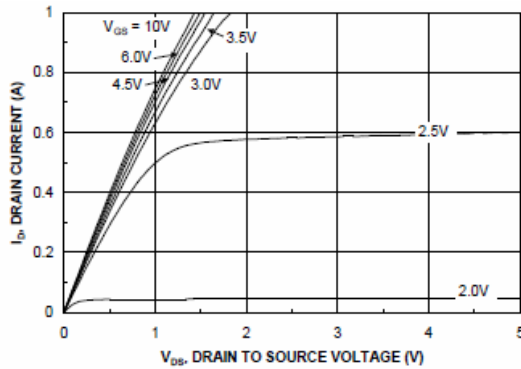
Electrical Characteristics

(T_A=25°C Unless otherwise noted)

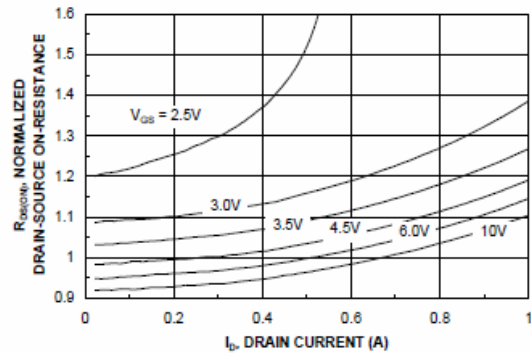
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250uA	60			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	1.0		2.0	
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			10	uA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =80V, V _{GS} =0V			1	uA
		V _{DS} =80V, V _{GS} =0V T _J =85°C			10	
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =0.17A		4.0	5.8	Ω
		V _{GS} = 4.5V, I _D =0.17A		4.6	6.8	
Forward Transconductance	g _{FS}	V _{DS} =10V, I _D =0.17A		0.8		S
Diode Forward Voltage	V _{SD}	I _S =0.17A, V _{GS} =0V		0.75	1.3	V
Dynamic						
Total Gate Charge	Q _g	V _{DS} =30V, V _{GS} =10V I _D ≅0.22A		1.8	3.5	nC
Gate-Source Charge	Q _{gs}			0.2		
Gate-Drain Charge	Q _{gd}			0.3		
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V f=1MHz		70		pF
Output Capacitance	C _{oss}			8		
Reverse Transfer Capacitance	C _{rss}			5		
Turn-On Time	t _{d(on)}	V _{DD} =30V, R _G =50Ω I _D ≅0.28A, V _{GEN} =10V		5	10	ns
	t _r			5	10	
Turn-Off Time	t _{d(off)}			7	15	
	t _f			10	20	



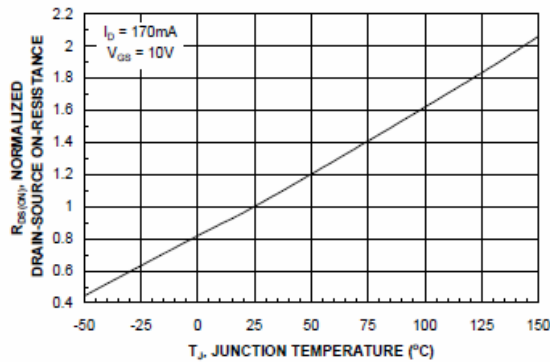
Typical Characteristics



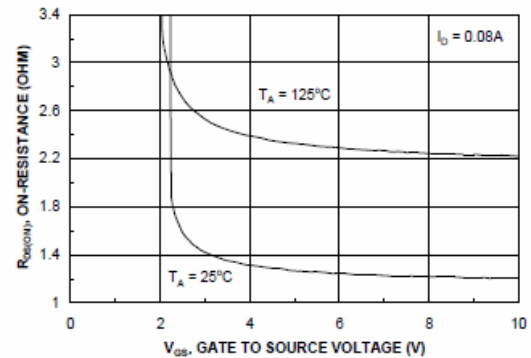
On-Region Characteristics



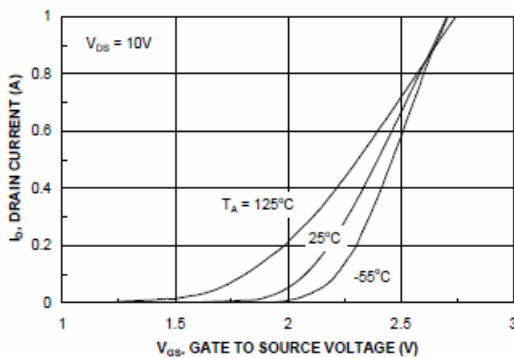
On-Resistance Variation with
Drain Current and Gate Voltage



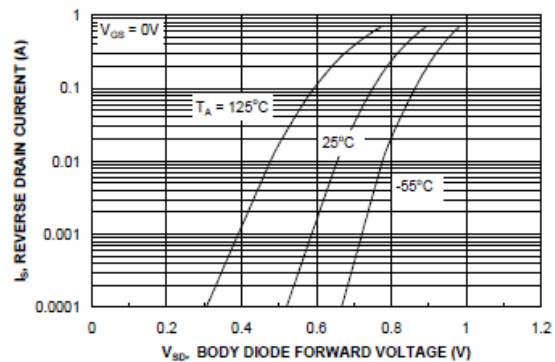
On-Resistance Variation with Temperature



On-Resistance Variation with
Gate-to-Source Voltage



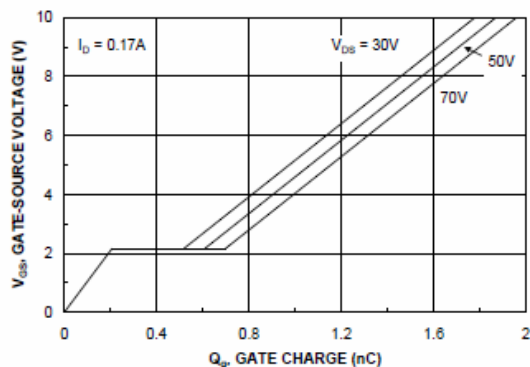
Transfer Characteristics



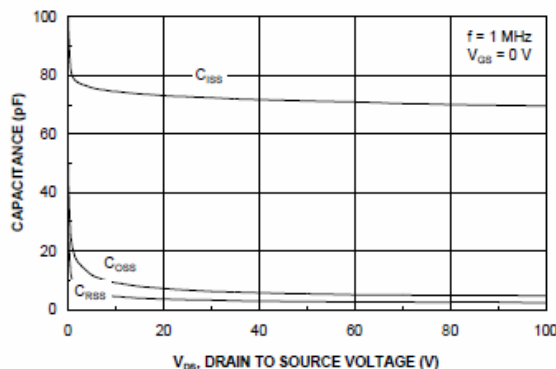
Body Diode Forward Voltage Variation
with Source Current and Temperature



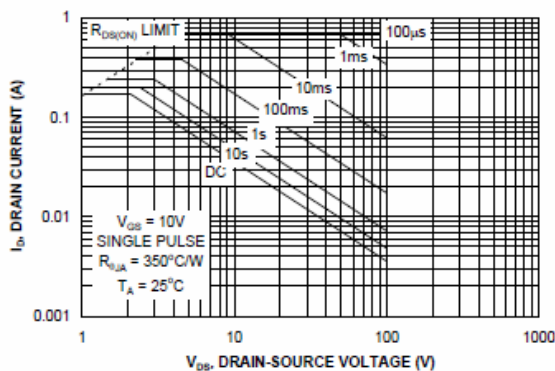
Typical Characteristics



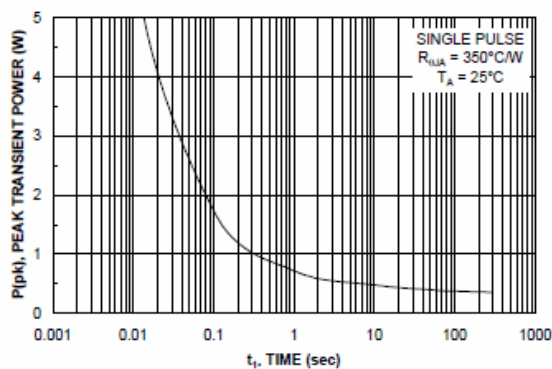
Gate Charge Characteristics



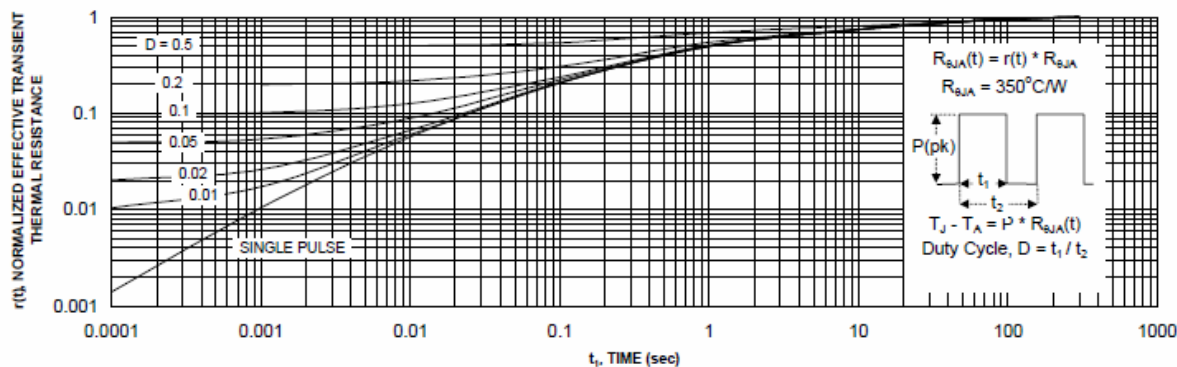
Capacitance Characteristics



Maximum Safe Operating Area



Single Pulse Maximum Power Dissipation

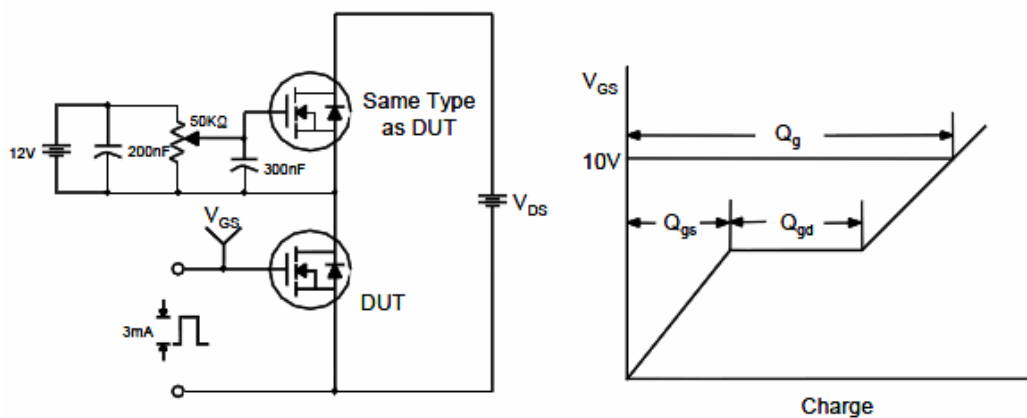


Transient Thermal Response Curve, Junction to Ambient

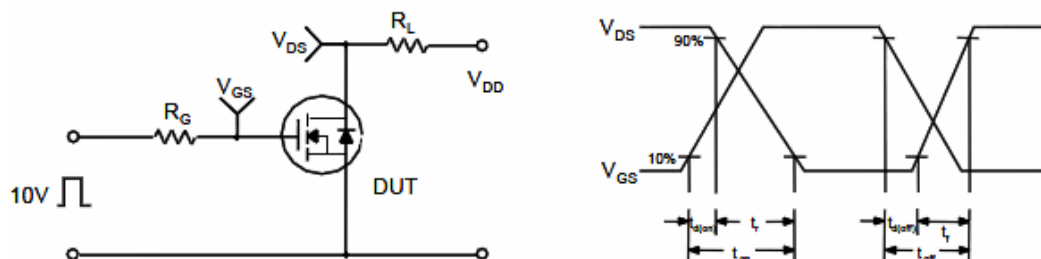


Typical Characteristics

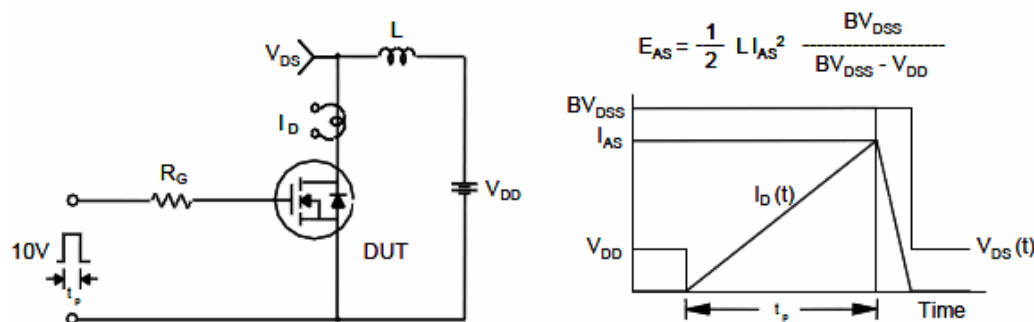
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

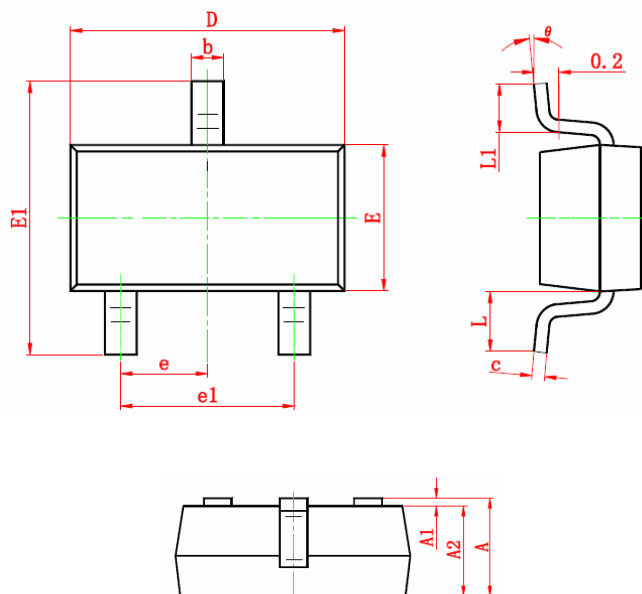


Unclamped Inductive Switching Test Circuit & Waveforms





Package Information (SOT-23)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.200	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.100	0.035	0.039
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	6°

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