AT003SN060MSE

N-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	85mΩ@10V	3A
	95mΩ@4.5V	

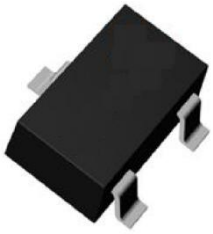
Feature

- Advanced trench technology
- Excellent $R_{DS(ON)}$
- Low gate charge
- Surface mount package

Application

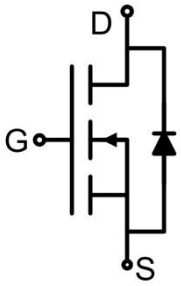
- Battery protection
- Load switch
- Uninterruptible power supply

Package

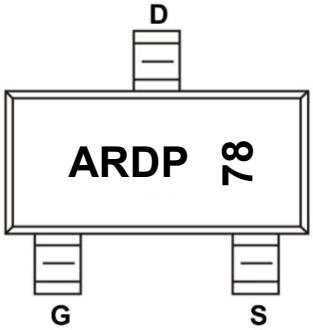


SOT-23-3L

Circuit diagram



Marking



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Absolute maximum ratings (T_C=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (V_{GS}=10V,T_C=25℃)[1]	I_D	3	A
Continuous Drain Current (V_{GS}=10V,T_C=100℃)[1]	I_D (100℃)	2.1	A
Pulsed Drain Current [2]	I_{DM}	50	A
Single Pulse Avalanche Energy [3]	E_{AS}	11	mJ
Power Dissipation (T_C=25℃) [4]	P_D	42	W
Thermal Resistance,Junction-to-Case[1]	$R_{\theta JC}$	3	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_A=25℃, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}= 0V, I_D =250μA	60			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =48V,V_{GS} =0V,T_J=25℃			1	μA
		V_{DS} =48V,V_{GS} =0V,T_J=55℃			5	
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} =0V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.2	1.6	2.5	V
Drain-source on-resistance[2]	$R_{DS(on)}$	V_{GS} =10V, I_D =5A		70	85	mΩ
		V_{GS} =4.5V, I_D =5A		85	95	
Dynamic characteristics[5]						
Input Capacitance	C_{iss}	V_{DS} =15V,V_{GS} =0V,f =1MHz		695		pF
Output Capacitance	C_{oss}			148		
Reverse Transfer Capacitance	C_{rss}			7		
Total Gate Charge	Q_g	V_{DS} =12V,V_{GS} =10V,I_D =5A		5.5		nC
Gate-Source Charge	Q_{gs}			1.8		
Gate-Drain Charge	Q_{gd}			2.4		
Turn-on delay time	$t_{d(on)}$	V_{DD}=12V, V_{GS} =10V, I_D =5A R_G=3.3Ω		6		nS
Turn-on rise time	t_r			10		
Turn-off delay time	$t_{d(off)}$			15		
Turn-off fall time	t_f			7		
Source-Drain Diode characteristics						
Diode Forward Current [1]	I_S	V_G=V_D=0V, Force Current			3	A
Pulsed Diode Forward Current [2]	I_{SM}				50	A
Diode Forward voltage[2]	V_{SD}	V_{GS} =0V, I_S=1A,T_J=25℃			1.2	V

Notes:

1) The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.

2) The data tested by pulsed , pulse width≦300us , duty cycle≦2%.

3) The power dissipation is limited by 150℃ junction temperature.

4) The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

5) Guaranteed by design, not subject to production testing.

Typical Characteristics

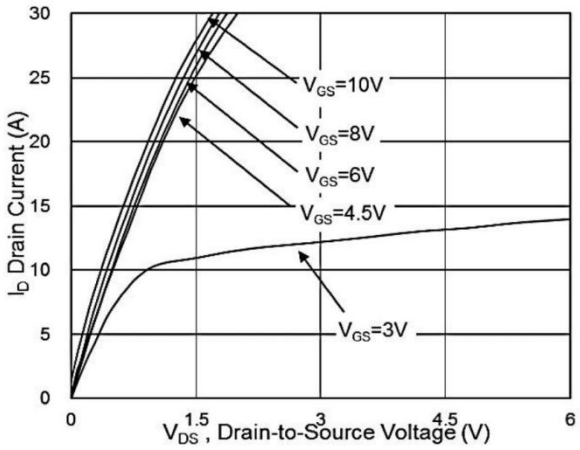


Fig.1 Typical Output Characteristics

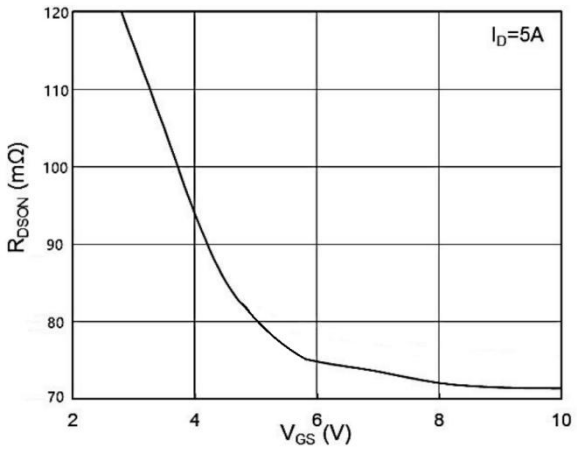


Fig.2 On-Resistance vs. Gate-Source Voltage

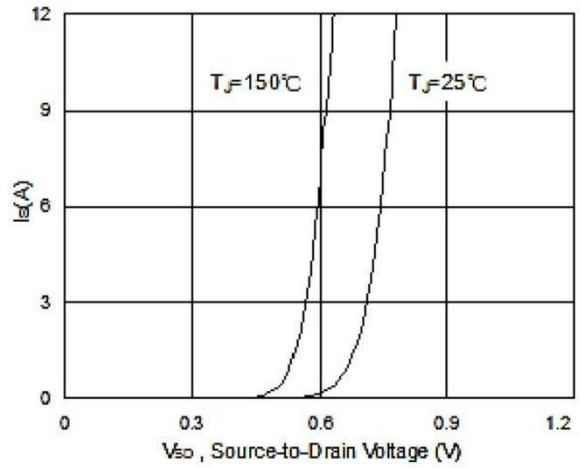


Fig.3 Forward Characteristics of Reverse

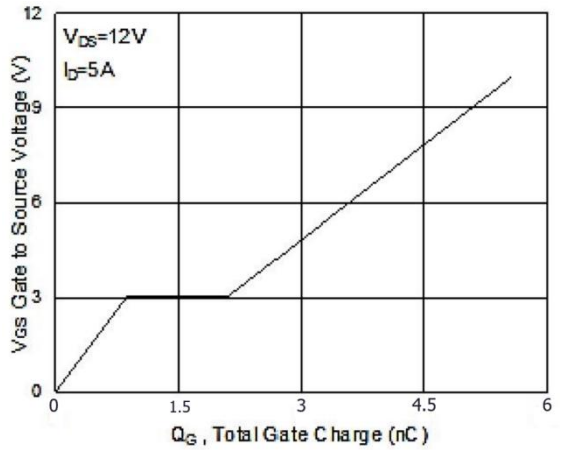


Fig.4 Gate-Charge Characteristics

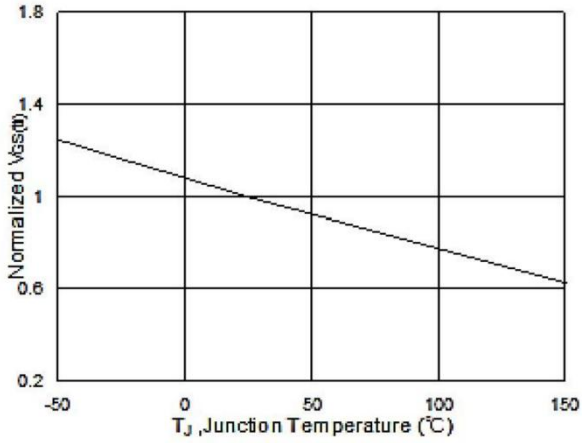


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

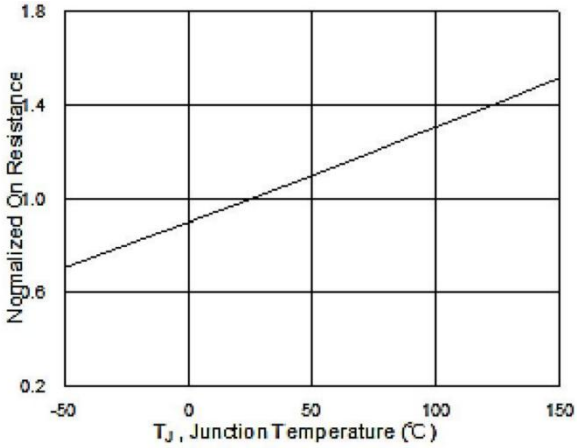


Fig.6 Normalized R_{DSON} vs. T_J

Typical Characteristics

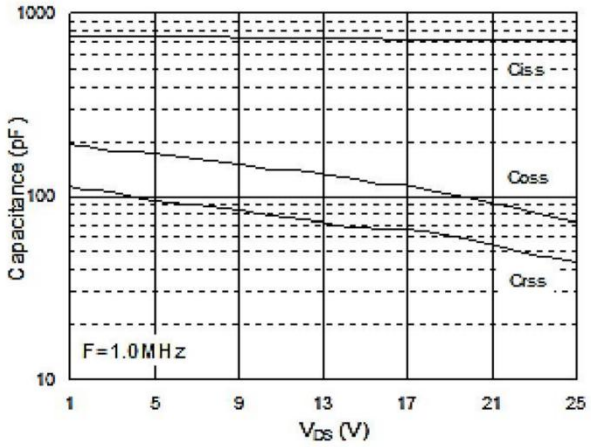


Fig.7 Capacitance

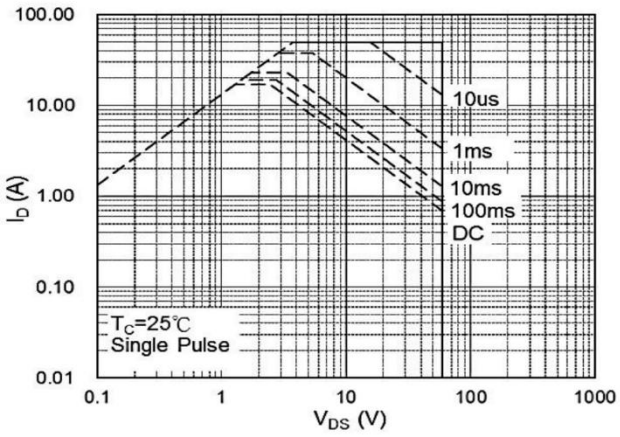


Fig.8 Safe Operating Area

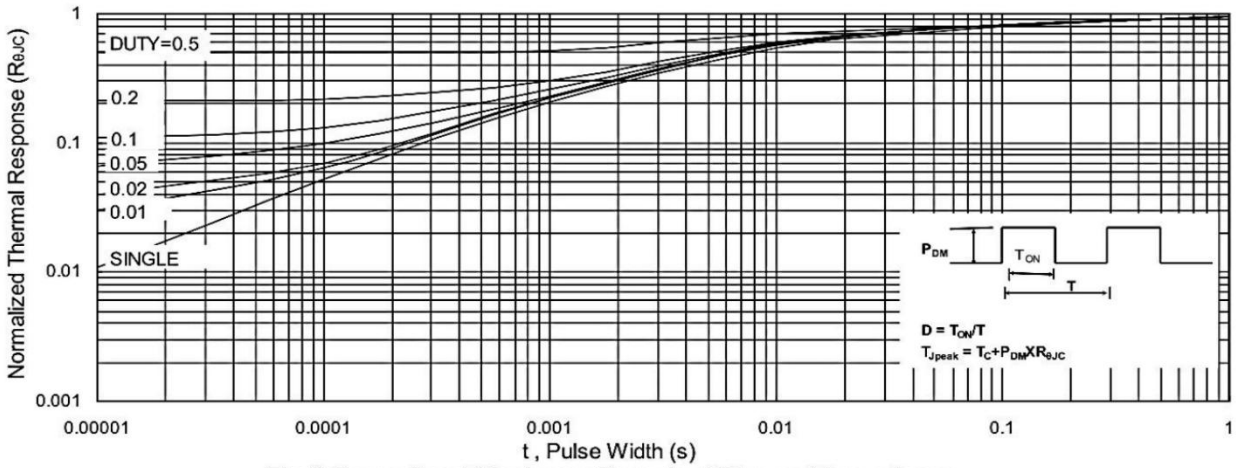


Fig.9 Normalized Maximum Transient Thermal Impedance

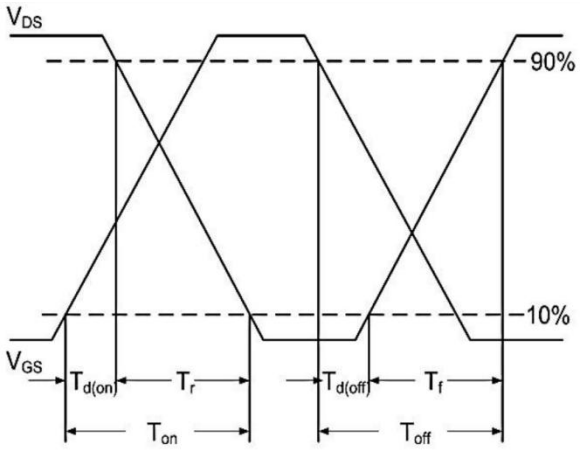


Fig.10 Switching Time Waveform

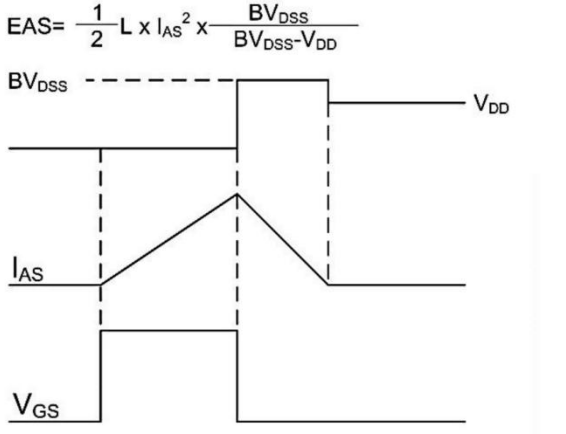
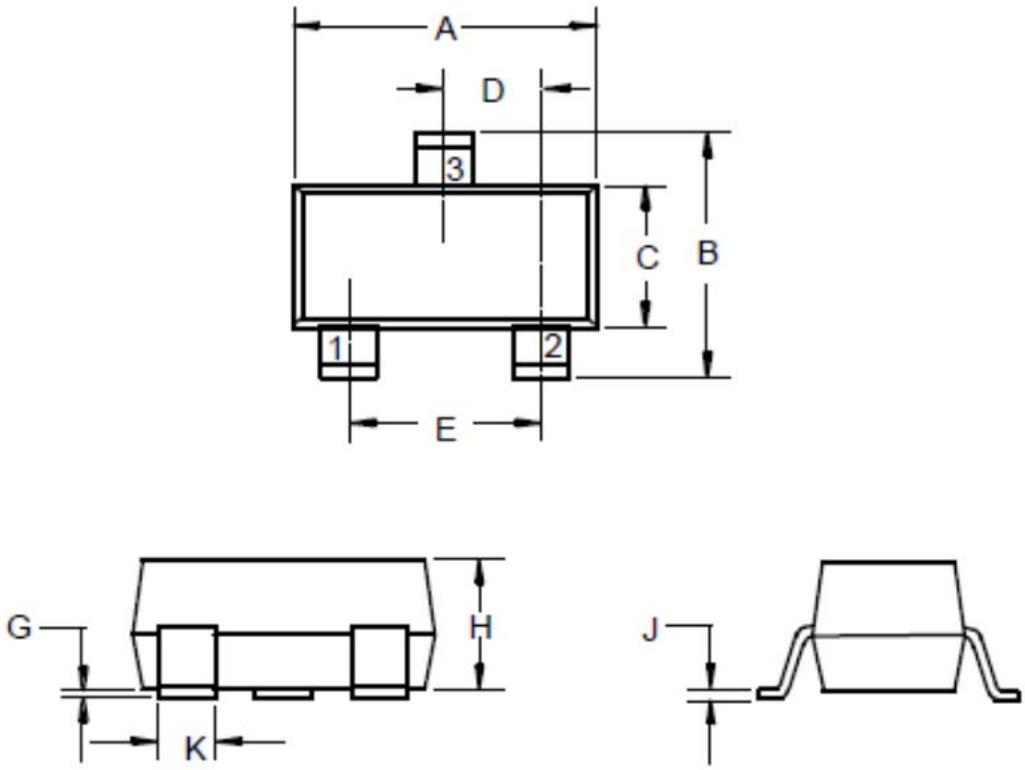


Fig.11 Unclamped Inductive Switching Waveform

SOT-23-3L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.820	3.020	0.111	0.119
B	2.650	2.950	0.104	0.116
C	1.500	1.700	0.059	0.067
D	0.950 TYP.		0.037 TYP.	
E	1.800	2.000	0.071	0.079
G	0.000	0.200	0.000	0.008
H	1.050	1.250	0.041	0.049
J	0.100	0.200	0.004	0.008
K	0.300	0.500	0.012	0.020