AT002SN060MSA

N-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	185mΩ@10V	2A
	225mΩ@4.5V	

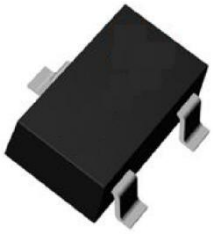
Feature

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

Application

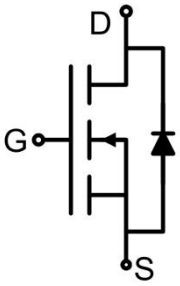
- Load switch
- Uninterruptible power supply

Package

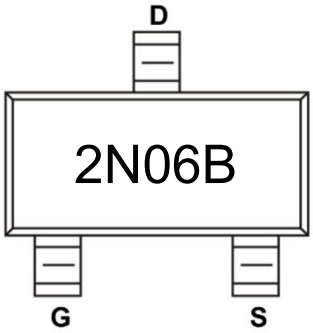


SOT-23

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[1] (V_{GS} =10V)	I_D	2	A
Continuous Drain Current[1] (V_{GS} =10V, T_C =100℃)	I_D (100℃)	1.1	A
Pulsed Drain Current[2]	I_{DM}	6	A
Single Pulse Avalanche Energy	E_{AS}	11	mJ
Power Dissipation[3]	P_D	42	W
Thermal Resistance Junction to Case[1]	$R_{\theta JC}$	3	℃/W
Operating Junction Temperature	T_J	-55 ~ +150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_A=25 °C, 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} =60V, V_{GS} =0V			1	μA
Gate-body leakage current	I_{GSS}	V_{DS} =0V, V_{GS} =±20V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1	1.6	2.5	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =1.6A		135	185	mΩ
		V_{GS} =4.5V, I_D =1A		165	225	
Dynamic characteristics[4]						
Input Capacitance	C_{iss}	V_{DS} =10V, V_{GS} =0V, f =1MHz		205		pF
Output Capacitance	C_{oss}			25		
Reverse Transfer Capacitance	C_{rss}			10		
Total Gate Charge	Q_g	V_{DS} =30V, V_{GS} =10V, I_D =3A		5		nC
Gate-Source Charge	Q_{gs}			2.5		
Gate-Drain Charge	Q_{gd}			1		
Turn-on delay time	$t_{d(on)}$	V_{DS} =30V, V_{GS} =10V, R_L =20Ω R_G =3Ω		6		nS
Turn-on rise time	t_r			9		
Turn-off delay time	$t_{d(off)}$			12		
Turn-off fall time	t_f			3		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				2	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S =1A			1.3	V
Reverse recover time	T_{rr}	I_F =1A, di/dt =100A/us		16		nS
Reverse recovery charge	Q_{rr}			14		nC

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°C junction temperature.

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

Typical Characteristics

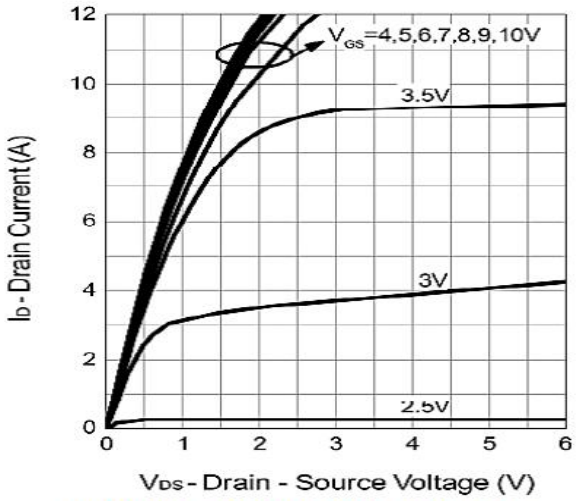


Figure1： Output Characteristics

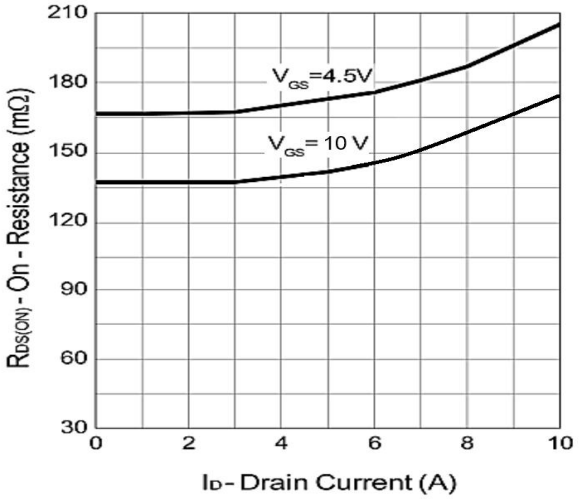


Figure2： Drain-Source On Resistance

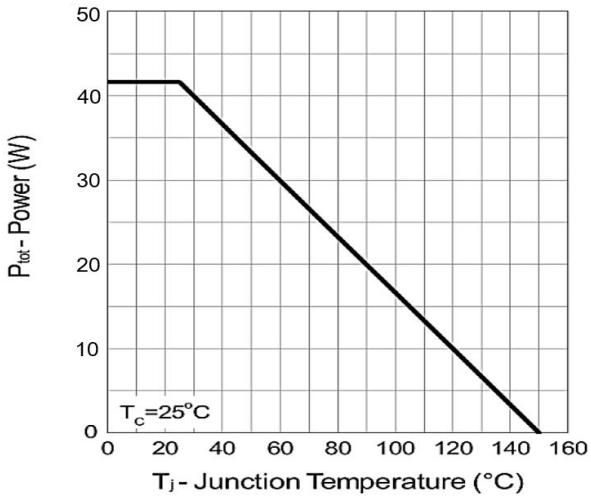


Figure3： Power Dissipation

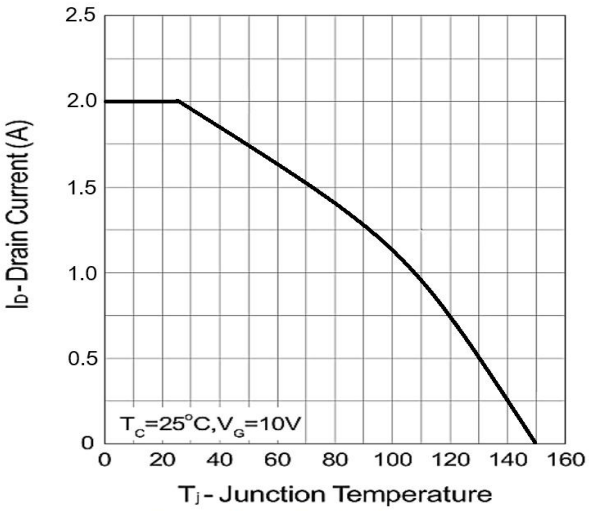


Figure4： Drain Current

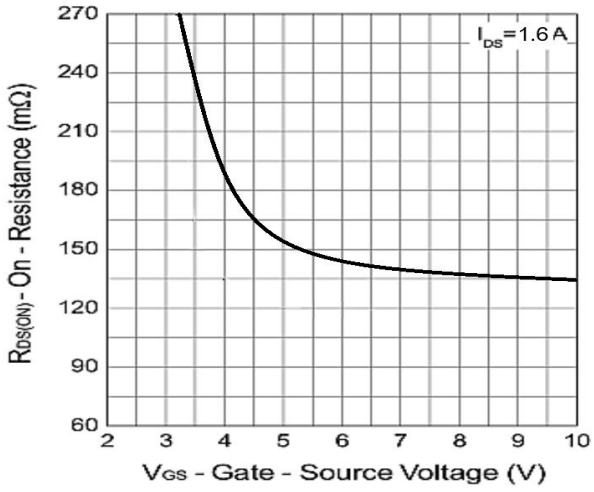


Figure5： Gate-Source On Resistance

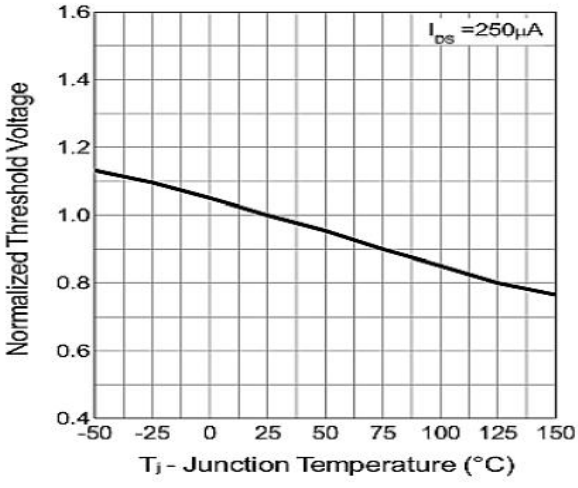


Figure6： Gate Threshold Voltage

Typical Characteristics

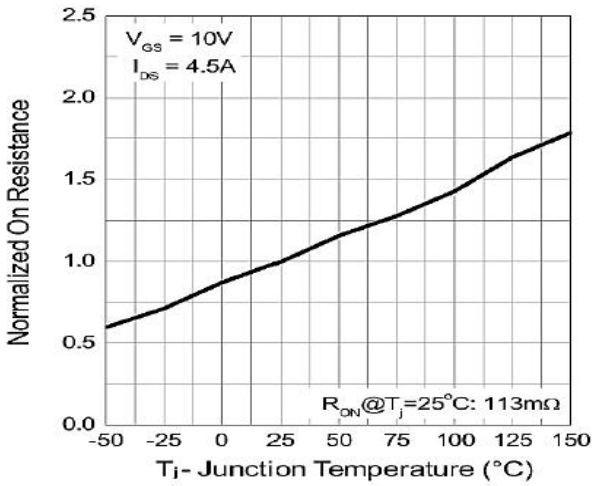


Figure7: Drain-Source On Resistance

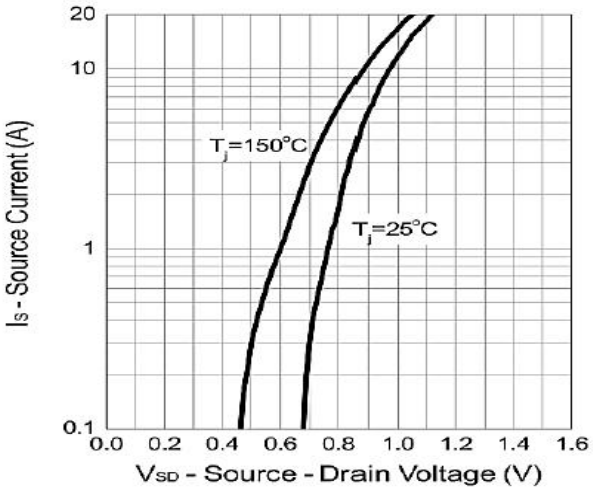


Figure8: Source-Drain Diode Forward

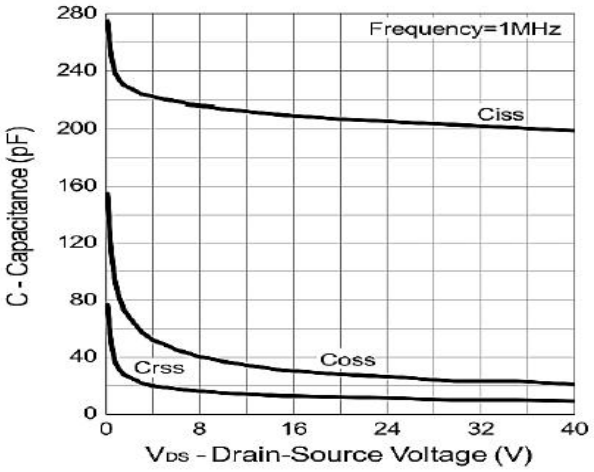


Figure:9: Capacitance

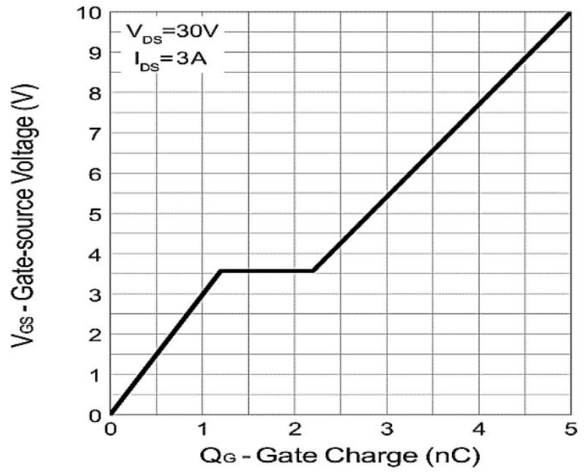


Figure10: Gate Charge

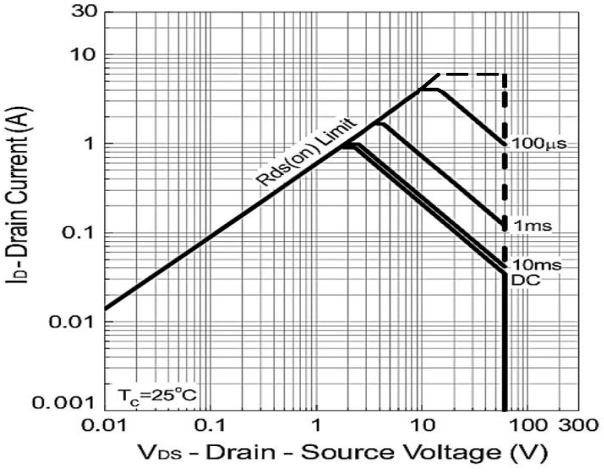


Figure11: Safe Operation Area

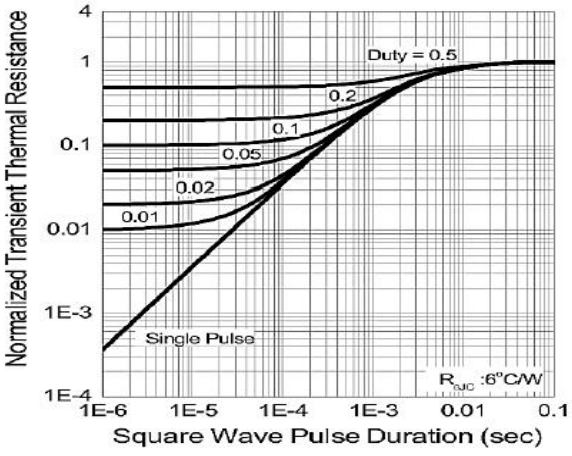
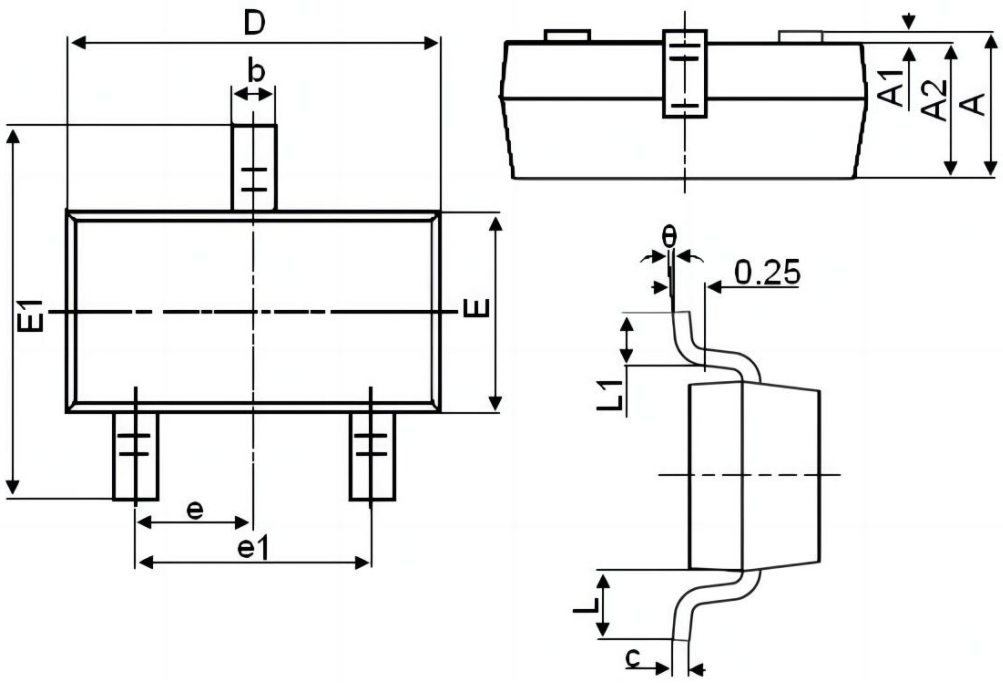


Figure12: Thermal Transient Impedance

SOT-23 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
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 REF.		0.037 REF.	
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°	8°