AT2302DSA

N-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
20V	65mΩ@4.5V	2.3A
	90mΩ@2.5V	

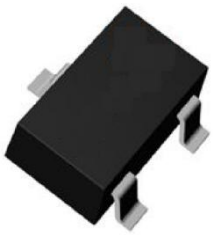
Feature

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

Application

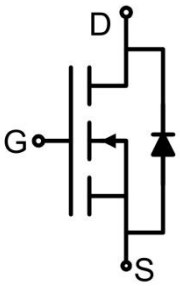
- Battery protection
- Load Switch
- Uninterruptible power supply

Package

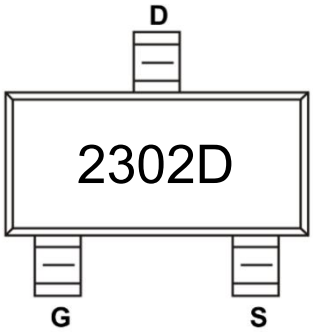


SOT-23

Circuit diagram



Marking



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N-Channel Enhancement Mode MOSFET

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current[1] (V_{GS}=4.5V, T_A=25℃)	I_D	2.3	A
Continuous Drain Current[1] (V_{GS}=4.5V, T_A=70℃)	I_D (70℃)	1.2	A
Pulsed Drain Current[2]	I_{DM}	6.9	A
Power Dissipation[3] (T_A=25℃)	P_D	0.77	W
Thermal Resistance from Junction to Ambient[1]	$R_{\theta JA}$	125	℃/W
Operating Junction Temperature	T_J	-55 ~ +150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_J=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	20			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =20V, V_{GS} =0V			1	μA
Gate-body leakage current	I_{GSS}	V_{DS} =0V, V_{GS} =±12V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	0.5	0.65	1.2	V
Drain-source on-resistance[2]	$R_{DS(on)}$	V_{GS} =4.5V, I_D =3A		52	65	mΩ
		V_{GS} =2.5V, I_D =2A		75	90	
Dynamic characteristics[4]						
Input Capacitance	C_{iss}	V_{DS} =10V, V_{GS} =0V, f =1MHz		150		pF
Output Capacitance	C_{oss}			34		
Reverse Transfer Capacitance	C_{rss}			26		
Total Gate Charge	Q_g	V_{DS} =10V, V_{GS} =4.5V, I_D =3A		2.4		nC
Gate-Source Charge	Q_{gs}			0.88		
Gate-Drain Charge	Q_{gd}			0.77		
Turn-on delay time	$t_{d(on)}$	V_{DS} =10V, V_{GS} =4.5V, I_D =3A R_G =3Ω		6.8		nS
Turn-on rise time	t_r			57		
Turn-off delay time	$t_{d(off)}$			14		
Turn-off fall time	t_f			53		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				2.3	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S =3A			1.3	V

Notes:

1) The data tested by surface mounted on a 1 inch² 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) Guaranteed by design, not subject to production testing.

Typical Characteristics

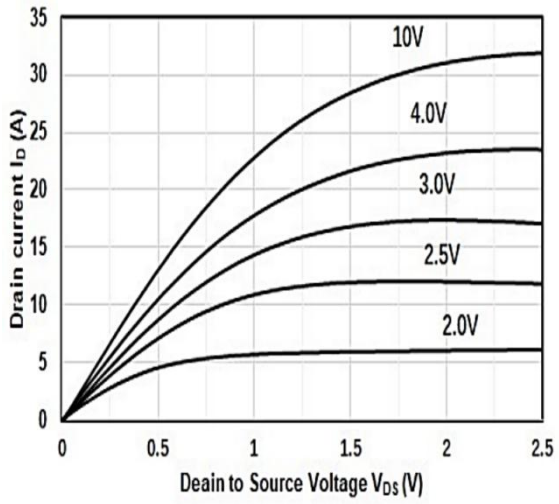


Figure1. Output Characteristics

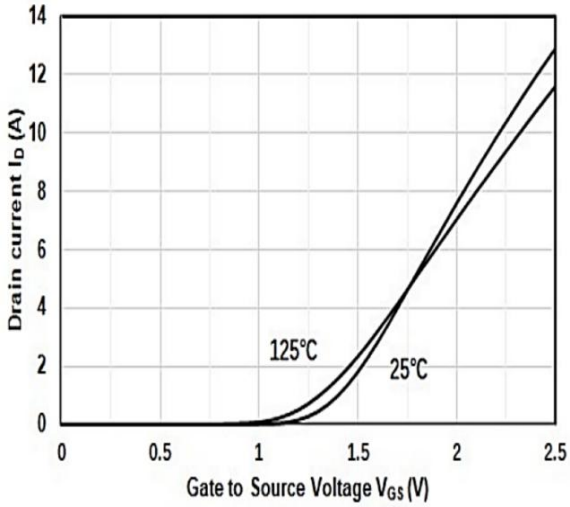


Figure2. Transfer Characteristics

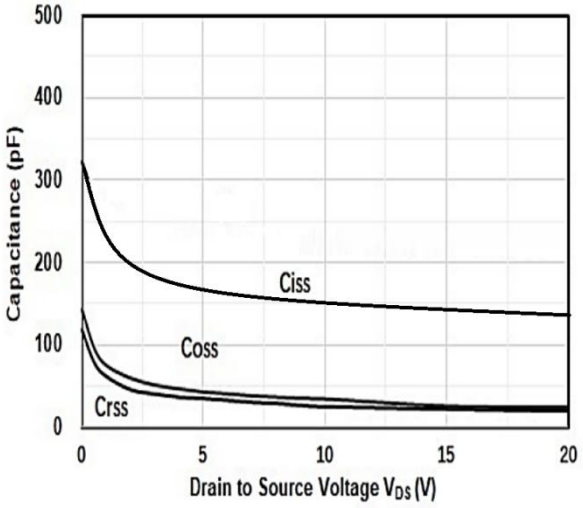


Figure3. Capacitance Characteristics

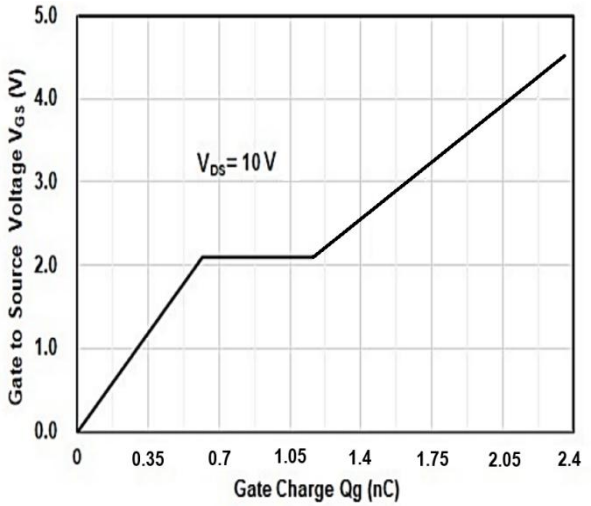


Figure4. Gate Charge

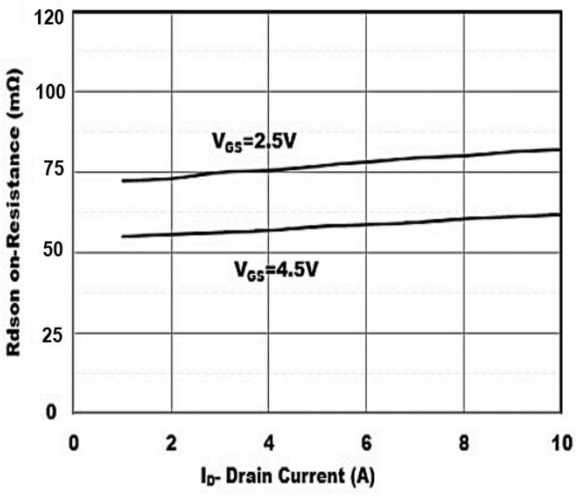


Figure5. Drain-Source on Resistance

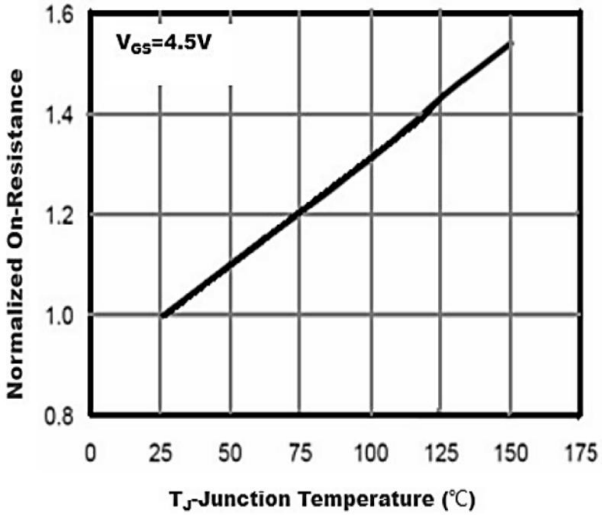
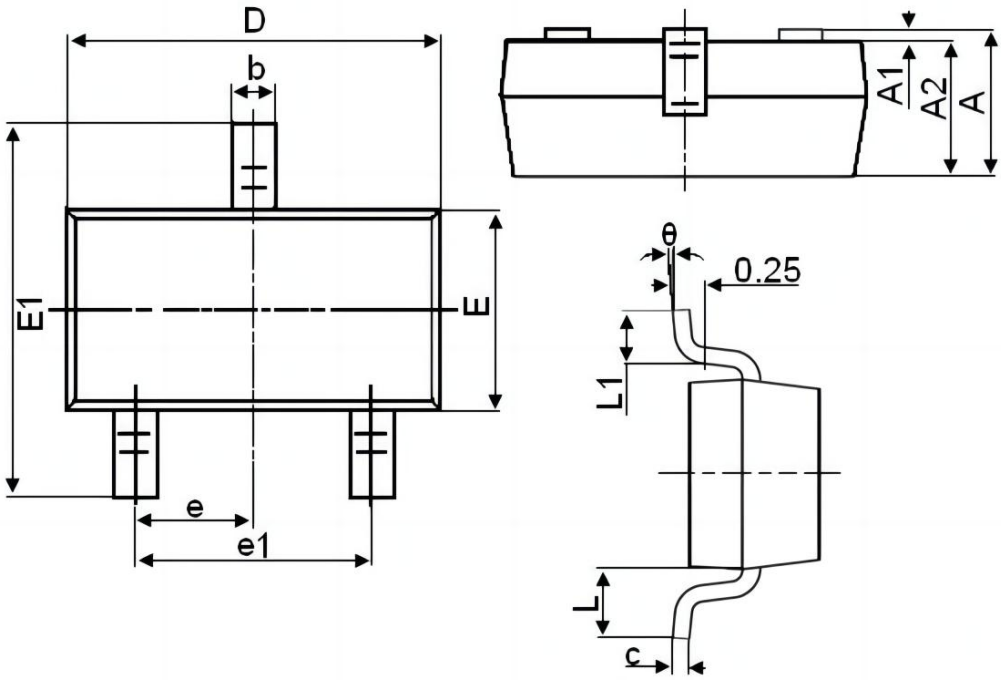


Figure6. Drain-Source on Resistance

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 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°	8°