DESCRIPTION

The AM2302 is available in SOT-23S Package.

BVDSS	RDSON	ID
20V	45mΩ	3A

APPLICATION

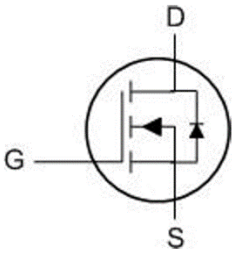
- Green Device Available
- Super Low Gate Charge
- Excellent Cdv/dt effect decline
- Advanced High Cell Density Trench Technology

ORDERING INFORMATION

Package Type	Part Number	
SOT-23S SPQ: 3,000pcs/Reel	E3S	AM2302E3SR
		AM2302E3VSR
Note	R: Tape & Reel V: Halogen free Package	
AiT provides all RoHS products		

PIN DESCRIPTION

SOT-23S



Pin#	Symbol	Function
1	G	Gate
2	S	Source
3	D	Drain

ABSOLUTE MAXIMUM RATINGS

T_A=25°C Unless otherwise noted

V_{DS}, Drain-Source Voltage		20V
V_{GS}, Gate-Source Voltage		±12V
I_D (1), Continuous Drain Current, V_{GS} @ 10V	T_A=25℃	3A
	T_A=70℃	1.20A
I_{DM} (2), Pulsed Drain Current		12A
P_D (3), Total Power Dissipation	T_A=25℃	0.85W
T_J, Operating Junction Temperature Range		-55℃~+150℃
T_{STG}, Storage Temperature Range		-55℃~+150℃
$R_{\theta JA}$ *, Thermal Resistance Junction-Ambient		162℃/W

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

* Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

ELECTRICAL CHARACTERISTICS

T_A=25℃, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
Off 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 to Body Leakage Current	I_{GSS}	V_{GS} =±12V, V_{DS}= 0V	-	-	±100	nA
On Characteristics						
Gate Threshold Voltage	$V_{GS\ (th)}$	V_{DS}=V_{GS}, I_D=250uA	0.40	0.70	1	V
Static Drain-Source On-Resistance*	$R_{DS\ (on)}$	V_{GS}=4.5V, I_D=3A	-	45	55	mΩ
		V_{GS}=2.5V, I_D=2A	-	62	85	
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=10V, V_{GS}=0V, f=1MHz	-	184	-	pF
Output Capacitance	C_{oss}		-	38	-	
Reverse Transfer Capacitance	C_{rss}		-	28	-	
Total Gate Charge	Q_g	V_{DS}=10V, V_{GS}=4.5V I_D=3A	-	2.70	-	nC
Gate-Source Charge	Q_{gs}		-	0.40	-	
Gate-Drain (“Miller”) Charge	Q_{gd}		-	0.50	-	
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	V_{DS}=10V, I_D=3A, R_{GEN}=3V, V_{GS}=4.5V	-	8	-	ns
Turn-on Rise Time	t_r		-	27	-	
Turn-off Delay Time	$t_{d(off)}$		-	26	-	
Turn-off Fall Time	t_f		-	33	-	
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain to Source Diode Forward Current	I_S	-	-	-	3	A
Maximum Pulsed Drain to Source Diode Forward Current	I_{SM}	-	-	-	12	A
Drain to Source Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=3A	-	-	1.2	V

* Pulse Test: PulseWidth≤300μs, Duty Cycle≤0.5%

TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Output Characteristics

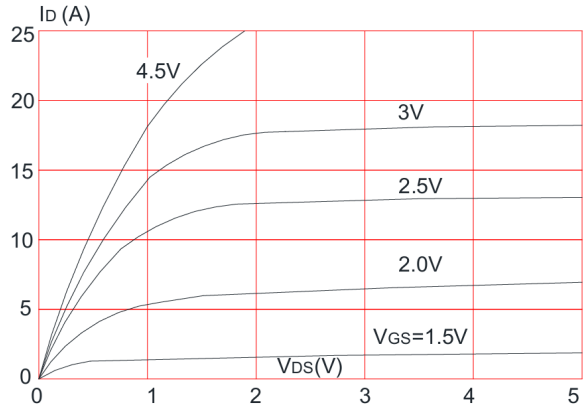


Fig 2. Typical Transfer Characteristics

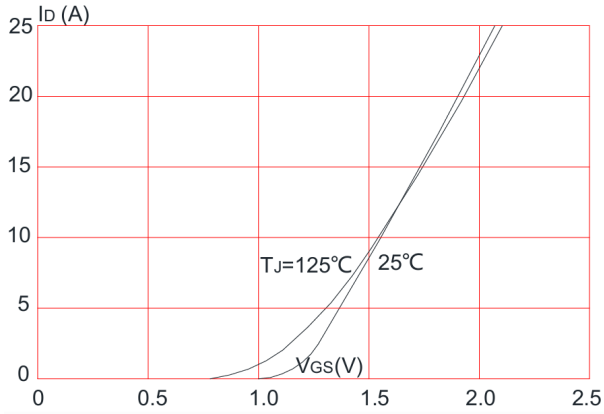


Fig 3. On-resistance vs. Drain Current

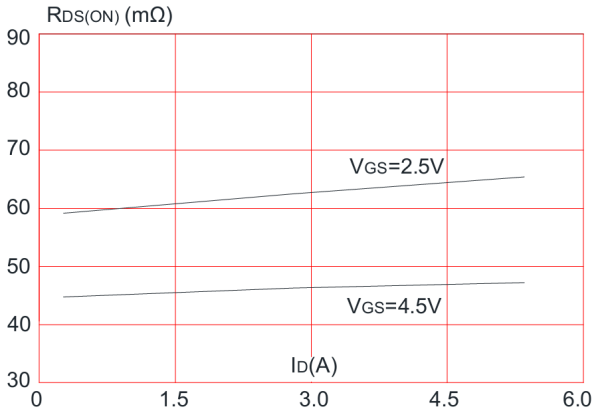


Fig 4. Body Diode Characteristics

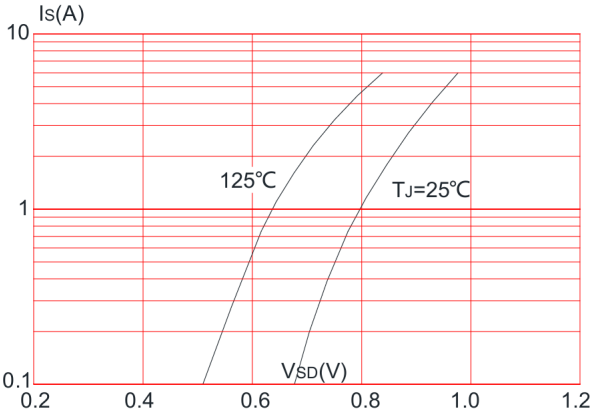


Fig 5. Gate Charge Characteristics

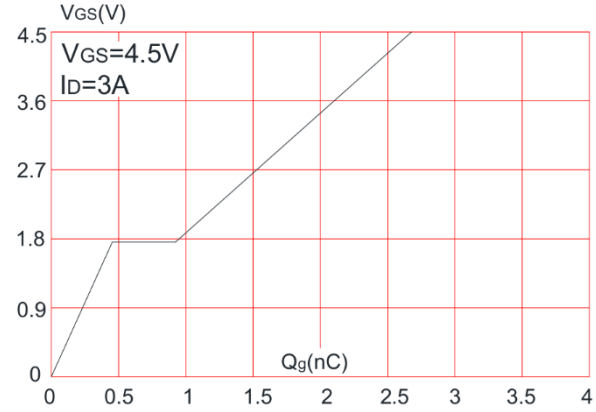


Fig 6. Capacitance Characteristics

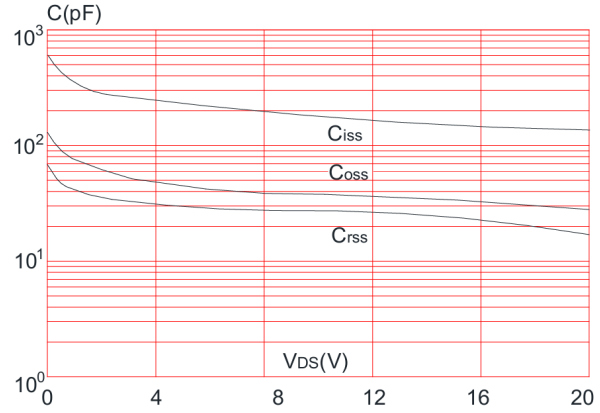


Fig 7. Normalized Breakdown Voltage vs. Junction Temperature

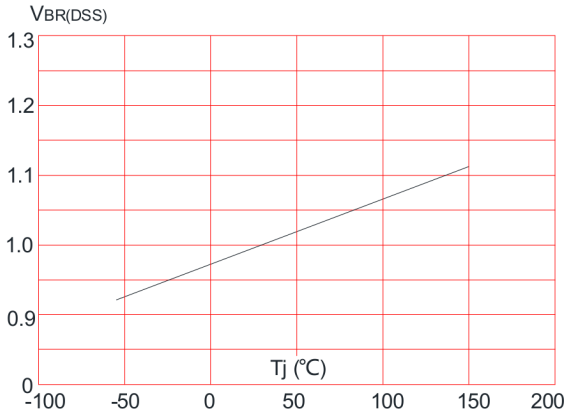


Fig 8. Normalized on Resistance vs. Junction Temperature

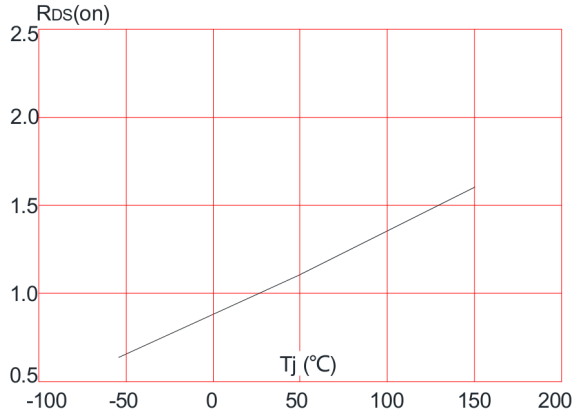


Fig 9. Maximum Safe Operating Area

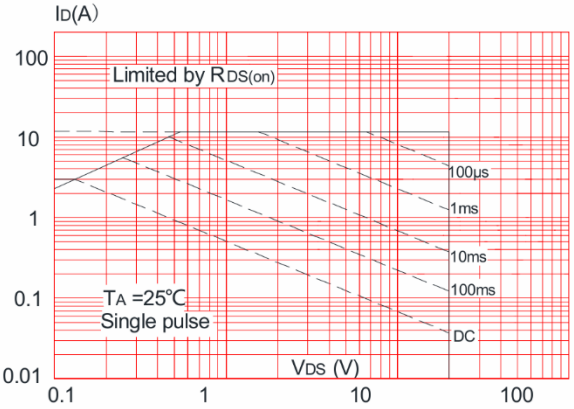


Fig 10. Maximum Continuous Drain Current

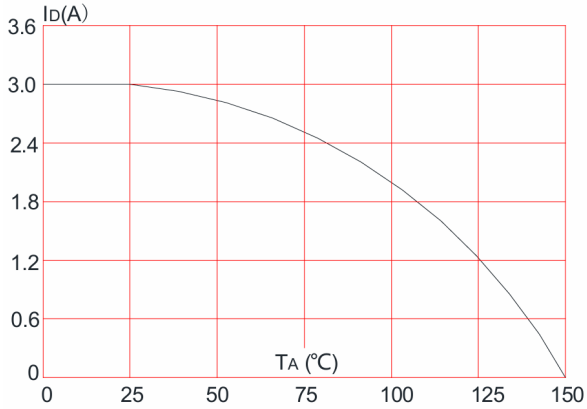
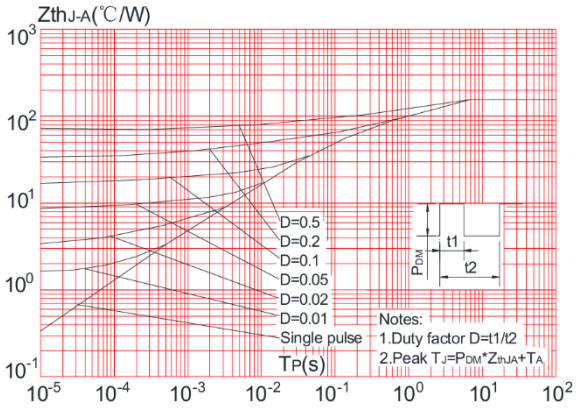
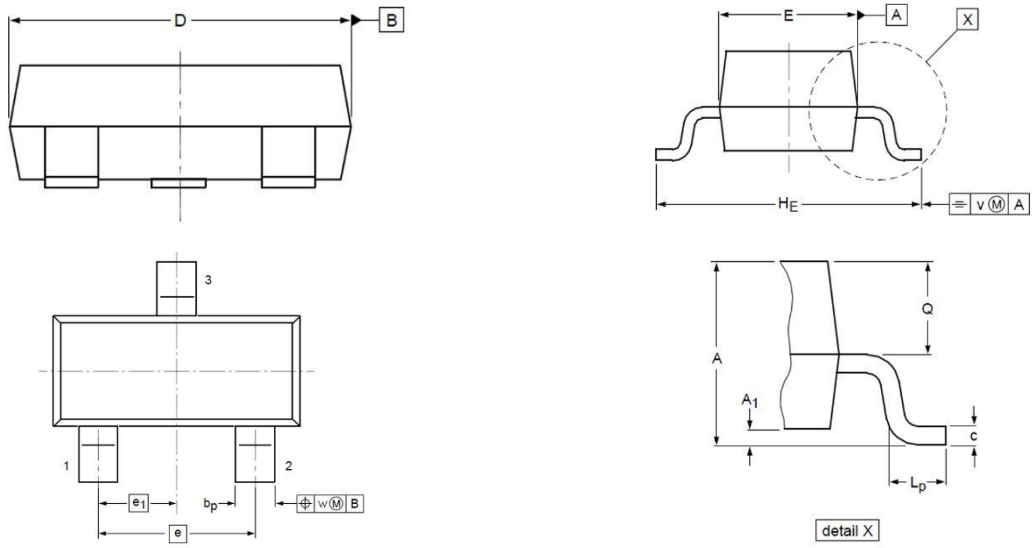


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



PACKAGE INFORMATION

Dimension in SOT-23 (Unit: mm)



Symbol	Millimeters (mm)	
	Min.	Max.
A	0.900	1.150
A1	0.010	0.100
b_p	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
e	1.900 TYP.	
e1	0.950 TYP.	
H_E	2.250	2.550
L_p	0.300	0.500
Q	0.450	0.550
v	0.200 TYP.	
w	0.100 TYP.	

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