DESCRIPTION

The AM2308 is available in a SOT-23S package

BVDSS	RDSON	ID
60V	58 mΩ	3.8A

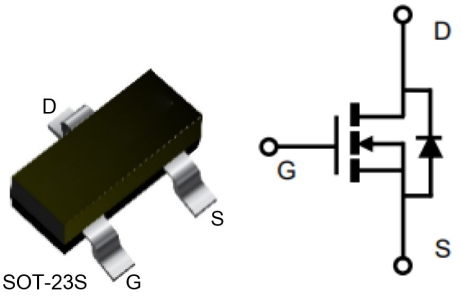
FEATURES

- Fast Switch
- $R_{DS(ON)Typ.}$= 58mΩ @ VGS= 10V
- $R_{DS(ON)\ Typ.}$= 66mΩ @ VGS= 4.5V

APPLICATION

- Head-Held Instruments
- Power Management
- LED Lighting

PIN DESCRIPTION



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

ORDERING INFORMATION

Package Type	Part Number	
SOT-23S SPQ: 3,000pcs/Reel	E3S	AM2308E3SR
		AM2308E3SVR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

ABSOLUTE MAXIMUM RATINGS

T_A = 25℃, unless otherwise noted

V_{DSS}, Drain-Source Voltage		60V
V_{GSS}, Gate-Source Voltage		±20V
I_D, Continuous Drain Current	T_A=25℃	3.8A
	T_A=70℃	3.1A
I_{DM}, Pulsed Drain Current (2)		15.2A
I_{AS}, Avalanche Current (2)		5A
E_{AS}, Single Pulse Avalanche Energy (L=0.3mH) (2)		3.75mJ
P_D, Power Dissipation (1)	T_A=25°C	1.6W
	T_A=70℃	1W
T_J, Operation Junction Temperature		-55℃~150℃
T_{STG}, Storage Temperature Range		-55℃~150℃

Stress beyond above listed “Absolute Maximum Ratings” may lead permanent damage to the device. These are stress ratings only and operations of the device at these or any other conditions beyond those indicated in the operational sections of the specifications are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

THERMAL CHARACTERISTICS

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction to Ambient (1)	t≦10s	$R_{\theta JA}$	-	80	℃/W
Thermal Resistance Junction to Ambient (1), (3)	Steady-State		-	120	

(1): Surface mounted on FR4 board using 1 in^2 pad size

(2): Pulsed width limited by maximum junction temperature, $T_{J(MAX)}$=150°C (initial temperature T_J=25°C).

(3): Using ≤ 10s junction-to-ambient thermal resistance is base on $T_{J(MAX)}$=150°C.

ELECTRICAL CHARACTERISTICS

T_A = 25℃, unless otherwise noted

Parameter	Symbol	Conditions	Min	Typ.	Max	Units
Static Parameters						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_{DS}=250μA	60	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_{DS}=250μA	1.2	1.8	2.5	V
Gate Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V	-	-	±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V, T_A=25°C	-	-	1	μA
		V_{DS}=48V, V_{GS}=0V, T_J=75°C	-	-	10	
Drain-Source On-state Resistance (4)	$R_{DS(ON)}$	V_{GS}=10V, I_D=3.8A	-	58	64	mΩ
		V_{GS}=4.5V, I_D=3.1A	-	66	76	
Forward Transconductance	G_{fs}	V_{DS}=10V, I_D=3.5A	-	6.8	-	S
Diode Characteristics						
Diode Forward Voltage (4)	V_{SD}	I_{SD}=1A, V_{GS}=0V	-	0.75	1	V
Diode Continuous Forward Current	I_S		-	-	2	A
Dynamic and Switching Parameter (5)						
Total Gate Charge(10V)	Q_g	V_{DS}=30V, V_{GS}=10V, I_D=3.5A	-	9.2	13.8	nC
Total Gate Charge(4.5V)	Q_g		-	4.5	6.8	
Gate-Source Charge	Q_{gs}		-	2.3	3.5	
Gate-Drain Charge	Q_{gd}		-	1.8	2.7	
Input Capacitance	C_{iss}	V_{DS}=30V, V_{GS}=0V, f=1.0MHz	-	495	-	pF
Output Capacitance	C_{oss}		-	43	-	
Reverse Transfer Capacitance	C_{rss}		-	15	-	
Turn-On Time	$t_{d(on)}$	V_{DD}=30V, V_{GEN}=10V, R_G=3.3Ω, I_D=1A,	-	3.1	9	ns
	t_r		-	9.2	-	
Turn-Off Time	$t_{d(off)}$		-	17.5	-	
	t_f		-	5.5	-	

(4): Pulse test width ≤300μs and duty cycle ≤ 2%.

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

TYPICAL CHARACTERISTICS

Fig.1 Output Characteristics

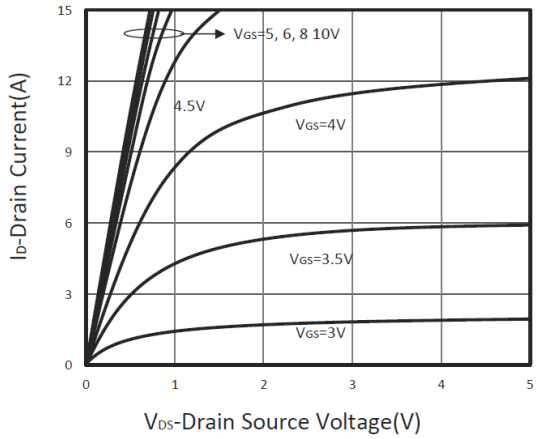


Fig.2 Drain-Source On Resistance

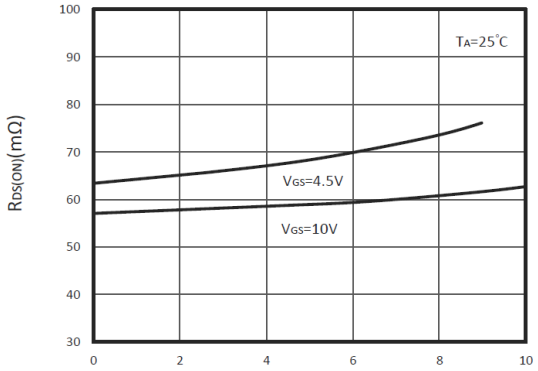


Fig.3 Gate Charge

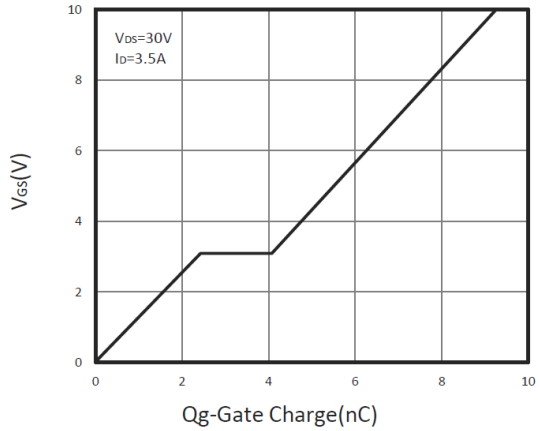


Fig.4 Capacitance

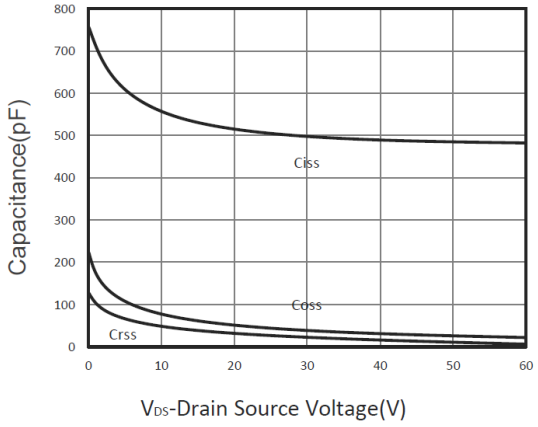


Fig.5 Gate Threshold Voltage

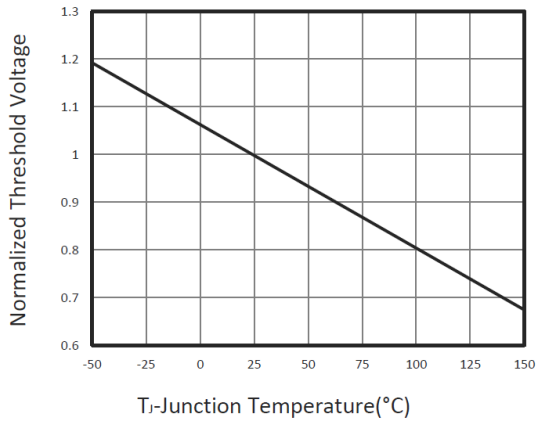


Fig.6 Power Dissipation

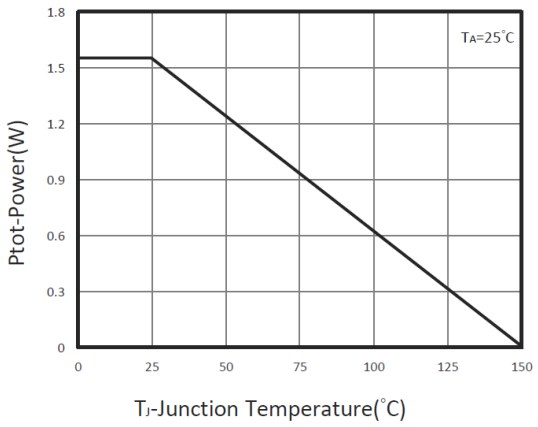


Fig.7 Drain-Source On Resistance

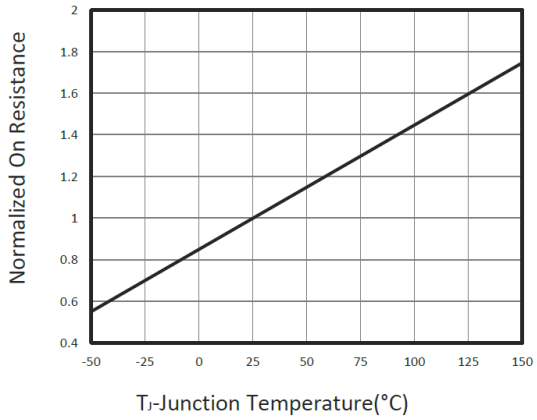


Fig.8 Drain Current vs T_J

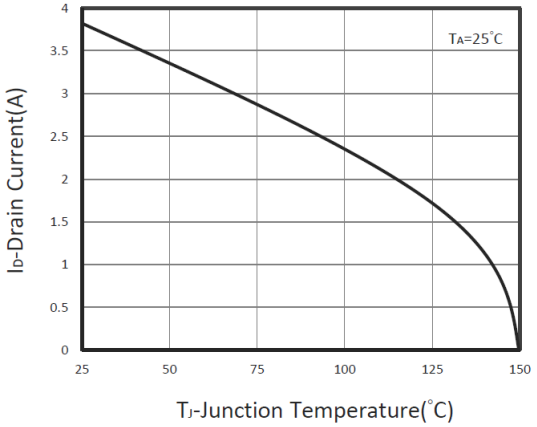


Fig.9 Maximum Safe Operation Area

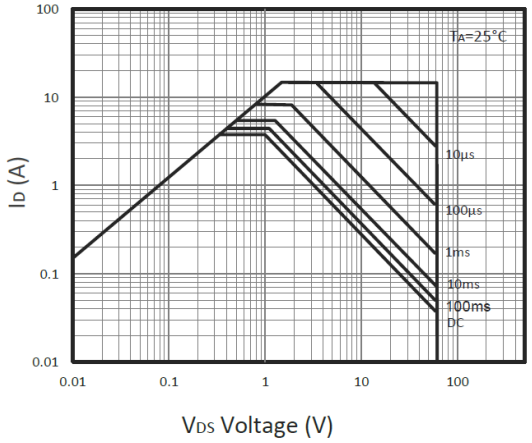


Fig.10 Thermal Transient Impedance

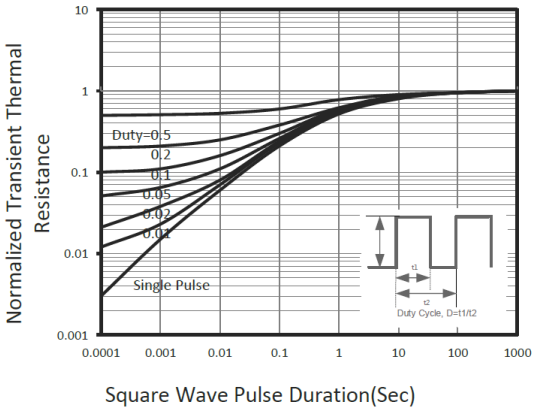


Fig.11 Gate Charge Waveform

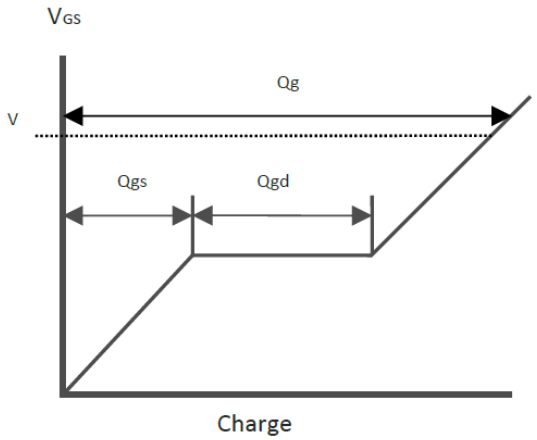
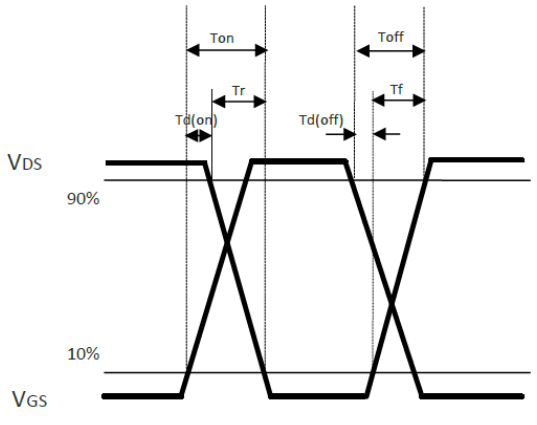
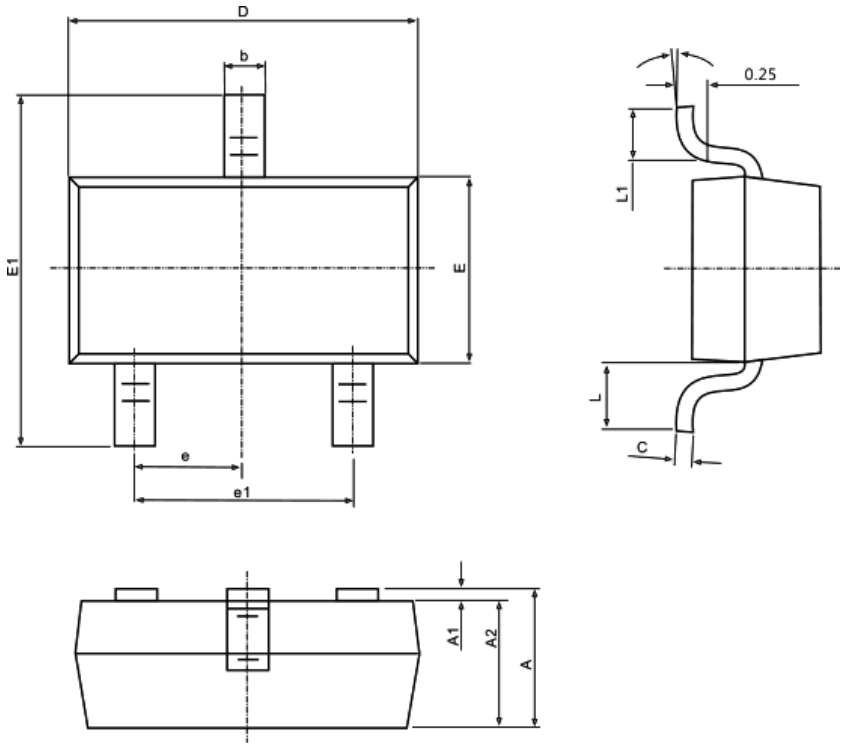


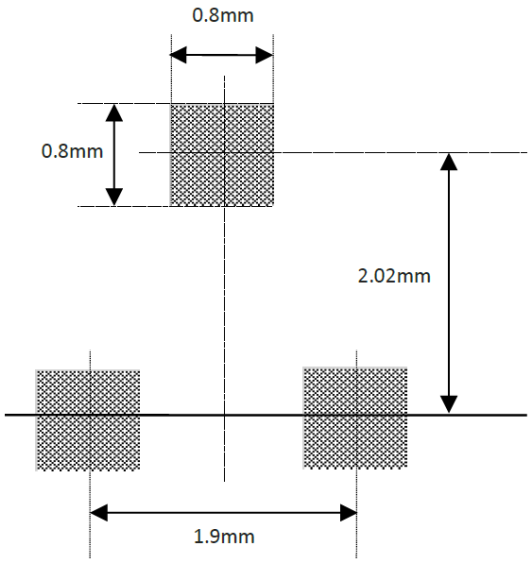
Fig.12 Switching Time Waveform



PACKAGE INFORMATION

Dimension in SOT-23S Package (Unit: mm)





Recommended Land Pattern

Symbol	Millimeters	
	Min.	Max.
A	0.940	1.120
A1	0.040	0.120
A2	0.900	1.000
b	0.300	0.500
c	0.090	0.110
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950 BSC	
e1	1.800	2.000
L	0.500	0.600
L	0.550 BSC	
L1	0.300	0.500
θ	1°	7°

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