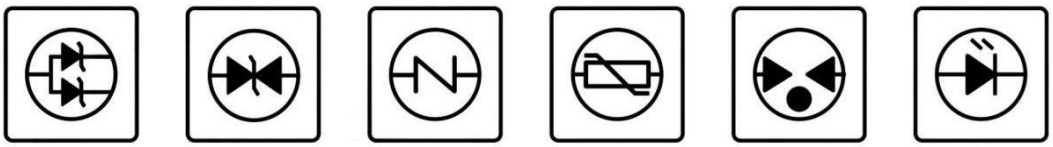
MSKSEMI 美森科
SEMICONDUCTOR



SI2302AI-MS

Product specification

General Features

V_{DS} = 20V,I_D = 3 A

$R_{DS(ON)}$ < 80mΩ @ V_{GS}=2.5V

$R_{DS(ON)}$ < 50mΩ @ V_{GS}=4.5V

High power and current handing capability

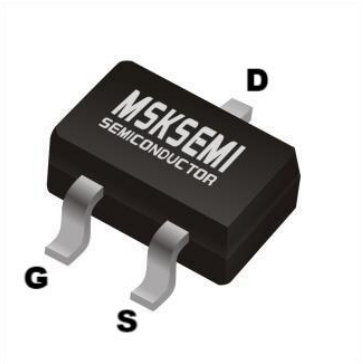
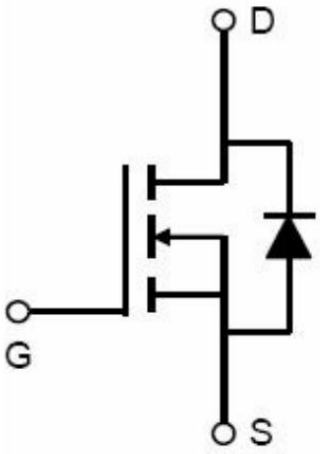
Lead free product is acquired

Surface mount package

Application

- Battery protection
- Load switch
- Power management

Reference News

PACKAGE OUTLINE	Schematic diagram	Marking
		A2SHB
SOT-23		

Absolute Maximum Ratings (TA=25℃ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain- Source Voltage	V_{DS}	20	V
Gate- Source Voltage	V_{GS}	±12	V
Drain Current- Continuous	I_D	3.0	A
Drain Current-Pulsed (Note 1)	I_{DM}	12	A
Maximum Power Dissipation	P_D	0.8	W
Operating Junction and Storage Temperature Range	T_J , T_{STG}	-55 To 150	℃

Thermal Characteristic

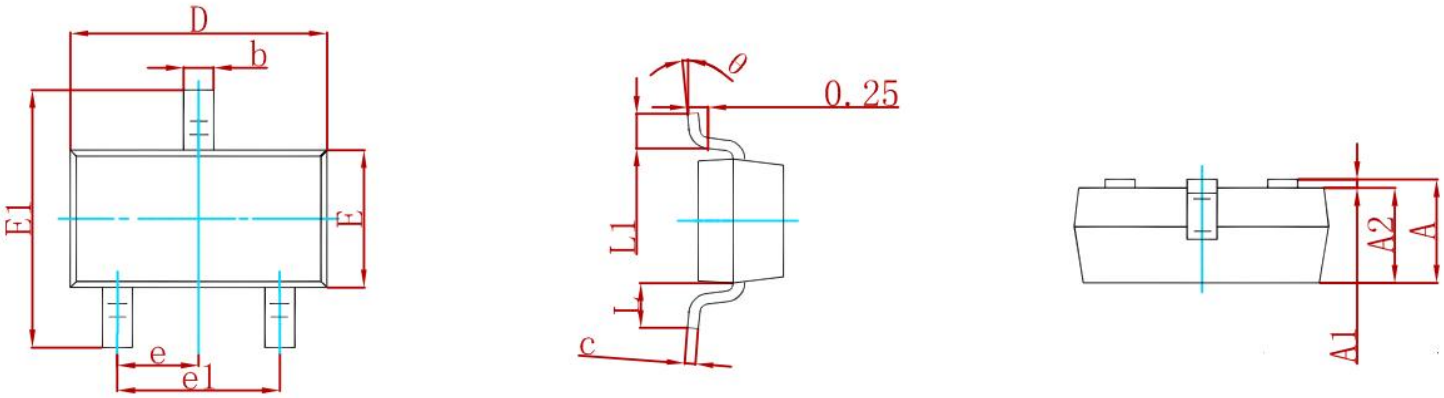
Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	156	℃/W

Electrical Characteristics (TA=25℃ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain- Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	20	22	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V,V_{GS}=0V	-	-	1	uA
Gate- Body Leakage Current	I_{GSS}	V_{GS}=± 12V,V_{DS}=0V	-	-	±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} ,I_D=250μA	0.5	0.75	1.2	V
Drain- Source On- State Resistance	$R_{DS(ON)}$	V_{GS}=2.5V, I_D=2.8A	-	42	80	mΩ
		V_{GS}=4.5V, I_D=3A	-	35	50	mΩ
Forward Transconductance	$_{FS}$	V_{DS}=5V,I_D=3A	-	5	-	S
Dynamic Characteristics (Note4)						
Input Capacitance	C_{lss}	V_{DS}=10V,V_{GS}=0V, F=1.0MHz	-	240	-	PF
Output Capacitance	C_{oss}		-	45	-	PF
Reverse Transfer Capacitance	C_{rss}		-	23	-	PF
Switching Characteristics (Note 4)						
Turn- on Delay Time	$t_{d(on)}$	V_{DD}=10V, R_L=3.3Ω V_{GS}=4.5V,R_{GEN}=6Ω	-	2.3	-	nS
Turn- on Rise Time	t_r		-	3.1	-	nS
Turn- Off Delay Time	$t_{d(off)}$		-	20	-	nS
Turn- Off Fall Time	t_f		-	2.5	-	nS
Total Gate Charge	Q_g	V_{DS}=10V,I_D=3A, V_{GS}=4.5V	-	2.7	5	nC
Gate- Source Charge	Q_{gs}		-	0.4	-	nC
Gate- Drain Charge	Q_{gd}		-	0.5	-	nC
Drain- Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS}=0V,I_S=3A	-	-	1.2	V
Diode Forward Current (Note 2)	I_S		-	-	3	A

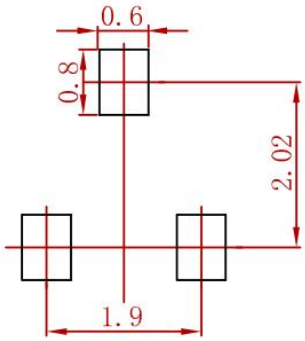
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production

PACKAGE MECHANICAL DATA



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°

Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.

REEL SPECIFICATION

P/N	PKG	QTY
SI2302AI-MS	SOT-23	3000

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