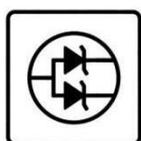


MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

SI2301AI-MS

Product specification

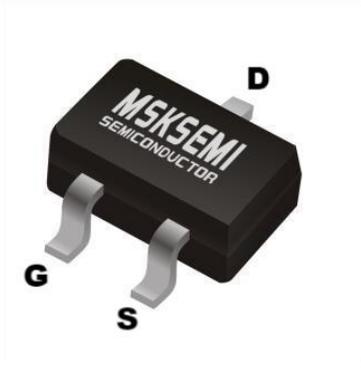
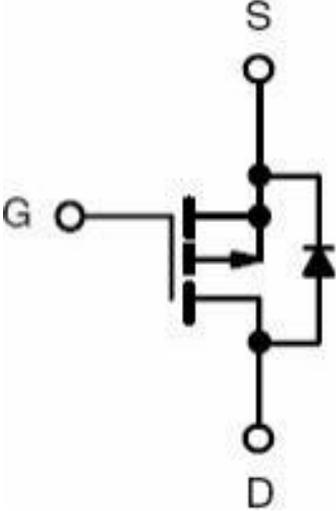
General Features

- $V_{DS} = -20V, I_D = -3A$
- $R_{DS(ON)} < 140m\Omega @ V_{GS} = -2.5V$
- $R_{DS(ON)} < 110m\Omega @ V_{GS} = -4.5V$
- High power and current handing capability
- Lead free product is acquired
- Surface mount package

Application

- PWM applications
- Load switch
- Power management

Reference News

PACKAGE OUTLINE	Schematic diagram	Marking
		
<p>SOT-23</p>		

Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain- Source Voltage	V _{DS}	-20	V
Gate- Source Voltage	V _{GS}	± 12	V
Drain Current- Continuous	D	-3	A
Drain Current -Pulsed (Note 1)	D _M	-10	A
Maximum Power Dissipation	D	1	W
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55 To 150	°C

Thermal Characteristic

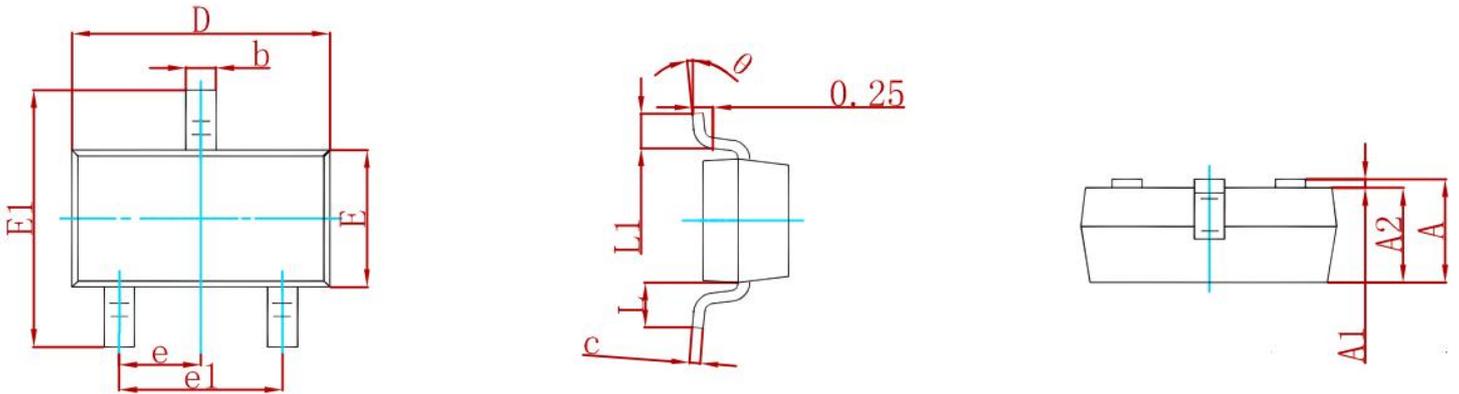
Thermal Resistance, Junction-to-Ambient (Note 2)	R _{θJA}	125	°C/W
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Electrical Characteristics (TA=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain- Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250μA	-20	-24	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-20V, V _{GS} =0V	-	-	-1	μA
Gate- Body Leakage Current	I _{GSS}	V _{GS} =± 12V, V _{DS} =0V	-	-	± 100	A
On Characteristics (Note 3)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-0.4	-0.7	-1	V
Drain- Source On- State Resistance	R _{DS(on)}	V _{GS} =-4.5V, I _D =-3A	-	64	110	mΩ
		V _{GS} =-2.5V, I _D =-2A	-	89	140	mΩ
Forward Transconductance	g _{FS}	V _{DS} =-5V, I _D =-2A	5	-	-	S
Dynamic Characteristics (Note 4)						
Input Capacitance	C _{iss}	V _{DS} =-10V, V _{GS} =0V, F=1.0MHz	-	405	-	pF
Output Capacitance	C _{oss}		-	75	-	pF
Reverse Transfer Capacitance	C _{rss}		-	55	-	pF
Switching Characteristics (Note 4)						
Turn-on Delay Time	t _{d(on)}	V _{DD} =-10V, I _D =-1A V _{GS} =-4.5V, R _{GEN} =10Ω	-	11	-	nS
Turn-on Rise Time	t _r		-	35	-	nS
Turn-Off Delay Time	t _{d(off)}		-	30	-	nS
Turn-Off Fall Time	t _f		-	10	-	nS
Total Gate Charge	Q _g	V _{DS} =-10V, I _D =-3A, V _{GS} =-2.5V	-	3.3	12	nC
Gate- Source Charge	Q _{gs}		-	0.7	-	nC
Gate- Drain Charge	Q _{gd}		-	1.3	-	nC
Drain- Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V _{SD}	V _{GS} =0V, I _S =1.3A	-	-	-1.2	V
Diode Forward Current (Note 2)	I _S		-	-	-3	A

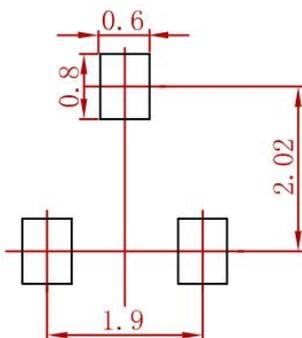
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production

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: ± 0.05 mm.
 3. The pad layout is for reference purposes only.

REEL SPECIFICATION

P/N	PKG	QTY
SI2301AI-MS	SOT-23	3000

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