

MSKSEMI 美森科

SEMICONDUCTOR



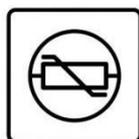
ESD



TVS



TSS



MOV



GDT



PLED

AO3415AI-MS

Product specification

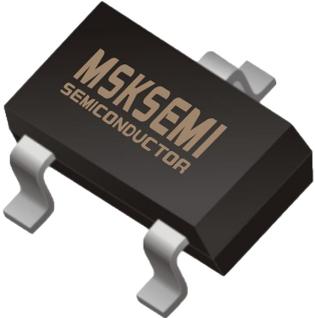
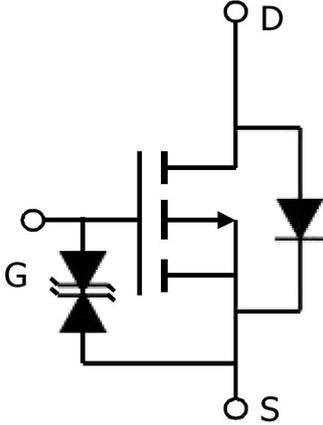
General Features

- V_{DS} -20V
- I_D (at $V_{GS}=-4.5V$) -4A
- $R_{DS(ON)}$ (at $V_{GS}= -4.5V$) < 41m Ω
- $R_{DS(ON)}$ (at $V_{GS}= -2.5V$) < 53m Ω
- $R_{DS(ON)}$ (at $V_{GS}= -1.8V$) < 65m Ω
- ESD protected

Application

- PWM application
- Load switch

Reference News

PACKAGE OUTLINE	Schematic diagram	Marking
		
SOT-23		

Absolute Maximum Ratings $T_A=25^{\circ}C$ unless otherwise noted

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 8	V
Continuous Drain Current	I_D	$T_A=25^{\circ}C$	-4
		$T_A=70^{\circ}C$	-3.5
Pulsed Drain Current ^C	I_{DM}	-30	A
Power Dissipation ^B	PD	$T_A=25^{\circ}C$	1.5
		$T_A=70^{\circ}C$	1
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^{\circ}C$

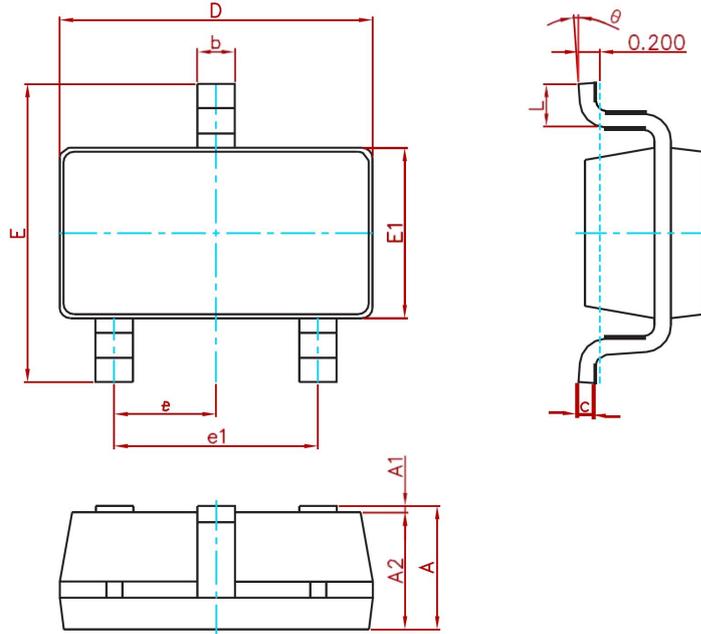
Thermal Characteristics

Parameter		Symbol	Typ	Max	Units
Maximum Junction-to-Ambient ^A	$t \leq 10s$	R _{θJA}	65	80	°C/W
Maximum Junction-to-Ambient ^{A D}	Steady- State		85	100	°C/W
Maximum Junction-to-Lead	Steady- State	R _{θJL}	43	52	°C/W

Electrical Characteristics (T_J=25°C unless otherwise noted)

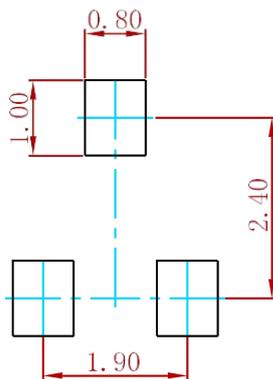
Symbol	Parameter	Conditions	Min	Typ	Max	Units
STATIC PARAMETERS						
B _V DSS	Drain- Source Breakdown Voltage	I _D =-250μA, V _{GS} =0V	-20			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-20V, V _{GS} =0V T _J =55°C			-1 -5	μA
I _{GSS}	Gate-Body leakage current	V _{DS} =0V, V _{GS} = ±8V			±10	μA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250μA	-0.3	-0.57	-0.9	V
I _{D(ON)}	On state drain current	V _{GS} =-4.5V, V _{DS} =-5V	-30			A
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =-4.5V, I _D =-4A T _J =125°C		34 49	41 59	mΩ
		V _{GS} =-2.5V, I _D =-4A		42	53	mΩ
		V _{GS} =-1.8V, I _D =-2A		52	65	mΩ
		V _{GS} =-1.5V, I _D =-1A		61		mΩ
g _{FS}	Forward Transconductance	V _{DS} =-5V, I _D =-4A		20		S
V _{SD}	Diode Forward Voltage	I _S =-1A, V _{GS} =0V		-0.64	-1	V
I _S	Maximum Body-Diode Continuous Current				-2	A
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-10V, f=1MHz	600	751	905	pF
C _{oss}	Output Capacitance		80	115	150	pF
C _{rss}	Reverse Transfer Capacitance		48	80	115	pF
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz	6	13	20	Ω
SWITCHING PARAMETERS						
Q _g	Total Gate Charge	V _{GS} =-4.5V, V _{DS} =-10V, I _D =-4A	7.4	9.3	11	nC
Q _{gs}	Gate Source Charge		0.8	1	1.2	nC
Q _{gd}	Gate Drain Charge		1.3	2.2	3.1	nC
t _{D(on)}	Turn-On DelayTime	V _{GS} =-4.5V, V _{DS} =-10V, R _L =2.5Ω, R _{GEN} =3Ω		13		ns
t _r	Turn-On Rise Time			9		ns
t _{D(off)}	Turn-Off DelayTime			19		ns
t _f	Turn-Off Fall Time			29		ns
t _{rr}	Body Diode Reverse Recovery Time	I _F =-4A, dI/dt=500A/μs	20	26	32	ns
Q _{rr}	Body Diode Reverse Recovery Charge	I _F =-4A, dI/dt=500A/μs	40	51	62	nC

PACKAGE MECHANICAL DATA



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950 (BSC)		0.037 (BSC)	
1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
0	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
AO3415AI-MS	SOT-23	3000

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