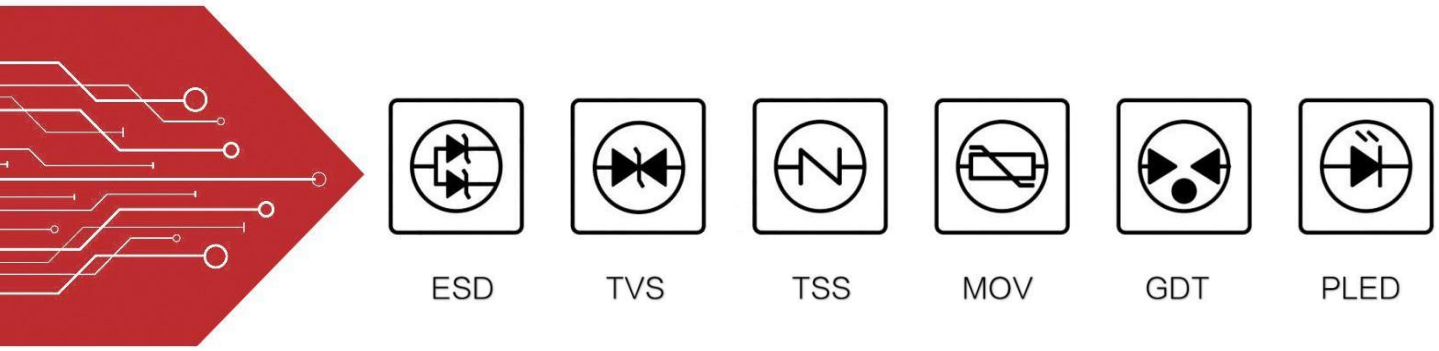
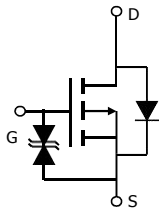
MSKSEMI
SEMICONDUCTOR



Product data sheet

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

ESD protected



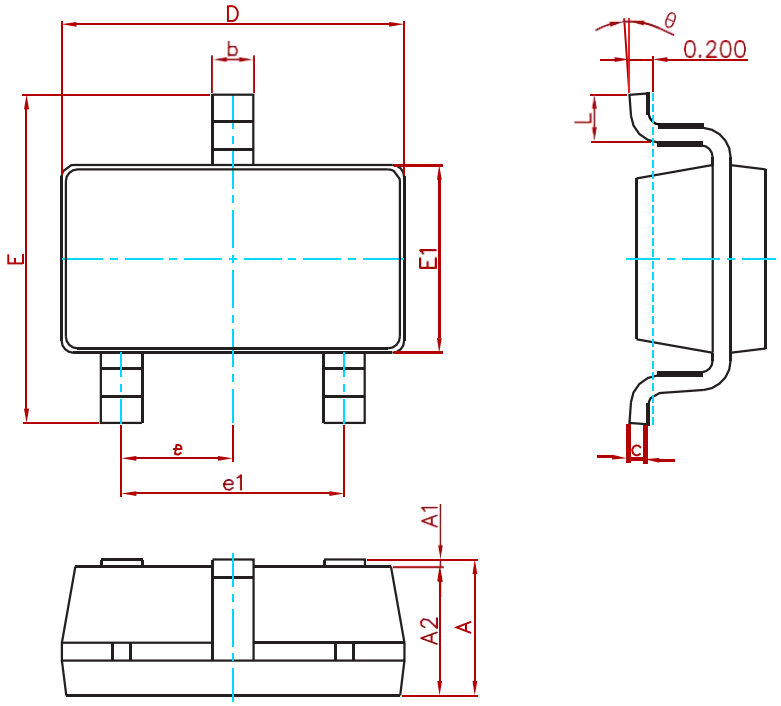
Absolute Maximum Ratings T_A=25°C unless otherwise noted				
Parameter		**Symbol**	**Maximum**	**Units**
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±8	V
Continuous Drain Current	T_A=25°C	I_D	-4	A
	T_A=70°C		-3.5	
Pulsed Drain Current [C]		I_{DM}	-30	
Power Dissipation [B]	T_A=25°C	P_D	1.5	W
	T_A=70°C		1	
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C

Thermal Characteristics					
Parameter		**Symbol**	**Typ**	**Max**	**Units**
Maximum Junction-to-Ambient [A]	t ≤ 10s	$R_{\theta JA}$	65	80	°C/W
Maximum Junction-to-Ambient [A D]	Steady-State		85	100	°C/W
Maximum Junction-to-Lead	Steady-State	$R_{\theta JL}$	43	52	°C/W

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

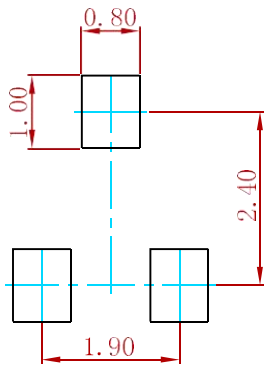
Symbol	Parameter	Conditions	Min	Typ	Max	Units
STATIC PARAMETERS						
BV_{DSS}	Drain-Source Breakdown Voltage	I_D=-250μA, V_{GS}=0V	-20			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-20V, V_{GS}=0V			-1	μA
		T_J=55°C			-5	
I_{GSS}	Gate-Body leakage current	V_{DS}=0V, V_{GS}= ±8V			±10	μA
$V_{GS(th)}$	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		34	41	mΩ
		T_J=125°C		49	59	
		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)	
e1	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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