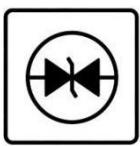


ESD



TVS



TSS



MOV



GDT



PLED

AOD4132-MS
Product specification

Description

The uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

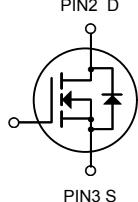
General Features

- $V_{DS} = 30V$ $I_D = 100A$
- $R_{DS(ON)} < 5.5m\Omega$ @ $V_{GS}=10V$

Application

- Battery protection
- Load switch
- Uninterruptible power supply

Reference News

PACKAGE OUTLINE	N-Channel MOSFET	Marking
 TO-252	 PIN2 D PIN3 S	 MSKSEMI AOD4132-MS

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

Symbol	Parameter	Rating	Units	
V_{GS}	Gate-Source Voltage	± 20	V	
$I_D@T_c=25^\circ C$	Continuous Drain Current, V_{GS} @ 10V ¹	100	A	
$I_D@T_c=100^\circ C$	Continuous Drain Current, V_{GS} @ 10V ¹	57	A	
$I_D@T_a=25^\circ C$	Continuous Drain Current, V_{GS} @ 10V ¹	27	A	
$I_D@T_a=70^\circ C$	Continuous Drain Current, V_{GS} @ 10V ¹	23	A	
I_{DM}	Pulsed Drain Current ²	160	A	
E_{AS}	Single Pulse Avalanche Energy ³	115.2	mJ	
I_{AS}	Avalanche Current	48	A	
$P_{D@T_c=25^\circ C}$	Total Power Dissipation ⁴	53	W	
$P_{D@T_a=25^\circ C}$	Total Power Dissipation ⁴	6	2.4	W
T_{STG}	Storage Temperature Range	-55 to 175	°C	
T_J	Operating Junction Temperature Range	-55 to 175	°C	
$R_{\theta JA}$	Thermal Resistance Junction-ambient (Steady State) ¹	62	°C/W	
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹ ($t \leq 10s$)	25	°C/W	
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	2.8	°C/W	

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	30	---	---	V
△BV _{DSS} /△T _J	BVDSS Temperature Coefficient	Reference to 25°C I _D =1mA	---	0.028	---	V/°C
R _{DSS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =30A	---	4.3	5.5	mΩ
		V _{GS} =4.5V, I _D =15A	---	7.5	9	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	1.0	1.5	2.5	V
△V _{GS(th)}	V _{GS(th)} Temperature Coefficient		---	-6.16	---	mV/°C
I _{DSS}	Drain-Source Leakage Current	V _{DS} =24V, V _{GS} =0V, T _J =25°C	---	---	1	uA
		V _{DS} =24V, V _{GS} =0V, T _J =55°C	---	---	5	
I _{GS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	± 100	nA
g _{fs}	Forward Transconductance	V _{DS} =5V, I _D =30A	---	22	---	S
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz	---	1.7	3.4	Ω
Q _g	Total Gate Charge (4.5V)	V _{DS} =15V, V _{GS} =4.5V, I _D =15A	---	20	---	nC
Q _{gs}	Gate-Source Charge		---	7.6	---	
Q _{gd}	Gate-Drain Charge		---	7.2	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =15V, V _{GS} =10V, R _G =3.3 I _D =15A	---	7.8	---	ns
T _r	Rise Time		---	15	---	
T _{d(off)}	Turn-Off Delay Time		---	37.3	---	
T _f	Fall Time		---	10.6	---	
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	---	2295	---	pF
C _{oss}	Output Capacitance		---	267	---	
C _{rss}	Reverse Transfer Capacitance		---	210	---	
I _s	Continuous Source Current ^{1,5}	V _G =V _D =0V, Force Current	---	---	80	A
I _{sM}	Pulsed Source Current ^{2,5}		---	---	160	A
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V, I _s =1A, T _J =25°C	---	---	1	V
t _{rr}	Reverse Recovery Time	I _F =30A, dI/dt=100A/μs, T _J =25°C	---	14	---	nS
Q _{rr}	Reverse Recovery Charge		---	5	---	nC

Note :

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width .The EAS data shows Max. rating .
- 3.The test cond≤ 300us , duty cycle itionis V_{DD}=25≤V,V 2%_{GS} =10V,L=0.1mH,I_{AS}=53.8A
- 4.The power dissipation is limited by 175°C junction temperature
- 5.The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Characteristics

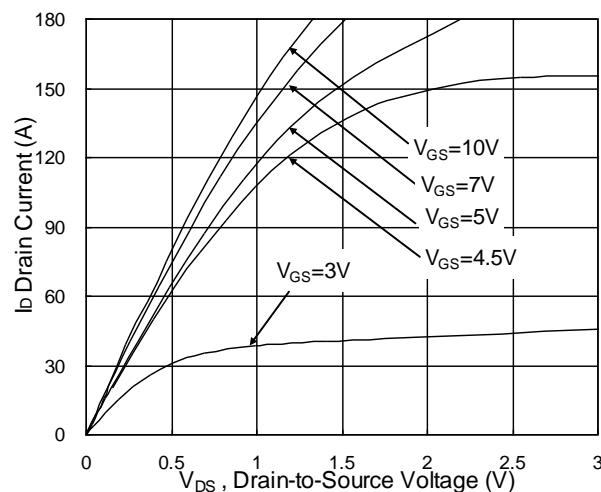


Fig.1 Typical Output Characteristics

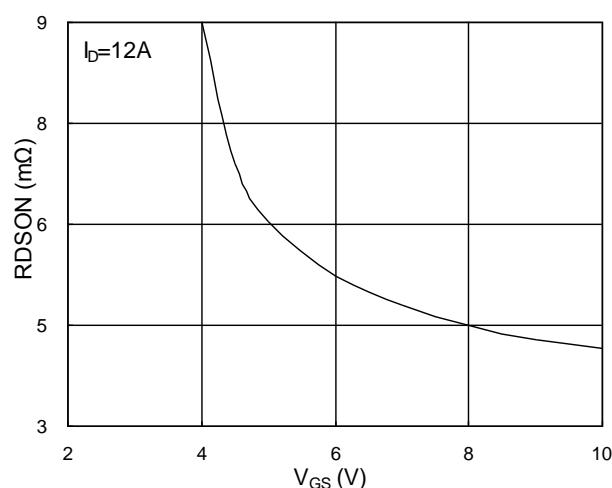


Fig.2 On-Resistance vs. G-S Voltage

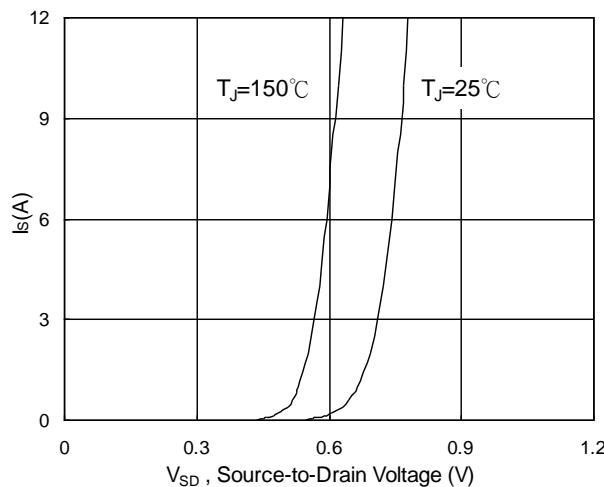


Fig.3 Forward Characteristics of Reverse

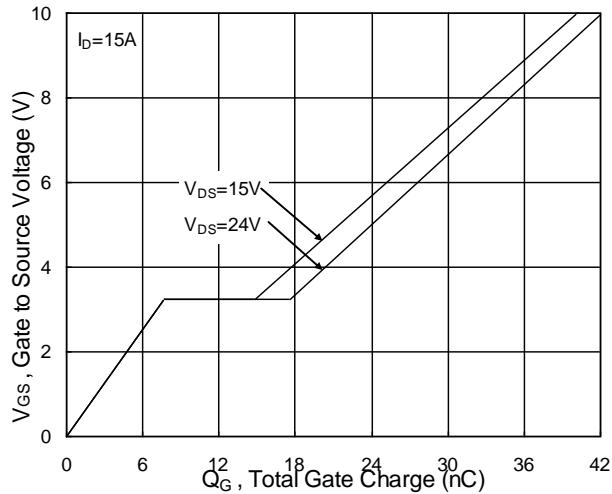


Fig.4 Gate-Charge Characteristics

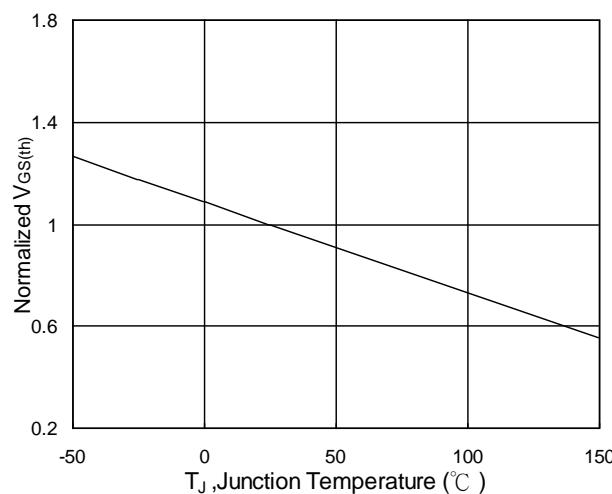


Fig.5 Normalized V_{GS(th)} vs. T_J

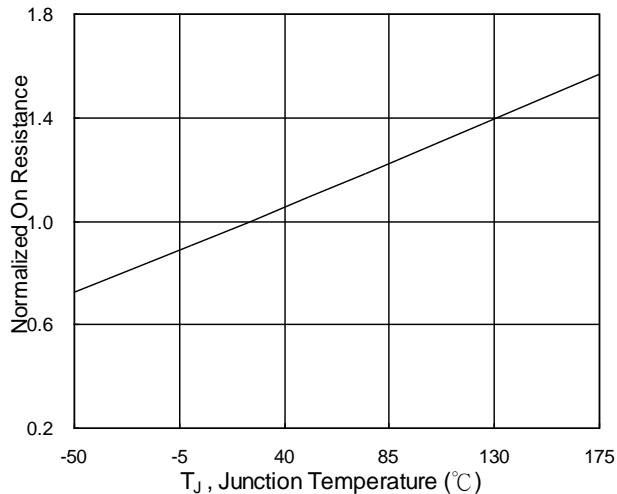


Fig.6 Normalized R_{DSON} vs. T_J

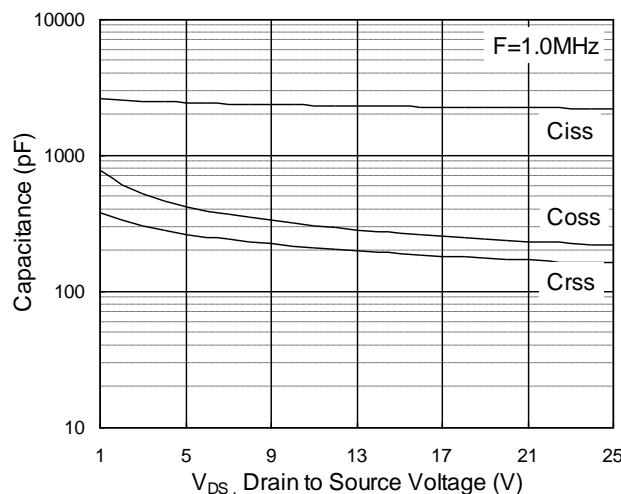


Fig.7 Capacitance

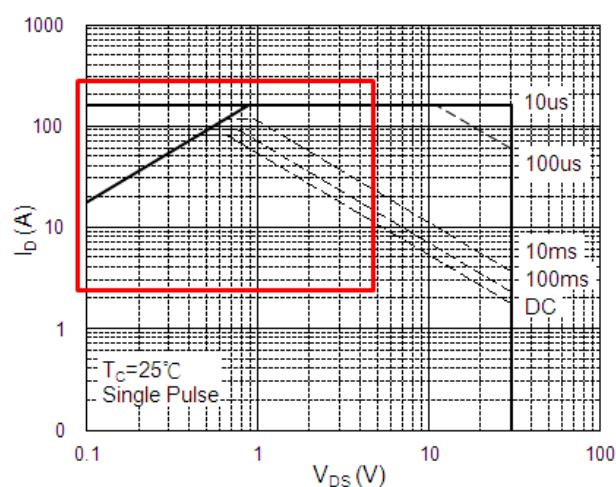


Fig.8 Safe Operating Area

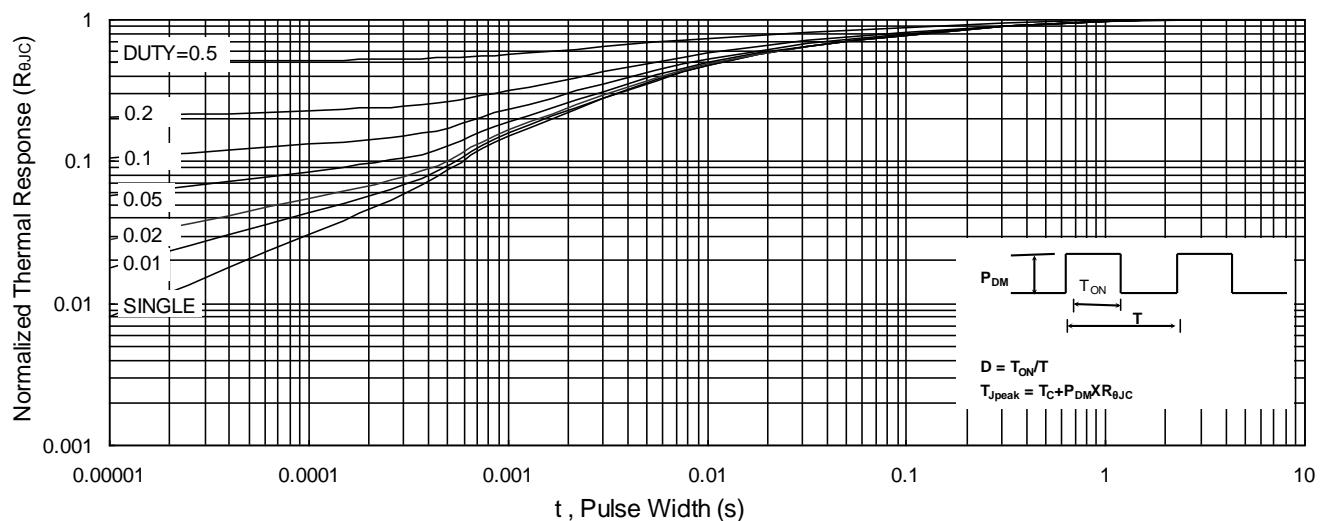


Fig.9 Normalized Maximum Transient Thermal Impedance

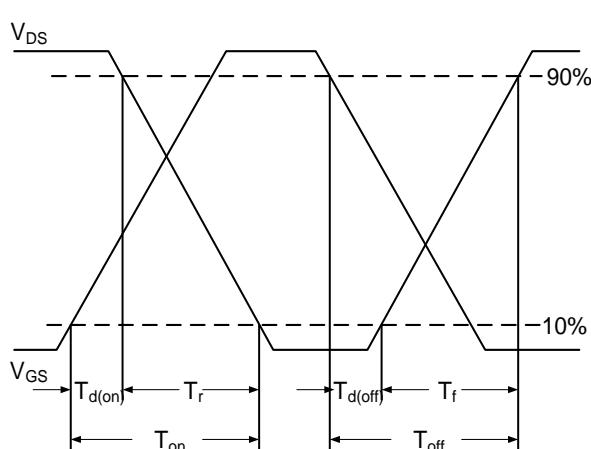


Fig.10 Switching Time Waveform

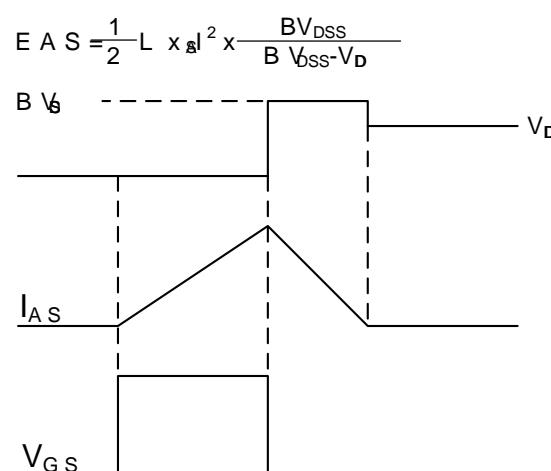
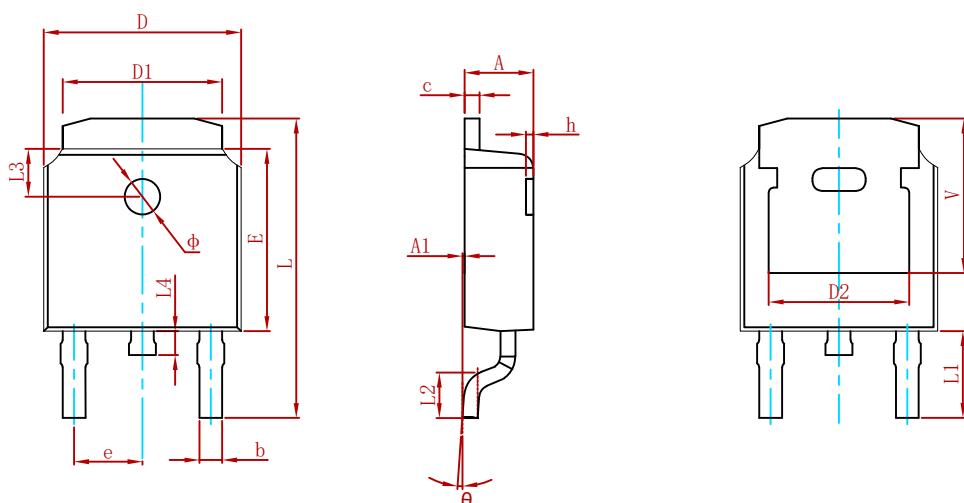
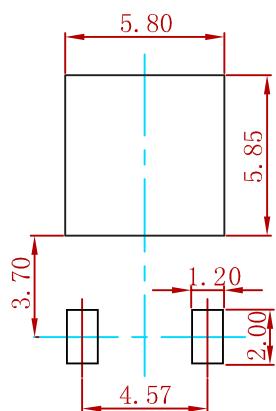


Fig.11 Unclamped Inductive Switching Waveform

PACKAGE MECHANICAL DATA


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.635	0.770	0.025	0.030
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.712	10.312	0.382	0.406
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.250 REF.		0.207 REF.	

Suggested Pad Layout

Note:

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

REELSPECIFICATION

P/N	PKG	QTY
AOD4132-MS	TO-252	2500

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