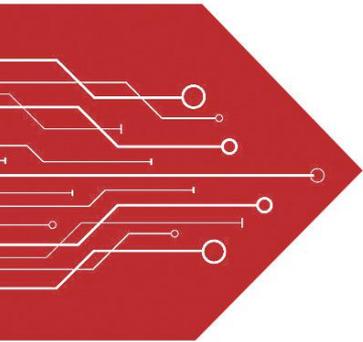


MSKSEMI

SEMICONDUCTOR



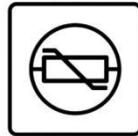
ESD



TVS



TSS



MOV

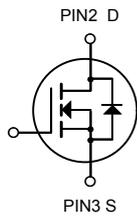


GDT



PLED

Product data sheet



N-Channel MOSFET

TO-252

Description

The AOD4132-MS 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

Absolute Maximum Ratings ($T_C=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Rating		Units
V _{GS}	Gate-Source Voltage	±20		V
I _D @T _C =25°C	Continuous Drain Current, V _{GS} @ 10V ¹	100		A
I _D @T _C =100°C	Continuous Drain Current, V _{GS} @ 10V ¹	57		A
I _D @T _A =25°C	Continuous Drain Current, V _{GS} @ 10V ¹	27	17	A
I _D @T _A =70°C	Continuous Drain Current, V _{GS} @ 10V ¹	23	14.5	A
I _{DM}	Pulsed Drain Current ²	160		A
EAS	Single Pulse Avalanche Energy ³	115.2		mJ
I _{AS}	Avalanche Current	48		A
P _D @T _C =25°C	Total Power Dissipation ⁴	53		W
P _D @T _A =25°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 _{θJA}	Thermal Resistance Junction-ambient (Steady State) ¹	62		°C/W
R _{θJA}	Thermal Resistance Junction-Ambient ¹ (t ≤10s)	25		°C/W
R _{θJC}	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
ΔBV _{DSS} /ΔT _J	BVDSS Temperature Coefficient	Reference to 25°C , I _D =1mA	---	0.028	---	V/°C
.R _{DS(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
ΔV _{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 _{GSS}	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	T _J =25°C	---	5	---	nC

Note :

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
- 2.The data tested by pulsed , pulse width .The EAS data shows Max. rating .
- 3.The test cond≤ 300us , duty cycle ition is V_{DD}=25≤V , V_{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

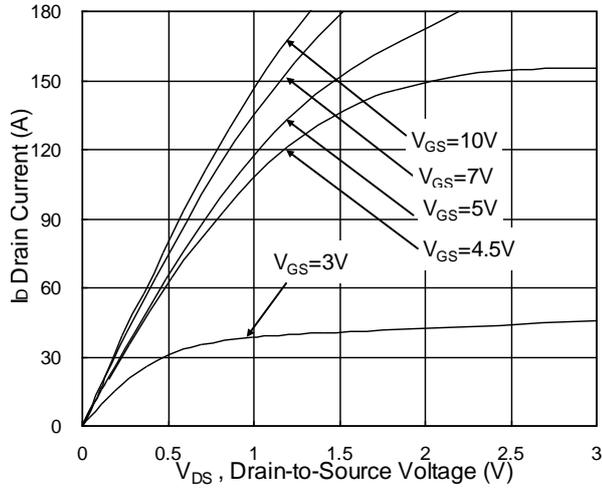


Fig.1 Typical Output Characteristics

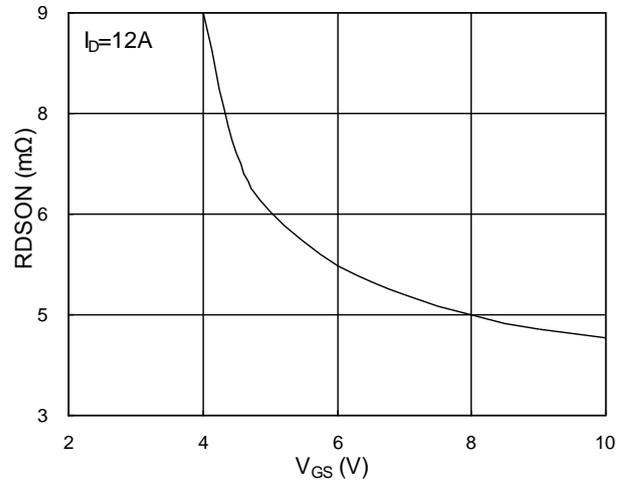


Fig.2 On-Resistance vs. G-S Voltage

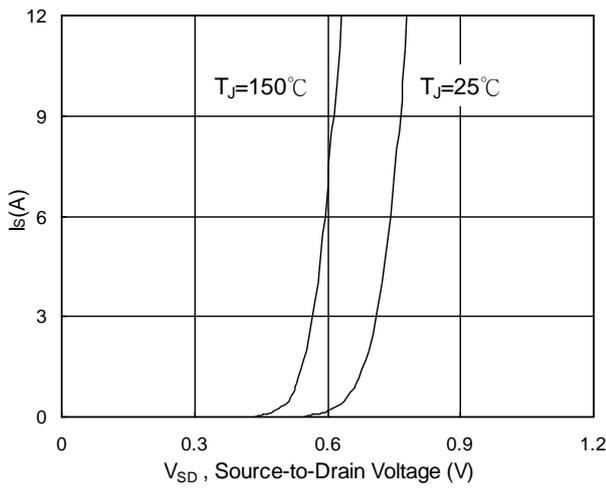


Fig.3 Forward Characteristics of Reverse

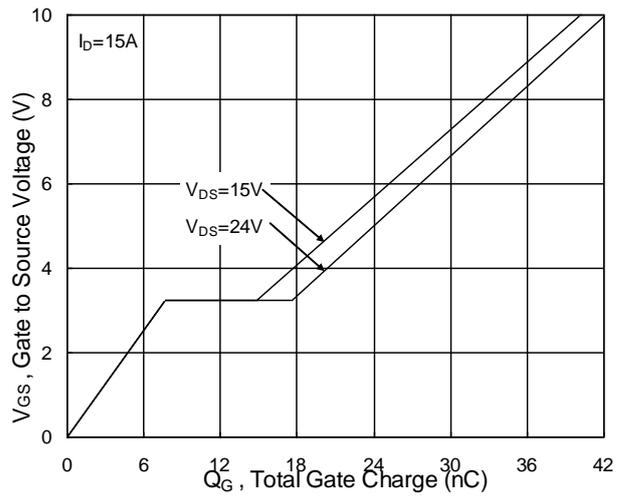


Fig.4 Gate-Charge Characteristics

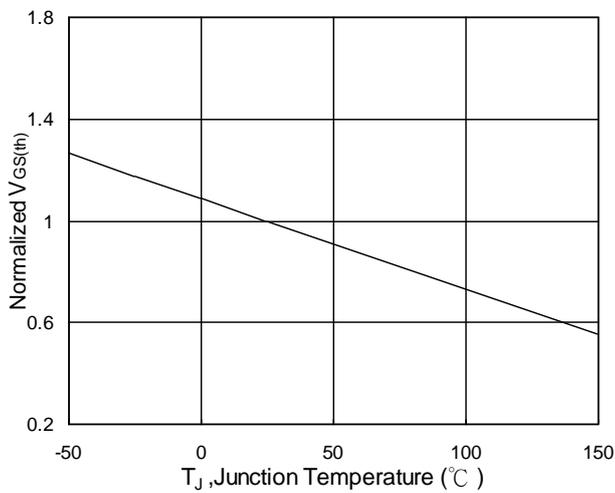


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

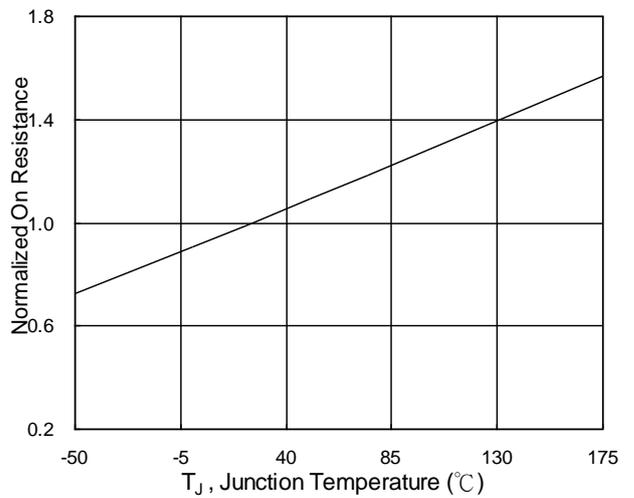


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

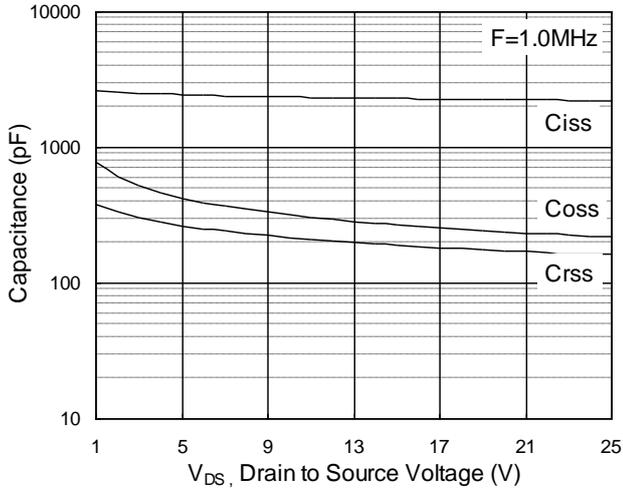


Fig.7 Capacitance

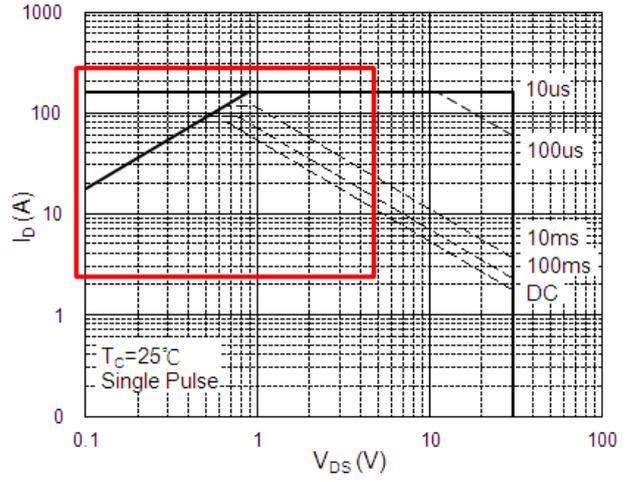


Fig.8 Safe Operating Area

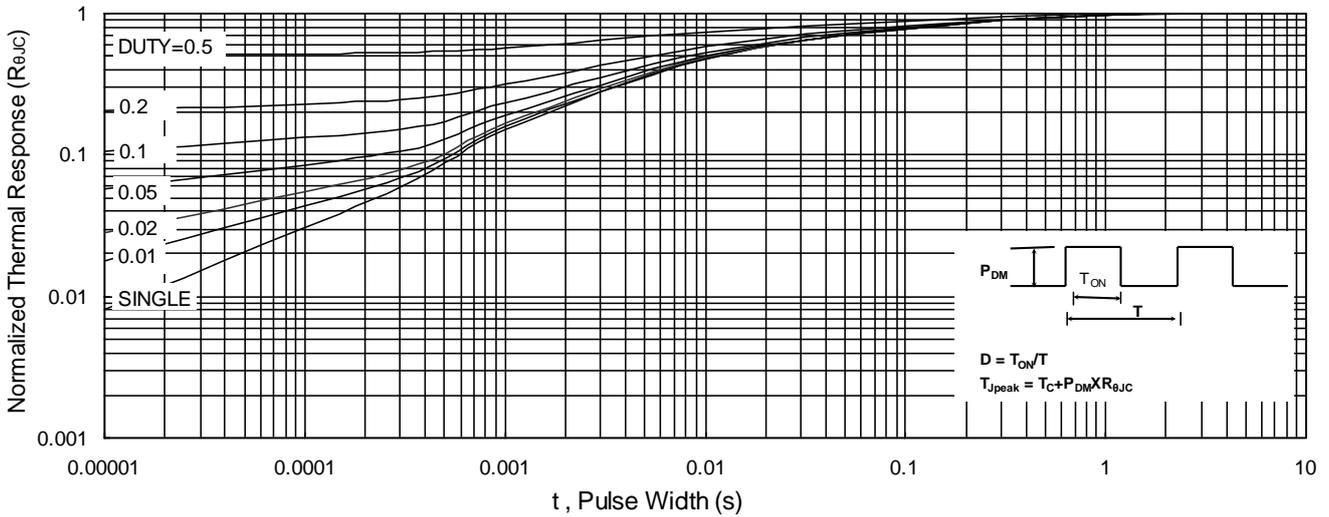


Fig.9 Normalized Maximum Transient Thermal Impedance

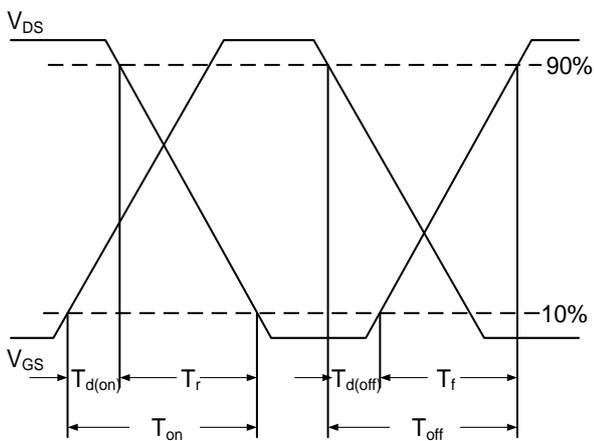


Fig.10 Switching Time Waveform

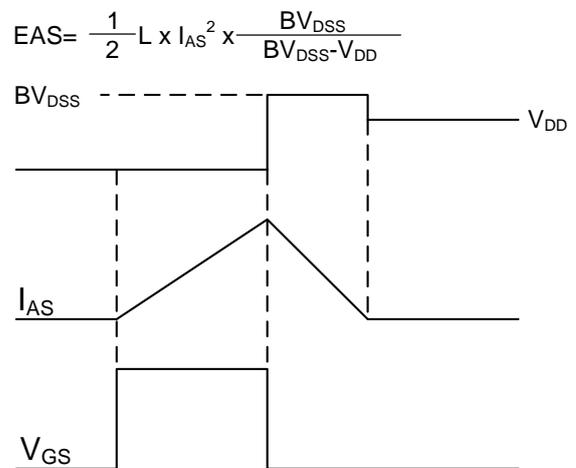
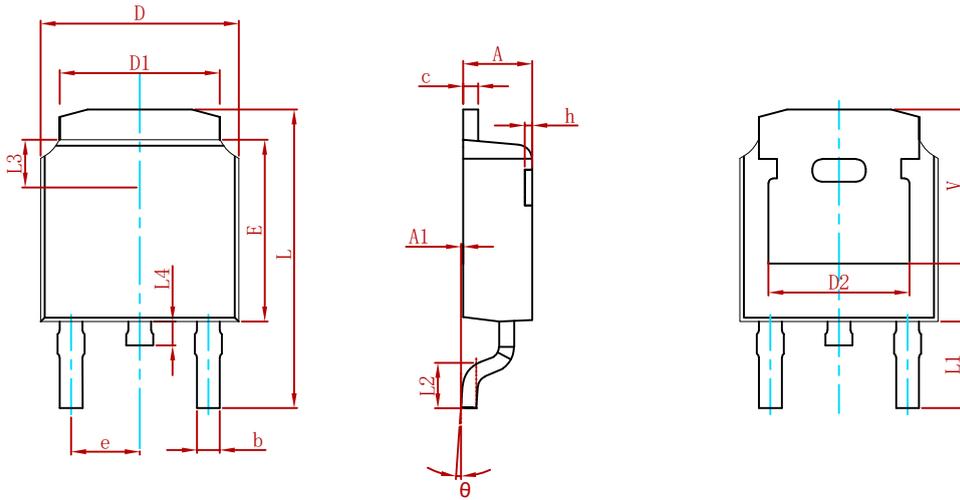


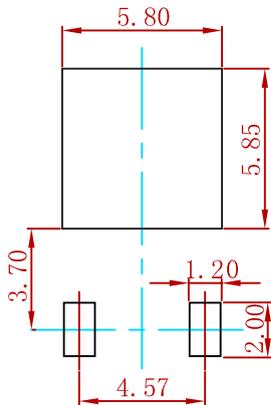
Fig.11 Unclamped Inductive Switching Waveform

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

REEL SPECIFICATION

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

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