MSKSEMI
SEMICONDUCTOR

ESD TVS TSS MOV GDT PLED
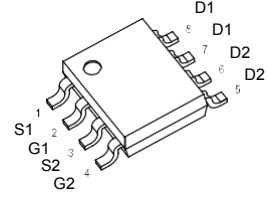
Product data sheet

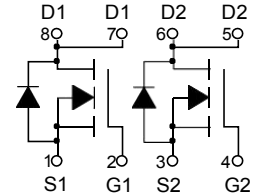## Product Summary

V_{DS}	30V
I_D (at V_{GS}=10V)	6A
$R_{DS(ON)}$ (at V_{GS}=10V)	< 30mΩ
$R_{DS(ON)}$ (at V_{GS} =4.5V)	< 42mΩ

SOP-8

General Description

The AO4842-MSuses advanced trench technology to provide excellent RDS(ON) and low gate charge. This device is suitable for use as a load switch or in PWM applications.

N-Channel MOSFET

Absolute Maximum Ratings T_A=25°C unless otherwise noted

Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_A=25°C	I_D	6	A
	T_A=70°C		5	
Pulsed Drain Current [C]		I_{DM}	30	
Avalanche Current [C]		I_{AS}, I_{AR}	10	A
Avalanche energy L=0.1mH [C]		E_{AS}, E_{AR}	5	mJ
Power Dissipation [B]	T_A=25°C	P_D	2	W
	T_A=70°C		1.3	
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	$R_{\theta JA}$	48	62.5	°C/W
Maximum Junction-to-Ambient [A D]	Steady-State		74	90	°C/W
Maximum Junction-to-Lead	Steady-State	$R_{\theta JL}$	32	40	°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		30			V
I$_{DSS}$	Zero Gate Voltage Drain Current	V$_{DS}$=30V, V$_{GS}$=0V				1	µA
			T$_J$=55°C			5	
I$_{GSS}$	Gate-Body leakage current	V$_{DS}$=0V, V$_{GS}$=±20V				±100	nA
V$_{GS(th)}$	Gate Threshold Voltage	V$_{DS}$=V$_{GS}$ I$_D$=250µA		1.2	1.8	2.4	V
I$_{D(ON)}$	On state drain current	V$_{GS}$=10V, V$_{DS}$=5V		30			A
R$_{DS(ON)}$	Static Drain-Source On-Resistance	V$_{GS}$=10V, I$_D$=6A			25	30	mΩ
			T$_J$=125°C		40	48	
		V$_{GS}$=4.5V, I$_D$=5A			33	42	mΩ
g$_{FS}$	Forward Transconductance	V$_{DS}$=5V, I$_D$=6A			15		S
V$_{SD}$	Diode Forward Voltage	I$_S$=1A,V$_{GS}$=0V			0.76	1	V
I$_S$	Maximum Body-Diode Continuous Current					2.5	A
DYNAMIC PARAMETERS							
C$_{iss}$	Input Capacitance	V$_{GS}$=0V, V$_{DS}$=15V, f=1MHz			255	310	pF
C$_{oss}$	Output Capacitance				45		pF
C$_{rss}$	Reverse Transfer Capacitance				35	50	pF
R$_g$	Gate resistance	V$_{GS}$=0V, V$_{DS}$=0V, f=1MHz		1.6	3.25	4.9	Ω
SWITCHING PARAMETERS							
Q$_{g(10V)}$	Total Gate Charge	V$_{GS}$=10V, V$_{DS}$=15V, I$_D$=6A			5.2	6.3	nC
Qg$_{(4.5V)}$					2.55	3.2	nC
Q$_{gs}$	Gate Source Charge				0.85		nC
Q$_{gd}$	Gate Drain Charge				1.3		nC
t$_{D(on)}$	Turn-On DelayTime	V$_{GS}$=10V, V$_{DS}$=15V, R$_L$=2.5Ω, R$_{GEN}$=3Ω			4.5		ns
t$_r$	Turn-On Rise Time				2.5		ns
t$_{D(off)}$	Turn-Off DelayTime				14.5		ns
t$_f$	Turn-Off Fall Time				3.5		ns
t$_{rr}$	Body Diode Reverse Recovery Time	I$_F$=6A, dI/dt=100A/µs			8.5		ns
Q$_{rr}$	Body Diode Reverse Recovery Charge	I$_F$=6A, dI/dt=100A/µs			2.2		nC

A. The value of R$_{θJA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T$_A$ =25°C. The value in any given application depends on the user's specific board design.

B. The power dissipation P$_D$ is based on T$_{J(MAX)}$=150°C, using ⩽ 10s junction-to-ambient thermal resistance.

C. Repetitive rating, pulse width limited by junction temperature T$_{J(MAX)}$=150°C. Ratings are based on low frequency and duty cycles to keep initialT$_J$=25°C.

D. The R$_{θJA}$ is the sum of the thermal impedance from junction to lead R$_{θJL}$ and lead to ambient.

E. The static characteristics in Figures 1 to 6 are obtained using <300µs pulses, duty cycle 0.5% max.

F. These curves are based on the junction-to-ambient thermal impedance which is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, assuming a maximum junction temperature of T$_{J(MAX)}$=150°C. The SOA curve provides a single pulse ratin g.

PACKAGE MECHANICAL DATA
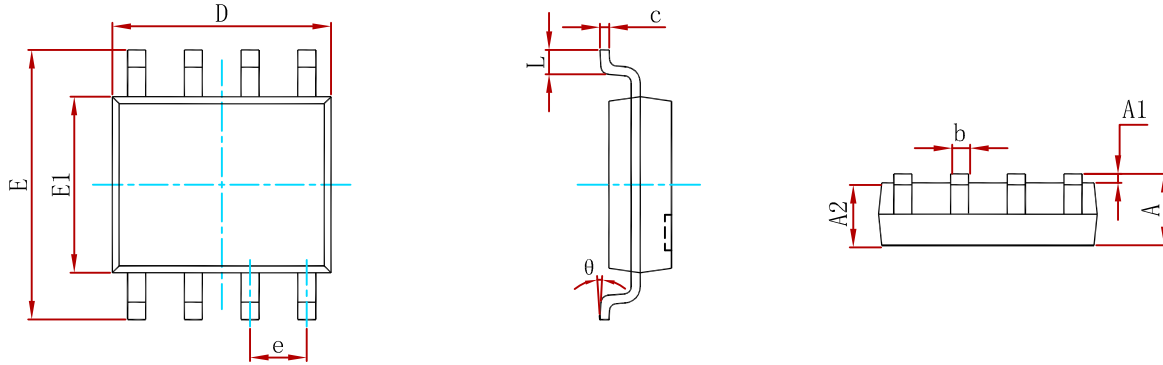
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	**Max**	**Min**	**Max**
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.800	5.000	0.189	0.197
e	1.270（BSC）		0.050（BSC）	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

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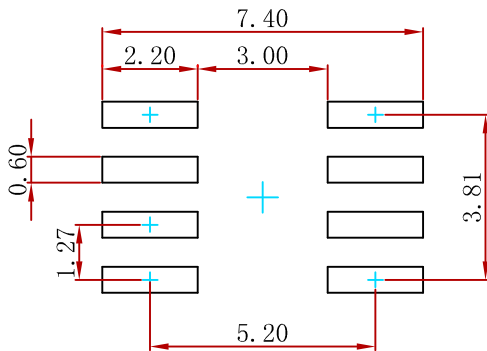
Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.

REEL SPECIFICATION

P/N	PKG	QTY
AO4842-MS	SOP-8	3000

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