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SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

AO4407A

Product specification


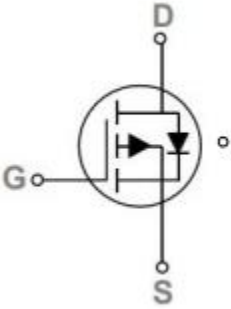

General Features

- -30V,- 12A, RDS(ON) =9 .0mΩ @VGS = - 10V
- Fast switching
- Green Device Available
- Suit for -4 . 5V Gate Drive Applications

Application

- MB / VGA / Vcore
- POL Applications
- Load Switch
- LED Application

Reference News

PACKAGE OUTLINE	Pin Configuration	Marking
		
<p>SOP-8</p>		

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

Symbol	Parameter	Rating	Units
V _{DS}	Drain- Source Voltage	-30	V
V _{GS}	Gate- Source Voltage	±20	V
I _D	Drain Current – Continuous (TA=25°C)	-12	A
	Drain Current – Continuous (TA=70°C)	-8	A
I _{DM}	Drain Current – Pulsed ¹	-40	A
EAS	Single Pulse Avalanche Energy ²	125	mJ
IAS	Single Pulse Avalanche Current ²	50	A
P _D	Power Dissipation (TA=25°C)	2	W
	Power Dissipation – Derate above 25°C	0.016	W/°C
T _{STG}	Storage Temperature Range	-55 to 150	°C
T _J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Thermal Resistance Junction to ambient	---	62.5	°C/W

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain- Source Breakdown Voltage	V _{GS} =0V , I _D =-250μA	-30	---	---	V
I _{DSS}	Drain- Source Leakage Current	V _{DS} =-30V , V _{GS} =0V , T _J =25°C	---	---	-1	μA
		V _{DS} =-24V , V _{GS} =0V , T _J =125°C	---	---	-10	μA
I _{GSS}	Gate- Source Leakage Current	V _{GS} = ±20V , V _{DS} =0V	---	---	±100	nA

On Characteristics

R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =-10V , I _D =-10A	---	9	13	mΩ
		V _{GS} =-4.5V , I _D =-8A	---	14	20	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250μA	-1.0	-1.6	-2.5	V
g _{fs}	Forward Transconductance	V _{DS} =-10V , I _D =-3A	---	11	---	S

Dynamic and switching Characteristics

Q _g	Total Gate Charge ^{3, 4}	V _{DS} =-15V , V _{GS} =-10V , I _D =-5A	---	34	---	nC
Q _{gs}	Gate-Source Charge ^{3, 4}		---	5.2	---	
Q _{gd}	Gate-Drain Charge ^{3, 4}		---	7.9	---	
T _{d(on)}	Turn-On Delay Time ^{3, 4}	V _{DD} =-15V , V _{GS} =-10V , R _G =6Ω I _D =-5A	---	20	---	ns
T _r	Rise Time ^{3, 4}		---	15	---	
T _{d(off)}	Turn-Off Delay Time ^{3, 4}		---	40	---	
T _f	Fall Time ^{3, 4}		---	30	---	
C _{iss}	Input Capacitance	V _{DS} =-15V , V _{GS} =0V , F=1MHz	---	2020	---	PF
C _{oss}	Output Capacitance		---	305	---	
C _{rss}	Reverse Transfer Capacitance		---	245	---	

Drain- Source Diode Characteristics and Maximum Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current	V _G =V _D =0V , Force Current	---	---	-12	A
I _{SM}	Pulsed Source Current		---	---	-24	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V , I _S =-1A , T _J =25°C	---	---	-1.2	V

Note :

- 1 . Repetitive Rating : Pulsed width limited by maximum junction temperature .
- 2 . The data tested by pulsed , pulse width ≤ 30 0 us , duty cycle ≤ 2 % .
- 3 . Essentially independent of operating temperature .

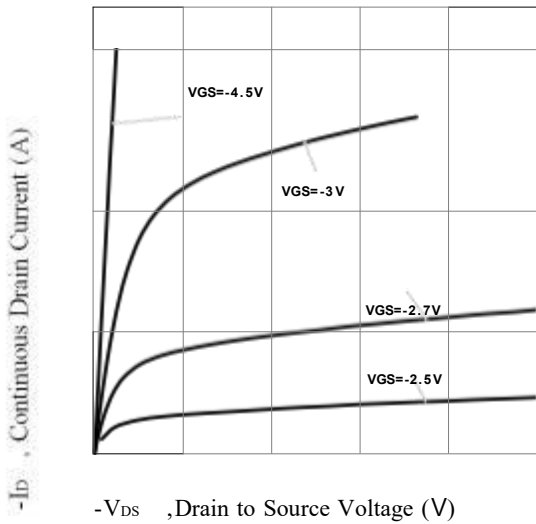


Fig. 1 Typical Output Characteristics

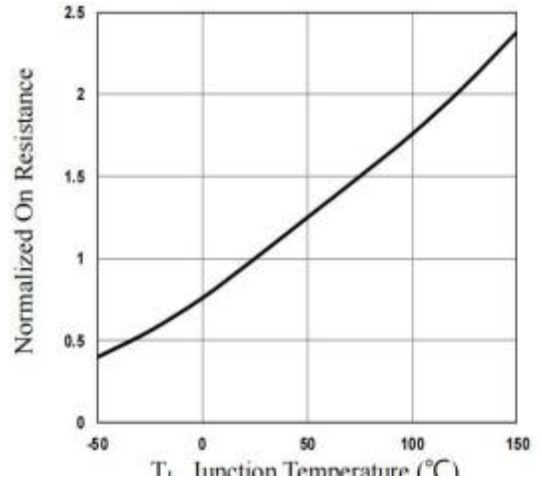


Fig. 2 Normalized $R_{DS(on)}$ vs. T_J

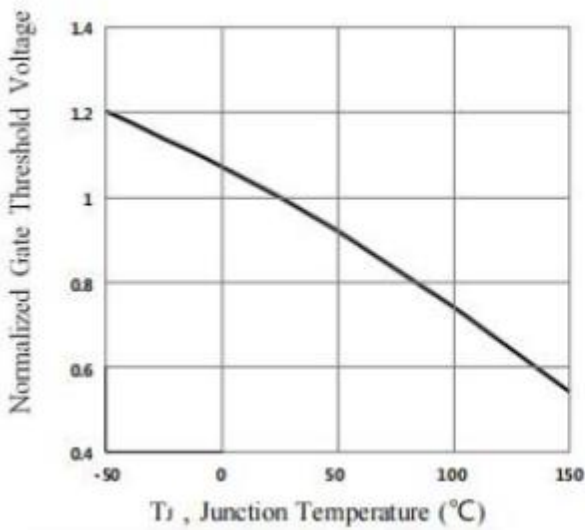


Fig.3 Normalized V_{GS} vs. T_J

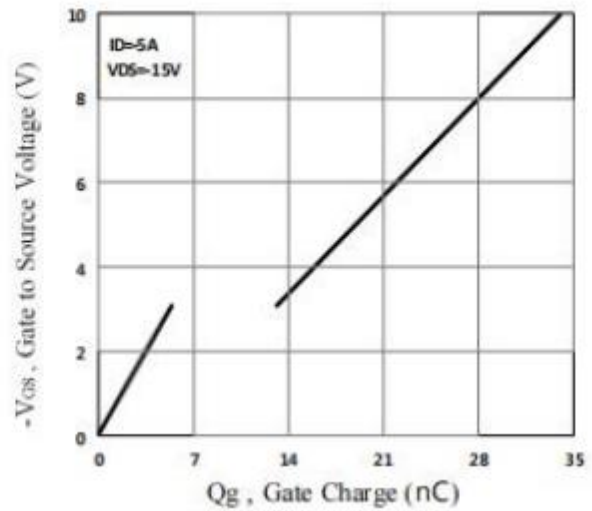


Fig.4 Gate Charge Waveform

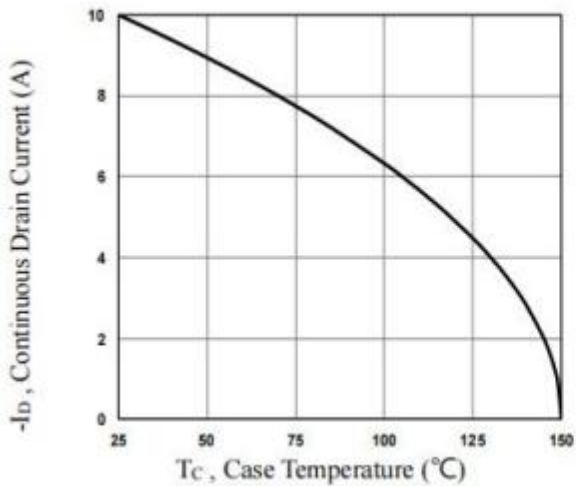


Fig. 5 Continuous Drain Current vs. T_C

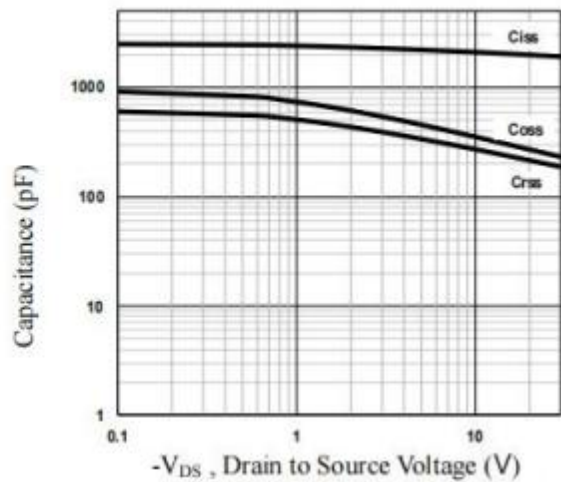


Fig. 6 Capacitance Characteristics

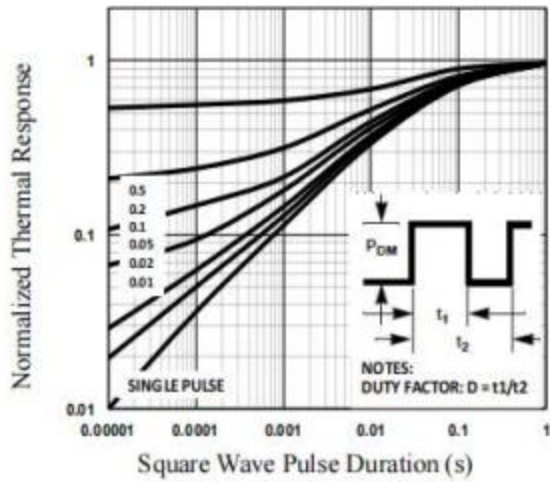


Fig. 7 Normalized Transient Impedance

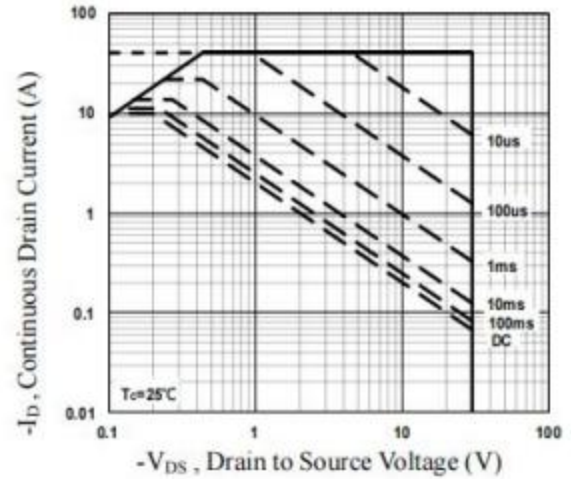


Fig. 8 Maximum Safe Operation Area

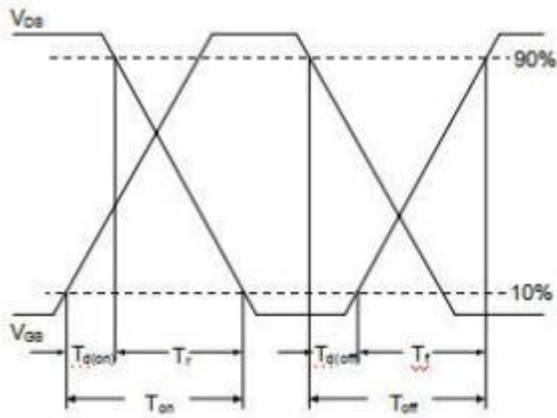


Fig. 9 Switching Time Waveform

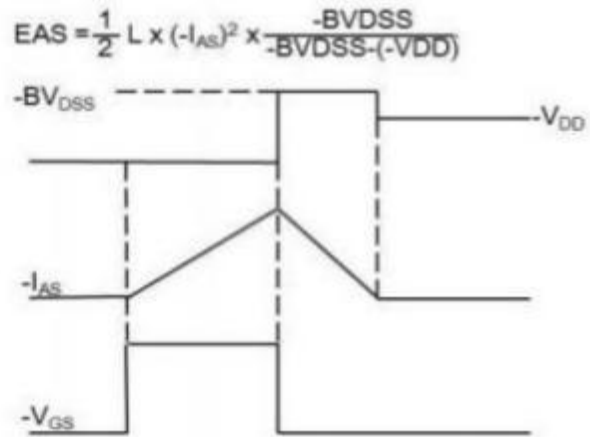
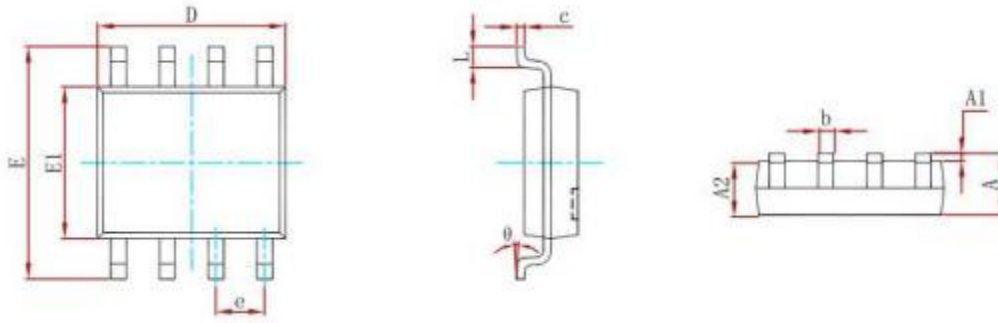


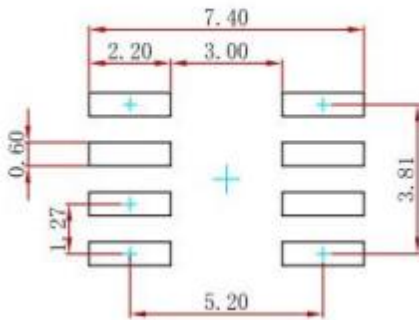
Fig. 10 EAS Waveform

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
AO4407A	SOP-8	3000

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