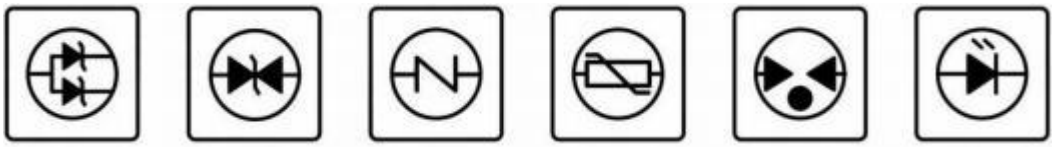
MSKSEMI 美森科
SEMICONDUCTOR



AO4407A

Product specification

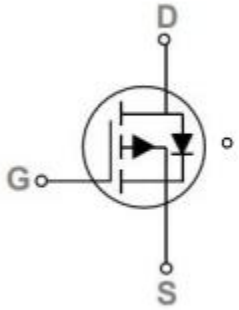
General Features

- -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
 SOP-8		MSKSEMI 4407 MS07P

Absolute Maximum Ratings (TA=25℃ 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 (T_A=25°C)	-12	A
	Drain Current – Continuous (T_A=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 (T_A=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
$R_{\theta JA}$	Thermal Resistance Junction to ambient	---	62.5	°C/W

Electrical Characteristics (TJ=25℃ , unless otherwise noted)

Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=-250uA	-30	---	---	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-30V , V_{GS}=0V , T_J=25°C	---	---	-1	uA
		V_{DS}=-24V , V_{GS}=0V , T_J=125°C	---	---	-10	uA
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 =-250uA	-1.0	-1.6	-2.5	V
gfs	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 ≦ 300 us , duty cycle ≦ 2 % .

3 . Essentially independent of operating temperature .

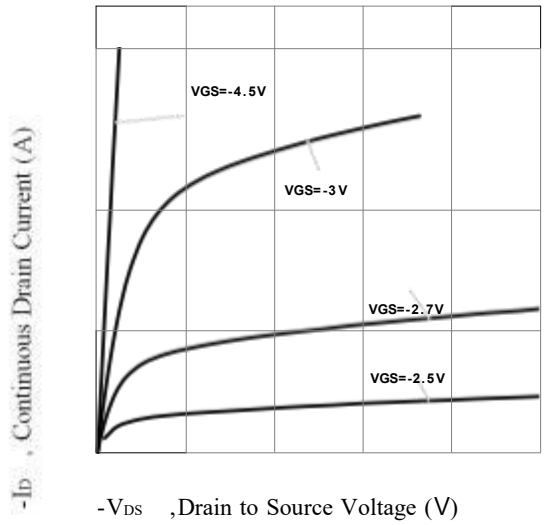


Fig. 1 Typical OutpuCharacteristics

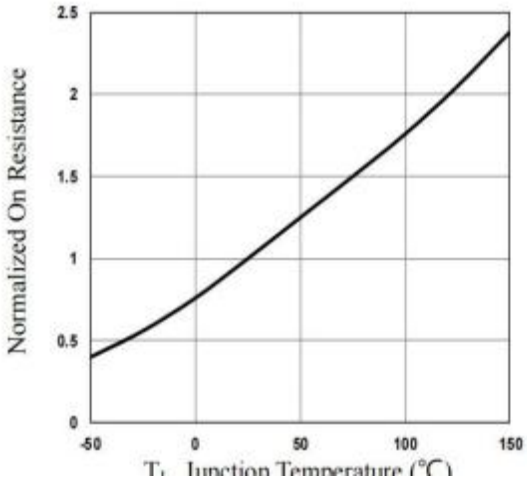


Fig. 2 Normalized RDSON vs. TJ

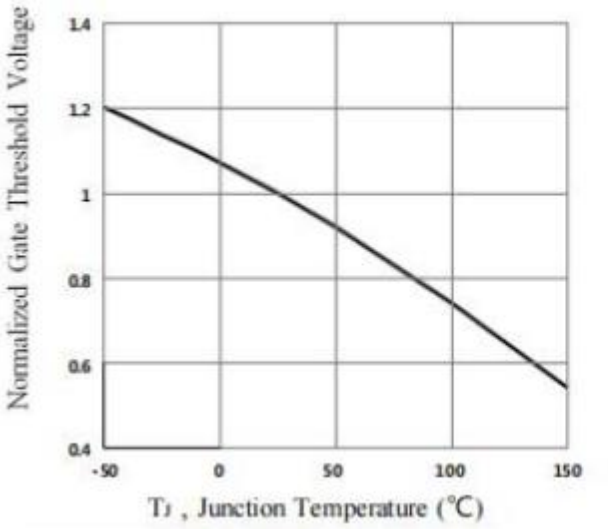


Fig.3 Normalized Vth vs. TJ

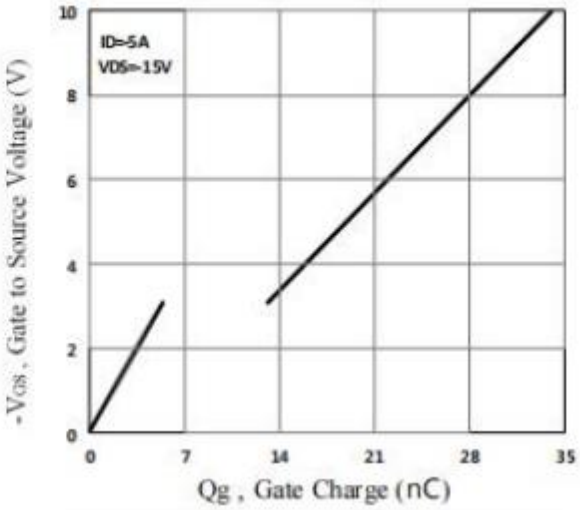


Fig.4 Gate Charge Waveform

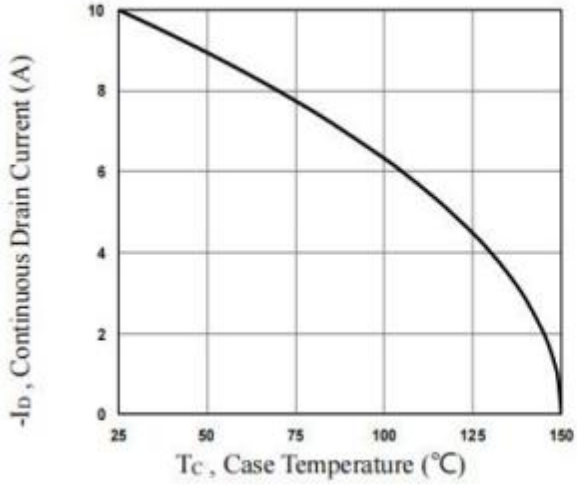


Fig. 5 Continuous Drain Current vs. TC

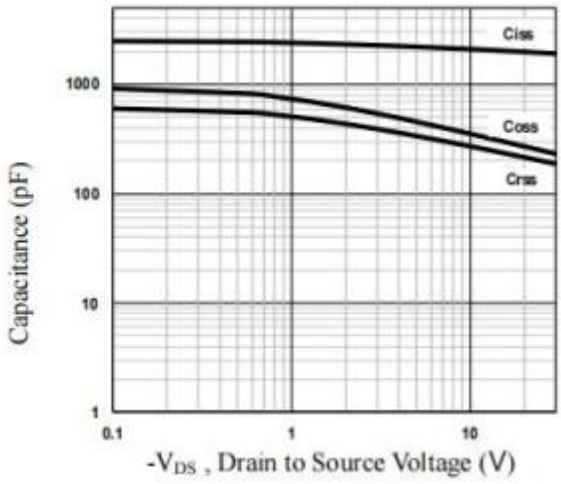


Fig. 6 Capacitance Characteristics

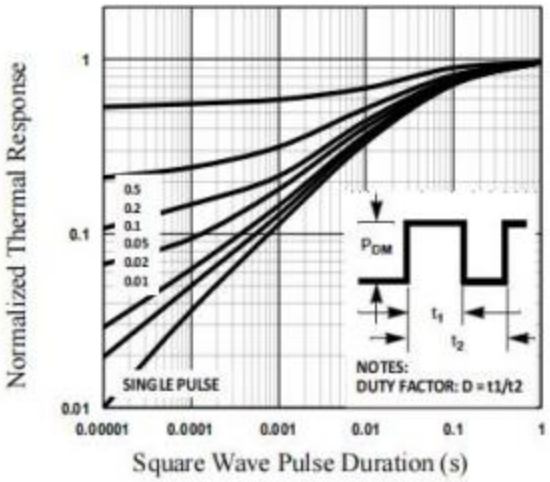


Fig. 7 Normalized Transient Impedance

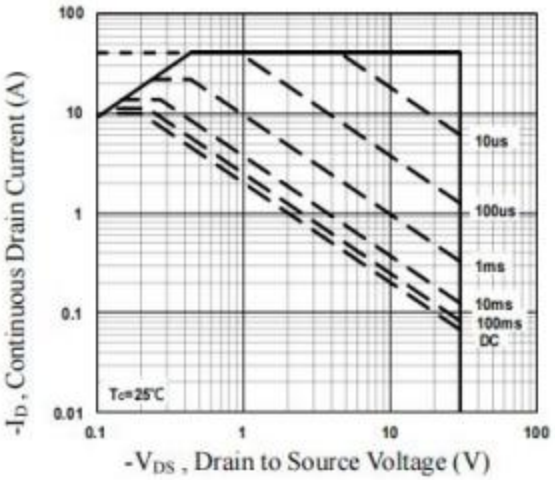


Fig. 8 Maximum Safe Operation Area

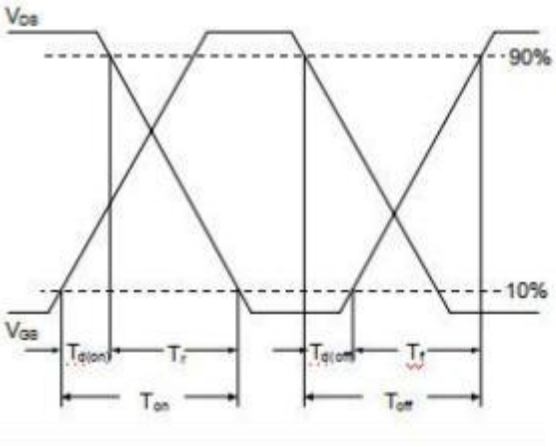


Fig. 9 Switching Time Waveform

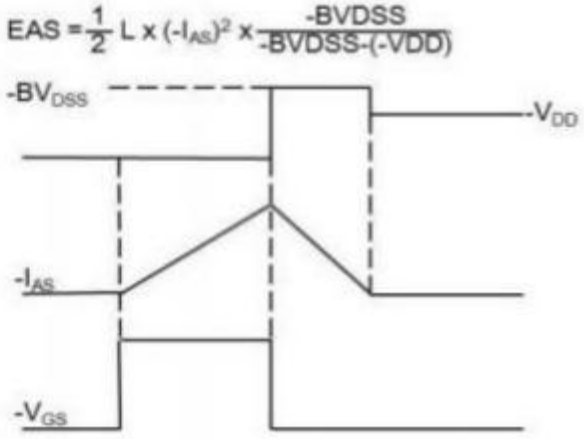
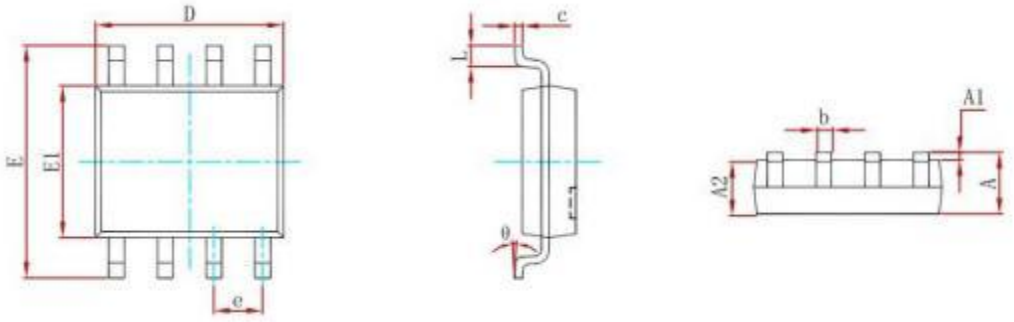


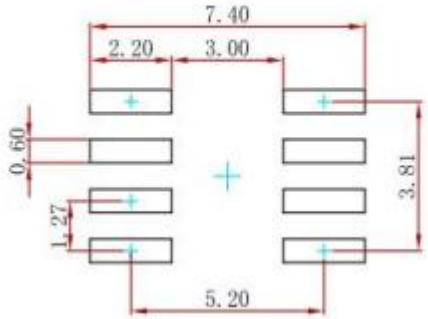
Fig. 10 EAS Waveform

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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