

# MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

## **AO4805-MS**

**Product specification**

## General Description

- Trench Power LV MOSFET technology
- High density cell design for low  $R_{DS(ON)}$
- High Speed switching

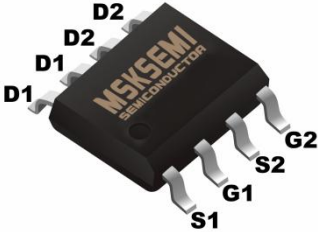
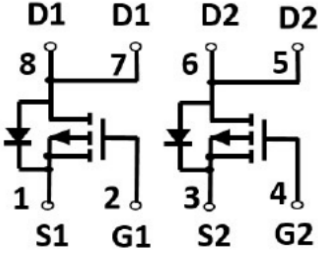

## Product Summary

- $V_{DS}$  -30V
- $I_D$  -7.1A
- $R_{DS(ON)}$ ( at  $V_{GS}=-10V$ ) <25mohm
- $R_{DS(ON)}$ ( at  $V_{GS}=-4.5V$ ) <40mohm
- 100%  $\nabla V_{DS}$  Tested

## Applications

- Battery protection
- Load switching
- Power management

## Reference News

PACKAGE OUTLINE	Dual P-Channel MOSFET	Marking
 <p>SOP-8</p>		

## Absolute Maximum Ratings ( $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		$V_{DS}$	-30	V
Gate-source Voltage		$V_{GS}$	$\pm 20$	V
Drain Current		$I_D$	-7.1	A
Pulsed Drain Current <sup>A</sup>		$I_{DM}$	-20	A
Total Power Dissipation	$T_A=25^\circ\text{C}$	$P_D$	2.5	W
	$T_A=70^\circ\text{C}$		1.6	W
Thermal Resistance Junction-to-Ambient <sup>B</sup>		$R_{\theta JA}$	50	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range		$T_J, T_{STG}$	-55 ~ +150	$^\circ\text{C}$

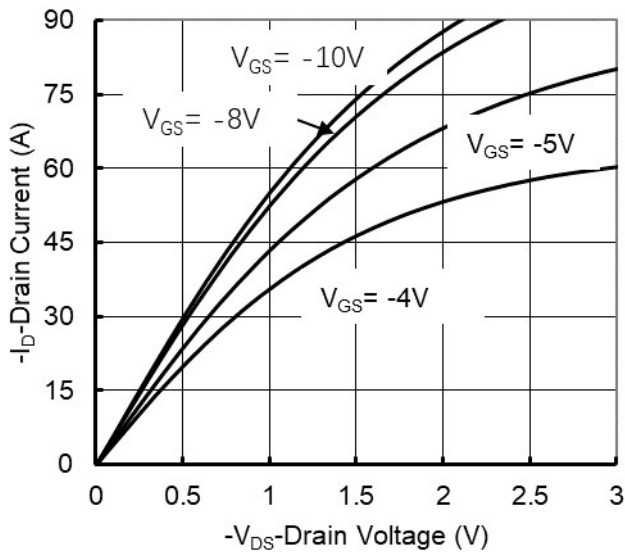
**Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)**

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =-250μA	-30			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-30V, V <sub>GS</sub> =0V			-1	μA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> =0V			±100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> =-250μA	-1.0	-1.5	-2.5	V
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-7A		20	25	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-5A		30	40	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-7A, V <sub>GS</sub> =0V			-1.2	V
Dynamic Parameters						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-15V, V <sub>GS</sub> =0V, f=1MHZ		1488		pF
Output Capacitance	C <sub>oss</sub>			178		
Reverse Transfer Capacitance	C <sub>rss</sub>			164		
Switching Parameters						
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =-10V, V <sub>DS</sub> =-15V, I <sub>D</sub> =-7.1A		28.44		nC
Gate-Source Charge	Q <sub>gs</sub>			5.25		
Gate-Drain Charge	Q <sub>gd</sub>			5.17		
Reverse Recovery Chrage	Q <sub>rr</sub>	I <sub>F</sub> =-5A, di/dt=100A/us		5.3		ns
Reverse Recovery Time	t <sub>rr</sub>			14		
Turn-on Delay Time	t <sub>D(on)</sub>	V <sub>GS</sub> =-10V, V <sub>DS</sub> =-15V, I <sub>D</sub> =-7.1A R <sub>GEN</sub> =2.5Ω		10		
Turn-on Rise Time	t <sub>r</sub>			44		
Turn-off Delay Time	t <sub>D(off)</sub>			54		
Turn-off fall Time	t <sub>f</sub>			58		

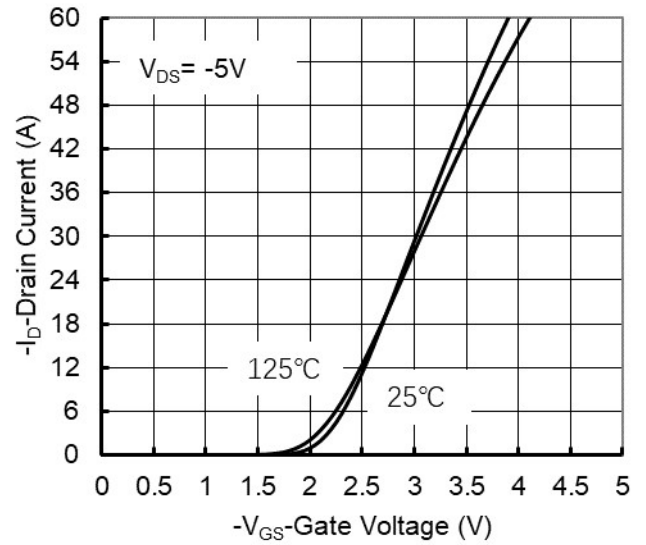
1. Pulse Test: Pulse Width≤300us, Duty cycle ≤2%.

2. R<sub>θJA</sub> is the sum of the junction-to-case and case-to-ambient thermal resistance, where the case thermal reference is defined as the solder mounting surface of the drain pins. R<sub>θJC</sub> is guaranteed by design, while R<sub>θJA</sub> is determined by the board design. The maximum rating presented here is based on mounting on a 1 in 2 pad of 2oz copper.

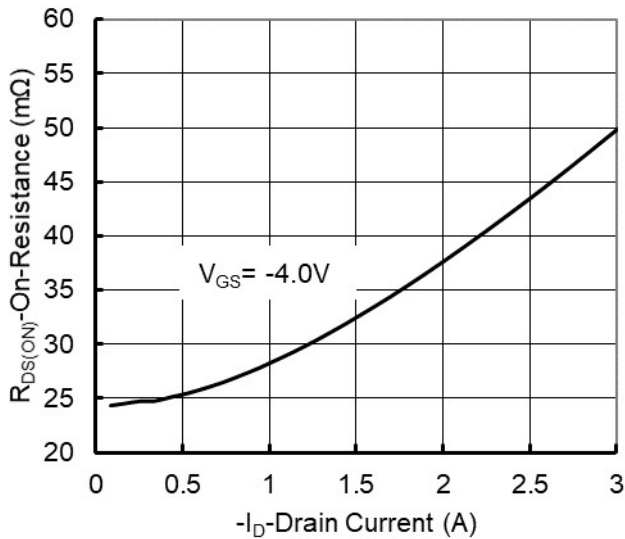
## Typical Performance Characteristics



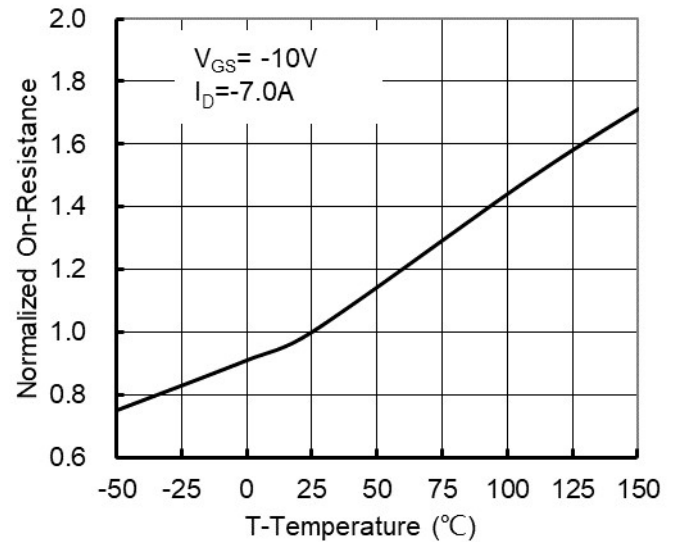
**Figure 1. Output Characteristics**



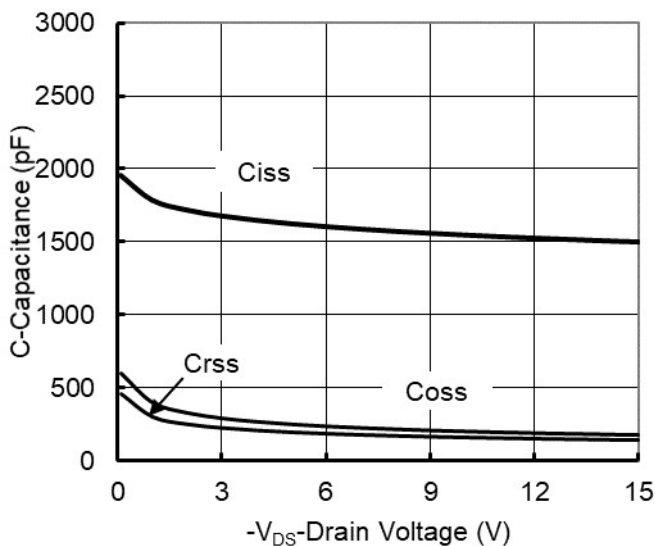
**Figure 2. Transfer Characteristics**



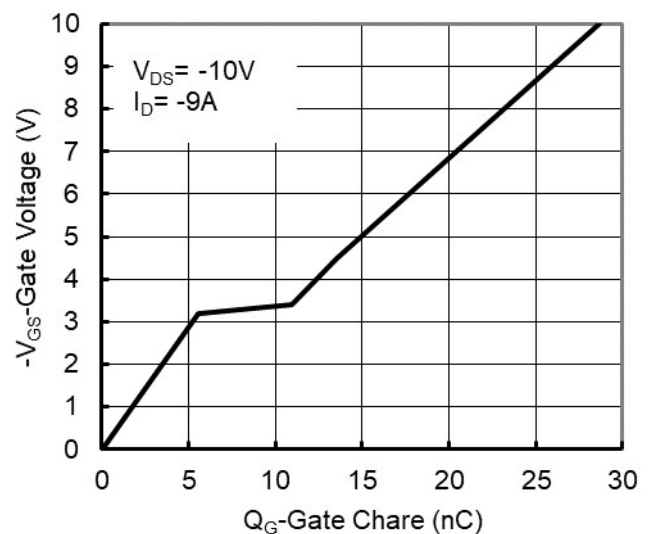
**Figure 3. On-Resistance vs. Drain Current and Gate Voltage**



**Figure 4. On-Resistance vs. Junction Temperature**



**Figure 5. Capacitance Characteristics**



**Figure 6. Gate Charge**

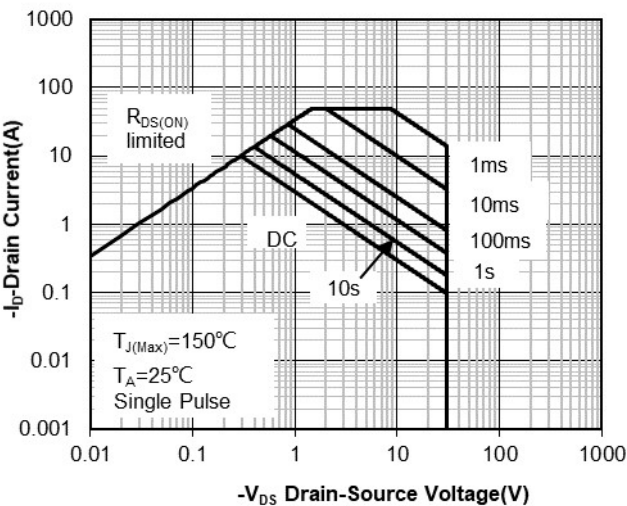


Figure 7. Safe Operation Area

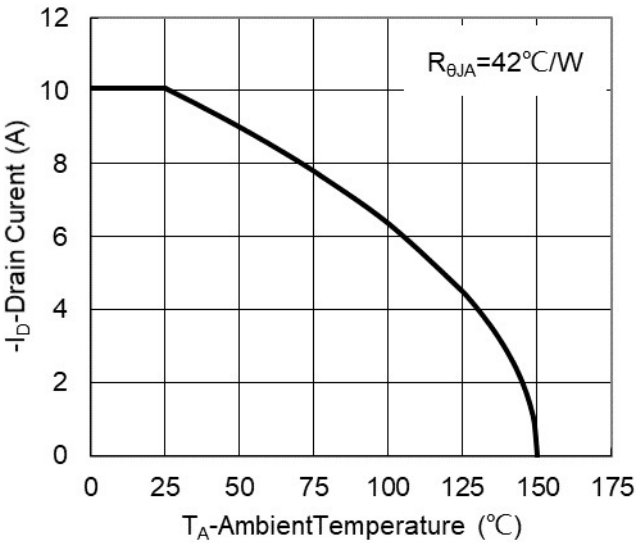
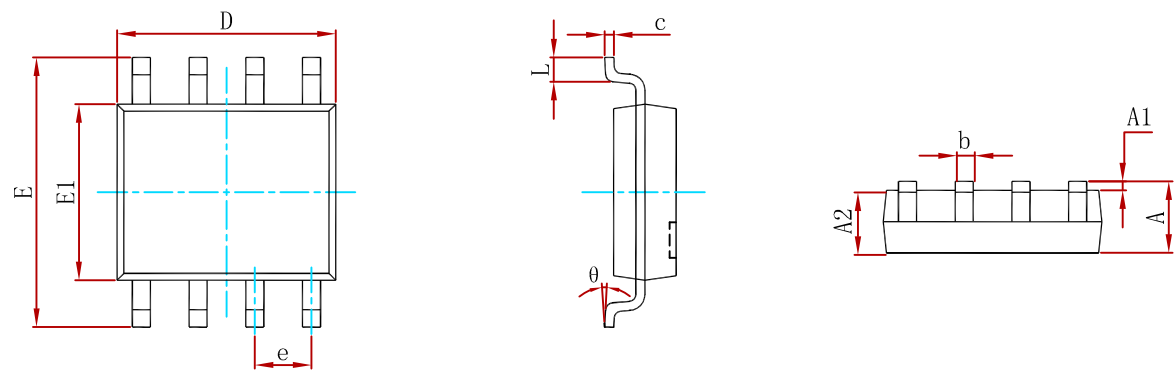


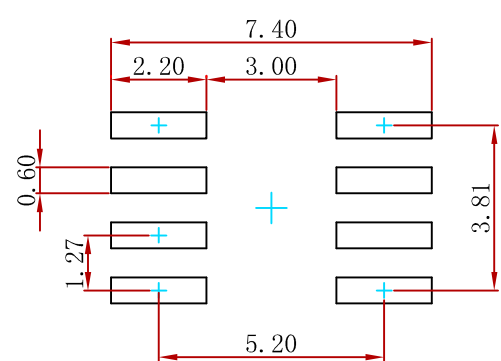
Figure 8. Maximum Continuous Drain Current vs Ambient Temperature

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
AO4805-MS	SOP-8	3000

## Attention

■ Any and all MSKSEMI Semiconductor products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your MSKSEMI Semiconductor representative nearest you before using any MSKSEMI Semiconductor products described or contained herein in such applications.

■ MSKSEMI Semiconductor assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specification of any and all MSKSEMI Semiconductor products described or contained herein.

■ Specifications of any and all MSKSEMI Semiconductor products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.

■ MSKSEMI Semiconductor strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.

■ In the event that any or all MSKSEMI Semiconductor products (including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.

■ No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written permission of MSKSEMI Semiconductor.

■ Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. MSKSEMI Semiconductor believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringement of intellectual property rights or other rights of third parties.

■ Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the MSKSEMI Semiconductor product that you intend to use.