

# MSKSEMI

SEMICONDUCTOR



ESD



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TSS



MOV



GDT

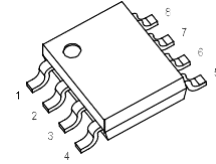


PLED

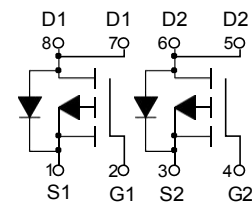
Product data sheet

Product Summary

$V_{DS}$	-30V
$I_D$ (at $V_{GS}=-10V$ )	-5A
$R_{DS(ON)}$ (at $V_{GS}=-10V$ )	< 52mΩ
$R_{DS(ON)}$ (at $V_{GS} = -4.5V$ )	< 87mΩ



SOP-8



P-Channel MOSFET

Absolute Maximum Ratings $T_A=25^{\circ}C$ unless otherwise noted					
Parameter		Symbol	Maximum	Units	
Drain-Source Voltage		$V_{DS}$	-30	V	
Gate-Source Voltage		$V_{GS}$	$\pm 20$	V	
Continuous Drain Current	$T_A=25^{\circ}C$	$I_D$	-5	A	
	$T_A=70^{\circ}C$		-4.2		
Pulsed Drain Current <sup>C</sup>		$I_{DM}$	-30		
Avalanche Current <sup>C</sup>		$I_{AS}, I_{AR}$	17	A	
Avalanche energy $L=0.1mH$ <sup>C</sup>		$E_{AS}, E_{AR}$	14	mJ	
Power Dissipation <sup>B</sup>	$T_A=25^{\circ}C$	$P_D$	2	W	
	$T_A=70^{\circ}C$		1.3		
Junction and Storage Temperature Range		$T_J, T_{STG}$	-55 to 150	$^{\circ}C$	
Thermal Characteristics					
Parameter		Symbol	Typ	Max	Units
Maximum Junction-to-Ambient <sup>A</sup>	$t \leq 10s$	$R_{\theta JA}$	48	62.5	$^{\circ}C/W$
	Steady-State		74	110	$^{\circ}C/W$
Maximum Junction-to-Lead		$R_{\theta JL}$	35	40	$^{\circ}C/W$

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>STATIC PARAMETERS</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	I <sub>D</sub> =-250μA, V <sub>GS</sub> =0V	-30			V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =-30V, V <sub>GS</sub> =0V T <sub>J</sub> =55°C			-1 -5	μA
I <sub>GSS</sub>	Gate-Body leakage current	V <sub>DS</sub> =0V, V <sub>GS</sub> = ±20V			±100	nA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> I <sub>D</sub> =-250μA	-1.4	-1.9	-2.4	V
I <sub>D(ON)</sub>	On state drain current	V <sub>GS</sub> =-10V, V <sub>DS</sub> =-5V	-30			A
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =-10V, I <sub>D</sub> =-5A T <sub>J</sub> =125°C		32 48	52 70	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-4A		51	87	mΩ
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =-5V, I <sub>D</sub> =-5A		13		S
V <sub>SD</sub>	Diode Forward Voltage	I <sub>S</sub> =-1A, V <sub>GS</sub> =0V		-0.7	-1	V
I <sub>S</sub>	Maximum Body-Diode Continuous Current				-2.5	A
<b>DYNAMIC PARAMETERS</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V, V <sub>DS</sub> =-15V, f=1MHz		520		pF
C <sub>oss</sub>	Output Capacitance			100		pF
C <sub>rss</sub>	Reverse Transfer Capacitance			65		pF
R <sub>g</sub>	Gate resistance	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1MHz	3.5	7.5	11.5	Ω
<b>SWITCHING PARAMETERS</b>						
Q <sub>g(10V)</sub>	Total Gate Charge	V <sub>GS</sub> =-10V, V <sub>DS</sub> =-15V, I <sub>D</sub> =-5A		9.2	11	nC
Q <sub>g(4.5V)</sub>	Total Gate Charge			4.6	6	nC
Q <sub>gs</sub>	Gate Source Charge			1.6		nC
Q <sub>gd</sub>	Gate Drain Charge			2.2		nC
t <sub>D(on)</sub>	Turn-On DelayTime	V <sub>GS</sub> =-10V, V <sub>DS</sub> =-15V, R <sub>L</sub> =3Ω, R <sub>GEN</sub> =3Ω		7.5		ns
t <sub>r</sub>	Turn-On Rise Time			5.5		ns
t <sub>D(off)</sub>	Turn-Off DelayTime			19		ns
t <sub>f</sub>	Turn-Off Fall Time			7		ns
t <sub>rr</sub>	Body Diode Reverse Recovery Time	I <sub>F</sub> =-5A, di/dt=100A/μs		11		ns
Q <sub>rr</sub>	Body Diode Reverse Recovery Charge	I <sub>F</sub> =-5A, di/dt=100A/μs		5.3		nC

A. The value of R<sub>θJA</sub> is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with T<sub>A</sub> =25° C. The value in any given application depends on the user's specific board design.

B. The power dissipation P<sub>D</sub> is based on T<sub>J(MAX)</sub>=150° C, using ≤ 10s junction-to-ambient thermal resistance.

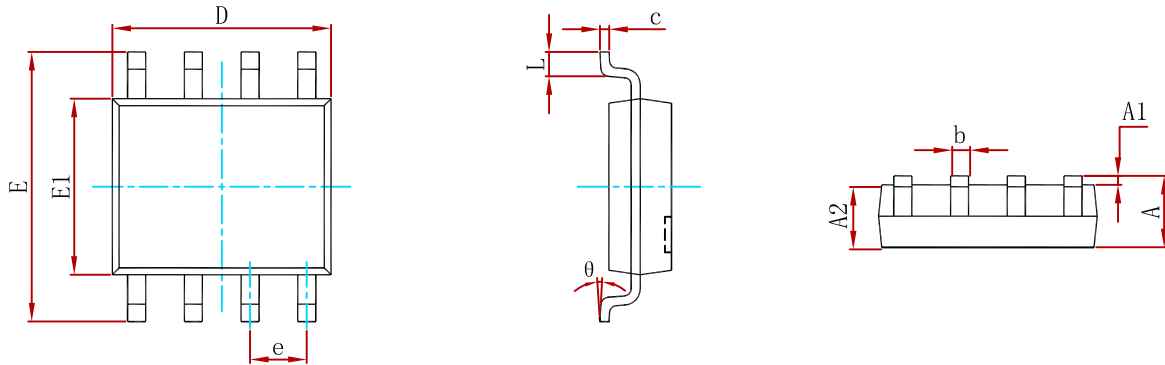
C. Repetitive rating, pulse width limited by junction temperature T<sub>J(MAX)</sub>=150° C. Ratings are based on low frequency and duty cycles to keep initial T<sub>J</sub>=25° C.

D. The R<sub>θJA</sub> is the sum of the thermal impedance from junction to lead R<sub>θJL</sub> and lead to ambient.

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

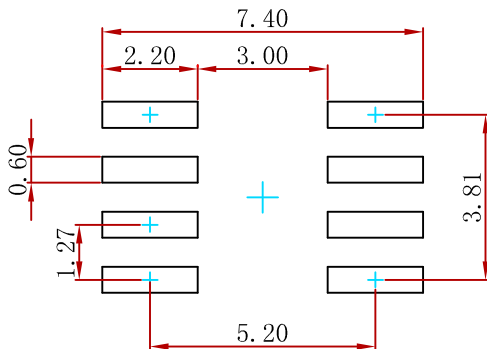
F. These curves are based on the junction-to-ambient thermal impedance which is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, assuming a maximum junction temperature of T<sub>J(MAX)</sub>=150° C. The SOA curve provides a single pulse rating.

**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
AO4803-MS	SOP-8	4000

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