

# MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

**AOD403**

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**Product specification**


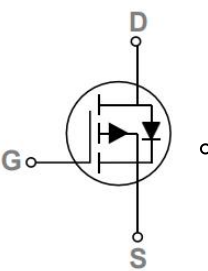
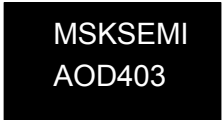
**General Features**

- -30 V,-70A, RDS(ON) =5.5mΩ@VGS = - 10V
- Fast switching
- Green Device Available

**Application**

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

**Reference News**

PACKAGE OUTLINE	Pin Configuration	Marking
		
TO-252		

**Absolute Maximum Ratings** Tc=25°C unless otherwise noted

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	-30	V
VGS	Gate-Source Voltage	±20	V
ID	Drain Current – Continuous (TC=25C)	-70	A
	Drain Current – Continuous (TC=100C)	-44	A
IDM	Drain Current – Pulsed <sup>1</sup>	-280	A
PD	Power Dissipation (TC=25C)	73.5	W
	Power Dissipation – Derate above 25C	0.58	W/ C
TSTG	Storage Temperature Range	-55 to 150	C
TJ	Operating Junction Temperature Range	-55 to 150	C

**Thermal Characteristics**

Symbol	Parameter	Typ.	Max.	Unit
R <sub>θJA</sub>	Thermal Resistance Junction to ambient	---	62	C/ W
R <sub>θJC</sub>	Thermal Resistance Junction to Case	---	1.7	C/ W

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V , I <sub>D</sub> =-250uA	-30	---	---	V
ΔBV <sub>DSS</sub> /ΔT <sub>J</sub>	BV <sub>DSS</sub> Temperature Coefficient	Reference to 25C , I <sub>D</sub> =-1mA	---	-0.03	---	V/ C
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =-30V , V <sub>GS</sub> =0V , T <sub>J</sub> =25C	---	---	-1	uA
		V <sub>DS</sub> =-24V , V <sub>GS</sub> =0V , T <sub>J</sub> =125C	---	---	-10	uA
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>GS</sub> =±20V , V <sub>DS</sub> =0V	---	---	±100	nA

**On Characteristics**

$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=-10V, I_D=-10A$	---	5.5	8.0	$m\Omega$
		$V_{GS}=-4.5V, I_D=-8A$	---	7.5	10	$m\Omega$
$V_{GS(th)}$	Gate Threshold Voltage		-1.0	-1.6	-2.5	V
$\Delta V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient	$V_{GS}=V_{DS}, I_D=-250\mu A$	---	4	---	mV/°C
gfs	Forward Transconductance	$V_{DS}=-10V, I_D=-10A$	---	14	---	S

**Dynamic and switching Characteristics**

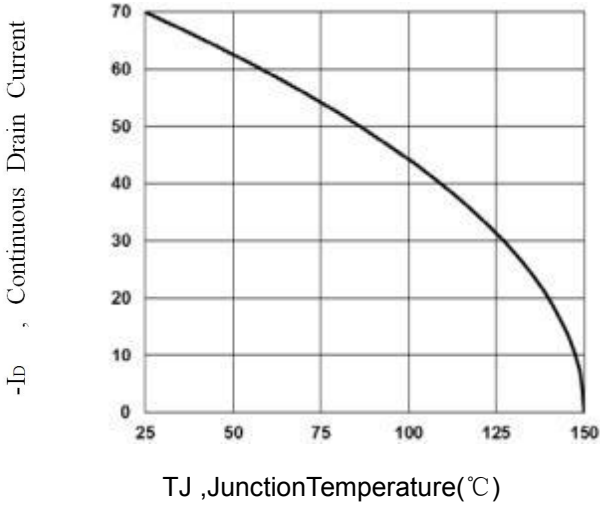
$Q_g$	Total Gate Charge <sup>2,3</sup>		---	35	---	nC
$Q_{gs}$	Gate-Source Charge <sup>2,3</sup>	$V_{DS}=-15V, V_{GS}=-4.5V, I_D=-10A$	---	10.8	---	
$Q_{gd}$	Gate-Drain Charge <sup>2,3</sup>		---	10.6	---	
$T_{d(on)}$	Turn-On Delay Time <sup>2,3</sup>		---	24.5	---	ns
$T_r$	Rise Time <sup>2,3</sup>	$V_{DD}=-15V, V_{GS}=-10V, R_G=6\Omega$	---	10.5	---	
$T_{d(off)}$	Turn-Off Delay Time <sup>2,3</sup>	$I_D=-1A$	---	156.8	---	
$T_f$	Fall Time <sup>2,3</sup>		---	50	---	
$C_{iss}$	Input Capacitance		---	3300	---	pF
$C_{oss}$	Output Capacitance	$V_{DS}=-15V, V_{GS}=0V, F=1MHz$	---	410	---	
$C_{rss}$	Reverse Transfer Capacitance		---	280	---	
$R_g$	Gate resistance	$V_{GS}=0V, V_{DS}=0V, F=1MHz$	---	8.5	---	$\Omega$

**Drain- Source Diode Characteristics and Maximum Ratings**

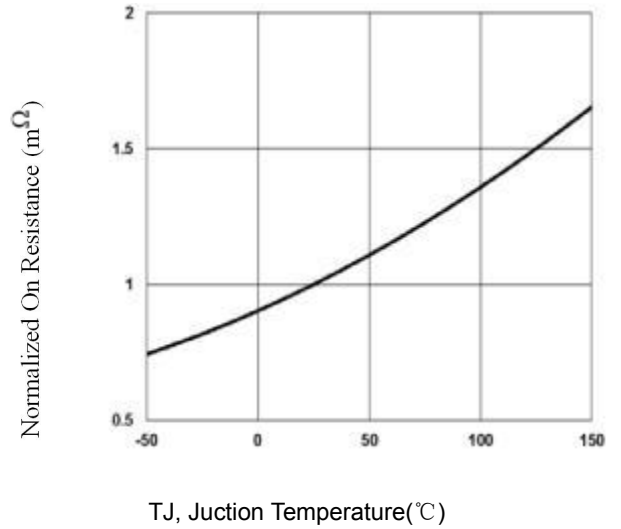
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$I_S$	Continuous Source Current	$V_G=V_D=0V, \text{ Force Current}$	---	---	-70	A
$I_{SM}$	Pulsed Source Current		---	---	-140	A
$V_{SD}$	Diode Forward Voltage	$V_{GS}=0V, I_S=-1A, T_J=25C$	---	---	-1.2	V

Note :

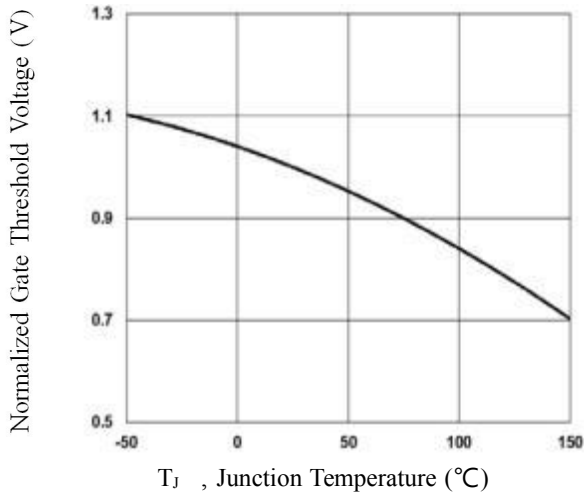
1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width  $\leq 300\mu s$  , duty cycle  $\leq 2\%$  .
3. Essentially independent of operating temperature.



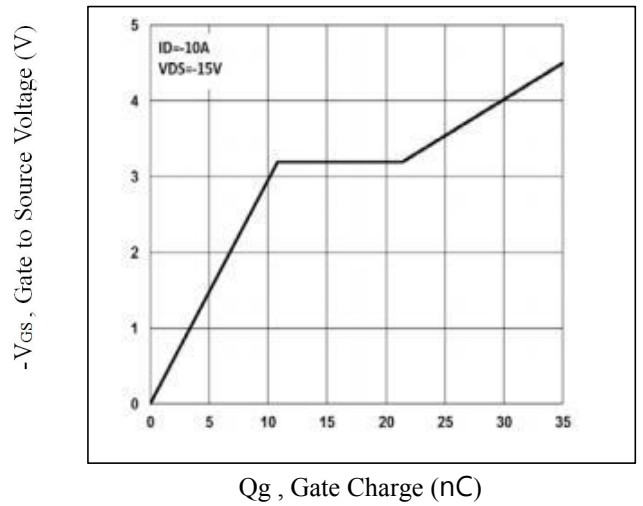
**Fig.1 Continuous Drain Current vs. T<sub>C</sub>**



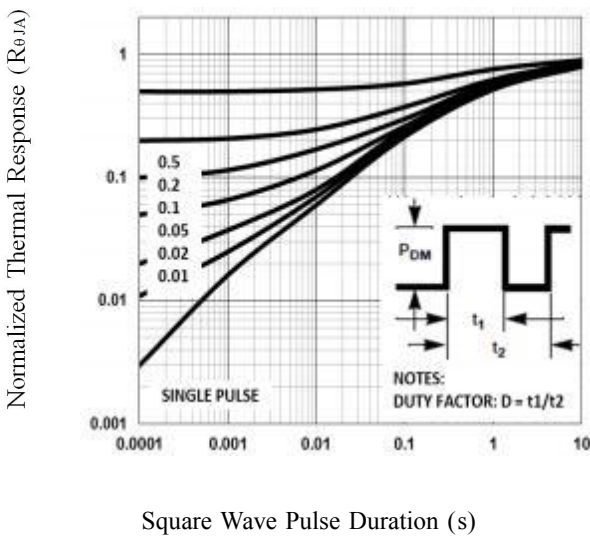
**Fig.2 Normalized R<sub>DS(on)</sub> vs. T<sub>J</sub>**



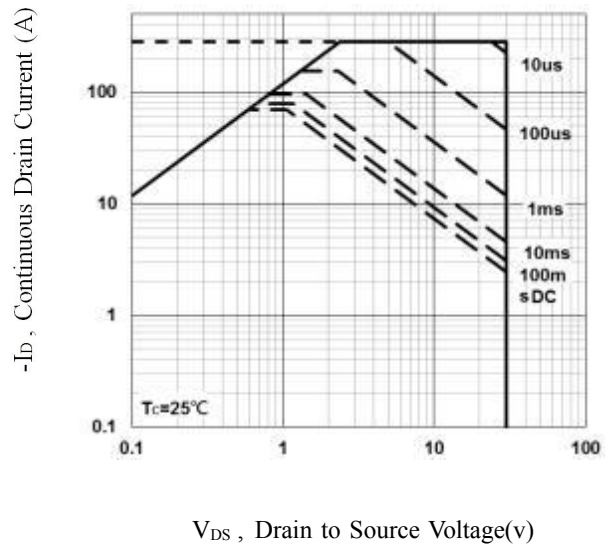
**Fig.3 Normalized V<sub>th</sub> vs. T<sub>J</sub>**



**Fig.4 Gate Charge Waveform**

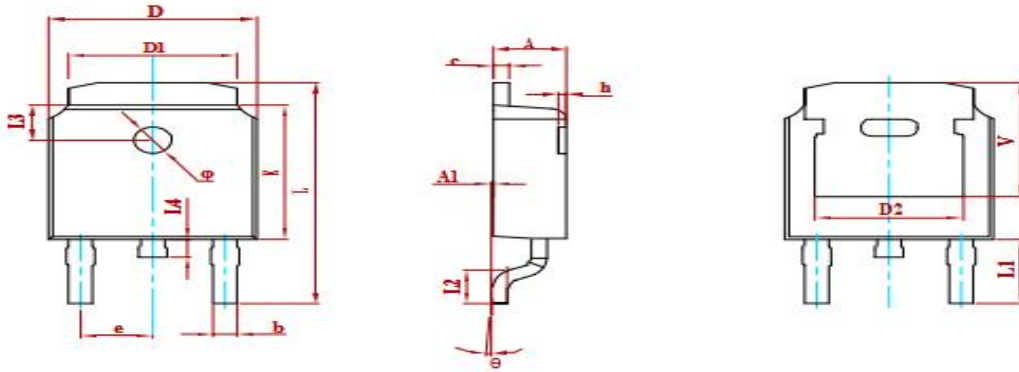


**Fig.5 Normalized Transient Response**



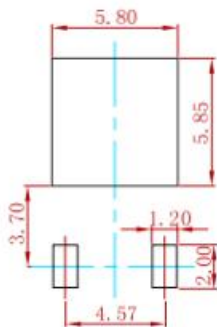
**Fig.6 Maximum Safe Operation Area**

**PACKAGE MECHANICAL DATA**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.635	0.770	0.025	0.030
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.712	10.312	0.382	0.406
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.250 REF.		0.207 REF.	

**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
AOD403	TO-252	2500

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