

# MSKSEMI

SEMICONDUCTOR



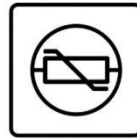
ESD



TVS



TSS



MOV



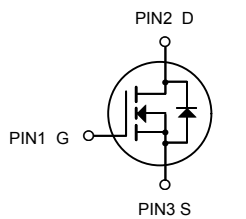
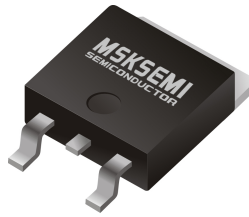
GDT



PLED

Product data sheet

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N-Channel MOSFET

TO-252

### General Description

The AOD2606-MS use advanced VD MOST technology to provide low RDS(ON), low gate charge, fast switching. This device is specially designed to get better ruggedness and suitable to use in

Low RDS(on) & FOM

Extremely low switching loss

Excellent stability and uniformity or Invertors

### Applications

Consumer electronic power supply Motor control

Synchronous-rectification Isolated DC

Synchronous-rectification applications

### General Features

$V_{DS} = 60V$   $I_D = 80 A$

$R_{DS(ON)} < 8m\Omega @ V_{GS}=10V$

$R_{DS(ON)} < 12m\Omega @ V_{GS}=4.5V$

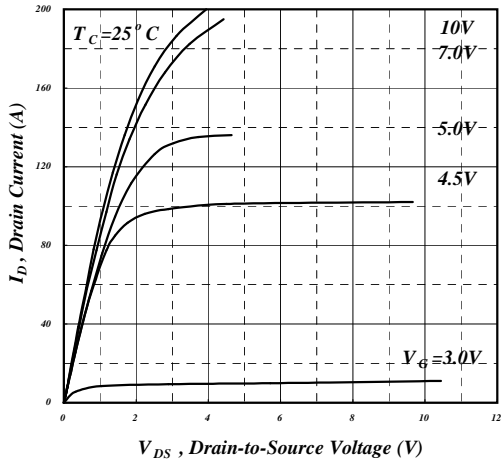
### Absolute Maximum Ratings@ $T_J=25^\circ C$ (unless otherwise specified)

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	60	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D @ T_C=25^\circ C$	Drain Current, $V_{GS} @ 10V$	80	A
$I_D @ T_C=100^\circ C$	Drain Current, $V_{GS} @ 10V$	43	A
$I_{DM}$	Pulsed Drain Current <sup>1</sup>	272	A
$P_D @ T_C=25^\circ C$	Total Power Dissipation	104	W
$T_{STG}$	Storage Temperature Range	-55 to 150	$^\circ C$
$T_J$	Operating Junction Temperature Range	-55 to 150	$^\circ C$
$R_{thj-c}$	Maximum Thermal Resistance, Junction-case	1.2	$^\circ C/W$
$R_{thj-a}$	Maximum Thermal Resistance, Junction-ambient (PCB mount) <sup>3</sup>	62.5	$^\circ C/W$

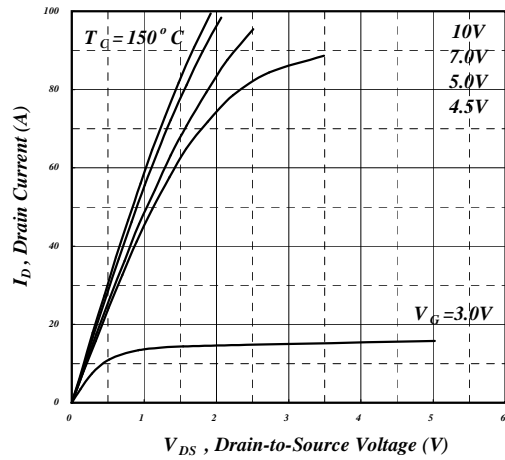
**Electrical Characteristics@T<sub>j</sub>=25°C(unless otherwise specified)**

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
B <sub>VDS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	60	-	-	V
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance <sup>2</sup>	V <sub>GS</sub> =10V, I <sub>D</sub> =45A	-	6	10	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =30A	-	8.3	15	mΩ
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	1	1.4	3	V
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =10V, I <sub>D</sub> =30A	-	71	-	S
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =60V, V <sub>GS</sub> =0V	-	-	10	uA
	Drain-Source Leakage Current (T <sub>j</sub> =125°C)	V <sub>DS</sub> =48V, V <sub>GS</sub> =0V	-	-	250	uA
I <sub>GSS</sub>	Gate-Source Leakage	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	-	-	±100	nA
Q <sub>g</sub>	Total Gate Charge	I <sub>D</sub> =30A	-	33	45	nC
Q <sub>gs</sub>	Gate-Source Charge	V <sub>DS</sub> =48V	-	5	-	nC
Q <sub>gd</sub>	Gate-Drain ("Miller") Charge	V <sub>GS</sub> =4.5V	-	21	-	nC
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DS</sub> =30V	-	10	-	ns
t <sub>r</sub>	Rise Time	I <sub>D</sub> =30A	-	43	-	ns
t <sub>d(off)</sub>	Turn-off Delay Time	R <sub>G</sub> =3.3Ω	-	47	-	ns
t <sub>f</sub>	Fall Time	V <sub>GS</sub> =10V	-	80	-	ns
C <sub>iss</sub>	Input Capacitance		-	2680	3300	pF
C <sub>oss</sub>	Output Capacitance	V <sub>GS</sub> =0V	-	260	-	pF
C <sub>rss</sub>	Reverse Transfer Capacitance	V <sub>DS</sub> =25V f=1.0MHz	-	180	-	pF
V <sub>SD</sub>	Forward On Voltage <sup>2</sup>	I <sub>S</sub> =45A, V <sub>GS</sub> =0V	-	-	1.3	V
t <sub>rr</sub>	Reverse Recovery Time	I <sub>S</sub> =10A, V <sub>GS</sub> =0V, di/dt=100A/μs	-	30	-	ns
Q <sub>rr</sub>	Reverse Recovery Charge		-	18	-	nC

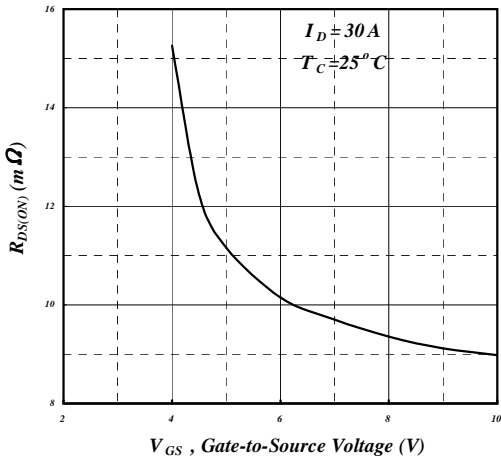
## Typical Performance Characteristics



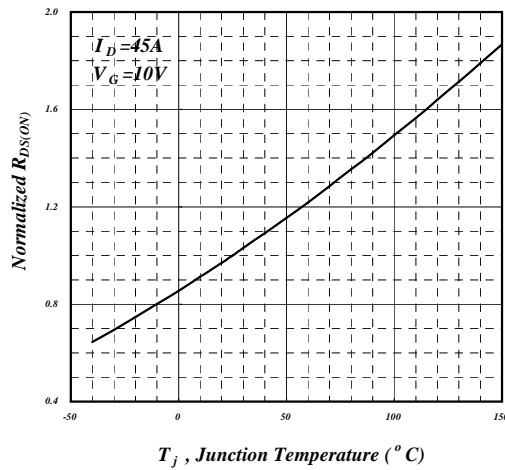
**Fig 1. Typical Output Characteristics**



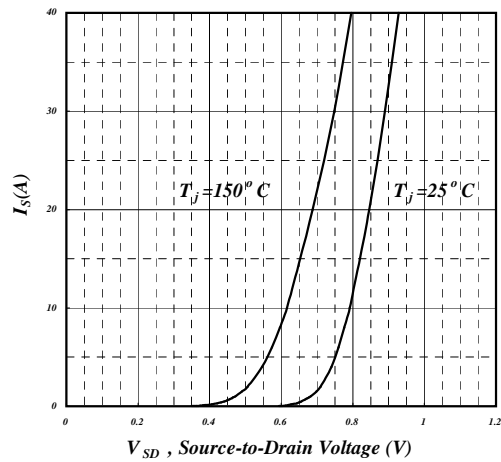
**Fig 2. Typical Output Characteristics**



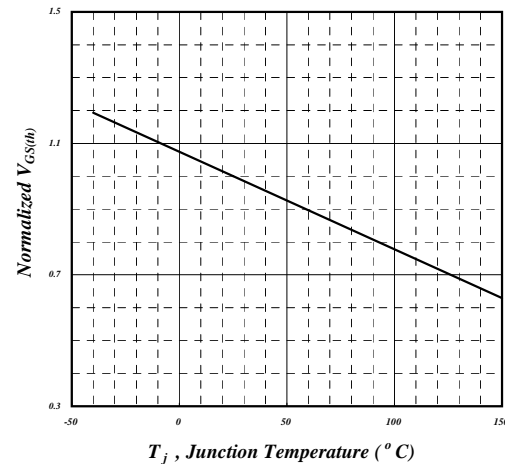
**Fig 3. On-Resistance v.s. Gate Voltage**



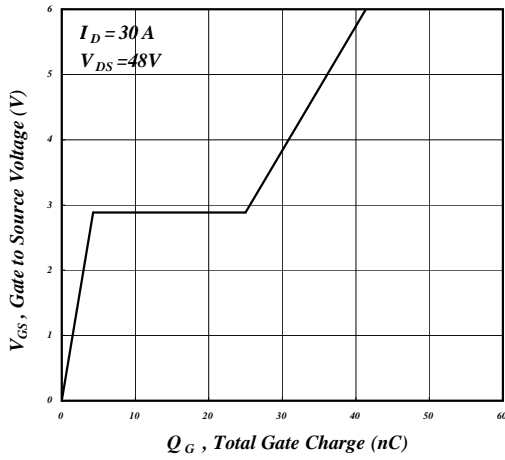
**Fig 4. Normalized On-Resistance v.s. Junction Temperature**



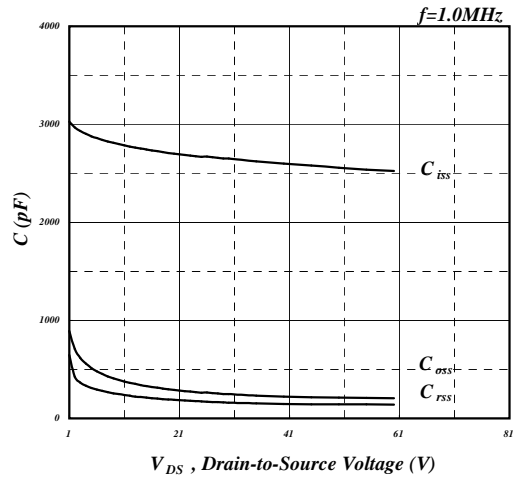
**Fig 5. Forward Characteristic of Reverse Diode**



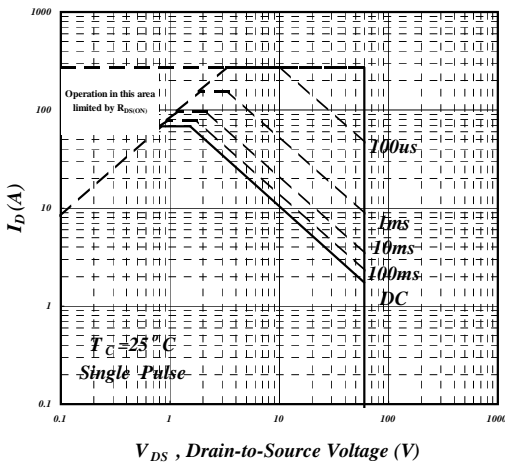
**Fig 6. Gate Threshold Voltage v.s. Junction Temperature**



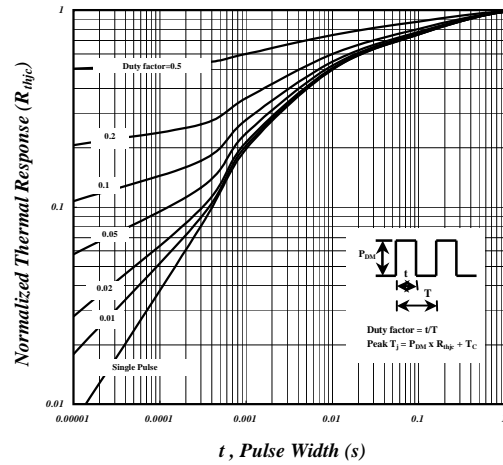
**Fig 7. Gate Charge Characteristics**



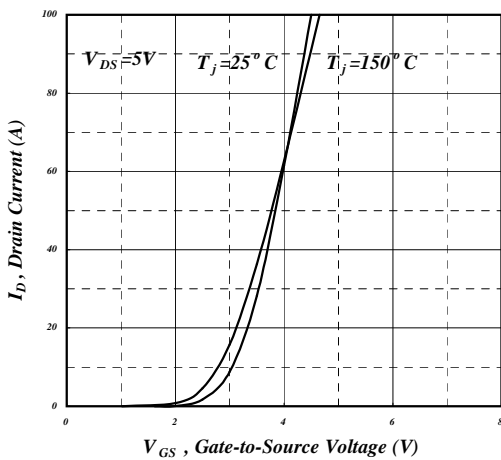
**Fig 8. Typical Capacitance Characteristics**



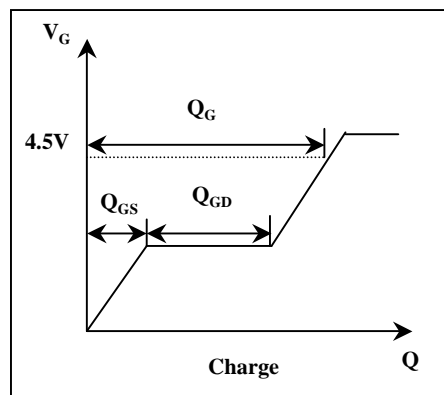
**Fig 9. Maximum Safe Operating Area**



**Fig 10. Effective Transient Thermal Impedance**

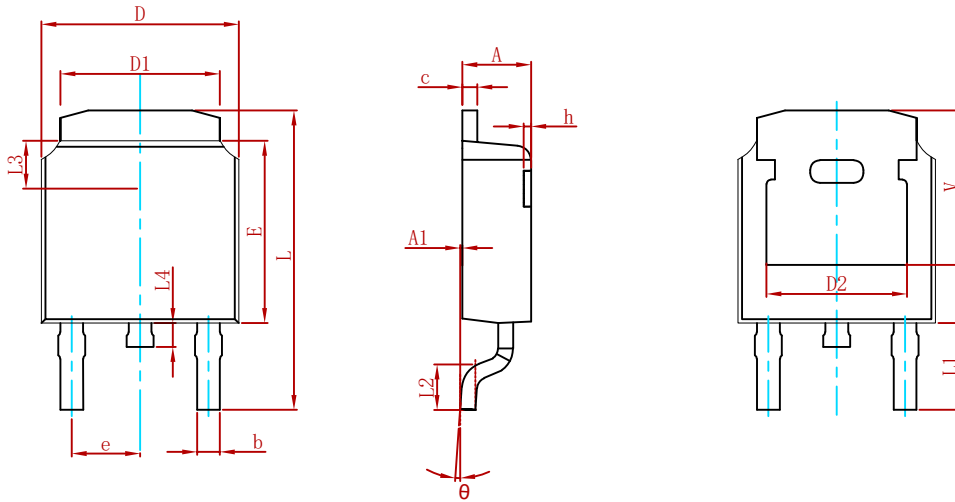


**Fig 11. Transfer Characteristics**



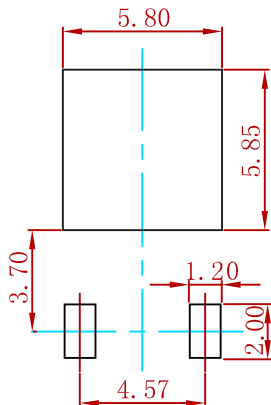
**Fig 12. Gate Charge Waveform**

**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
theta	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
AOD2606-MS	TO-252	2500

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