

General Description

The AO4852 uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge. As a pair these MOSFETs operate very efficiently in Push Pull and Bridge topologies.

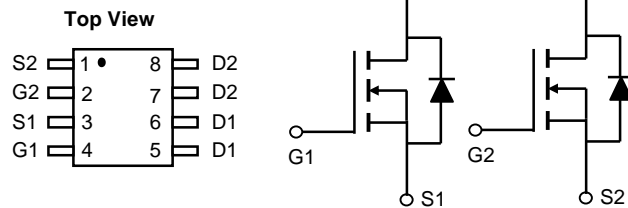
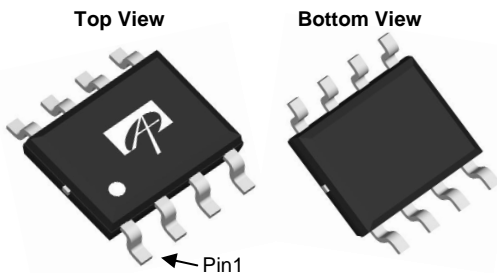
Product Summary

V_{DS} (V) = 60V
 $I_D = 3.5A$ ($V_{GS} = 10V$)
 $R_{DS(ON)} < 90m\Omega$ ($V_{GS} = 10V$)
 $R_{DS(ON)} < 105m\Omega$ ($V_{GS} = 4.5V$)

100% UIS Tested
 100% Rg Tested



SOIC-8



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

Parameter	Symbol	Maximum		Units
		10 Sec	Steady State	
Drain-Source Voltage	V_{DS}	60		V
Gate-Source Voltage	V_{GS}	± 20		V
Continuous Drain Current ^A	$T_A=25^\circ\text{C}$	3.5	3	A
	$T_A=70^\circ\text{C}$	2.8	2.4	
Pulsed Drain Current ^B	I_{DM}	20		A
Power Dissipation	$T_A=25^\circ\text{C}$	2	1.4	W
	$T_A=70^\circ\text{C}$	1.3	0.9	
Avalanche Current ^B	I_{AR}	8		A
Repetitive avalanche energy 0.3mH ^B	E_{AR}	9.6		mJ
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150		$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Ambient ^A $t \leq 10s$	$R_{\theta JA}$	48	62.5	$^\circ\text{C}/\text{W}$
Maximum Junction-to-Ambient ^A Steady-State		74	90	$^\circ\text{C}/\text{W}$
Maximum Junction-to-Lead ^C Steady-State	$R_{\theta JL}$	33	40	$^\circ\text{C}/\text{W}$

Electrical Characteristics ($T_J=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
STATIC PARAMETERS						
BV_{DSS}	Drain-Source Breakdown Voltage	$I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$	60			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=60\text{V}$, $V_{GS}=0\text{V}$ $T_J=55^\circ\text{C}$			1 5	μA
I_{GSS}	Gate-Body leakage current	$V_{DS}=0\text{V}$, $V_{GS}=\pm 20\text{V}$			100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$	1.7	2.3	2.6	V
$I_{D(ON)}$	On state drain current	$V_{GS}=10\text{V}$, $V_{DS}=5\text{V}$	20			A
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10\text{V}$, $I_D=3\text{A}$ $T_J=125^\circ\text{C}$		79	90	$\text{m}\Omega$
		$V_{GS}=4.5\text{V}$, $I_D=2\text{A}$		146	159	$\text{m}\Omega$
g_{FS}	Forward Transconductance	$V_{DS}=5\text{V}$, $I_D=3\text{A}$		15		S
V_{SD}	Diode Forward Voltage	$I_S=1\text{A}$, $V_{GS}=0\text{V}$		0.8	1	V
I_{SM}	Pulsed Body-Diode Current ^B				20	A
I_S	Maximum Body-Diode Continuous Current				2.5	A
DYNAMIC PARAMETERS						
C_{iss}	Input Capacitance	$V_{GS}=0\text{V}$, $V_{DS}=30\text{V}$, $f=1\text{MHz}$		372	450	pF
C_{oss}	Output Capacitance			31		pF
C_{rss}	Reverse Transfer Capacitance			17		pF
R_g	Gate resistance	$V_{GS}=0\text{V}$, $V_{DS}=0\text{V}$, $f=1\text{MHz}$		1.7	2.6	Ω
SWITCHING PARAMETERS						
$Q_g(10\text{V})$	Total Gate Charge	$V_{GS}=10\text{V}$, $V_{DS}=30\text{V}$, $I_D=3\text{A}$		7.1	9.2	nC
$Q_g(4.5\text{V})$	Total Gate Charge			3.6		nC
Q_{gs}	Gate Source Charge			1		nC
Q_{gd}	Gate Drain Charge			2		nC
$t_{D(on)}$	Turn-On DelayTime	$V_{GS}=10\text{V}$, $V_{DS}=30\text{V}$, $R_L=10\Omega$, $R_{GEN}=3\Omega$		4.1	5.3	ns
t_r	Turn-On Rise Time			2.1		ns
$t_{D(off)}$	Turn-Off DelayTime			15		ns
t_f	Turn-Off Fall Time			2.1		ns
t_{rr}	Body Diode Reverse Recovery Time	$I_F=3\text{A}$, $di/dt=100\text{A}/\mu\text{s}$		23.4	29	ns
Q_{rr}	Body Diode Reverse Recovery Charge	$I_F=3\text{A}$, $di/dt=100\text{A}/\mu\text{s}$		23.2		nC

A: The value of $R_{\theta JA}$ is measured with the device mounted on 1 in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$. The value in any given application depends on the user's specific board design.

B: Repetitive rating, pulse width limited by junction temperature.

C: The $R_{\theta JA}$ is the sum of the thermal impedance from junction to lead $R_{\theta JL}$ and lead to ambient.

D: The static characteristics in Figures 1 to 6 are obtained using $< 300 \mu\text{s}$ pulses, duty cycle 0.5% max.

E: These tests are performed with the device mounted on 1 in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$. The SOA curve provides a single pulse rating.

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TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

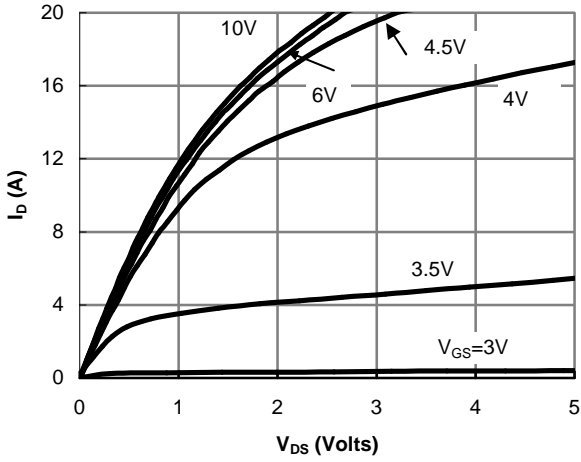


Fig 1: On-Region Characteristics

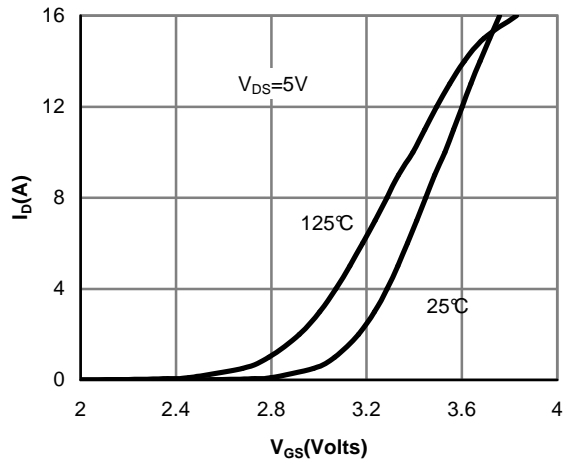


Figure 2: Transfer Characteristics

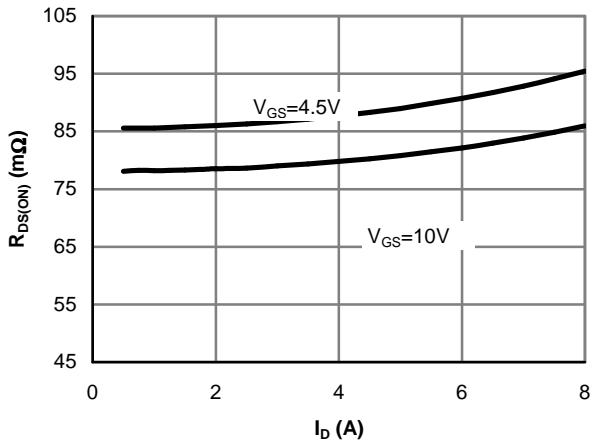


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

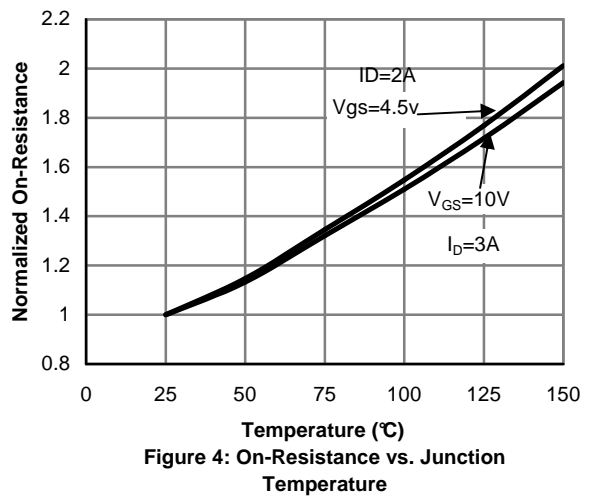


Figure 4: On-Resistance vs. Junction Temperature

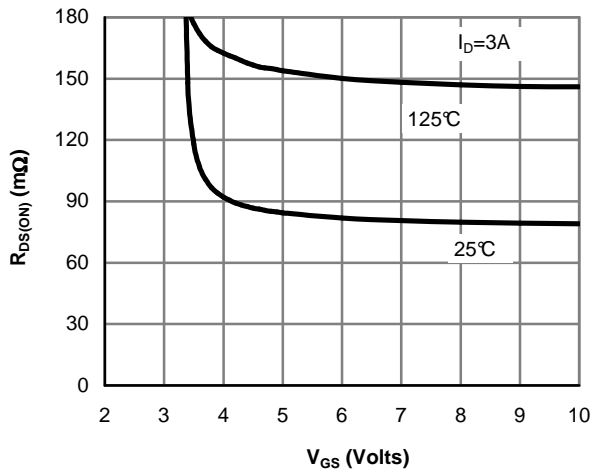


Figure 5: On-Resistance vs. Gate-Source Voltage

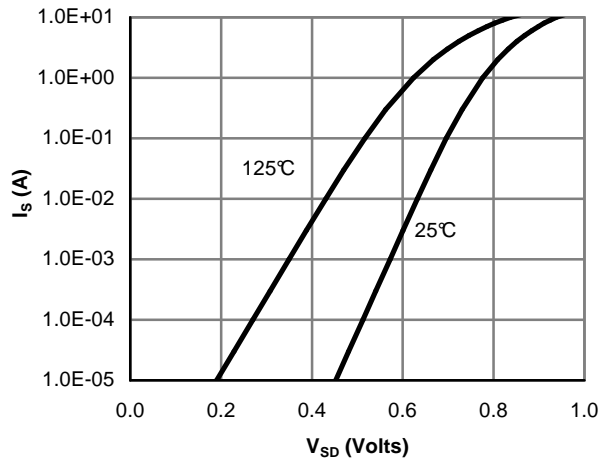


Figure 6: Body-Diode Characteristics

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

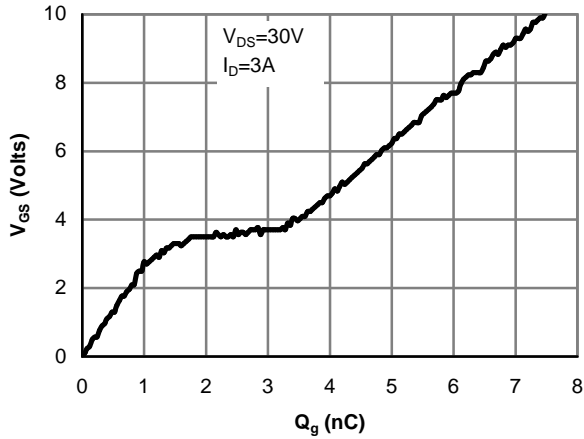


Figure 7: Gate-Charge Characteristics

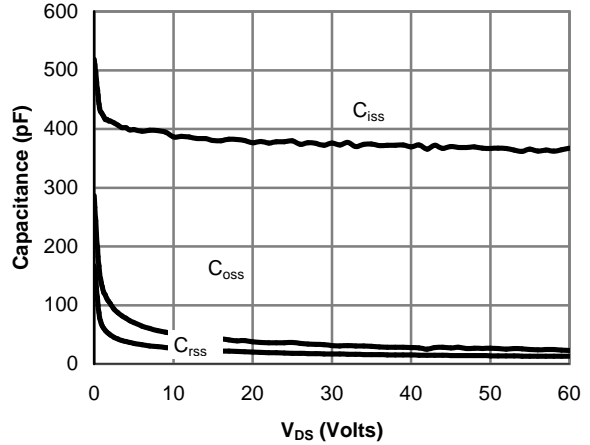


Figure 8: Capacitance Characteristics

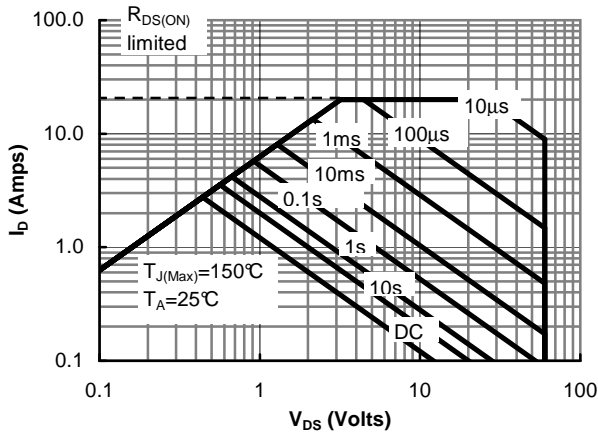


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

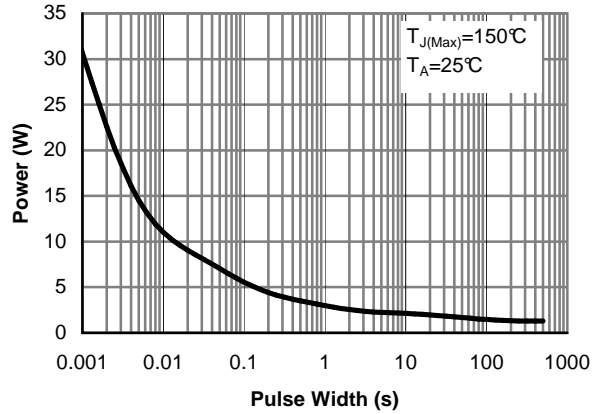


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

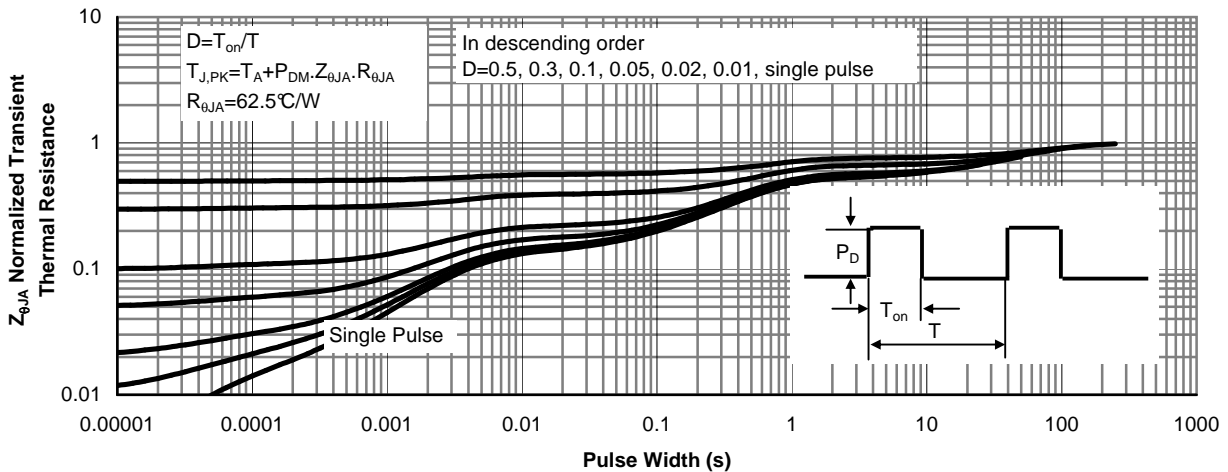


Figure 11: Normalized Maximum Transient Thermal Impedance

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