

1. Description

The AO4805 uses advanced trench technology to provide excellent $R_{DS(ON)}$, and ultra-low low gate charge with a 25V gate rating. This device is suitable for use as a load switch or in PWM applications.

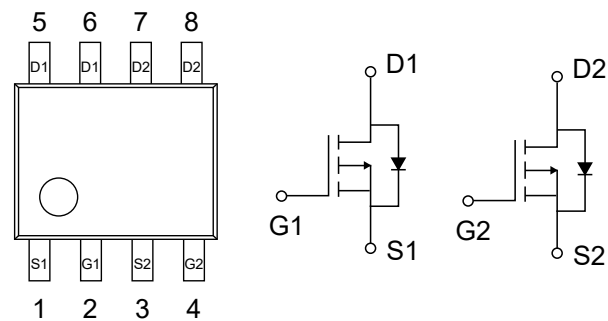
2. Features

- $V_{DS(V)} = -30V$
- $I_D = -9A$
- $R_{DS(ON)} < 15m\Omega (V_{GS} = 10V)$
- $R_{DS(ON)} < 19m\Omega (V_{GS} = 4.5V)$

3. Pinning information

Pin	Symbol	Description
2,4	G1, G2	GATE
1,3	S1, S2	SOURCE
5,6,7,8	D1, D2	DRAIN

SOP-8



4. 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}	± 25	V
Continuous Drain Current ^A	I_D	-9	A
$T_A = 25^\circ C$		-6.9	
Pulsed Drain Current ^B	I_{DM}	-40	
Power Dissipation ^A	P_D	2	W
		$T_A = 25^\circ C$	
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^\circ C$



5. Thermal Characteristics

Parameter		Symbol	Typ	Max	Units
Maximum Junction-to-Ambient ^A	$t \leq 10s$	$R_{\theta JA}$	50	62.5	$^{\circ}C/W$
Maximum Junction-to-Ambient ^A	Steady-State		73	110	$^{\circ}C/W$
Maximum Junction-to-Lead ^C	Steady-State	$R_{\theta JL}$	31	40	$^{\circ}C/W$



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

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=-250\mu\text{A}$, $V_{GS}=0\text{V}$	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-24\text{V}$, $V_{GS}=0\text{V}$			-1	μA
		$T_J=55^\circ\text{C}$			-5	μA
Gate-Body leakage current	I_{GSS}	$V_{DS}=0\text{V}$, $V_{GS}=\pm 20\text{V}$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_D=-250\mu\text{A}$	-1	-1.5	-2.5	V
On state drain current	$I_{D(ON)}$	$V_{GS}=-10\text{V}$, $V_{DS}=-5\text{V}$	40			A
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=-10\text{V}$, $I_D=-8\text{A}$		12	15	m Ω
		$V_{GS}=-4.5\text{V}$, $I_D=-5\text{A}$		16	19	m Ω
Forward Transconductance	g_{FS}	$V_{DS}=-5\text{V}$, $I_D=-8\text{A}$	16	21		S
Diode Forward Voltage	V_{SD}	$I_S=-1\text{A}$, $V_{GS}=0\text{V}$		-0.75	-1	V
Maximum Body-Diode Continuous Current	I_S				-2.6	A
Input Capacitance	C_{iss}			2076		pF
Output Capacitance	C_{oss}	$V_{GS}=0\text{V}$, $V_{DS}=-15\text{V}$, $f=1\text{MHz}$		503		pF
Reverse Transfer Capacitance	C_{rss}			302		pF
Gate resistance	R_g	$V_{GS}=0\text{V}$, $V_{DS}=0\text{V}$, $f=1\text{MHz}$		2		Ω
Total Gate Charge	Q_g	$V_{GS}=-10\text{V}$, $V_{DS}=-15\text{V}$ $I_D=-8\text{A}$		39		nC
Gate Source Charge	Q_{gs}			8		nC
Gate Drain Charge	Q_{gd}			11.4		nC
Turn-On DelayTime	$t_{D(on)}$	$V_{GS}=-10\text{V}$, $V_{DS}=-15\text{V}$ $R_L=1.8\Omega$, $R_{GEN}=3\Omega$		12.7		ns
Turn-On Rise Time	t_r			7		ns
Turn-Off DelayTime	$t_{D(off)}$			25.2		ns
Turn-Off Fall Time	t_f			12		ns
Body Diode Reverse Recovery Time	t_{rr}	$I_F=-8\text{A}$, $dI/dt=100\text{A}/\mu\text{s}$		32		ns
Body Diode Reverse Recovery Charge	Q_{rr}	$I_F=-8\text{A}$, $dI/dt=100\text{A}/\mu\text{s}$		26		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. The current rating is based on the $t \leq 10\text{s}$ thermal resistance rating.

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

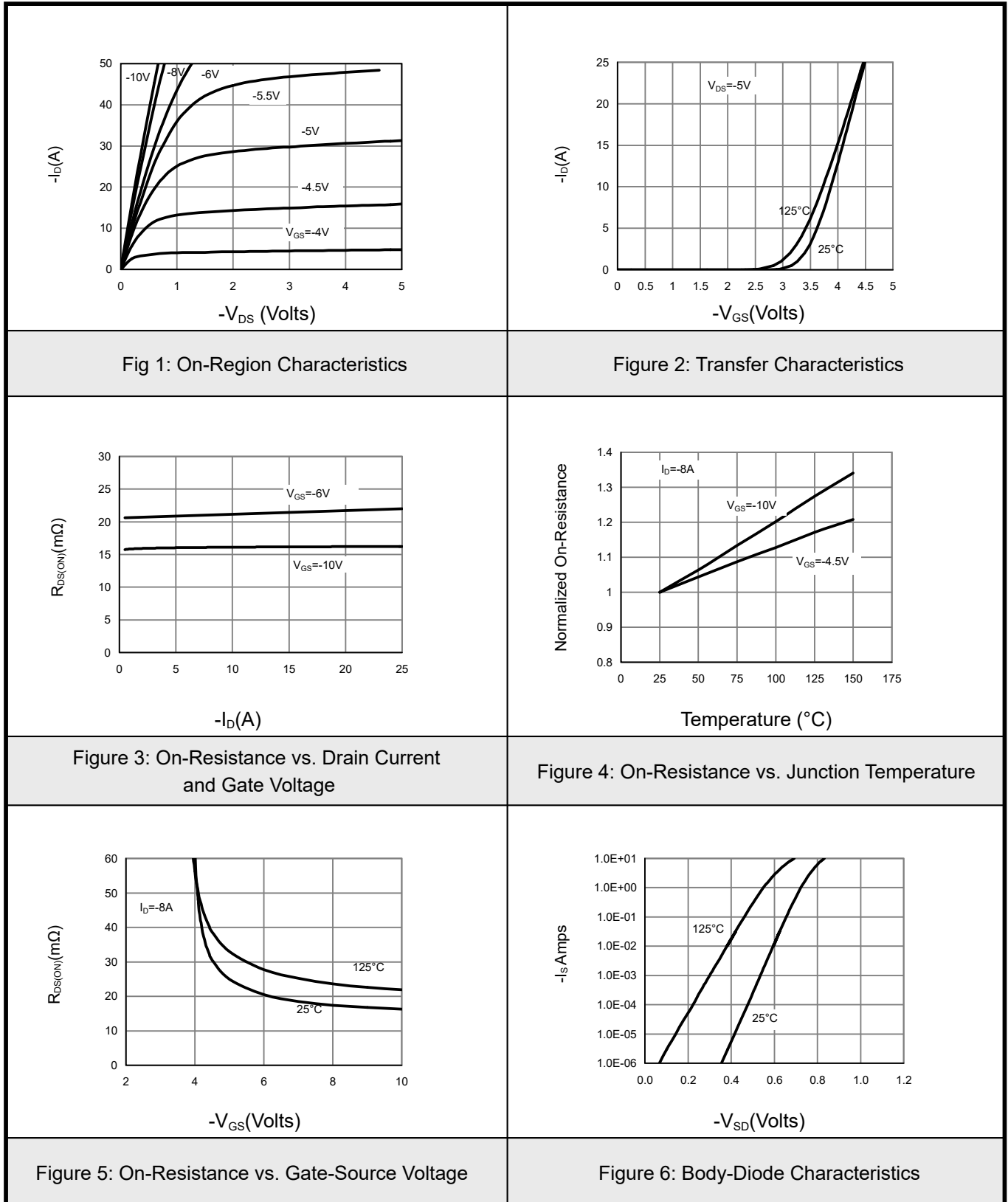
C. The $R_{\theta JA}$ is the sum of the thermal impedance from junction to lead $R_{\theta JL}$ and lead to ambient.

D. The static characteristics in Figures 1 to 6, 12, 14 are obtained using 80 μs 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.

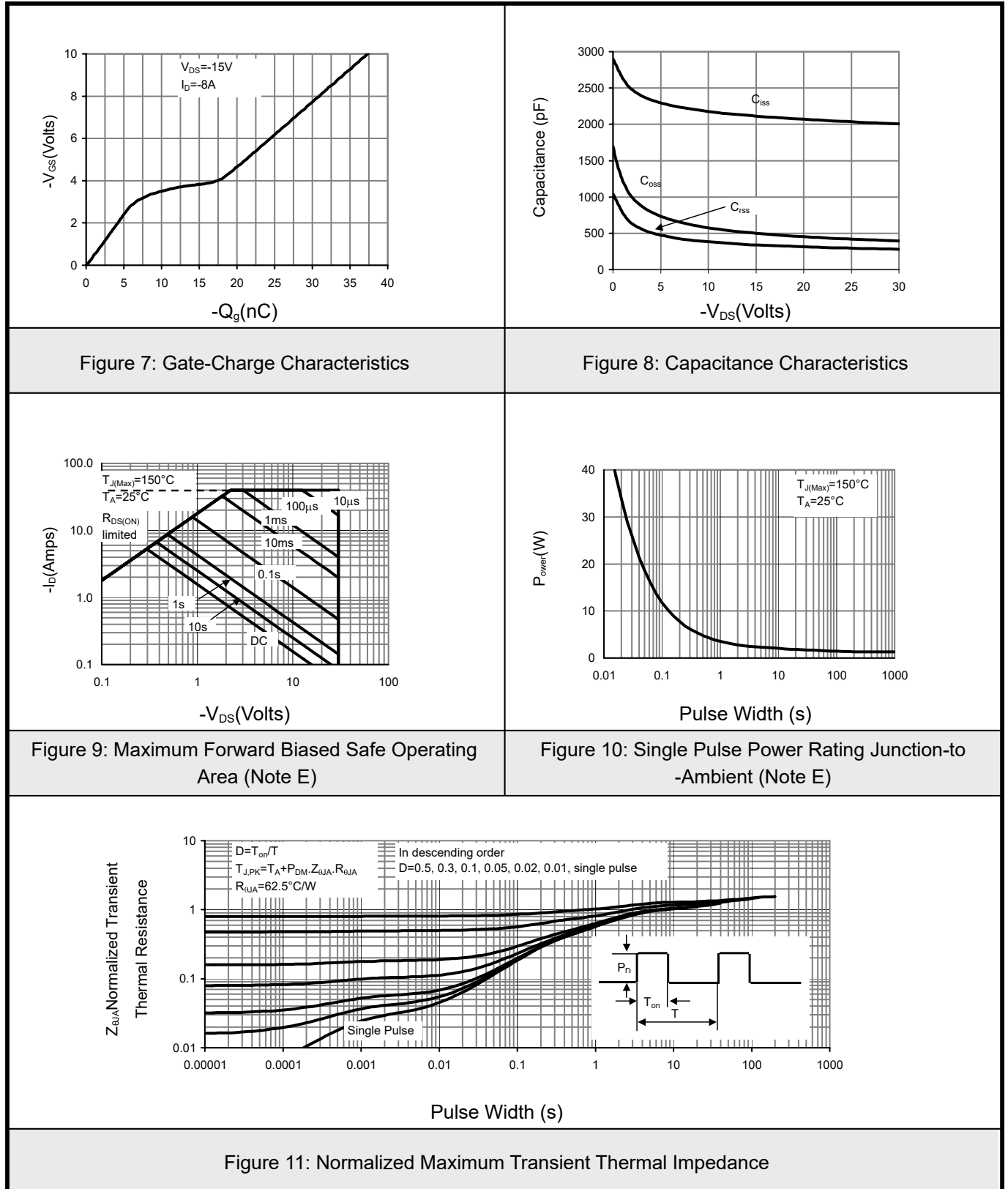


7.1 TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS



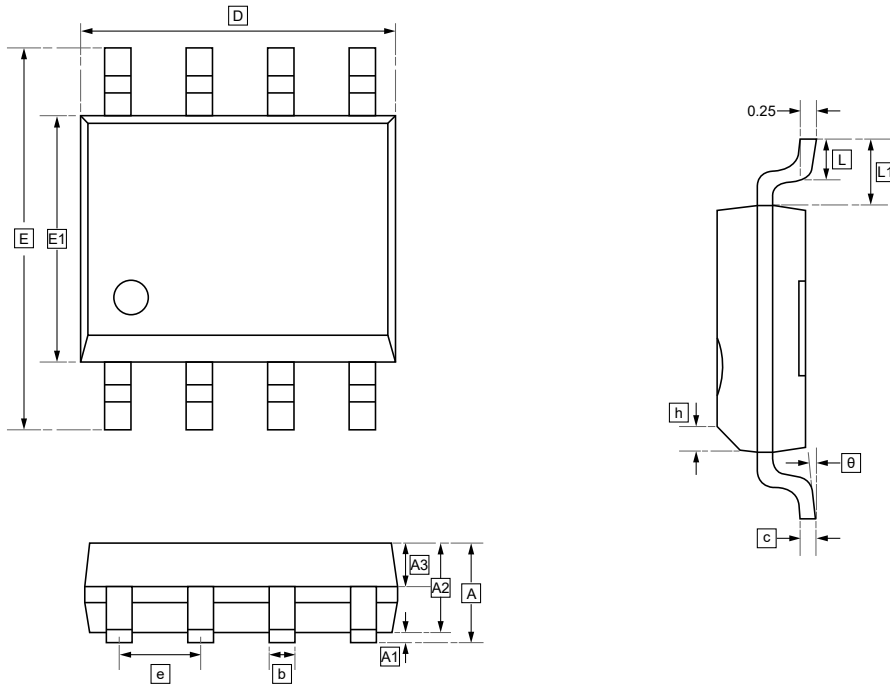


7.2 TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS





8.SOP-8 Package Outline Dimensions



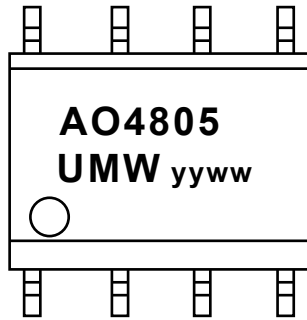
DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	A3	b	c	D	E	E1	e	h	L
Min	-	0.05	1.30	0.60	0.39	0.20	4.80	5.80	3.80	1.24	0.30	0.50
Max	1.75	0.20	1.50	0.70	0.47	0.24	5.00	6.20	4.00	1.30	0.50	0.80

Symbol	L1	θ
Min	1.00	0°
Max	1.10	8°



9. Ordering information



yy: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW AO4805	SOP-8	3000	Tape and reel



10.Disclaimer

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