

1. Description

The AO4480 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. It is ESD Protected. This device is suitable for use as a low side switch in SMPS and general purpose applications.

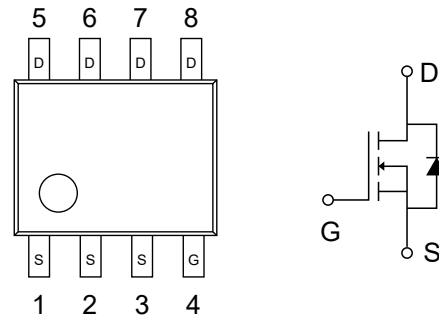
2. Features

- $V_{DS(V)}=40V$
- $I_D=14A$
- $R_{DS(ON)}<12m\Omega(V_{GS}=10V)$
- $R_{DS(ON)}<16m\Omega(V_{GS}=4.5V)$

3. Pinning information

Pin	Symbol	Description
4	G	GATE
1,2,3	S	SOURCE
5,6,7,8	D	DRAIN

SOP-8



4. Absolute Maximum Ratings $T_A=25^\circ C$

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ^{AF}	I_{DSM}	$T_A=25^\circ C$	14
		$T_A=70^\circ C$	11
Pulsed Drain Current ^B	I_{DM}	70	A
Power Dissipation	P_D	$T_A=25^\circ C$	3.1
		$T_A=70^\circ C$	2
Avalanche Current ^B	I_{AR}	30	A
Repetitive avalanche energy 0.3mH ^B	E_{AR}	135	mJ
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	$t \leq 10s$	$R_{\theta JA}$	30	40	°C/W
Maximum Junction-to-Ambient ^A	Steady-State		59	75	°C/W
Maximum Junction-to-Lead ^C	Steady-State	$R_{\theta JL}$	16	24	°C/W



6. Electrical Characteristic (T_J=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =250μA, V _{GS} =0V	40			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =32V, V _{GS} =0V T _J =55°C			1	μA
					5	μA
Gate-Body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	μA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1	1.5	2.5	V
On state drain current	I _{D(ON)}	V _{GS} =10V, V _{DS} =5V	70			A
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =14A		10	12	mΩ
		V _{GS} =4.5V, I _D =5A		12	16	mΩ
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =14A		50		S
Diode Forward Voltage	V _{SD}	I _S =1A, V _{GS} =0V		0.7	1	V
Maximum Body-Diode Continuous Current	I _S				4	A
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =20V, f=1MHz		1600	1920	pF
Output Capacitance	C _{oss}			320		pF
Reverse Transfer Capacitance	C _{rss}			100		pF
Gate resistance	R _g	V _{GS} =0V, V _{DS} =0V, f=1MHz		3.4		Ω
Total Gate Charge	Q _g (10V)	V _{GS} =10V, V _{DS} =20V I _D =14A		22		nC
Total Gate Charge	Q _g (4.5V)			10.5		nC
Gate Source Charge	Q _{gs}			4.2		nC
Gate Drain Charge	Q _{gd}			4.8		nC
Turn-On DelayTime	t _{D(on)}	V _{GS} =10V, V _{DS} =20V R _L =1.5Ω, R _{GEN} =3Ω		3.5		ns
Turn-On Rise Time	t _r			6		ns
Turn-Off DelayTime	t _{D(off)}			13.2		ns
Turn-Off Fall Time	t _f			3.5		ns
Body Diode Reverse Recovery Time	t _{rr}	I _F =14A, dI/dt=100A/μs		31		ns
Body Diode Reverse Recovery Charge	Q _{rr}	I _F =14A, dI/dt=100A/μs		33		nC



A: The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 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.

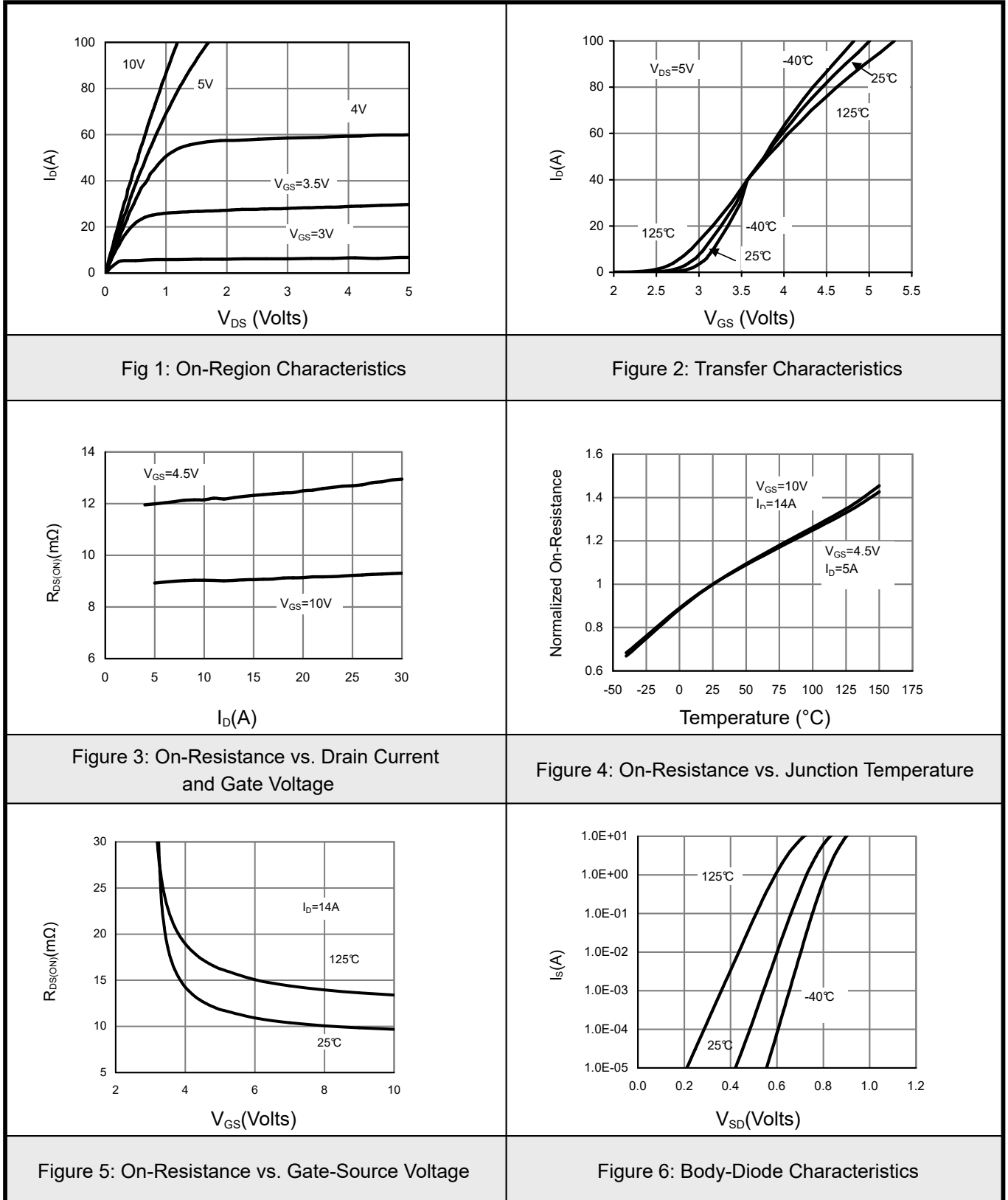
D. The static characteristics in Figures 1 to 6 are obtained using $<300\ \mu\text{s}$ pulses, duty cycle 0.5% max.

E. These tests are performed with the device mounted on 1 in ² 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.

F. The current rating is based on the $t \leq 10\text{s}$ junction to ambient thermal resistance rating.

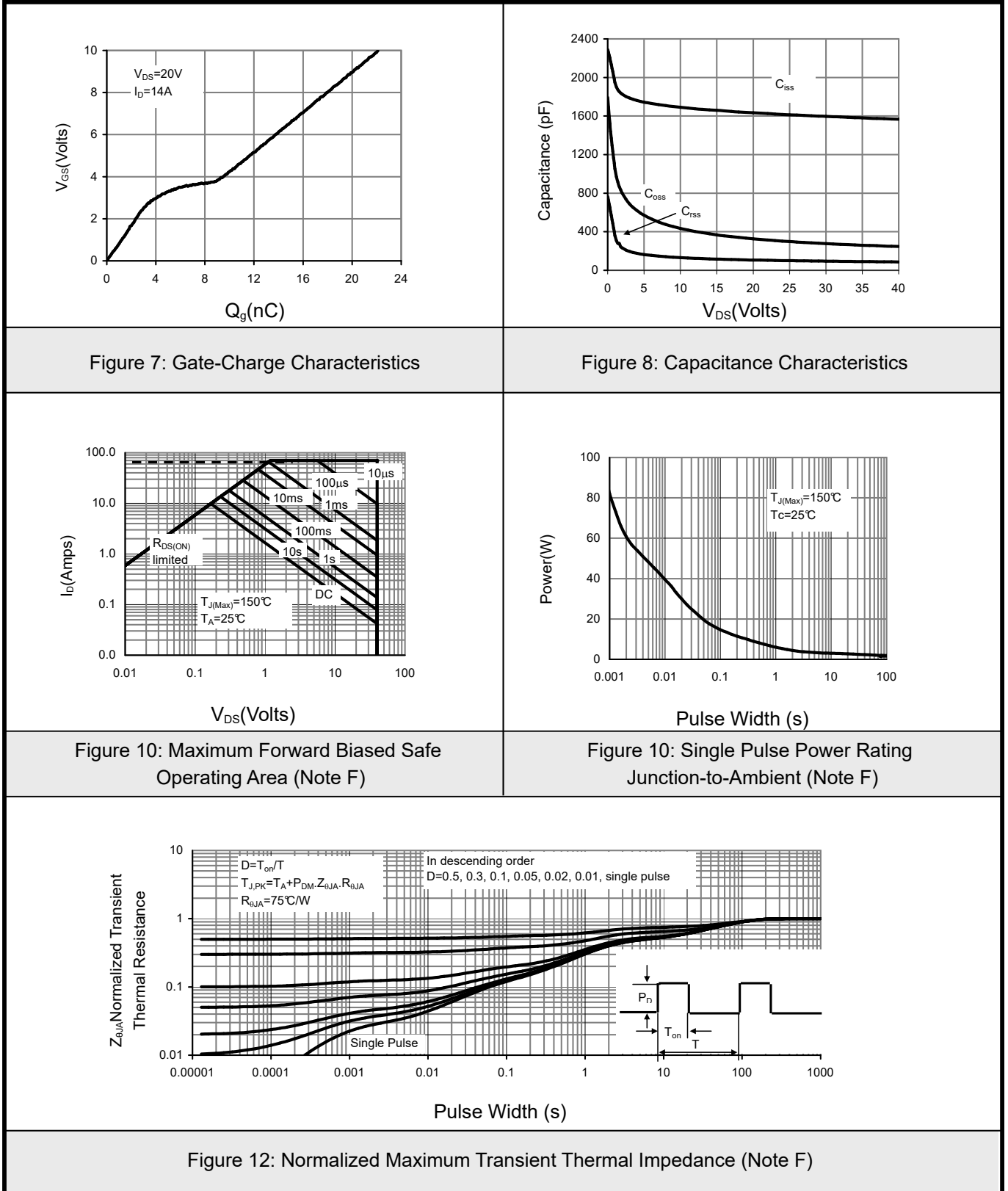


7.1 Typical characteristic



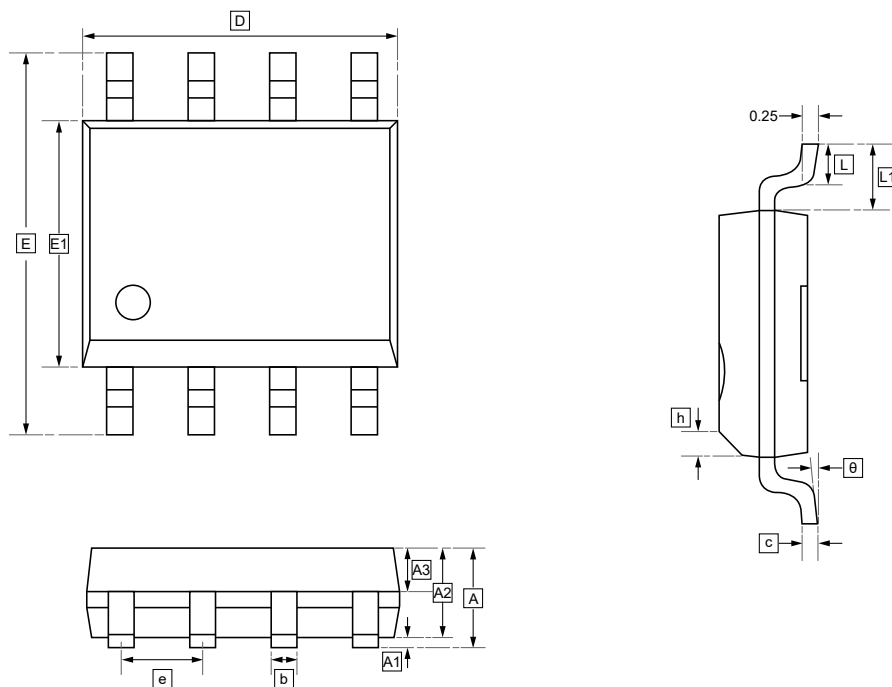


7.2 Typical characteristic





8.SOP-8 Package Outline Dimensions



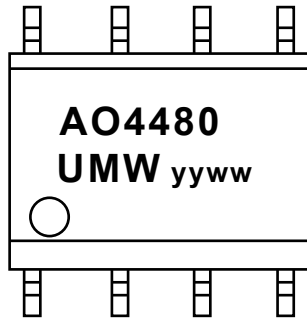
DIMENSIONS (mm are the original dimensions)

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 AO4480	SOP-8	3000	Tape and reel



10.Disclaimer

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