

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.

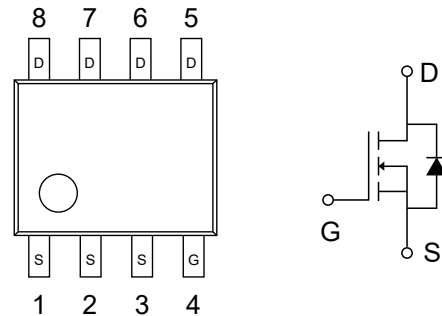
2.Features

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

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}	$T_A=25^{\circ}C$	I_{DSM}	14	A
	$T_A=70^{\circ}C$		11	
Pulsed Drain Current ^B		I_{DM}	70	
Power Dissipation	$T_A=25^{\circ}C$	P_D	3.1	W
	$T_A=70^{\circ}C$		2	W
Avalanche Current ^B		I_{AR}	30	A
Repetitive avalanche energy 0.3mH ^B		E_{AR}	135	mJ
unction 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 ≤ 10s	R _{θJA}	30	40	°C/W
Maximum Junction-to-Ambient ^A	Steady-State		59	75	°C/W
Maximum Junction-to-Lead ^C	Steady-State	R _{θJL}	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			1	μA
		T _J =55°C			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 1in 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

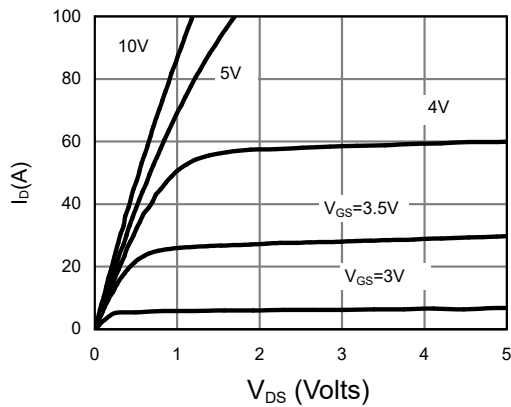


Fig 1: On-Region Characteristics

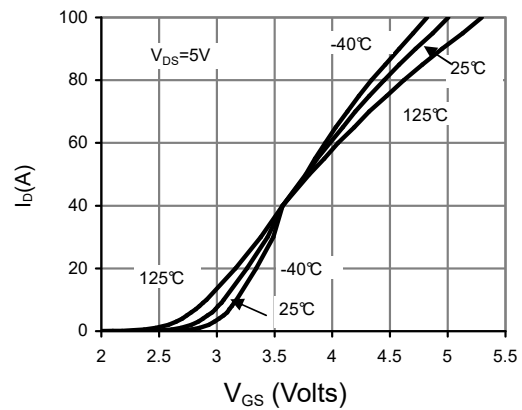


Figure 2: Transfer Characteristics

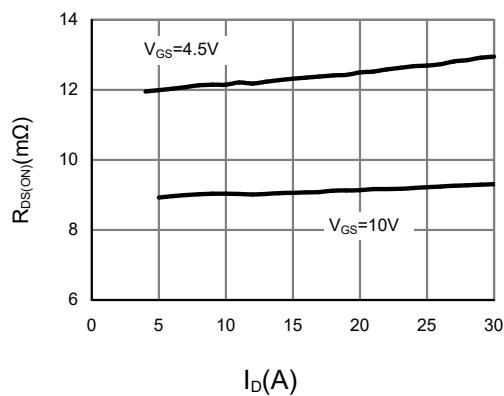


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

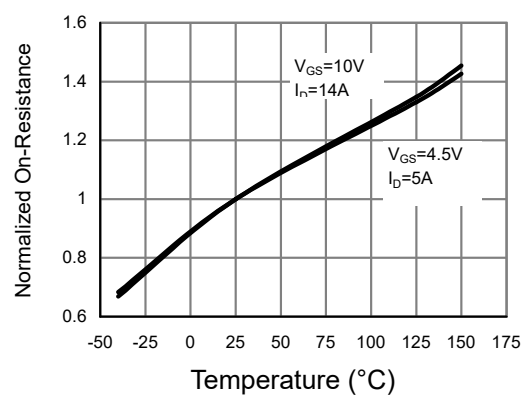


Figure 4: On-Resistance vs. Junction Temperature

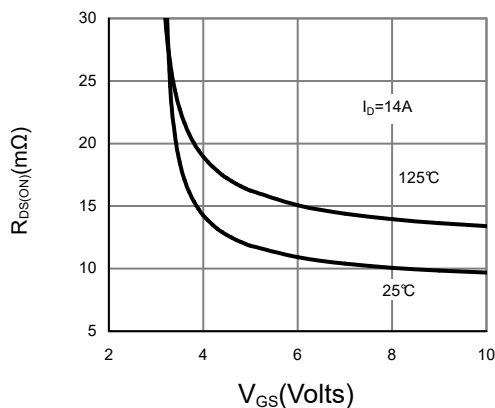


Figure 5: On-Resistance vs. Gate-Source Voltage

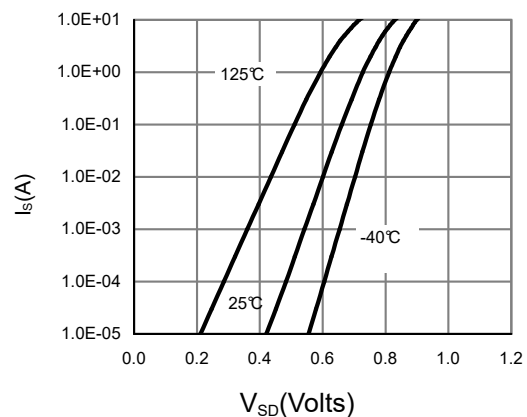


Figure 6: Body-Diode Characteristics



7.2 Typical characteristic

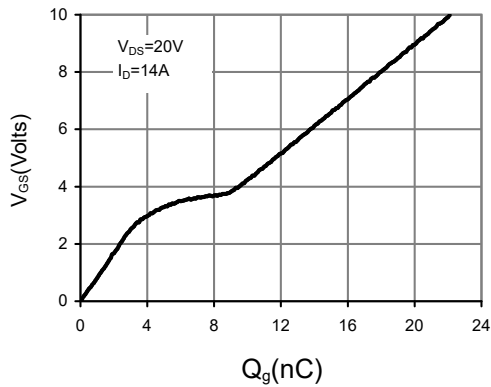


Figure 7: Gate-Charge Characteristics

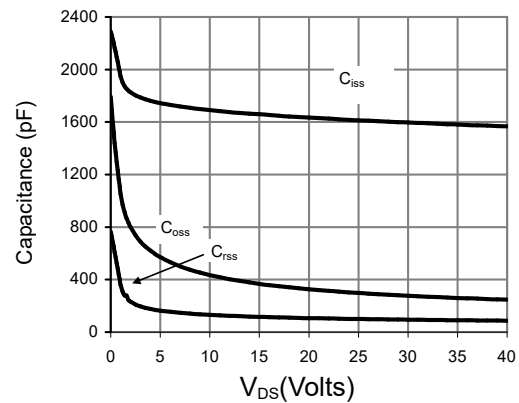


Figure 8: Capacitance Characteristics

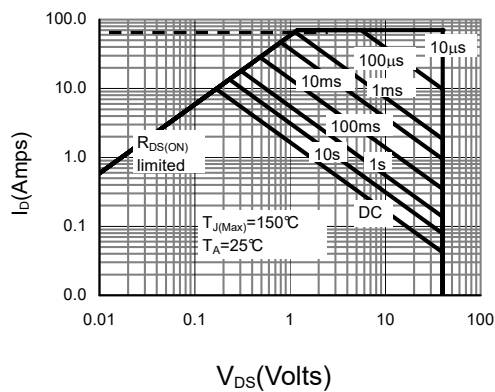


Figure 10: Maximum Forward Biased Safe Operating Area (Note F)

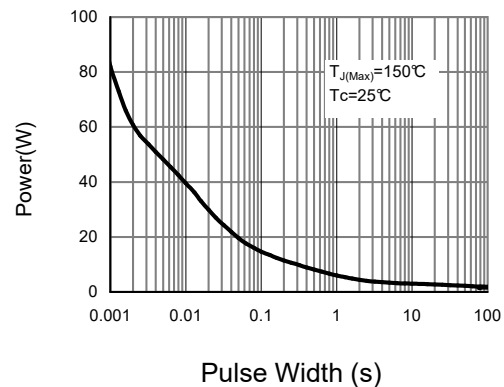


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

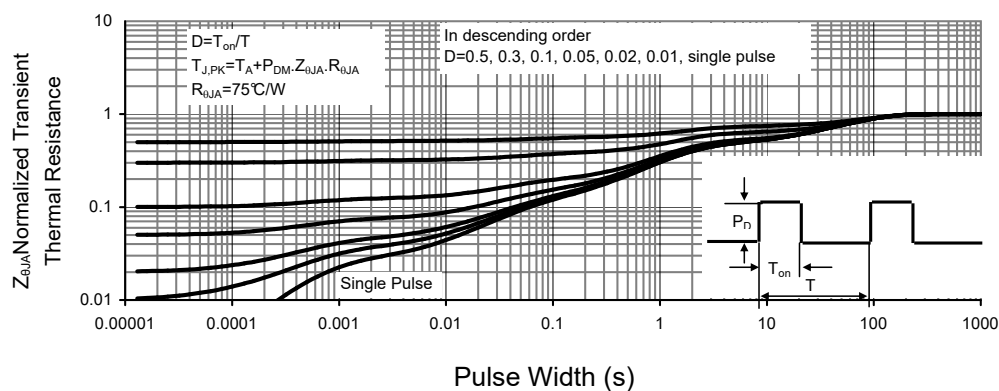
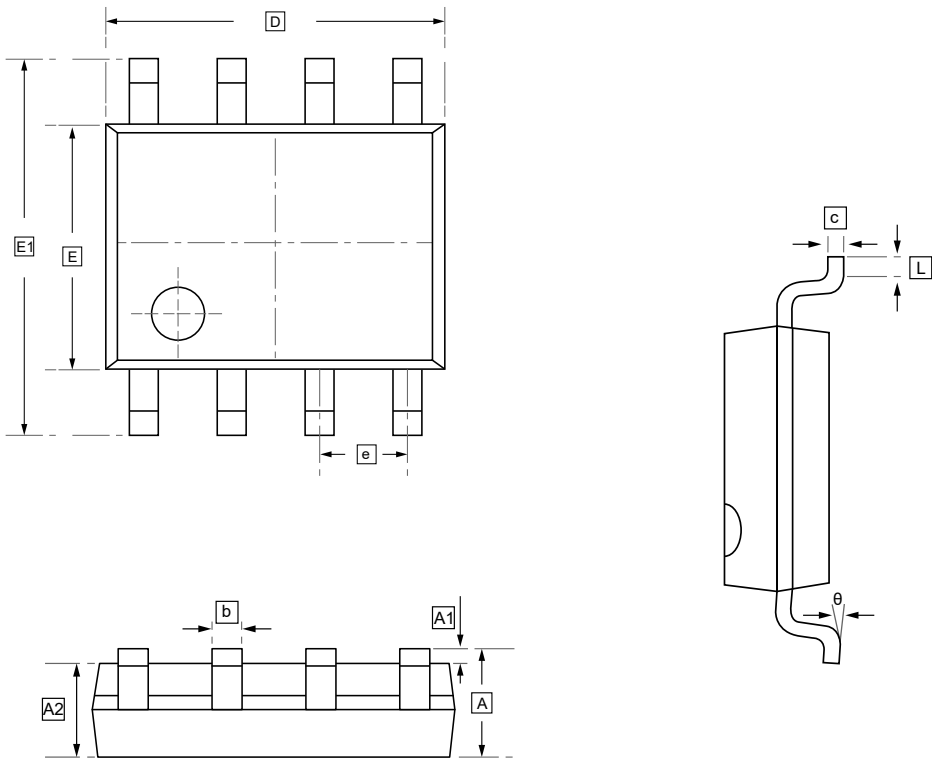


Figure 12: Normalized Maximum Transient Thermal Impedance (Note F)



8.SOP-8 Package Outline Dimensions

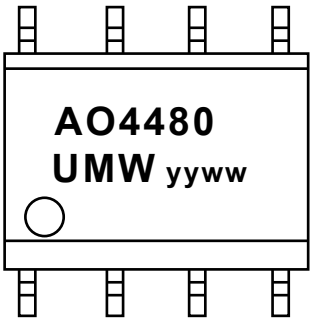


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	b	c	D	E	E1	e	L	θ
Min	1.350	0.000	1.350	0.330	0.170	4.700	3.800	5.800	1.270	0.400	0°
Max	1.750	0.100	1.550	0.510	0.250	5.100	4.000	6.200	BSC	1.270	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

UMW reserves the right to make changes to all products, specifications. Customers should obtain the latest version of product documentation and verify the completeness and currency of the information before placing an order.

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