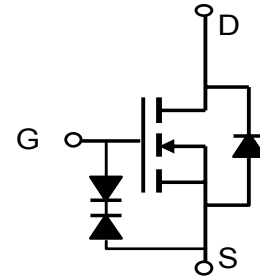


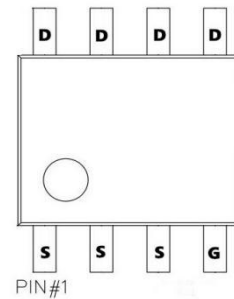
### General Description

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.



### Product Summary

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



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

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	$V_{DS}$	40	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current <sup>AF</sup>	$I_{DSM}$	$T_A=25^\circ\text{C}$	14
		$T_A=70^\circ\text{C}$	11
Pulsed Drain Current <sup>B</sup>	$I_{DM}$	70	A
Power Dissipation	$P_D$	$T_A=25^\circ\text{C}$	3.1
		$T_A=70^\circ\text{C}$	2.0
Avalanche Current <sup>B</sup>	$I_{AR}$	30	A
Repetitive avalanche energy 0.3mH <sup>B</sup>	$E_{AR}$	135	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 <sup>A</sup>	$R_{\theta JA}$	30	40	$^\circ\text{C}/\text{W}$
Maximum Junction-to-Ambient <sup>A</sup>		Steady-State	59	75
Maximum Junction-to-Lead <sup>C</sup>	$R_{\theta JL}$	16	24	$^\circ\text{C}/\text{W}$

**Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)**

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

A: The value of R<sub>θJA</sub> is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with T<sub>A</sub>=25°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<sub>θJA</sub> is the sum of the thermal impedance from junction to lead R<sub>θJL</sub> and lead to ambient.

D: The static characteristics in Figures 1 to 6 are obtained using <300 μs 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<sub>A</sub>=25°C. The SOA curve provides a single pulse rating.

F: The current rating is based on the t ≤ 10s junction to ambient thermal resistance rating.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

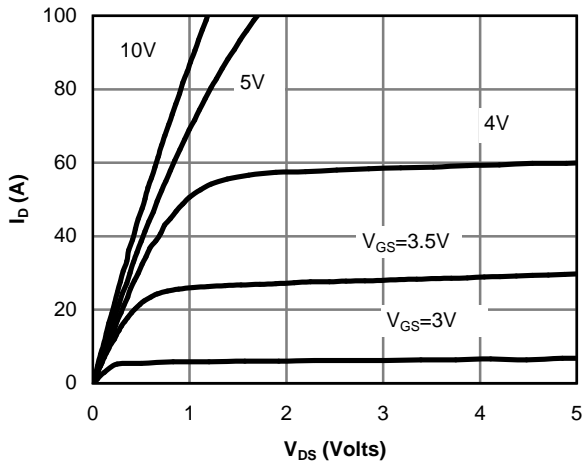


Figure 1: On-Region Characteristics

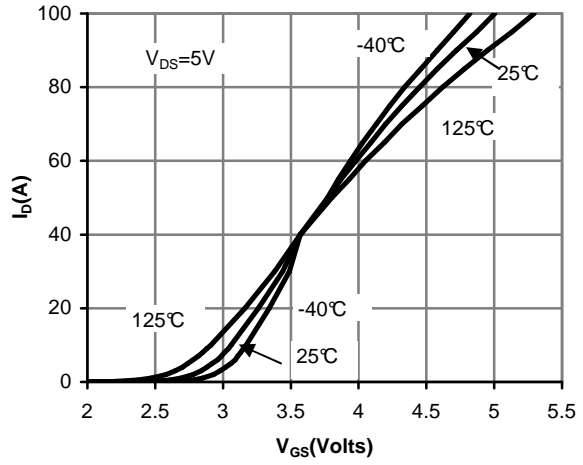


Figure 2: Transfer Characteristics

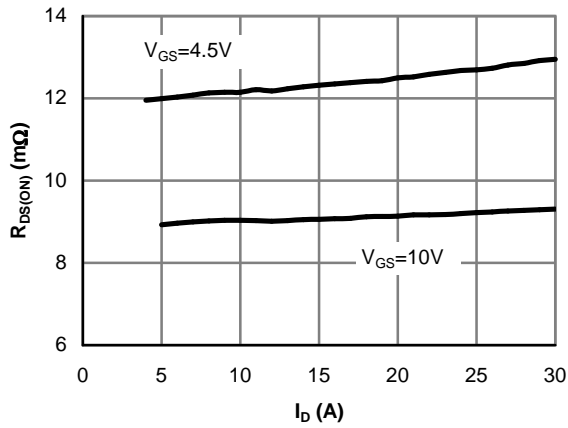


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

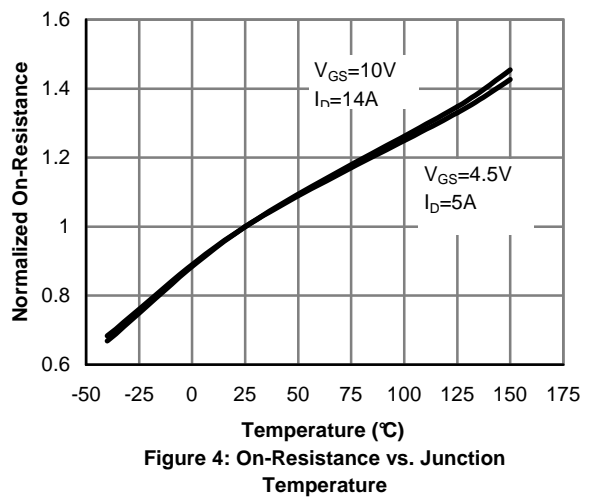


Figure 4: On-Resistance vs. Junction Temperature

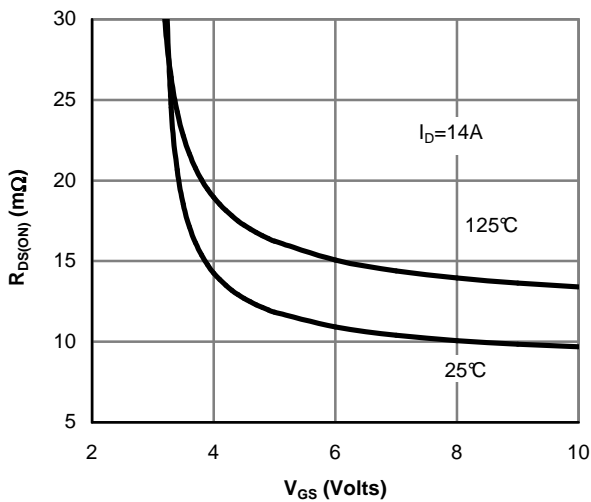


Figure 5: On-Resistance vs. Gate-Source Voltage

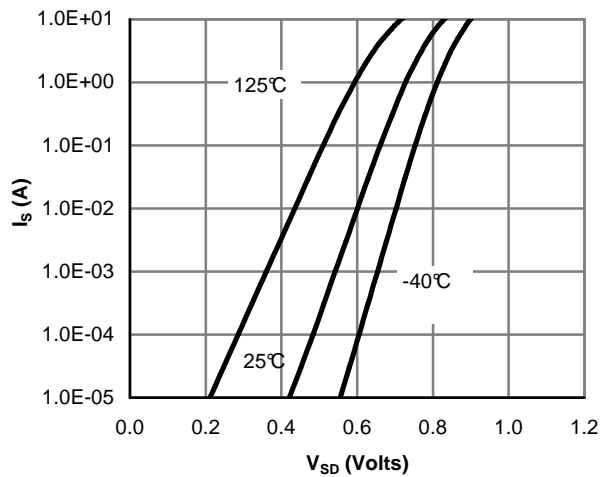


Figure 6: Body-Diode Characteristics

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

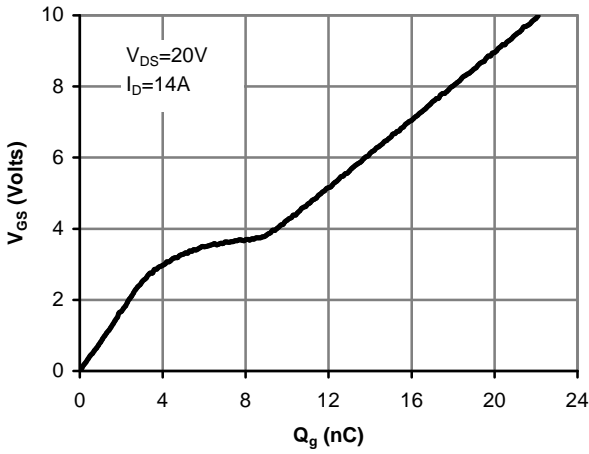


Figure 7: Gate-Charge Characteristics

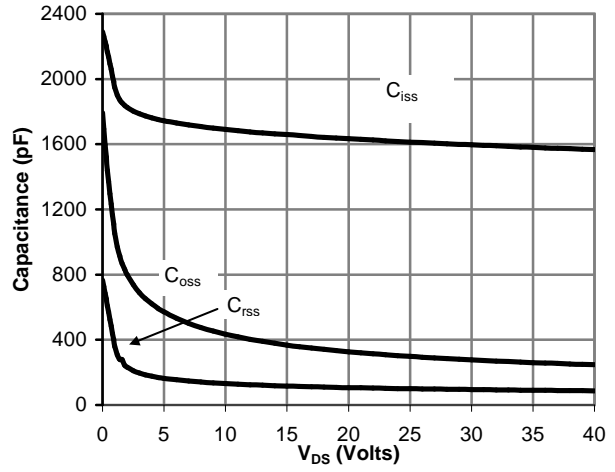


Figure 8: Capacitance Characteristics

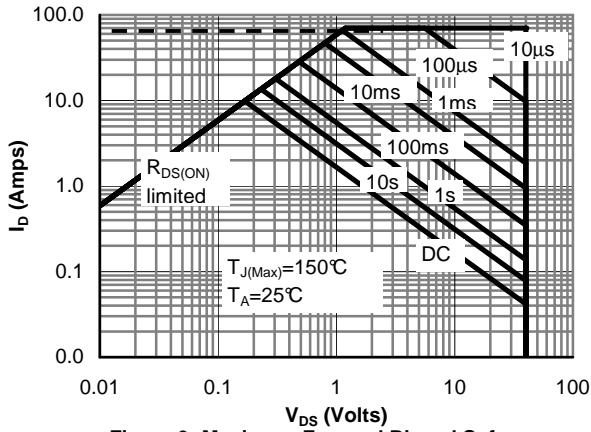


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

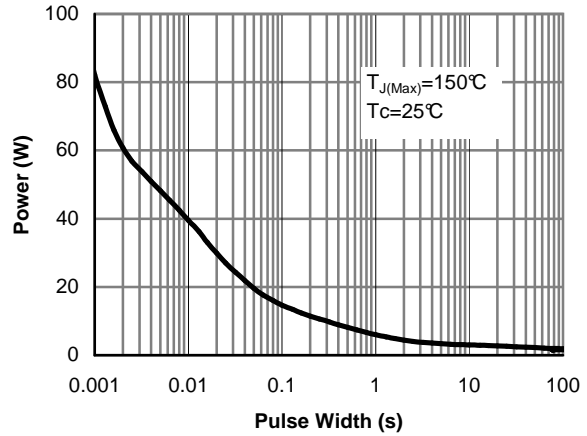


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

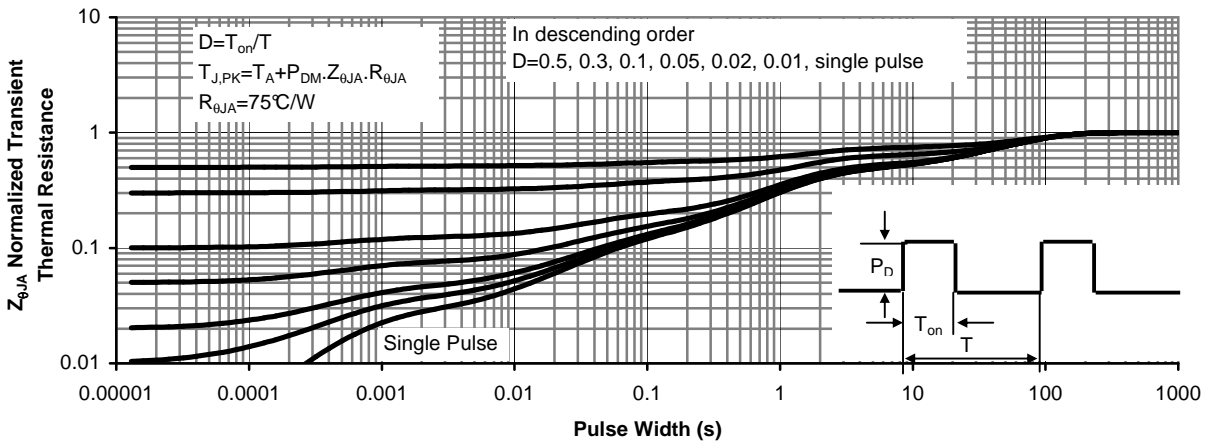
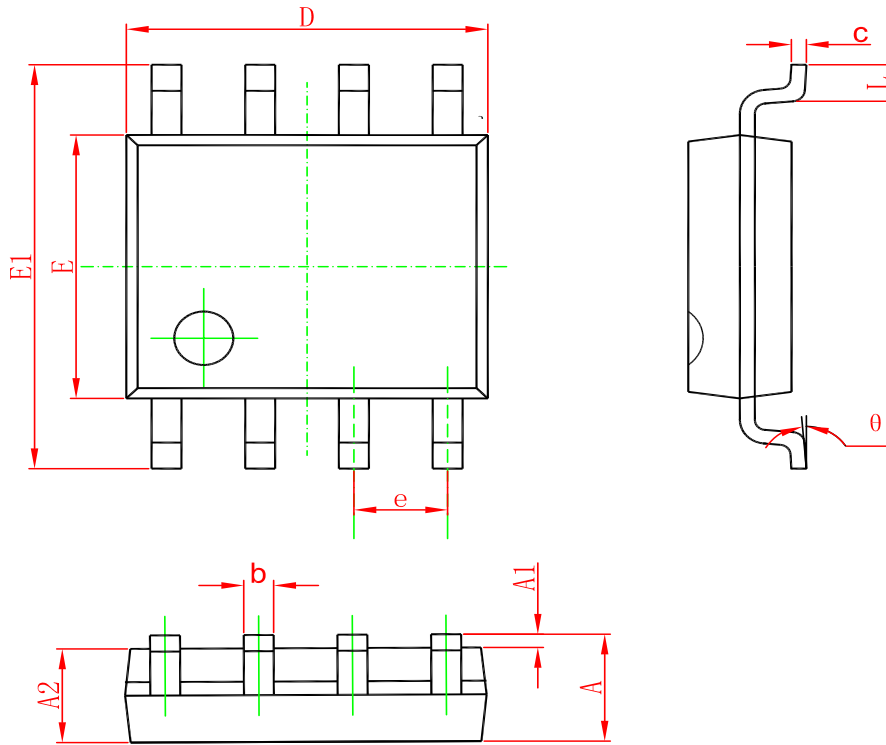


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

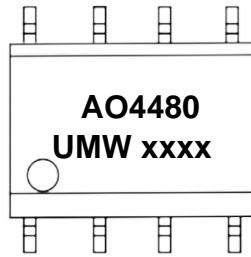
PACKAGE OUTLINE DIMENSIONS

SOP-8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

### Marking



("xxxx"代表年份周期)

### Ordering information

Order code	Package	Baseqty	Deliverymode
UMW AO4480	SOP-8	3000	Tape and reel