

1.Description

The AO4435A uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application.

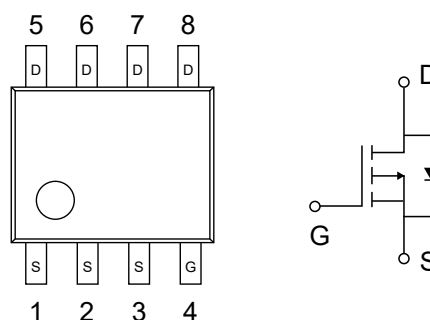
2.Features

- $V_{DS(V)} = -30V$
- $I_D = -12A$
- $R_{DS(ON)} < 20m\Omega (V_{GS} = 10V)$

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}	-30	V
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current ³ , $V_{GS} = 10V$	$T_A = 25^\circ C$	I_D	-12	A
	$T_A = 70^\circ C$		-10	
Pulsed Drain Current ¹		I_{DM}	-50	
Total Power Dissipation	$T_A = 25^\circ C$	P_D	2.5	W
Linear Derating Factor			0.02	W/ $^\circ C$
Storage Temperature Range		T_{STG}	-55 to 150	$^\circ C$
Junction Temperature Range		T_J	-55 to 150	$^\circ C$
Maximum Thermal Resistance, Junction-ambient ³		R_{thJA}	50	$^\circ C/W$



5. Electrical Characteristic ($T_J=25^{\circ}\text{C}$ 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
Static Drain-Source On-Resistance ²	$R_{DS(ON)}$	$V_{GS}=-10\text{V}$, $I_D=-7\text{A}$		15	20	m Ω
		$V_{GS}=-4.5\text{V}$, $I_D=-5\text{A}$		25	32	m Ω
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_D=-250\mu\text{A}$	-0.6	-0.9	-1.5	V
Forward Transconductance	g_{FS}	$V_{DS}=-10\text{V}$, $I_D=-7\text{A}$		16		S
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-24\text{V}$, $V_{GS}=0\text{V}$			5	μA
Gate-Source Leakage	I_{GSS}	$V_{GS}=\pm 20\text{V}$, $V_{DS}=0\text{V}$			± 100	nA
Total Gate Charge	Q_g	$I_D=-7\text{A}$		18	29	nC
Gate-Source Charge	Q_{gs}	$V_{DS}=-24\text{V}$		3		nC
Gate-Drain ("Miller") Charge	Q_{gd}	$V_{GS}=-4.5\text{V}$		10		nC
Turn-on Delay Time	$t_{D(on)}$	$V_{DS}=-15\text{V}$		8		ns
Rise Time	t_r	$I_D=-1\text{A}$		6.6		ns
Turn-off Delay Time	$t_{D(off)}$	$R_G=3.3\Omega$		44		ns
Fall Time	t_f	$V_{GS}=-10\text{V}$		34		ns
Input Capacitance	C_{iss}	$V_{GS}=0\text{V}$		1175	1690	pF
Output Capacitance	C_{oss}	$V_{DS}=-25\text{V}$		195		pF
Reverse Transfer Capacitance	C_{rss}	$f=1\text{MHz}$		190		pF
Forward On Voltage ²	V_{SD}	$I_S=-2.1\text{A}$, $V_{GS}=0\text{V}$			-1.2	V
Reverse Recovery Time	t_{rr}	$I_F=-7\text{A}$, $V_{GS}=0\text{V}$		28		ns
Reverse Recovery Charge	Q_{rr}	$dI/dt=100\text{A}/\mu\text{s}$		18		nC

Notes:

1. Pulse width limited by Max. junction temperature.

2. Pulse test

3. Surface mounted on 1 in ² copper pad of FR4 board, $t < 10\text{sec}$; $125^{\circ}\text{C}/\text{W}$ when mounted on Min. cop.



6.1 Typical Characteristic

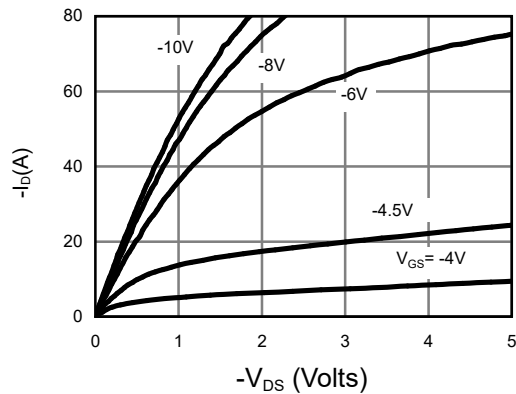


Figure 1: On-Region Characteristics

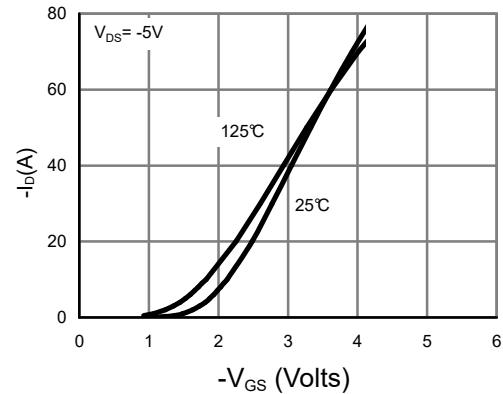


Figure 2: Transfer Characteristics

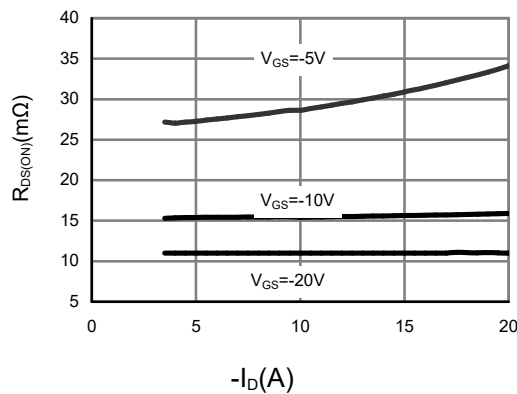


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

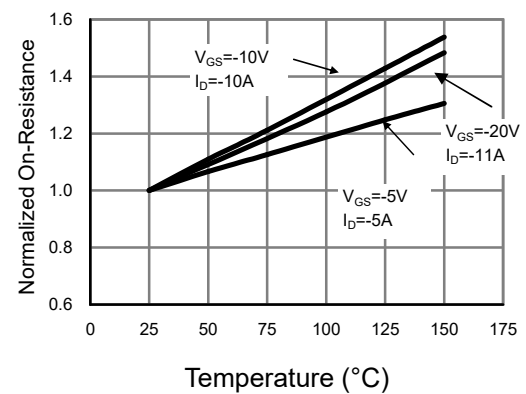


Figure 4: On-Resistance vs. Junction Temperature

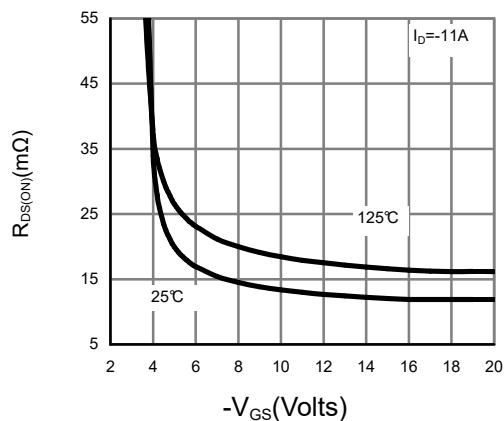


Figure 5: On-Resistance vs. Gate-Source Voltage

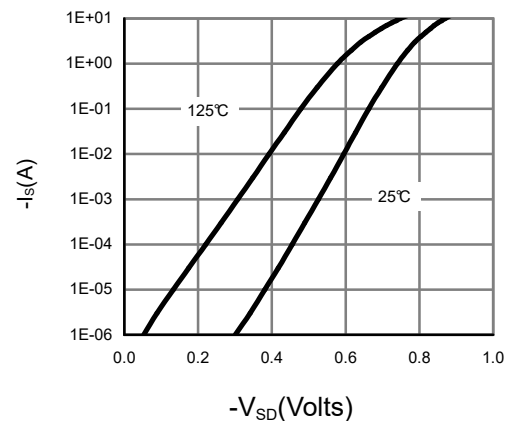


Figure 6: Body-Diode Characteristics



6.2 Typical Characteristic

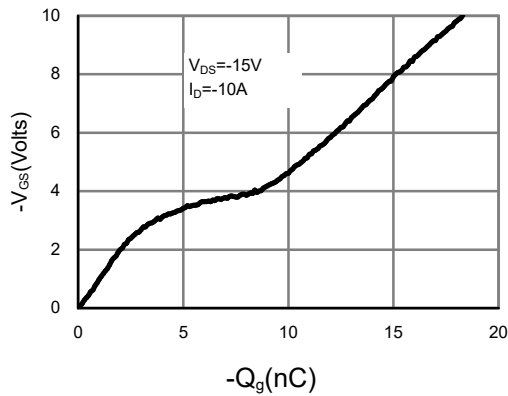


Figure 7: Gate-Charge Characteristics

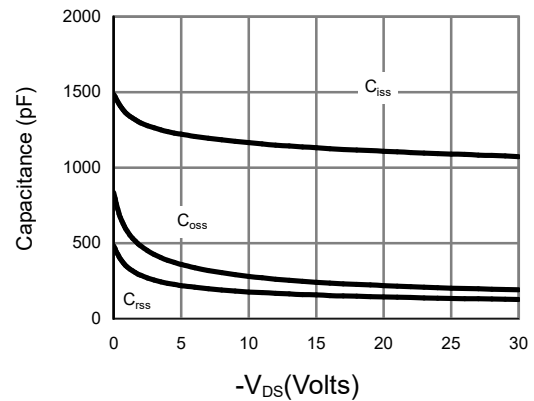


Figure 8: Capacitance Characteristics

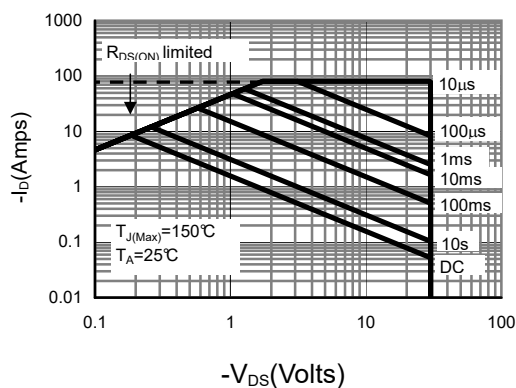


Figure 9: : Maximum Forward Biased Safe Operating Area (Note E)

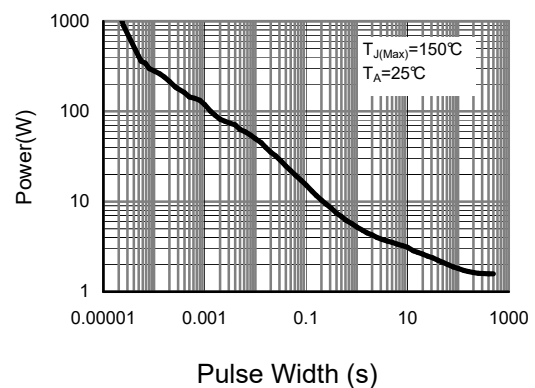


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

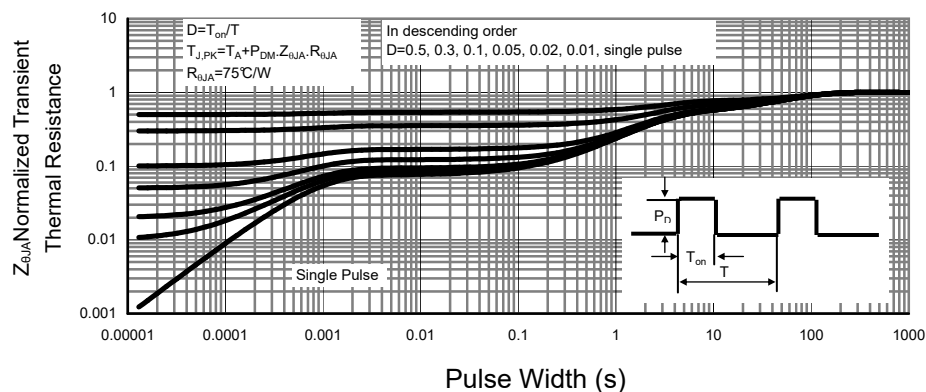
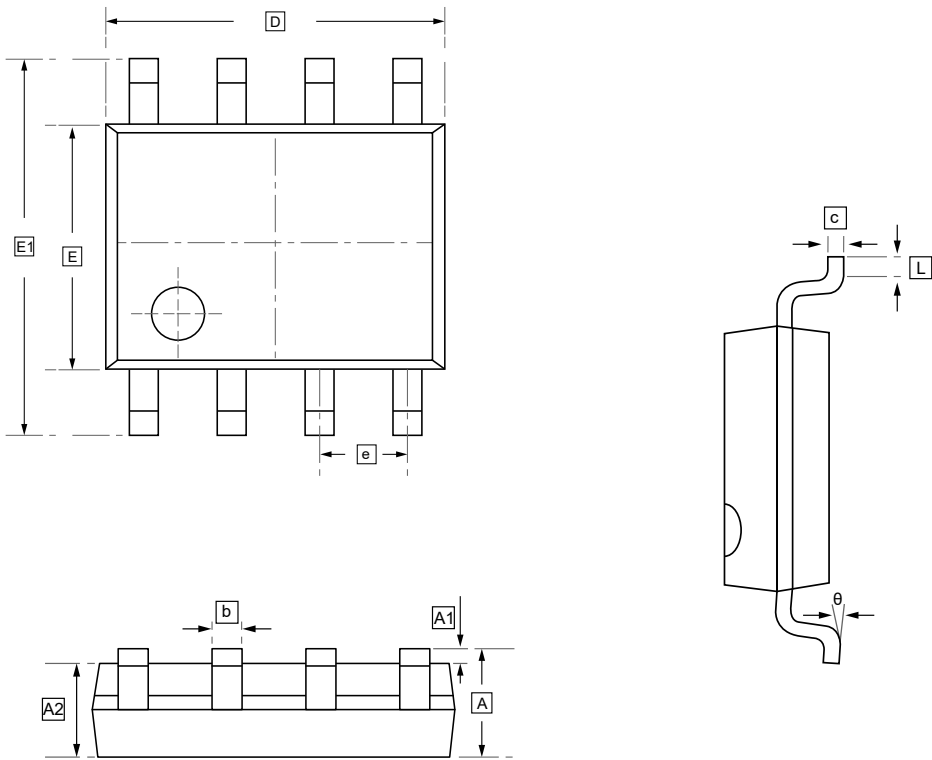


Figure 12: Normalized Maximum Transient Thermal Impedance



7.SOP-8 Package Outline Dimensions

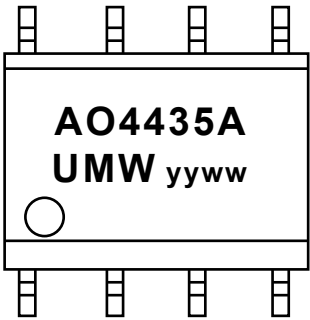


DIMENSIONS (mm are the original dimensions)

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°



8.Ordering Information



yy: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW AO4435A	SOP-8	3000	Tape and reel



9.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.

When applying our products, please do not exceed the maximum rated values, as this may affect the reliability of the entire system. Under certain conditions, any semiconductor product may experience faults or failures. Buyers are responsible for adhering to safety standards and implementing safety measures during system design, prototyping, and manufacturing when using our products to prevent potential failure risks that could lead to personal injury or property damage.

Unless explicitly stated in writing, UMW products are not intended for use in medical, life-saving, or life-sustaining applications, nor for any other applications where product failure could result in personal injury or death. If customers use or sell the product for such applications without explicit authorization, they assume all associated risks.

When reselling, applying, or exporting, please comply with export control laws and regulations of China, the United States, the United Kingdom, the European Union, and other relevant countries, regions, and international organizations.

This document and any actions by UMW do not grant any intellectual property rights, whether express or implied, by estoppel or otherwise. The product names and marks mentioned herein may be trademarks of their respective owners.