UMW AO4435A

-30V P-Channel MOSFET

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.

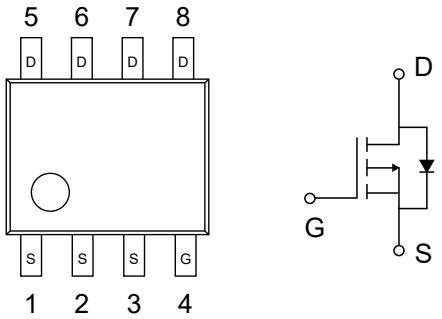
2.Features

- $V_{DS\ (V)}$=-30V
- I_D=-12A
- $R_{DS(ON)}$<20mΩ(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°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°C	I_D	-12	A
	T_A=70°C		-10	
Pulsed Drain Current [1]		I_{DM}	-50	
Total Power Dissipation	T_A=25°C	P_D	2.5	W
Linear Derating Factor			0.02	W/°C
Storage Temperature Range		T_{STG}	-55 to 150	°C
Junction Temperature Range		T_J	-55 to 150	°C
Maximum Thermal Resistance, Junction-ambient [3]		R_{thJA}	50	°C/W

5.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	-30			V
Static Drain-Source On-Resistance [2]	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-7A		15	20	mΩ
		V_{GS}=-4.5V, I_D=-5A		25	32	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-0.6	-0.9	-1.5	V
Forward Transconductance	g_{FS}	V_{DS}=-10V, I_D=-7A		16		S
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-24V, V_{GS}=0V			-5	μA
Gate-Source Leakage	I_{GSS}	V_{GS}=±20V, V_{DS}=0V			±100	nA
Total Gate Charge	Q_g	I_D=-7A		18	29	nC
Gate-Source Charge	Q_{gs}	V_{DS}=-24V		3		nC
Gate-Drain ("Miller") Charge	Q_{gd}	V_{GS}=-4.5V		10		nC
Turn-on Delay Time	$t_{D(on)}$	V_{DS}=-15V		8		ns
Rise Time	t_r	I_D=-1A		6.6		ns
Turn-off Delay Time	$t_{D(off)}$	R_G=3.3Ω		44		ns
Fall Time	t_f	V_{GS}=-10V		34		ns
Input Capacitance	C_{iss}	V_{GS}=0V		1175	1690	pF
Output Capacitance	C_{oss}	V_{DS}=-25V		195		pF
Reverse Transfer Capacitance	C_{rss}	f=1MHz		190		pF
Forward On Voltage [2]	V_{SD}	I_S=-2.1A, V_{GS}=0V			-1.2	V
Reverse Recovery Time	t_{rr}	I_F=-7A, V_{GS}=0V		28		ns
Reverse Recovery Charge	Q_{rr}	dI/dt=100A/μs		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 <10sec ; 125 °C/W when mounted on Min. cop.

6.1 Typical Characteristic

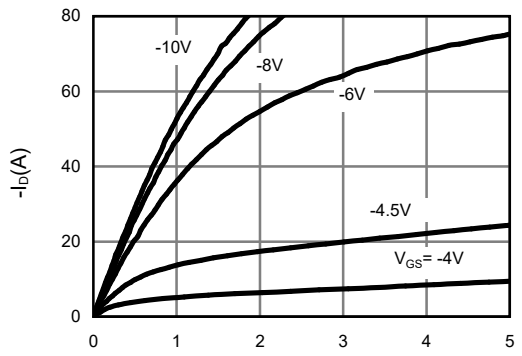


Figure 1: On-Region Characteristics

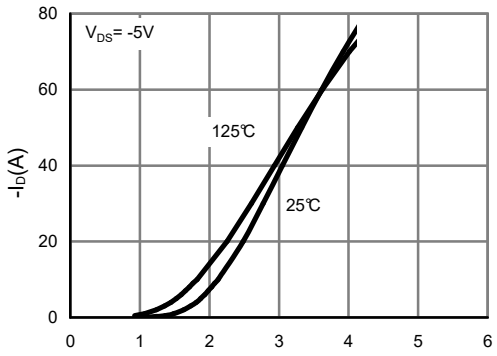


Figure 2: Transfer Characteristics

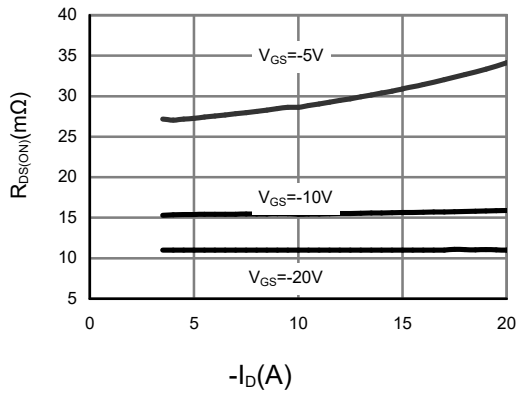


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

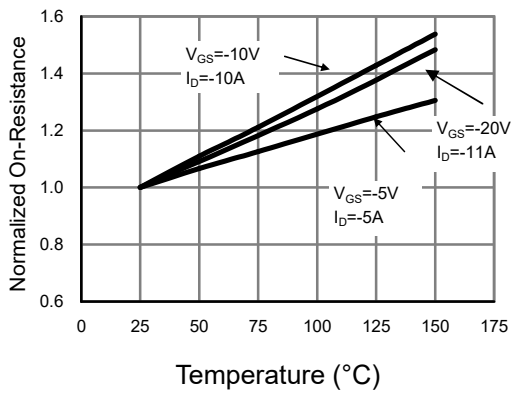


Figure 4: On-Resistance vs. Junction Temperature

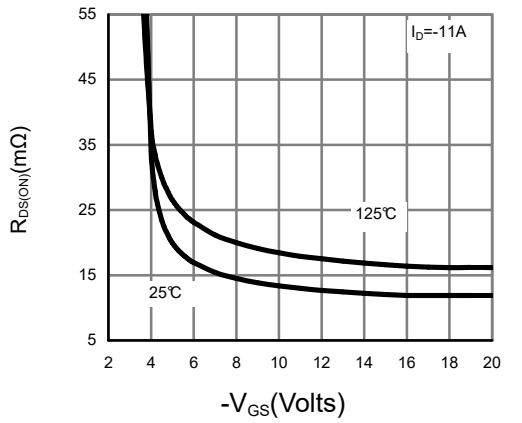


Figure 5: On-Resistance vs. Gate-Source Voltage

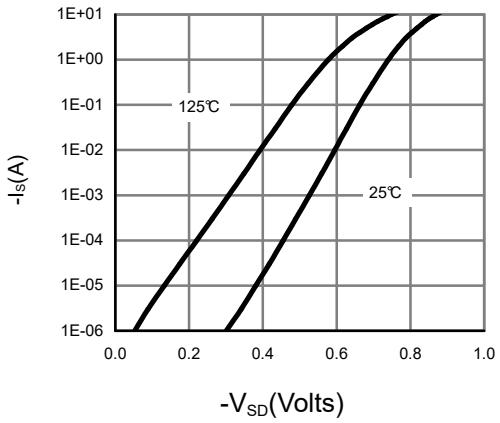


Figure 6: Body-Diode Characteristics

6.2 Typical Characteristic

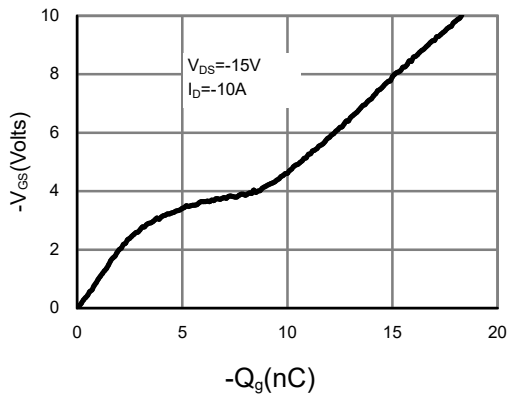


Figure 7: Gate-Charge Characteristics

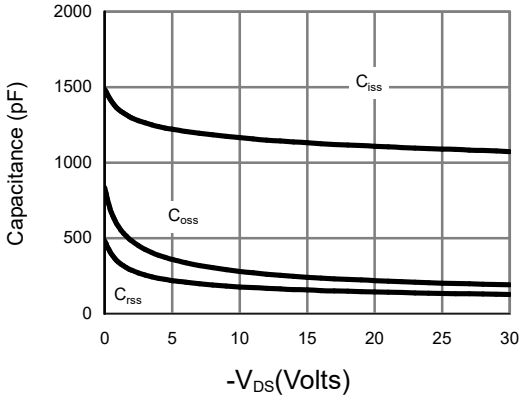


Figure 8: Capacitance Characteristics

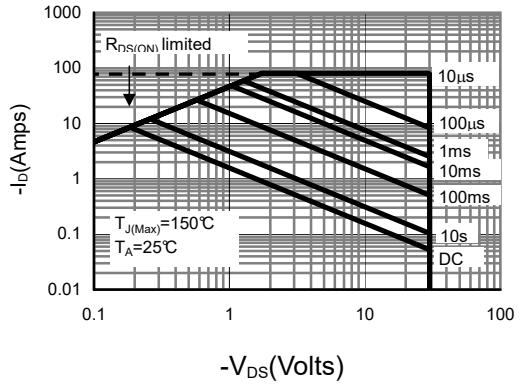


Figure 9: : Maximum Forward Biased Safe Operating Area (Note E)

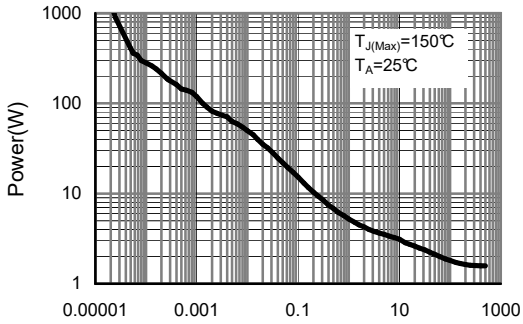


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

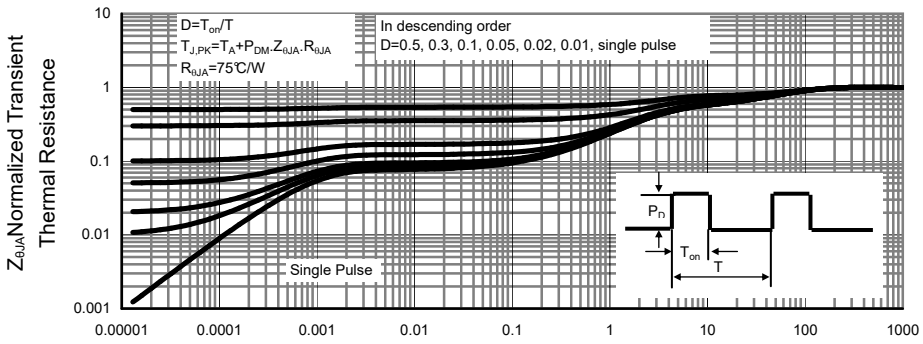
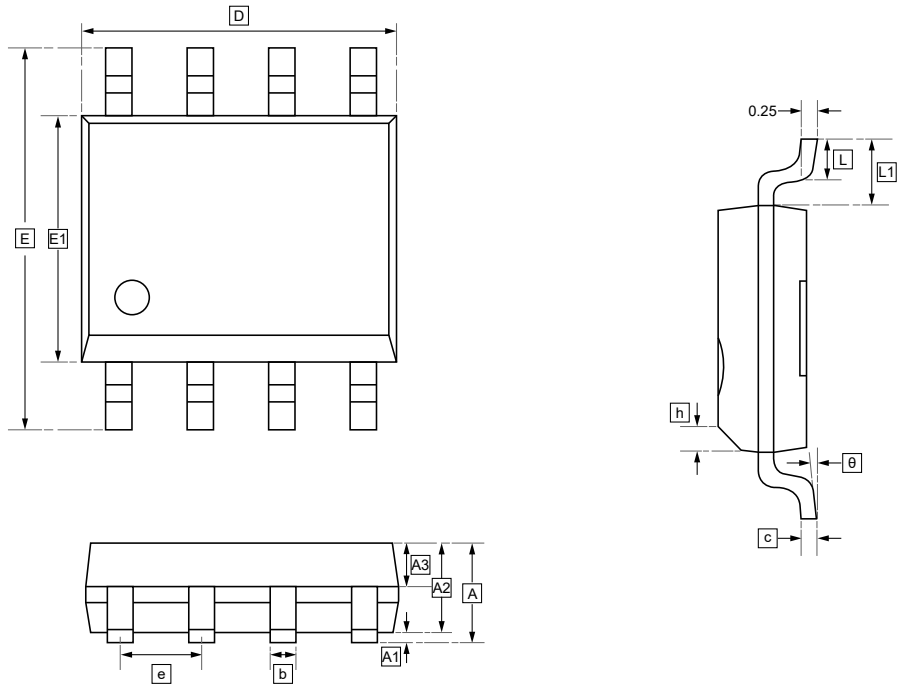


Figure 12: Normalized Maximum Transient Thermal Impedance

7.SOP-8 Package Outline Dimensions

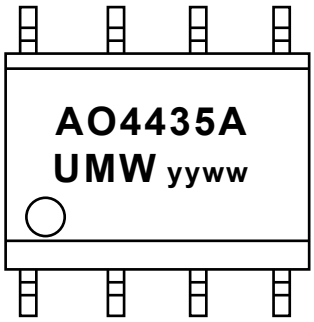


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	A3	b	c	D	E	E1	e	h	L
Min	-	0.05	1.30	0.60	0.39	0.20	4.70	5.80	3.80	1.24	0.30	0.50
Max	1.75	0.20	1.50	0.70	0.47	0.24	5.10	6.20	4.00	1.30	0.50	0.80

Symbol	L1	θ
Min	1.00	0°
Max	1.10	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

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