UMW AO4443

-40V P-Channel MOSFET

1.Description

The AO4443 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

- $V_{DS\ (V)}$=-40V
- I_D=-8A
- $R_{DS(ON)}$<22mΩ(V_{GS}=10V)

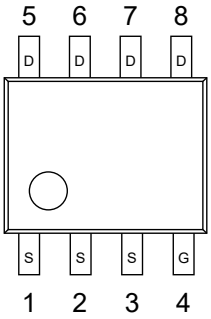
3.Application

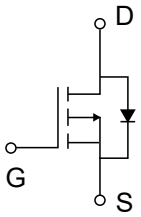
- Battery protection
- Load switch
- Uninterruptible power supply

4.Pinning information

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

SOP-8





5.Absolute Maximum Ratings T_A= 25°C

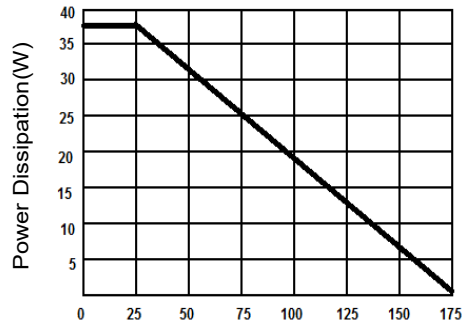
Parameter	Symbol	Rating	Units
Drain-Source Voltage (V_{GS}=0V)	V_{DS}	-40	V
Gate-Source Voltage (V_{DS}=0V)	V_{GS}	±20	
Drain Current-Continuous(T_C=25°C)	I_D	-8	A
Drain Current-Continuous(T_C=100°C)		-5	
Drain Current-Continuous, Current-Pulsed (Note 1)	$I_{DM(pluse)}$	-20	
Maximum Power Dissipation(T_C=25°C)	P_D	3.8	W
Maximum Power Dissipation(T_C=100°C)		1.9	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	°C
Thermal Resistance,Junction-to-Case	R_{thJC}	4	°C/W

6.Electrical Characteristic (T_A=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	uA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-1	-2	-3	V
Forward Transconductance	g_{FS}	V_{DS}=-5V, I_D=-8A		25		S
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-6A		18	22	mΩ
		V_{GS}=-4.5V, I_D=-5A		22	25	mΩ
Input Capacitance	C_{iss}	V_{DS}=-25V, V_{GS}=0V, f=1MHz		840		pF
Output Capacitance	C_{oss}			92		pF
Reverse Transfer Capacitance	C_{rss}			60		pF
Turn-on Delay Time	$t_{D(on)}$	R_L=1.6Ω, R_{GEN}=3Ω V_{GS}=-10V, V_{DS}=-20V		5		ns
Turn-on Rise Tim	t_r			12		ns
Turn-Off Delay Time	$t_{D(off)}$			20		ns
Turn-Off Fall Time	t_f			4.5		ns
Total Gate Charge	Q_g	V_{GS}=-10V, V_{DS}=-20V I_D=-5A		20		nC
Gate-Source Charge	Q_{gs}			2.5		nC
Gate-Drain Charge	Q_{gd}			4.5		nC
Source-Drain Current(Body Diode)	I_{SD}				-20	A
Forward on Voltage	V_{SD}	I_S=-20A, V_{GS}=0V			-1.2	V

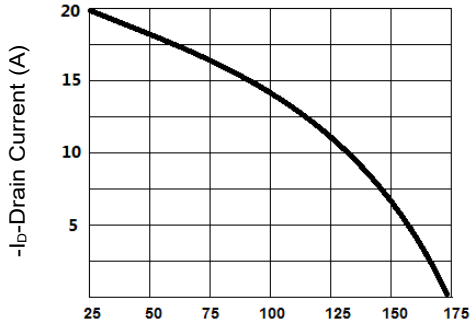
Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature

7.1Typical characteristic



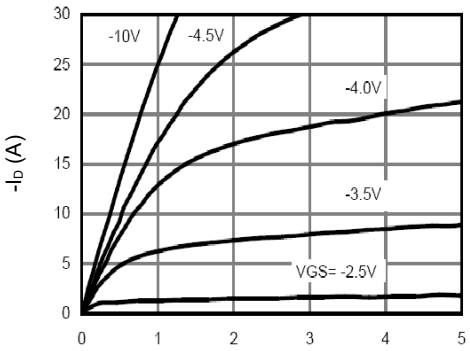
$-V_{DS}$ - Drain-to-Source Voltage (V)

Fig 1. Typical Output Characteristics



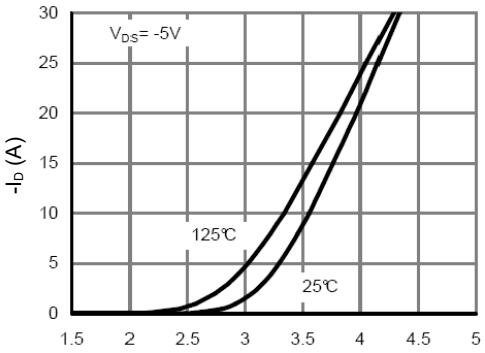
$-V_{DS}$ - Drain-to-Source Voltage (V)

Fig 2. Typical Output Characteristics



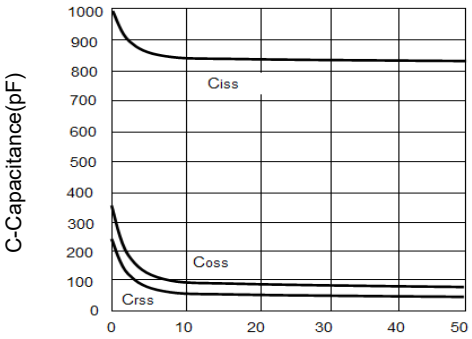
$-V_{DS}$ (Volts)

Fig 3. Output Characteristics



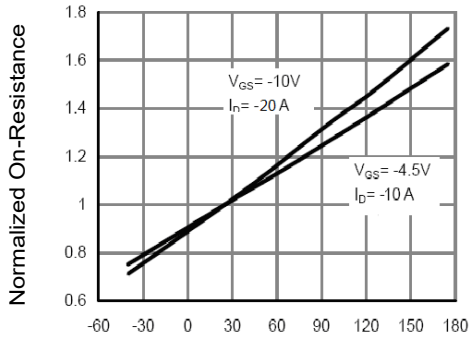
$-V_{GS}$ (Volts)

Fig 4. Transfer Characteristics



$-V_{DS}$ - Drain-to-Source Voltage(V)

Fig 5. Capacitance



Temperature (°C)

Fig 6. $R_{DS(ON)}$ vs Junction Temperature

7.2Typical characteristic

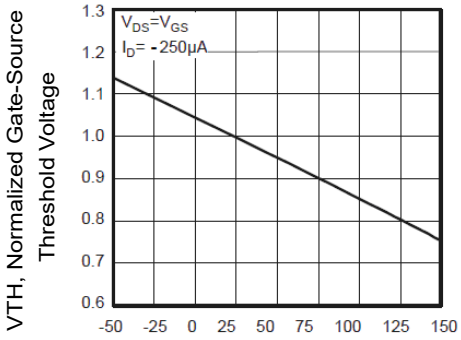


Fig 7. $V_{GS(th)}$ vs Junction Temperature

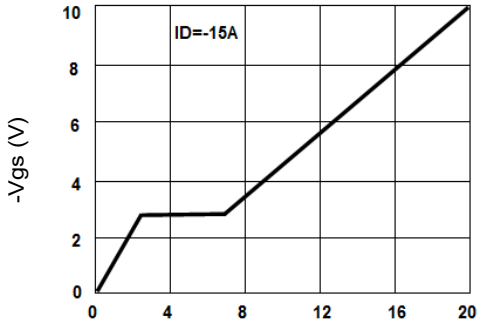


Fig 8. Gate Charge Waveforms

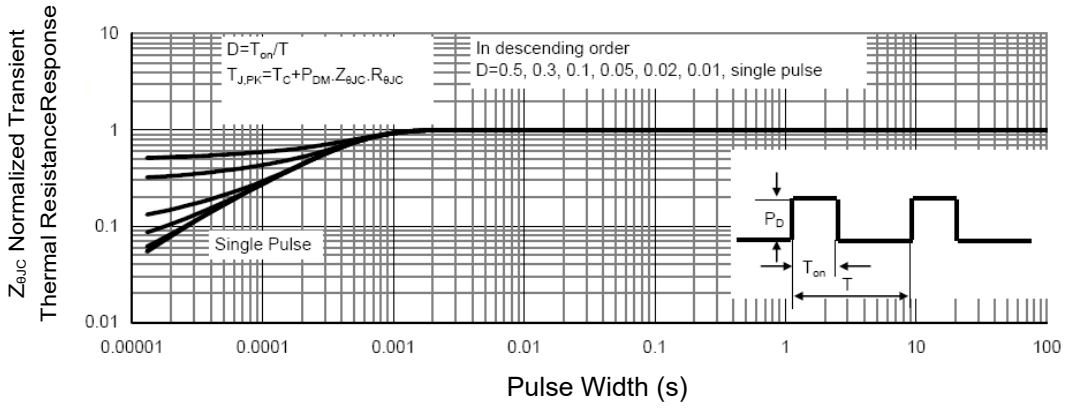
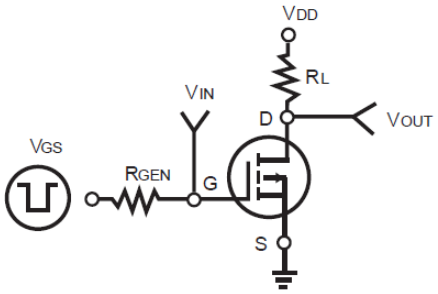
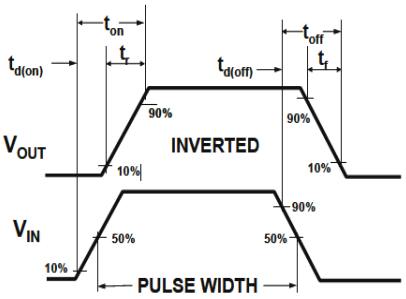


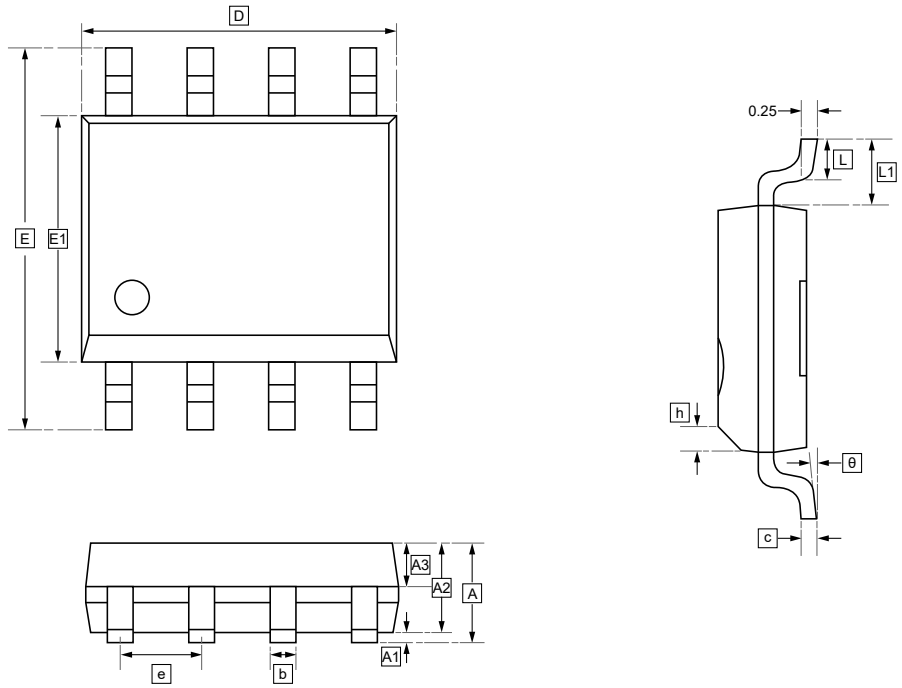
Fig 9. Normalized Maximum Transient Thermal Impedance

Switch Time Test Circuit and Switching Waveforms:





8.SOP-8 Package Outline Dimensions

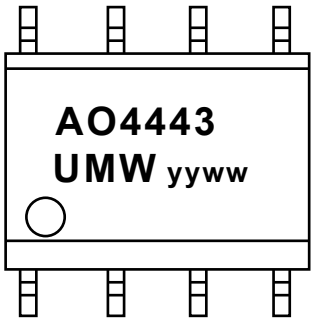


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	A3	b	c	D	E	E1	e	h	L
Min	-	0.05	1.30	0.60	0.39	0.20	4.70	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°

9.Ordering information



yy: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW AO4443	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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