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)

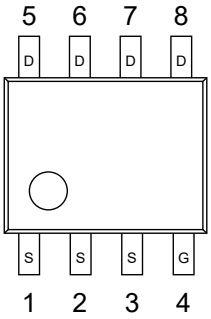
3.Application

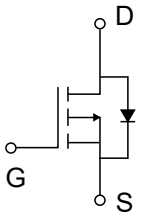
- Battery protection
- Load switch
- Uninterruptible power supply

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

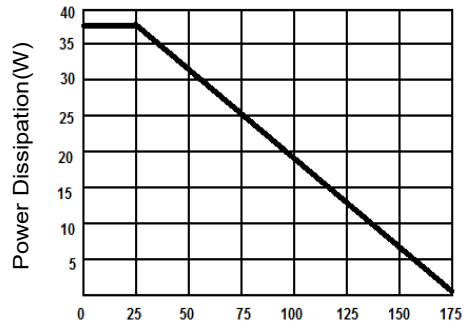
Parameter	Symbol	Rating	Units
Drain-Source Voltage (V_{GS}=0V)	V_{DS}	-40	V
Gate-Source Voltage (V_{DS}=0V)	V_{GS}	±20	
Drain Current-Continuous(T_C=25°C)	I_D	-8	A
Drain Current-Continuous(T_C=100°C)		-5	
Drain Current-Continuous, Current-Pulsed (Note 1)	$I_{DM(pluse)}$	-20	
Maximum Power Dissipation(T_C=25°C)	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

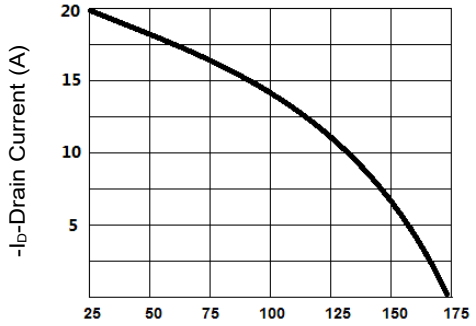
Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature

7.1Typical characteristic



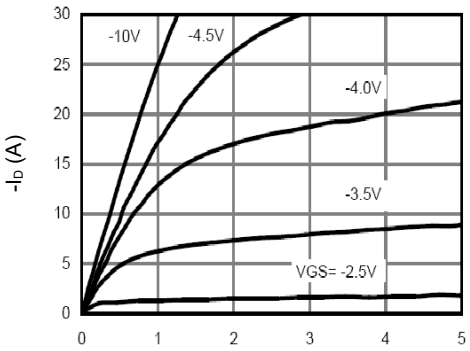
$-V_{DS}$ - Drain-to-Source Voltage (V)

Fig 1. Typical Output Characteristics



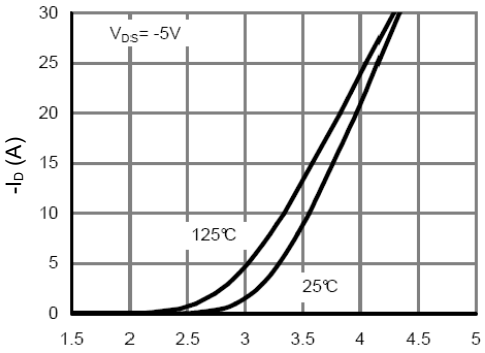
$-V_{DS}$ - Drain-to-Source Voltage (V)

Fig 2. Typical Output Characteristics



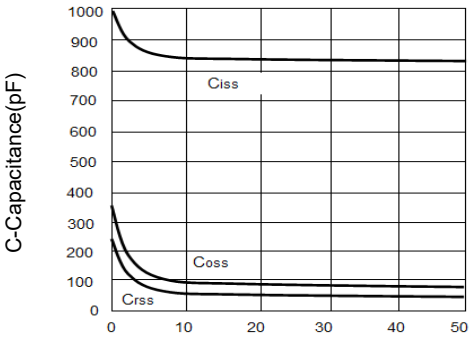
$-V_{DS}$ (Volts)

Fig 3. Output Characteristics



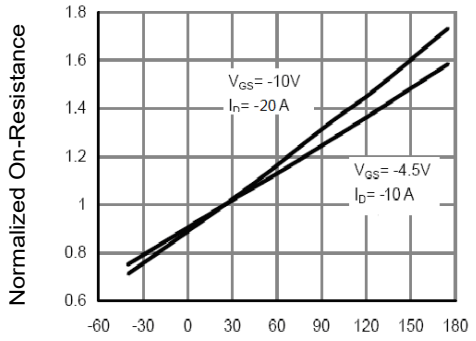
$-V_{GS}$ (Volts)

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

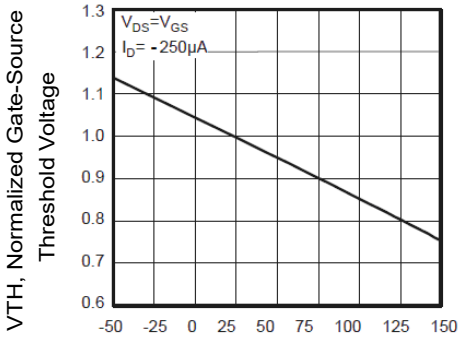


Fig 7. $V_{GS(th)}$ vs Junction Temperature

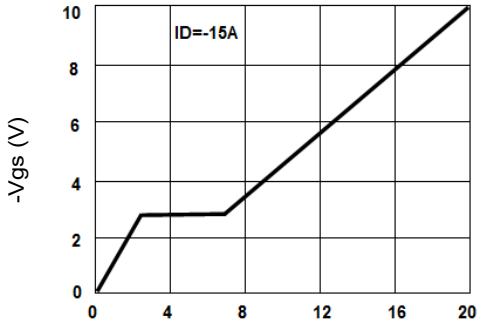


Fig 8. Gate Charge Waveforms

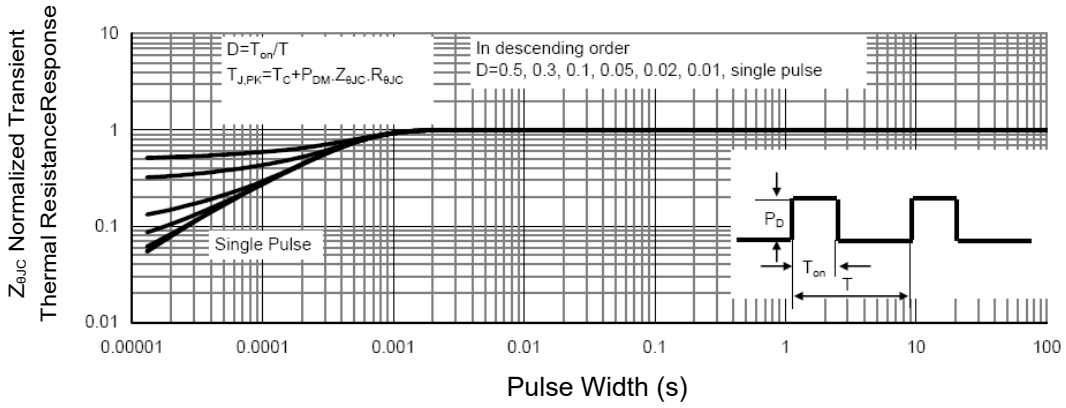
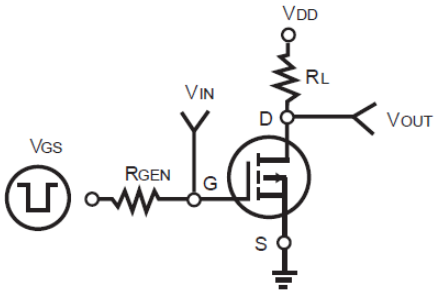
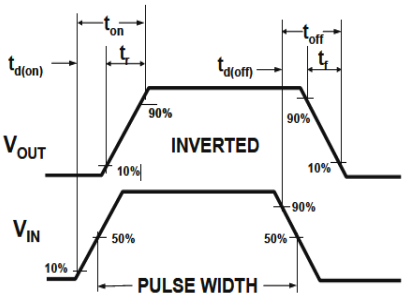


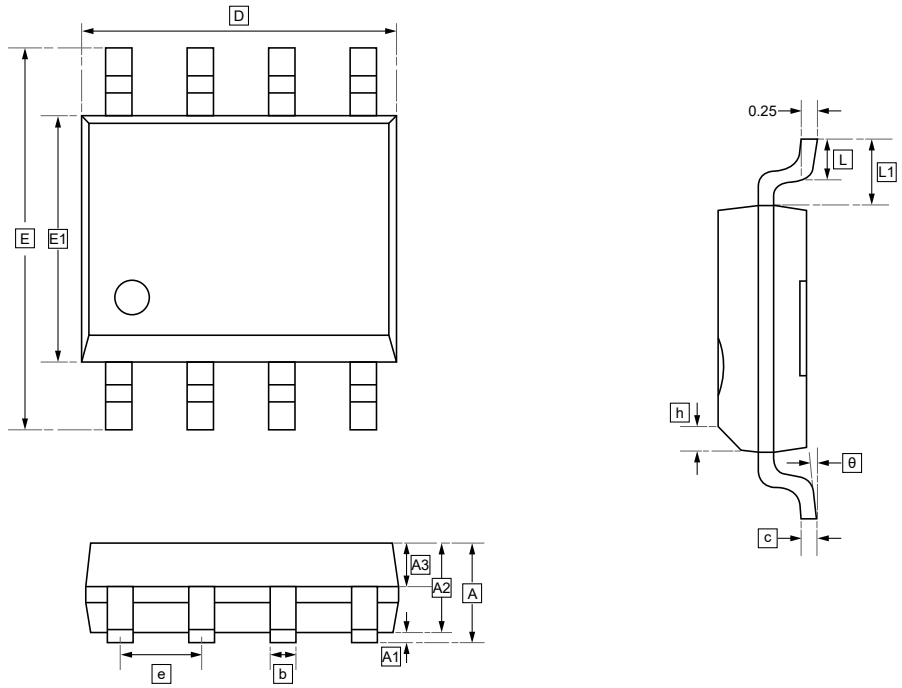
Fig 9. Normalized Maximum Transient Thermal Impedance

Switch Time Test Circuit and Switching Waveforms:





8.SOP-8 Package Outline Dimensions

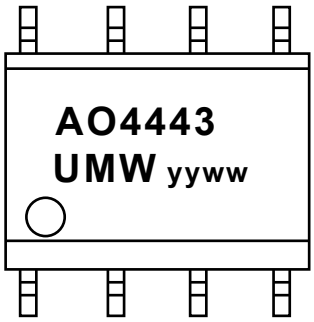


DIMENSIONS (mm are the original dimensions)

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

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