UMW AO3415A

SOT-23 Plastic-Encapsulate MOSFETS

1.Description

The AO3415A uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltage as low as 1.8V. This device is suitable for use as a load switch applications.

2.Features

- $V_{(BR)DSS}$ -20V
- I_D -5A
- $R_{DS(ON)}$MAX 36mΩ@-4.5V
- $R_{DS(ON)}$MAX 60mΩ@-2.5V

3.Features

- Excellent $R_{DS(ON)}$, low gate charge, low gate voltages

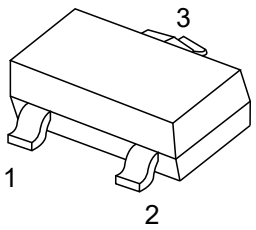
4.Applications

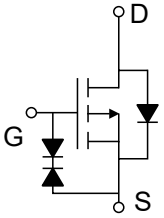
- Load switch and in PWM applications

5.Pinning information

Pin	Symbol	Description
1	G	GATE
2	S	SOURCE
3	D	DRAIN

SOT-23





6.Maximum ratings (T_A=25°C unless otherwise noted)

Parameter	Symbol	Value	Units
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±8	
Continuous Drain Current (t≤10s)	I_D	-5	A
Maximum Power Dissipation (t≤10s)	P_D	1	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	357	°C/W
Operating Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55~+150	°C

7.T_A=25°C unless otherwise specified

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameters						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=-250μA	-20			V
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-0.3	-0.56	-1	
Gate-body leakage current	I_{GSS}	V_{DS}=0V, V_{GS}=±8V			±10	μA
		V_{DS}=0V, V_{GS}=±4.5V			±1	
Zero gate voltage drain current	I_{DSS}	V_{DS}=-16V, V_{GS}=0V			-1	
Drain-source on-state resistance(note1)	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-4A		34	36	mΩ
		V_{GS}=-2.5V, I_D=-4A		43	60	
Forward transconductance(note2)	g_{FS}	V_{DS}=-5V, I_D=-4A	8			S
Body diode voltage(note2)	V_{SD}	I_S=-1A, V_{GS}=0V			-1	V
Dynamic Parameters (note3)						
Input Capacitance	C_{iss}	V_{DS}=-10V, V_{GS}=0V, f=1MHz		1450		pF
Output Capacitance	C_{oss}			205		
Reverse Transfer Capacitance	C_{rss}			160		
Gate resistance	R_g	V_{DS}=0V, V_{GS}=0V, f=1MHz		6.5		Ω
Switching Parameters						
Total Gate Charge	Q_g	V_{DS}=-10V, V_{GS}=-4.5V I_D=-4A		17.2		nC
Gate-Source Charge	Q_{gs}			1.3		
Gate-Drain Charge	Q_{gd}			4.5		
Turn-On Delay Time (note3)	$t_{D(on)}$	V_{DS}=-10V, V_{GS}=-4.5V R_{GEN}=3Ω, R_L=2.5Ω		9.5		ns
Turn-On Rise Time (note3)	t_r			17		
Turn-Off Delay Time (note3)	$t_{D(off)}$			94		
Turn-Off Fall Time (note3)	t_f			35		

1. Repetitive rating,pulse width limited by junction temperature.
2. Pulse Test : Pulse width≤300μs, duty cycle≤2%.
3. These parameters have no way to verify

8.1Typical Characterisitics

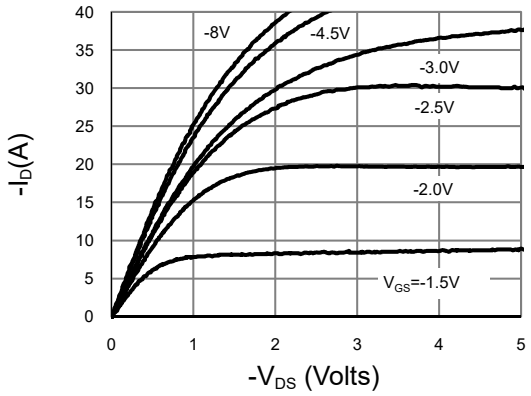


Fig 1: On-Region Characteristics

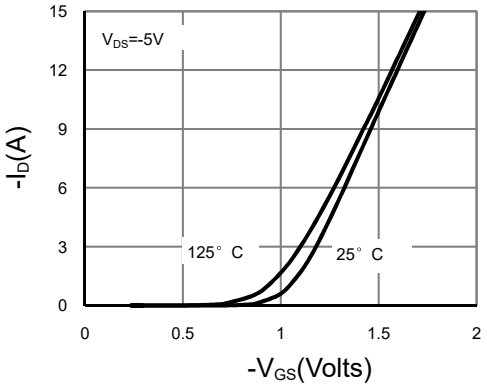


Figure 2: Transfer Characteristics

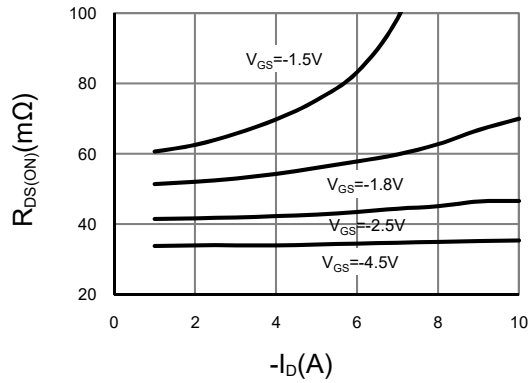


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

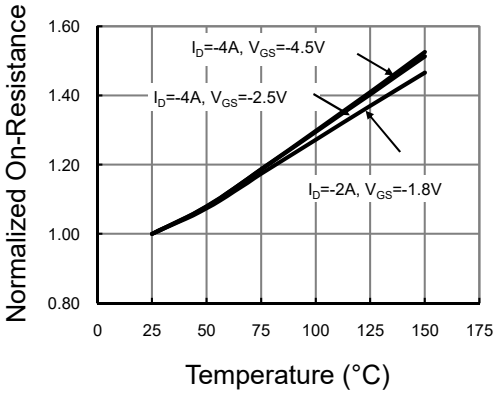


Figure 4: On-Resistance vs. Junction Temperature

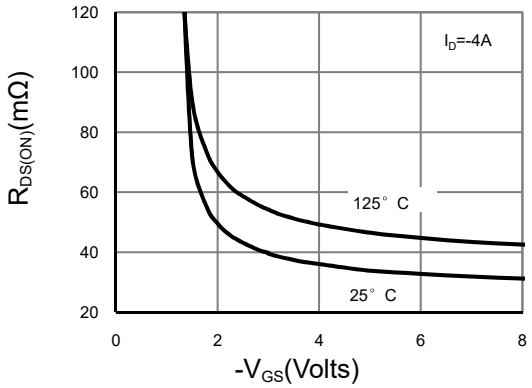


Figure 5: On-Resistance vs. Gate-Source Voltage

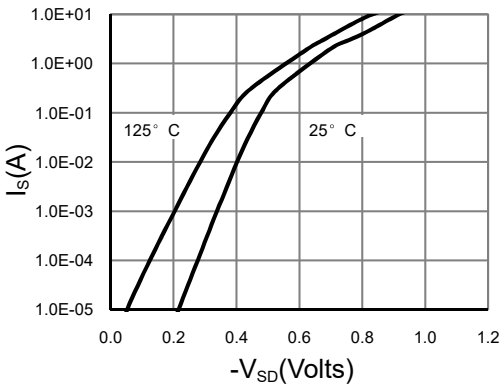


Figure 6: Body-Diode Characteristics

8.2Typical Characterisitics

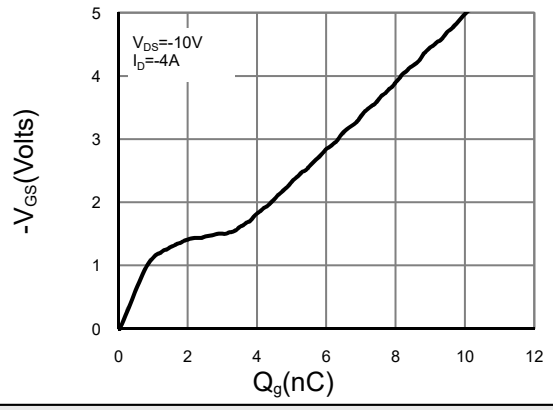


Figure 7: Gate-Charge Characteristics

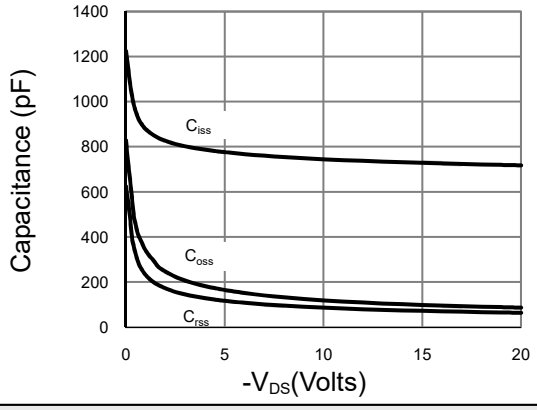


Figure 8: Capacitance Characteristics

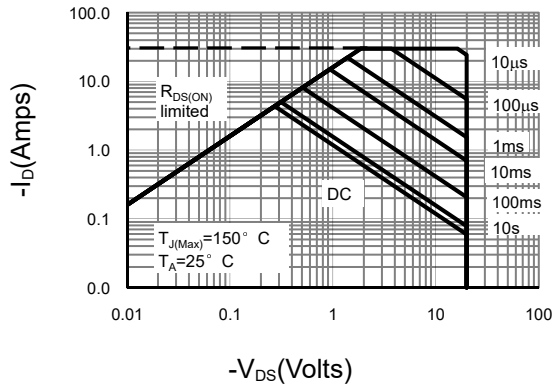


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

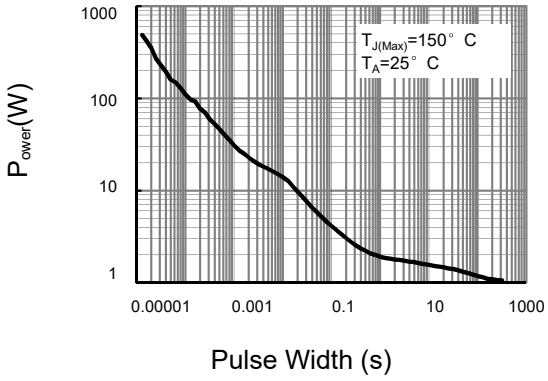


Figure 10: Single Pulse Power Rating Junction-to -Ambient (Note E)

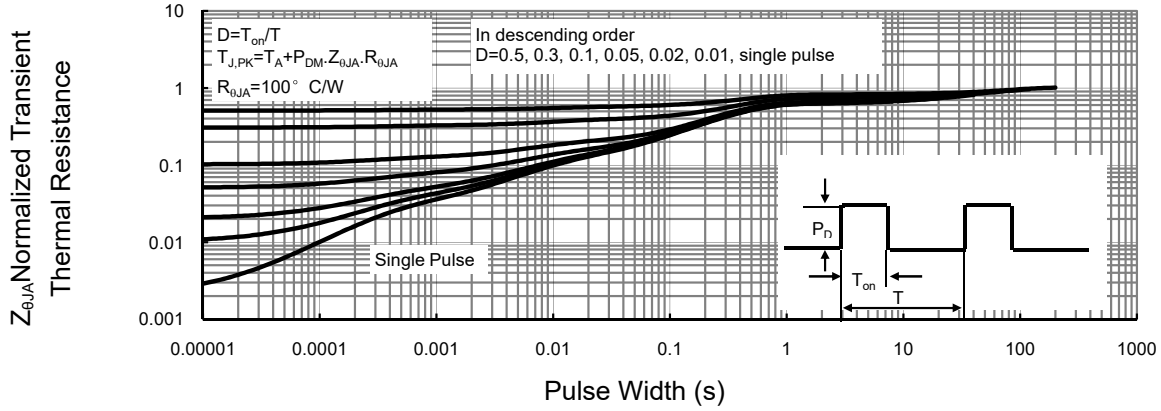
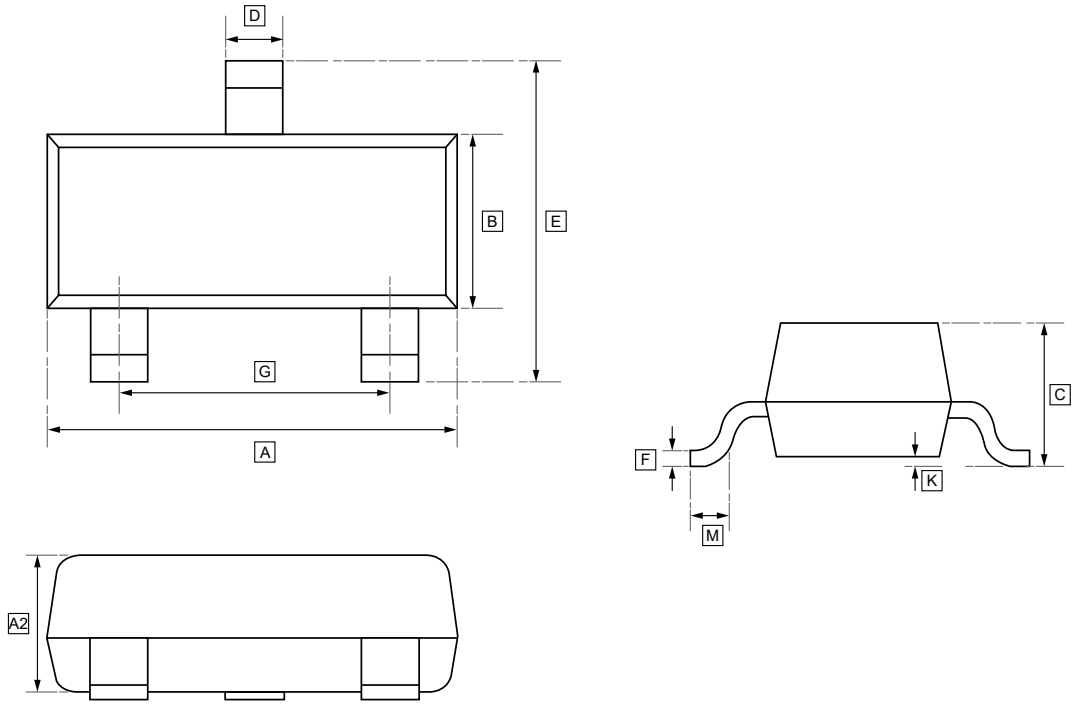


Figure 11: Normalized Maximum Transient Thermal Impedance

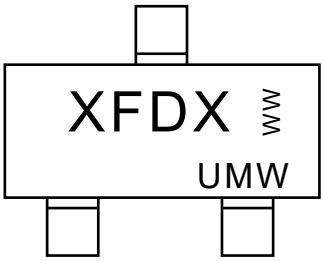
9.SOT-23 Package Outline Dimensions



DIMENSIONS (mm are the original dimensions)

Symbol	A	B	C	D	E	G	K	M	A2	F
Min	2.80	1.20	0.90	0.32	2.25	1.80	0.00	0.30	0.95	0.095
Max	3.04	1.40	1.10	0.55	2.55	2.00	0.10	-	1.05	0.115

10.Ordering Information



WW: Batch Code

Order Code	Package	Base QTY	Delivery Mode
UMW AO3415A	SOT-23	3000	Tape and reel

11.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.