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

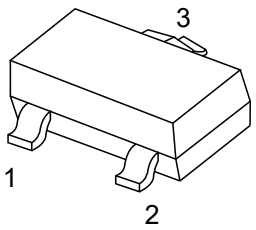
4.Applications

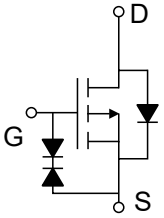
- Load switch and in PWM applications

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

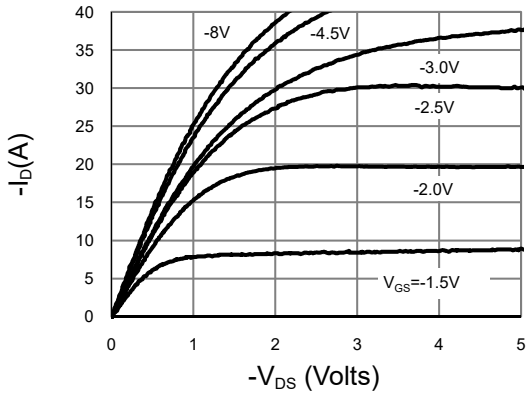


Fig 1: On-Region Characteristics

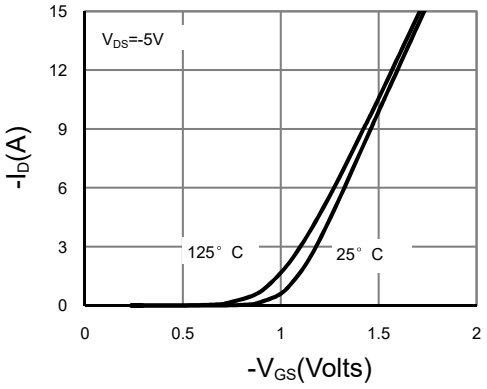


Figure 2: Transfer Characteristics

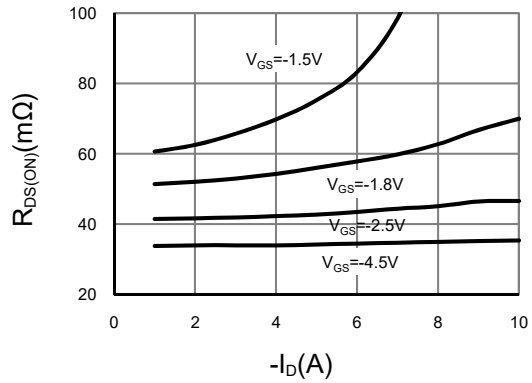


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

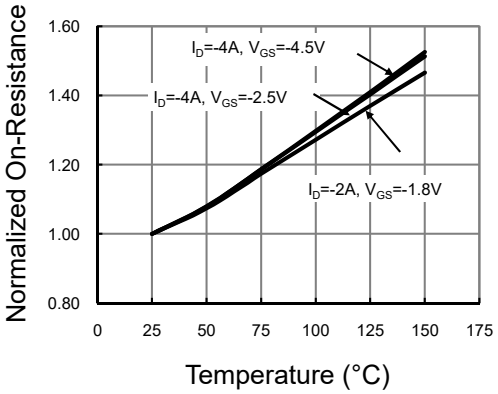


Figure 4: On-Resistance vs. Junction Temperature

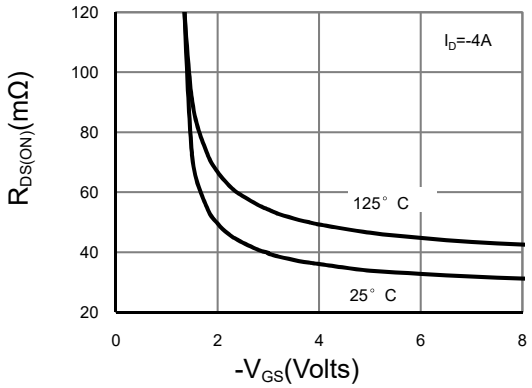


Figure 5: On-Resistance vs. Gate-Source Voltage

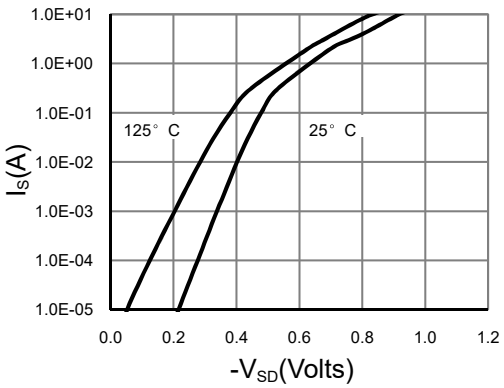


Figure 6: Body-Diode Characteristics

8.2Typical Characterisitics

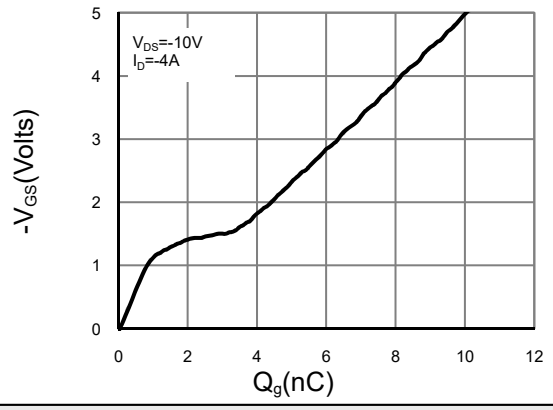


Figure 7: Gate-Charge Characteristics

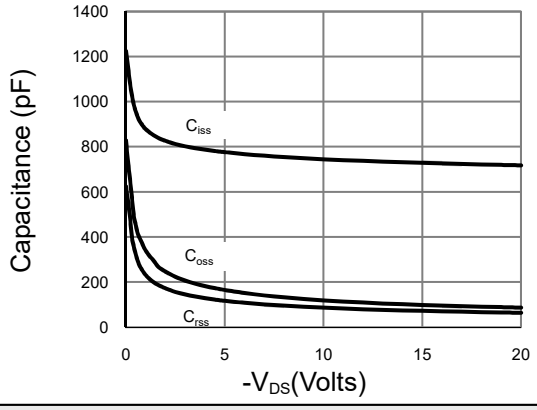


Figure 8: Capacitance Characteristics

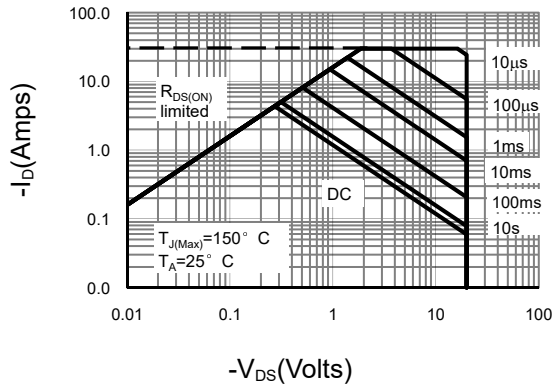


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

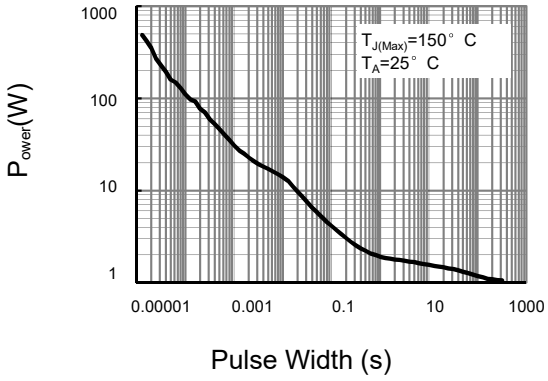


Figure 10: Single Pulse Power Rating Junction-to -Ambient (Note E)

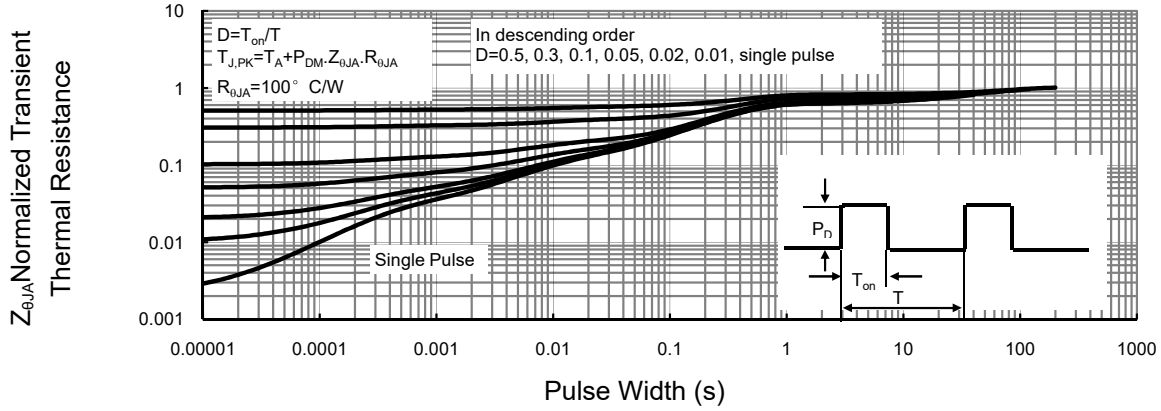
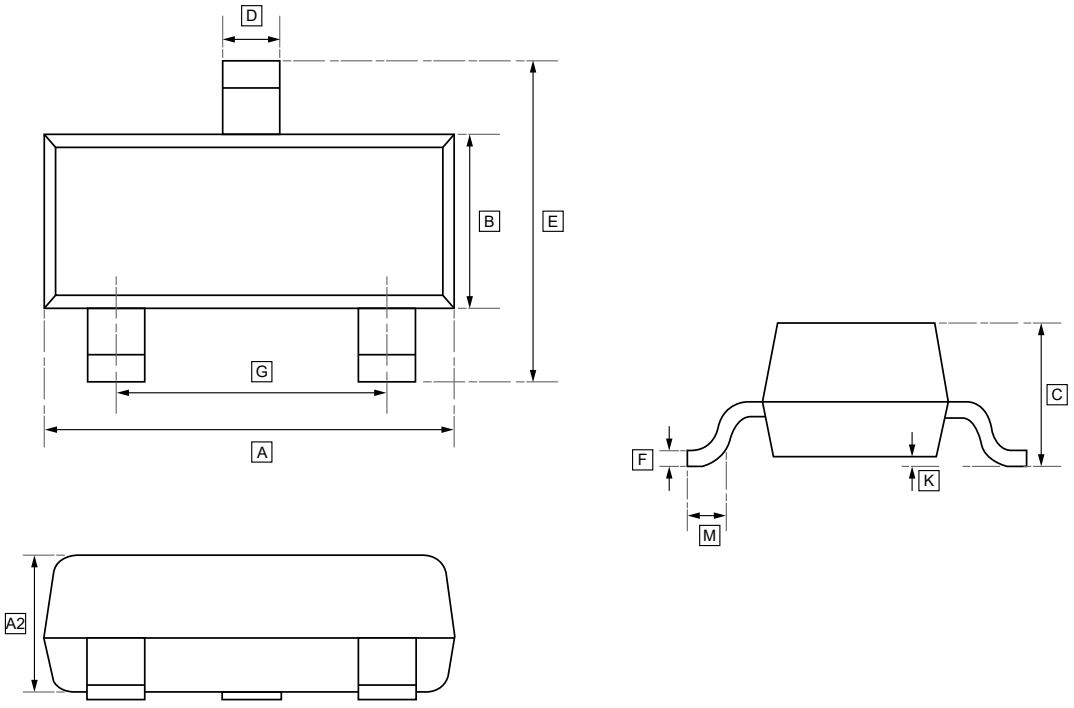


Figure 11: Normalized Maximum Transient Thermal Impedance

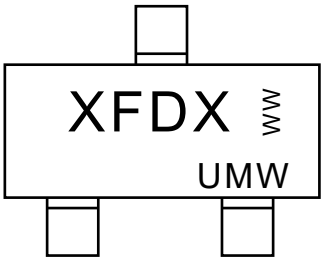
9.SOT-23 Package Outline Dimensions



DIMENSIONS (mm are the original dimensions)

Symbol	A	B	C	D	E	G	K	M	A2	F
Min	2.85	1.20	0.90	0.40	2.25	1.80	0.00	0.30	0.95	0.095
Max	3.04	1.40	1.10	0.50	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

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