UMW AO3402A

N-Channel MOSFET

1.Description

The AO3402A uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltage as low as 2.5V. This device is suitable for use as a load switch or in PWM application.

2.Features

- V_{DS}=30V
- I_D=4A
- $R_{DS(ON)}$<52mΩ(V_{GS}=10V)
- $R_{DS(ON)}$<65mΩ(V_{GS}=4.5V)
- $R_{DS(ON)}$<85mΩ(V_{GS}=2.5V)

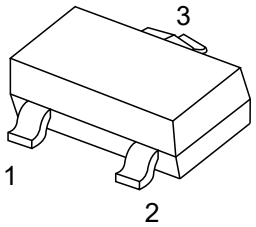
3.Application

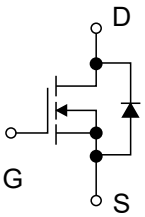
- Load Switch and in PWM applications

4.Pinning information

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

SOT-23





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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Curren	I_D	4	A
Pulsed Drain Current (note 1)	I_{DM}	15	A
Power Dissipation	P_D	0.35	W
Thermal Resistance from Junction to Ambient (note 2)	$R_{\theta JA}$	125	°C/W
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55~+150	°C

6.T_A=25°C unless otherwise specified

Parameter	Symbol	Conditions	Min	Typ	Max	Units
STATIC CHARACTERISTICS						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	30			V
Zero gate voltage drain current	I_{DSS}	V_{DS}=24V, V_{GS}=0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS}=±12V, V_{DS}=0V			±100	nA
Gate threshold voltage (note 3)	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	0.8		1.4	V
Drain-source on-resistance (note 3)	$R_{DS(ON)}$	V_{GS}=10V, I_D=4A			52	mΩ
		V_{GS}=4.5V, I_D=3A			65	mΩ
		V_{GS}=2.5V, I_D=2A			85	mΩ
Forward transconductance (note 3)	g_{FS}	V_{DS}=15V, I_D=4A		8		S
Diode forward voltage (note 3)	V_{SD}	I_S=1A, V_{GS}=0V			1	V
DYNAMIC CHARACTERISTICS (note 4)						
Input Capacitance	C_{iss}	V_{DS}=15V, V_{GS}=0V, f=1MHz		390		pF
Output Capacitance	C_{oss}			54.5		pF
Reverse Transfer Capacitance	C_{rss}			41		pF
Gate resistance	R_g	V_{DS}=0V, V_{GS}=0V, f=1MHz		3		Ω
SWITCHING CHARACTERISTICS (note 4)						
Turn-On delay time	$t_{D(on)}$	V_{GS}=10V, V_{DS}=15V, R_L=3.75Ω,R_{GEN}=6Ω		3.3		ns
Turn-On rise time	t_r			1		ns
Turn-Off delay time	$t_{D(off)}$			21.7		ns
Turn-Off fall time	t_f			2.1		ns
Total Gate Charge	Q_g	V_{DS}=15V, V_{GS}=4.5V, I_D=4A		4.34		nC
Gate-Source Charge	Q_{gs}			0.6		nC
Gate-Drain Charge	Q_{gd}			1.38		nC
Body Diode Reverse Recovery Time	t_{rr}	I_F=4A, dI/dt=100A/μs		1.2		ns
Body Diode Reverse Recovery Charge	Q_{rr}			6.3		nC

1. Repetitive rating : Pulse width limited by junction temperature.
2. Surface mounted on FR4 board , t≤10s.
3. Pulse Test : Pulse Width≤80μs, Duty Cycle≤0.5%.
4. Guaranteed by design, not subject to producting.

7.1Typical Characterisitics

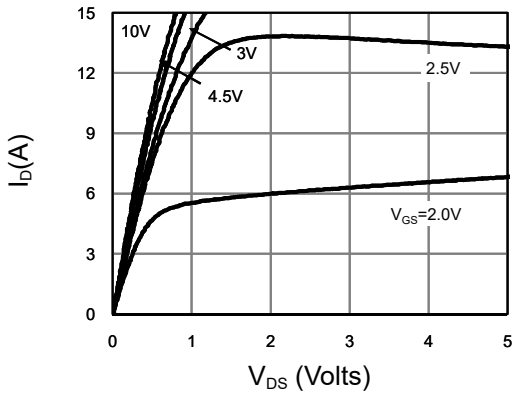


Fig 1: On-Region Characteristics

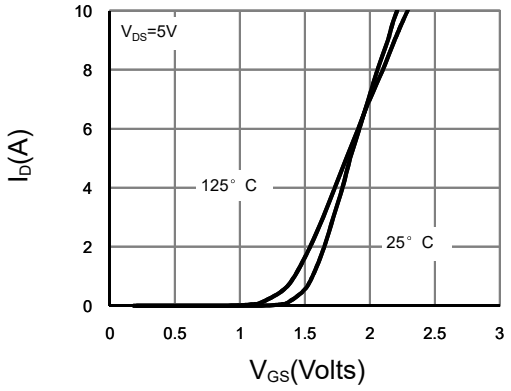


Figure 2: Transfer Characteristics

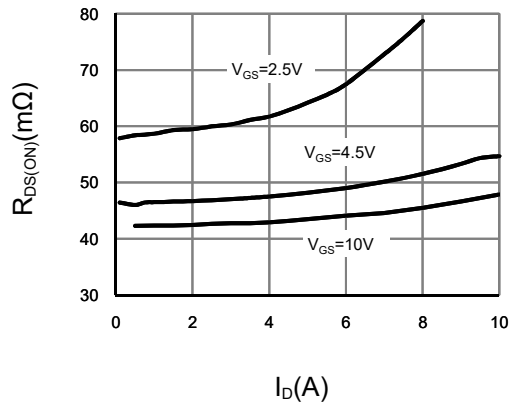


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

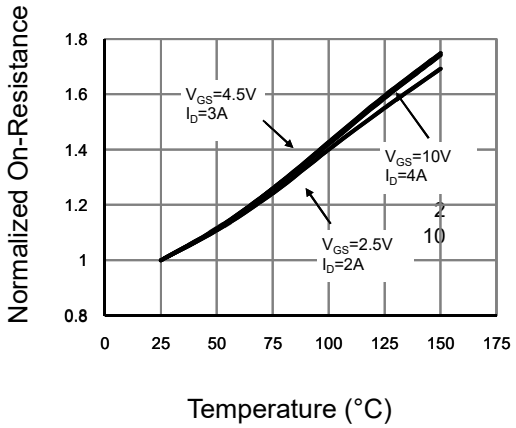


Figure 4: On-Resistance vs. Junction Temperature

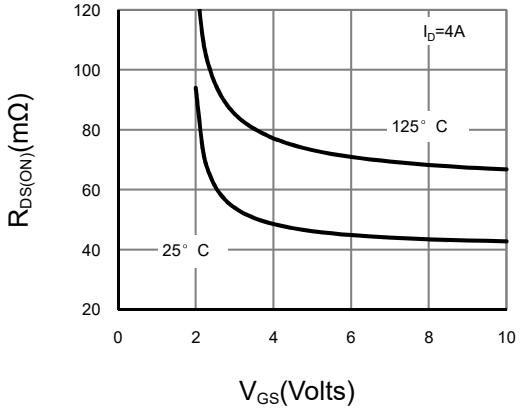


Figure 5: On-Resistance vs. Gate-Source Voltage

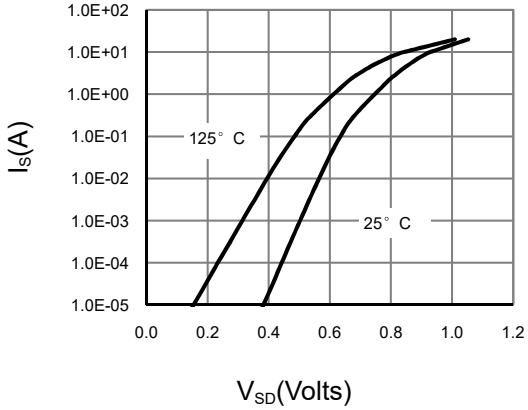


Figure 6: Body-Diode Characteristics

7.2Typical Characterisitics

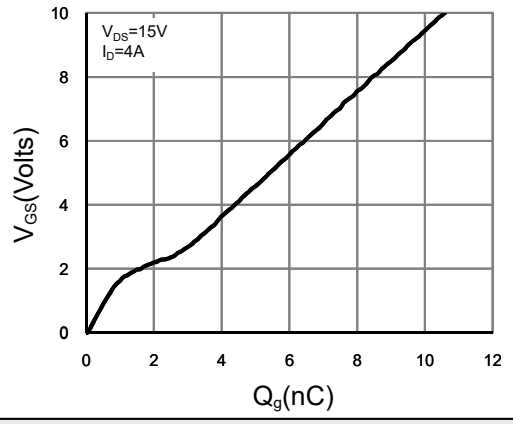


Figure 7: Gate-Charge Characteristics

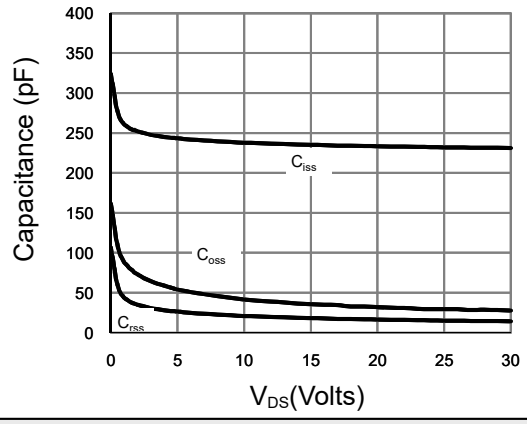


Figure 8: Capacitance Characteristics

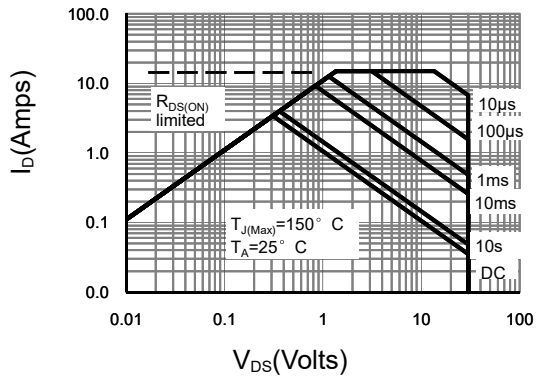


Figure 9: Maximum Forward Biased Safe Operating Area

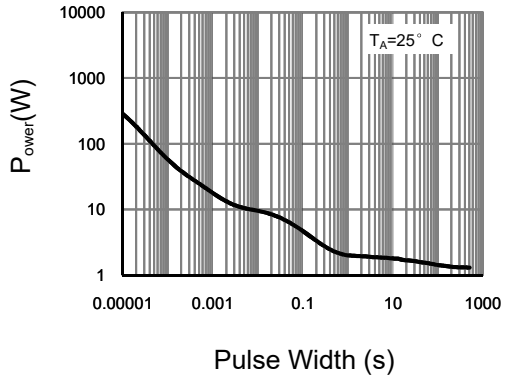


Figure 10: Single Pulse Power Rating Junction-to -Ambient

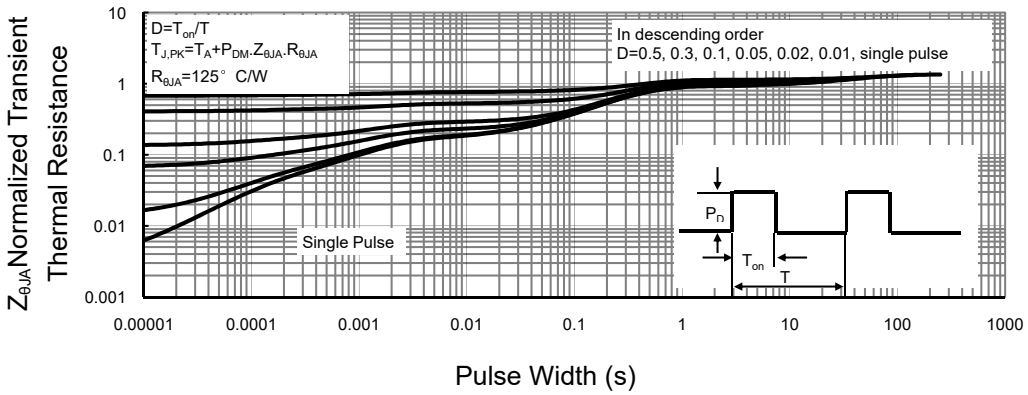
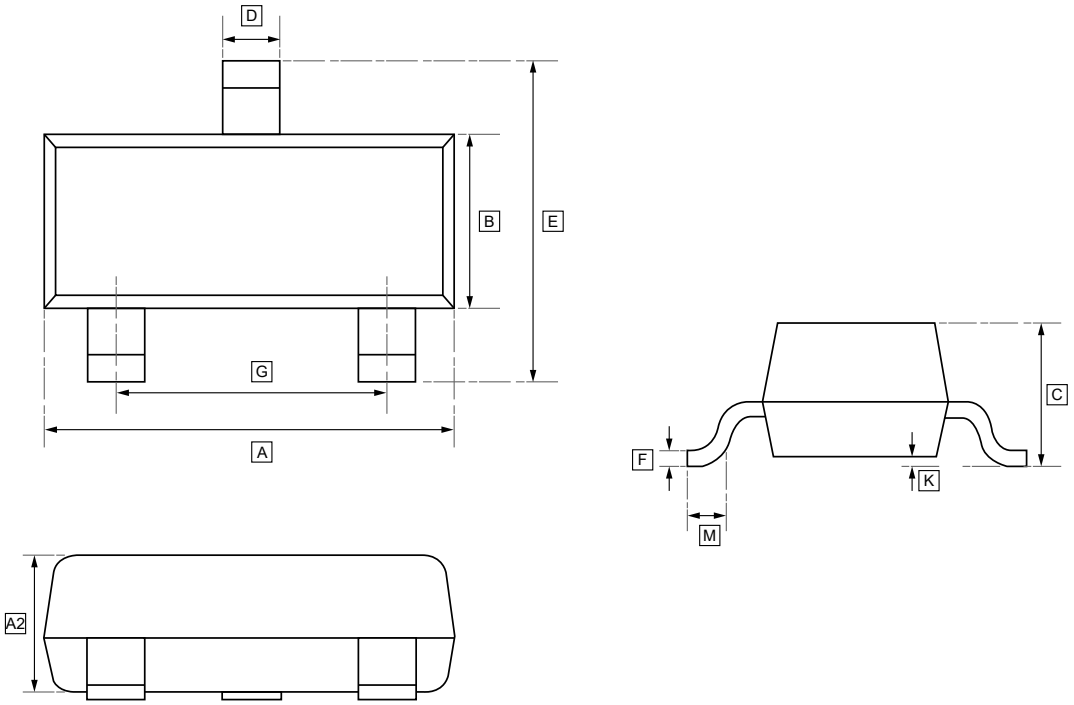


Figure 11: Normalized Maximum Transient Thermal Impedance

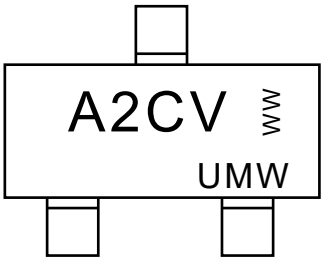
8.SOT-23 Package Outline Dimensions



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

9.Ordering Information



WW: Batch Code

Order Code	Package	Base QTY	Delivery Mode
UMW AO3402A	SOT-23	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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