UMW AO3422A

N-Channel 60-V(D-S) MOSFET

1.Description

The AO3422A uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge. It offers operation over a wide gate drive range from 2.5V to12V. This device is suitable for use as a load switch.

2.1Features

- V_{DS}=60V
- I_D=2.1A
- $R_{DS(ON)}$＜80mΩ(V_{GS}=10V)
- $R_{DS(ON)}$＜89mΩ(V_{GS}=4.5V)

2.2Features

- Trench FET Power MOSFET

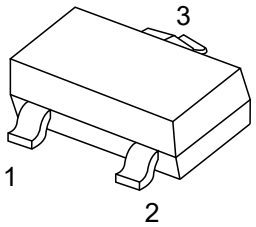
3.Application

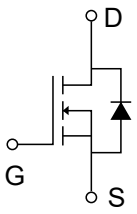
- Load Switch for Portable Devices
- DC/DC Converter

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}	60	V
Gate-Source Voltage	V_{GS}	±12	
Continuous Drain Curren	I_D	2.1	A
Pulsed Drain Current	I_{DM}	10	
Continuous Source-Drain Current(Diode Conduction)	I_S	0.85	
Power Dissipation	P_D	1.25	W
Thermal Resistance from Junction to Ambient (t≤5s)	$R_{\theta JA}$	125	°C/W
Operating Junction	T_J	150	°C
Storage Temperature	T_{STG}	-55 to 150	°C

6.Static Electrical Characteristics (T_A= 25°C Unless Otherwise Noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	60			V
Gate-source threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1		2.5	V
Gate-source leakage	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
Zero gate voltage drain current	I_{DSS}	V_{DS}=60V, V_{GS}=0V			1	μA
Drain-source on-state resistancea	$R_{DS(ON)}$	V_{GS}=10V, I_D=2.1A		80	105	mΩ
		V_{GS}=4.5V, I_D=2A		89	125	mΩ
Forward transconductance	g_{FS}	V_{DS}=4.5V, I_D=2.1A		11		S
Diode forward voltage	V_{SD}	I_S=1.5A, V_{GS}=0V		0.8	1.3	V
Dynamic						
Input Capacitance	C_{iss}	V_{DS}=25V, V_{GS}=0V, f=1MHz		214	300	pF
Output Capacitance	C_{oss}			31		pF
Reverse Transfer Capacitance	C_{rss}			12.6		pF
Total gate charge	Q_g	V_{DS}=25V, V_{GS}=4.5V, I_D=3A		2.6	3.3	nC
Gate-source charge	Q_{gs}			0.6		nC
Gate-drain charge	Q_{gd}			0.8		nC
Gate resistance	R_g	f=1MHz		1.3	3	Ω
Switchingb						
Turn-On Delay Time	$t_{D(on)}$	V_{DS}=25V R_L=6Ω, I_D≈1A V_{GEN}=10V, R_G=3Ω		2.3		ns
Rise Time	t_r			2.4		ns
Turn-Off Delay Time	$t_{D(off)}$			16.5		ns
Fall time	t_f			2		ns
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode Current	I_S	T_C=25°C			3	A

1. Repetitive rating : Pulse width limited by junction temperature.
2. Surface mounted on FR4 board , t < 5 sec.
3. Pulse Test : Pulse Width≤300μs, Duty Cycle≤2%.
4. Guaranteed by design, not subject to production testing.

7.1Typical Characterisitics

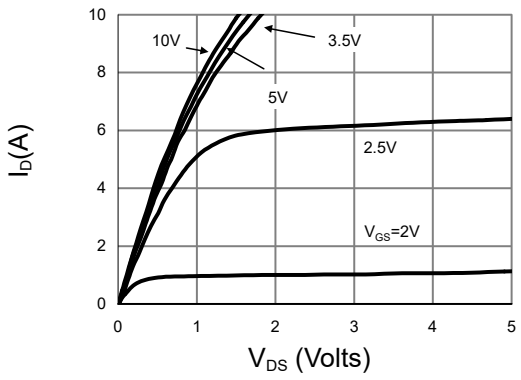


Fig 1: On-Region Characteristics

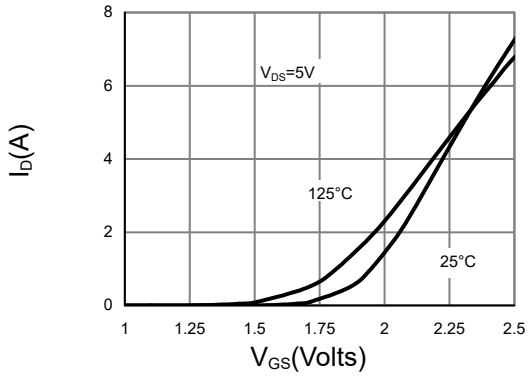


Figure 2: Transfer Characteristics

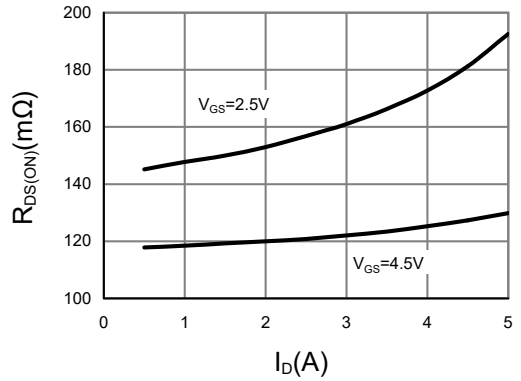


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

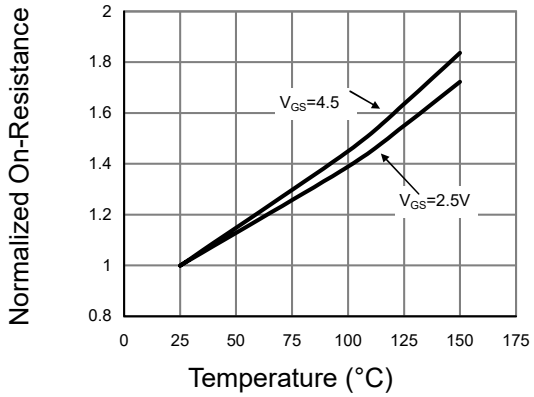


Figure 4: On-Resistance vs. Junction Temperature

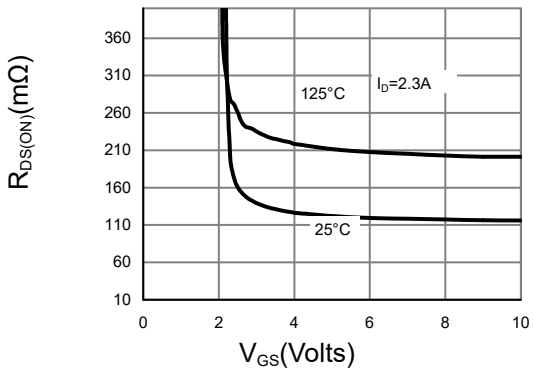


Figure 5: On-Resistance vs. Gate-Source Voltage

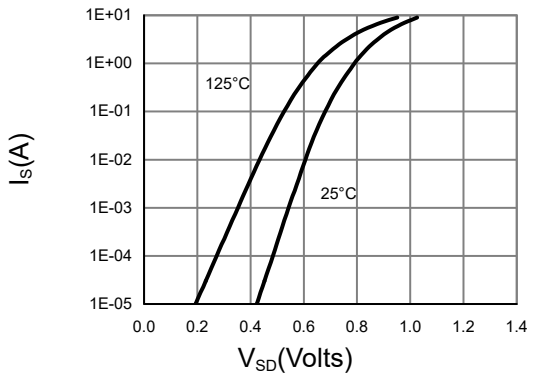


Figure 6: Body-Diode Characteristics

7.2Typical Characterisitics

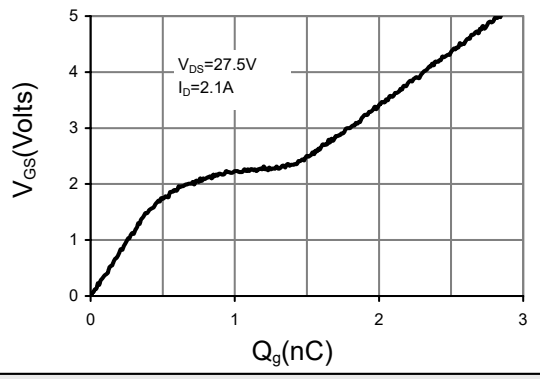


Figure 7: Gate-Charge Characteristics

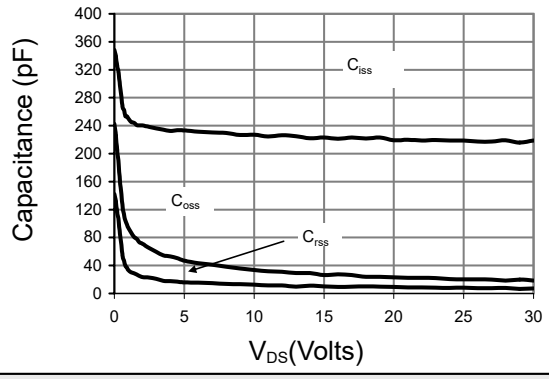


Figure 8: Capacitance Characteristics

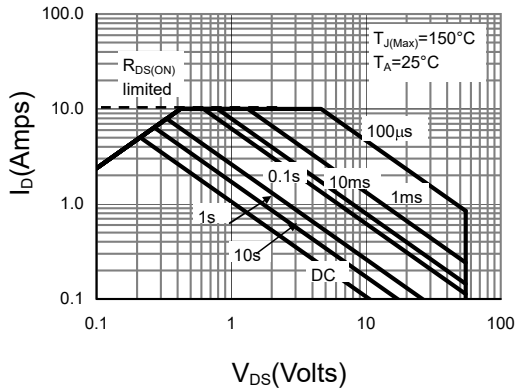


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

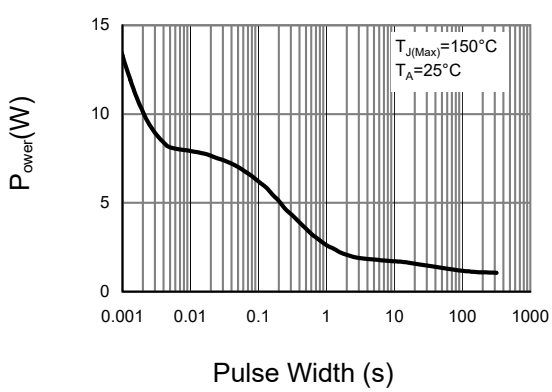


Figure 10: Single Pulse Power Rating Junction-to -Ambient (Note E)

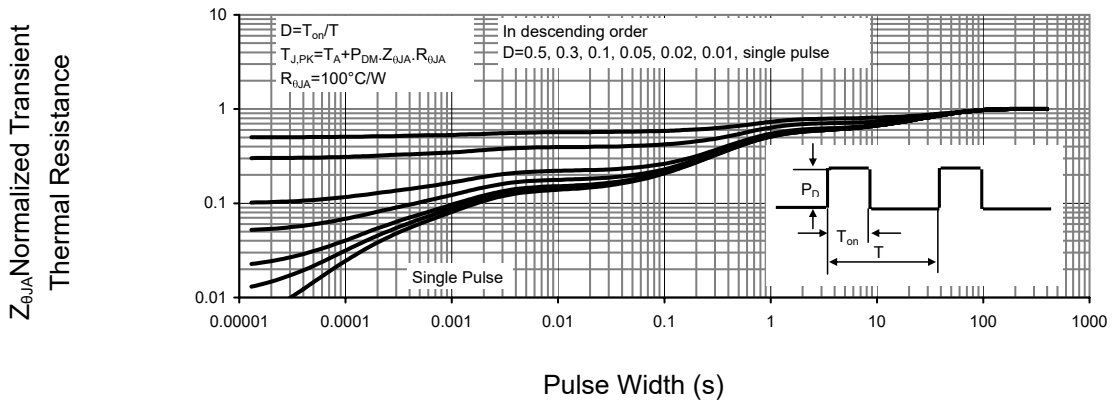
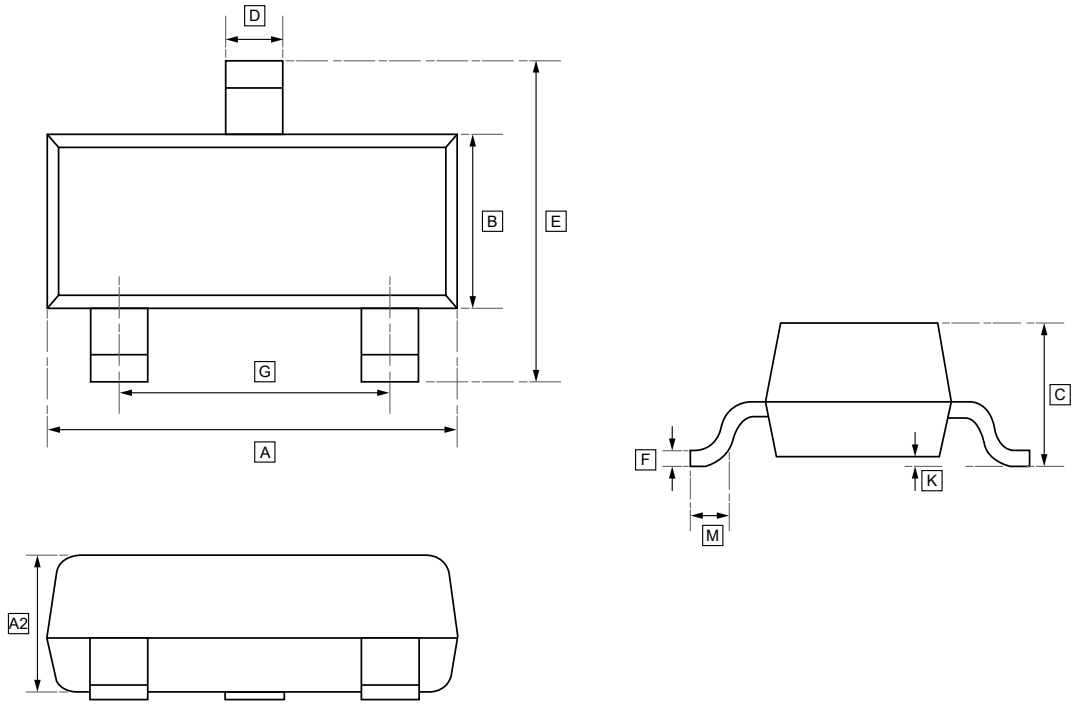


Figure 11: Normalized Maximum Transient Thermal Impedance

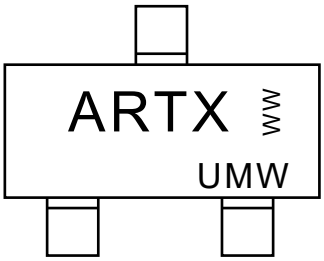
8.SOT-23 Package Outline Dimensions



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 AO3422A	SOT-23	3000	Tape and reel

10.Disclaimer

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