UMW AO3423A

-20V P-Channel MOSFET

1.Description

The AO3423A 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 load switch applications.

2.Features

- V_{DS}=-20V
- I_D=-2A
- $R_{DS(ON)}$<59mΩ(V_{GS}=-4.5V)
- $R_{DS(ON)}$<72mΩ(V_{GS}=-2.5V)
- Trench FET Power MOSFET

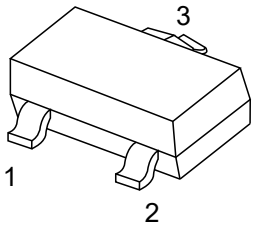
3.Application

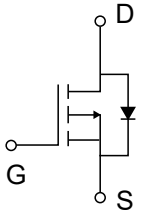
- Load Switch for Portable Devices
- DC/DC Converter

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	Value	Units
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±12	
Continuous Drain Current	I_D	-2	A
Pulsed Drain Curren	I_{DM}	-18	
Power Dissipation	P_D	1.4	W
Thermal Resistance from Junction to Ambient (t≤5s)	$R_{\theta JA}$	125	°C/W
Operating Junction	T_J	-55 to 150	°C
Storage Temperature	T_{STG}	-55 to 150	

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	-20			V
Gate-source threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-0.4		-1	V
Gate-source leakage	I_{GSS}	V_{DS}=0V, V_{GS}=±12V			±10	μA
Zero gate voltage drain current	I_{DSS}	V_{DS}=-20V, V_{GS}=0V			-1	μA
Drain-source on-state resistancea	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-2A		59	120	mΩ
		V_{GS}=-2.5V, I_D=-1A		72	150	mΩ
Forward transconductance	g_{FS}	V_{DS}=-4.5V, I_D=-2A		7		S
Diode forward voltage	V_{SD}	I_S=-1A, V_{GS}=0V		-0.8	-1.2	V
Dynamic						
Input Capacitance	C_{iss}	V_{DS}=-4.5V, V_{GS}=0V, f=1MHz		325		pF
Output Capacitance	C_{oss}			63		pF
Reverse Transfer Capacitance	C_{rss}			37		pF
Total gate charge	Q_g	V_{DS}=-10V, V_{GS}=-4.5V, I_D=-2A		3.2		nC
Gate-source charge	Q_{gs}			0.6		nC
Gate-drain charge	Q_{gd}			0.9		nC
Gate resistance	R_g	f=1MHz		11.2		Ω
Switchingb						
Turn-On Delay Time	$t_{D(on)}$	V_{DS}=-10V R_L=3Ω, I_D≈-1A V_{GEN}=-4.5V, R_G=3Ω		11		ns
Rise Time	t_r			5.5		ns
Turn-Off Delay Time	$t_{D(off)}$			22		ns
Fall time	t_f			8		ns
Body Diode Reverse Recovery Tim	t_{rr}	I_F=-2A, dI/dt=100A/μs				ns
Body Diode Reverse Recovery Charge	G_{rr}	I_F=-2A, dI/dt=100A/μs				nC

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

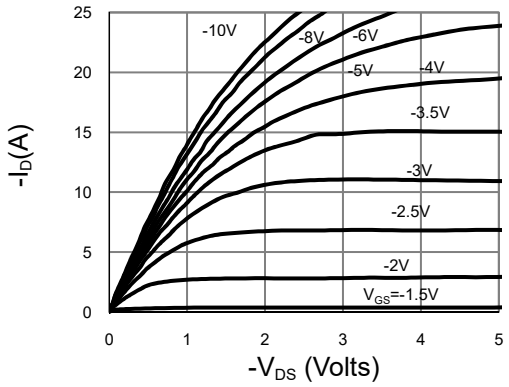


Fig 1: On-Region Characteristics

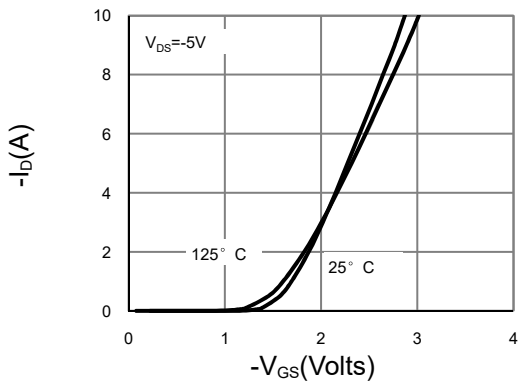


Figure 2: Transfer Characteristics

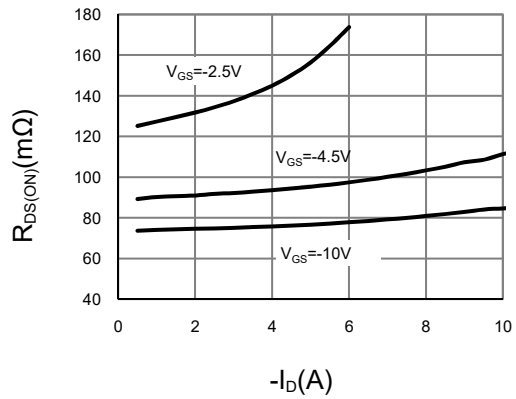


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

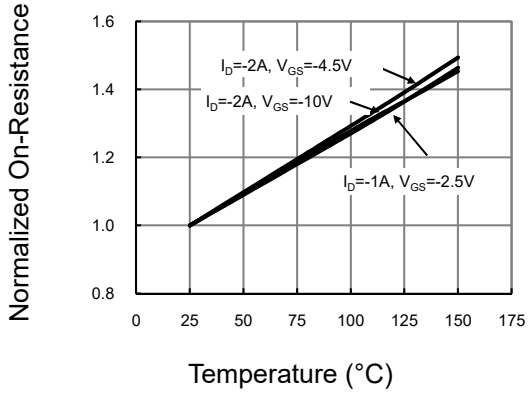


Figure 4: On-Resistance vs. Junction Temperature

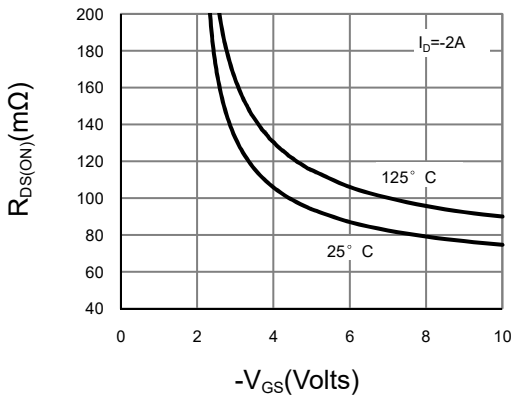


Figure 5: On-Resistance vs. Gate-Source Voltage

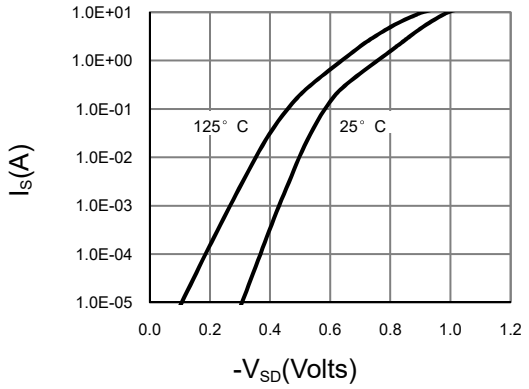


Figure 6: Body-Diode Characteristics

7.2Typical Characterisitics

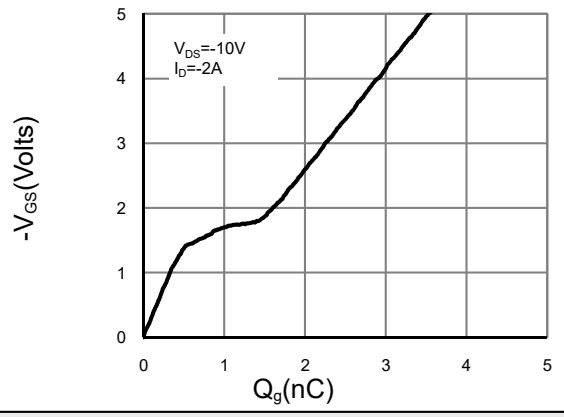


Figure 7: Gate-Charge Characteristics

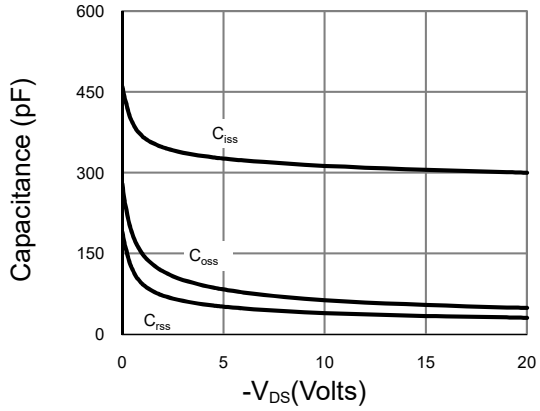


Figure 8: Capacitance Characteristics

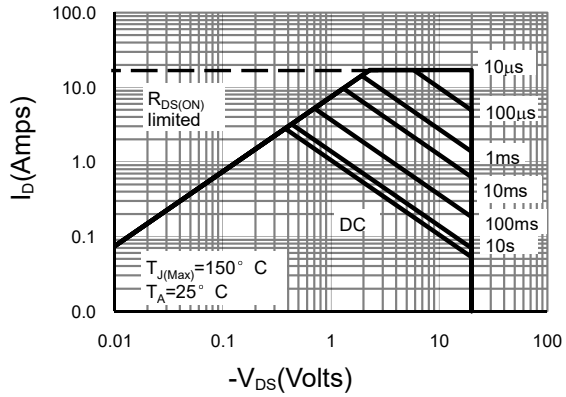


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

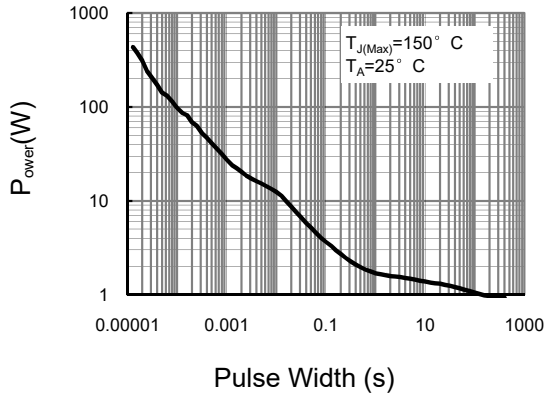


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

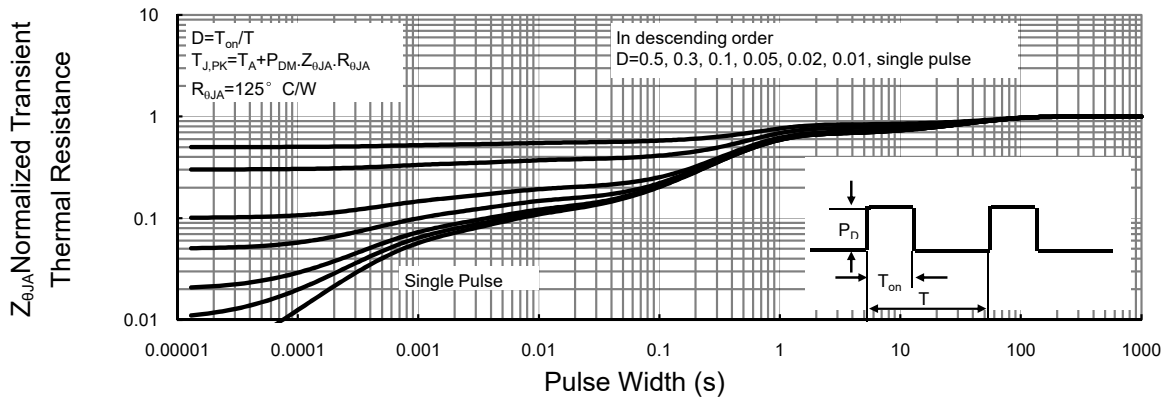
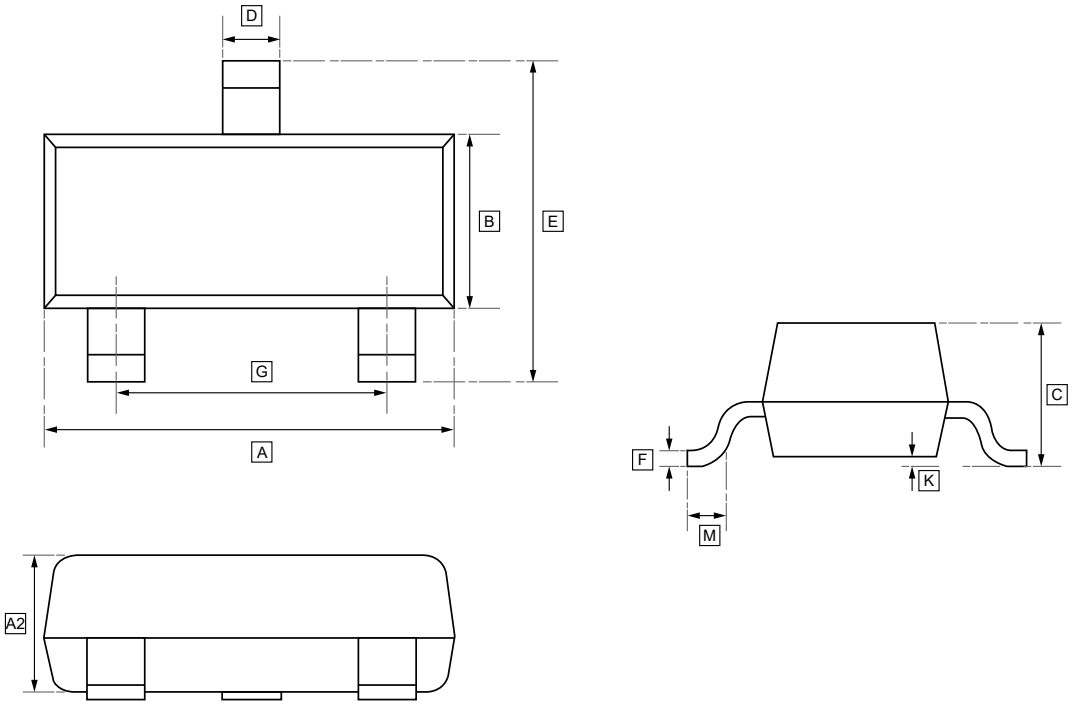


Figure 11: Normalized Maximum Transient Thermal Impedance

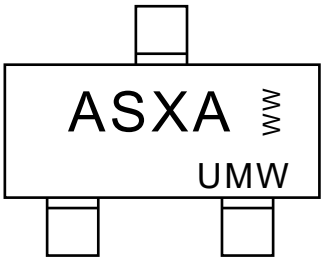
8.SOT-23 Package Outline Dimensions



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 AO3423A	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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