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

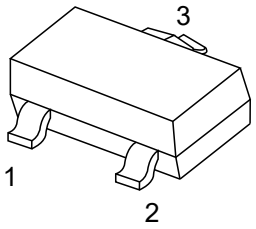
3.Application

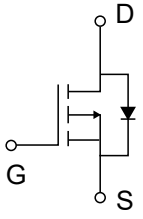
- Load Switch for Portable Devices
- DC/DC Converter

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

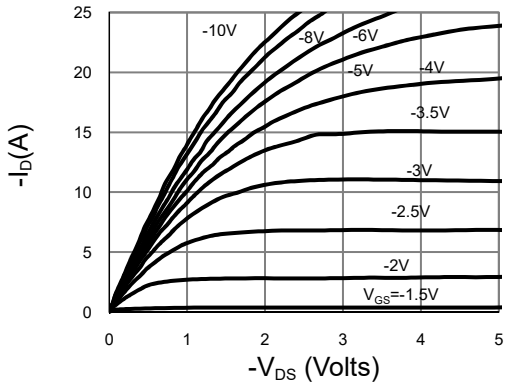


Fig 1: On-Region Characteristics

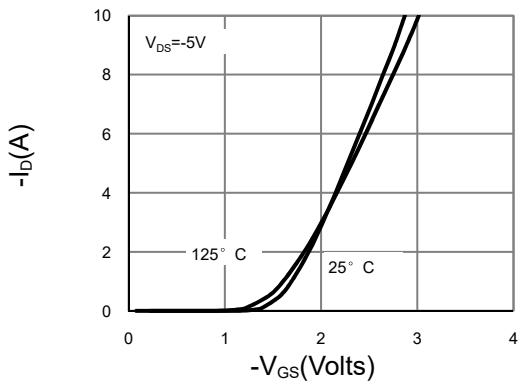


Figure 2: Transfer Characteristics

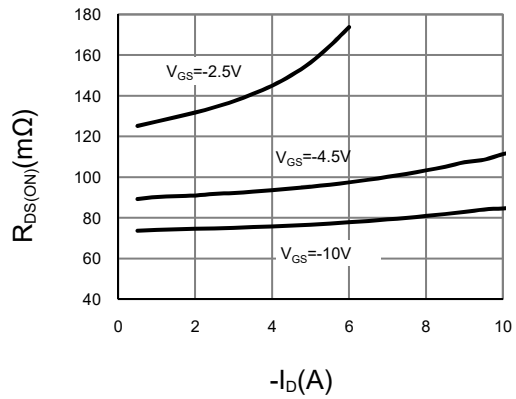


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

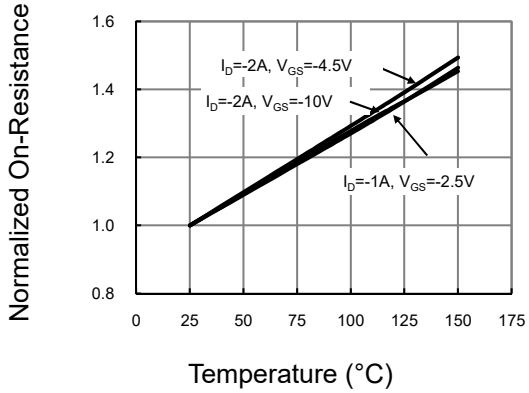


Figure 4: On-Resistance vs. Junction Temperature

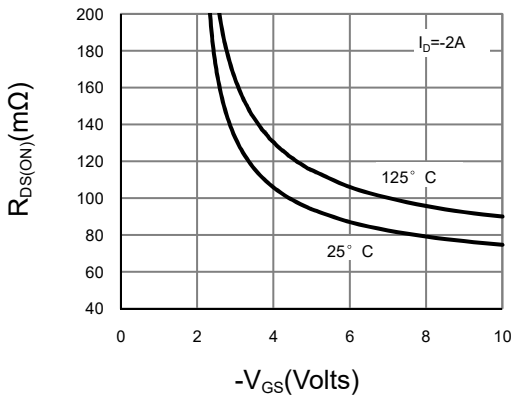


Figure 5: On-Resistance vs. Gate-Source Voltage

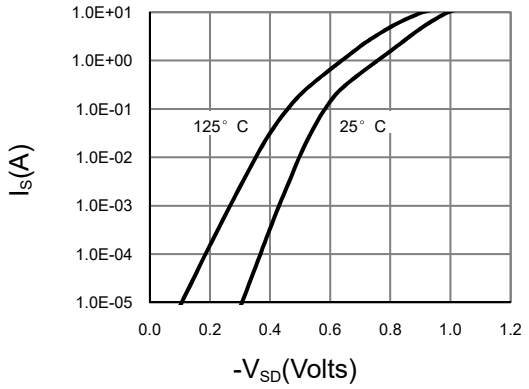


Figure 6: Body-Diode Characteristics

7.2Typical Characterisitics

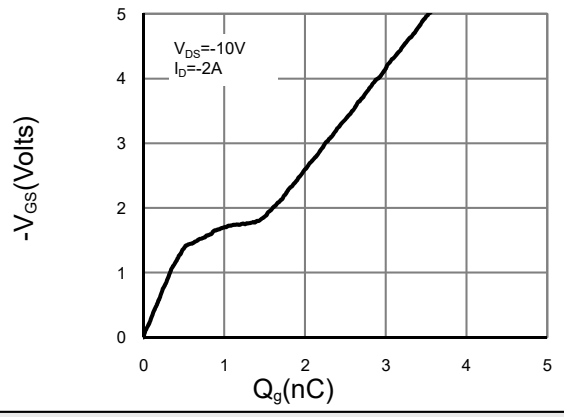


Figure 7: Gate-Charge Characteristics

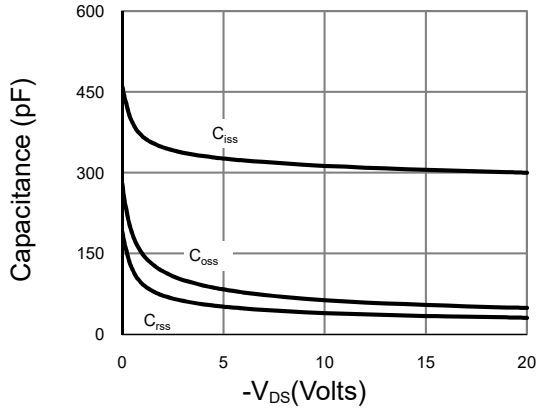


Figure 8: Capacitance Characteristics

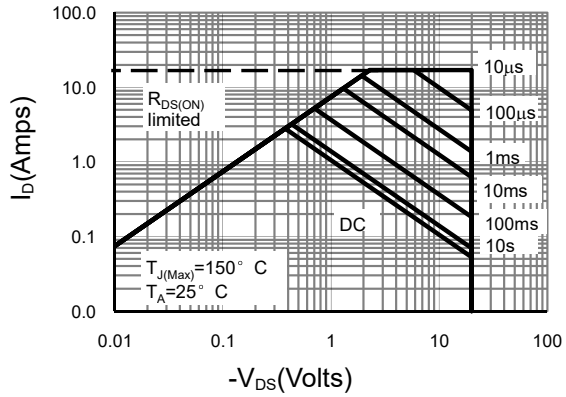


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

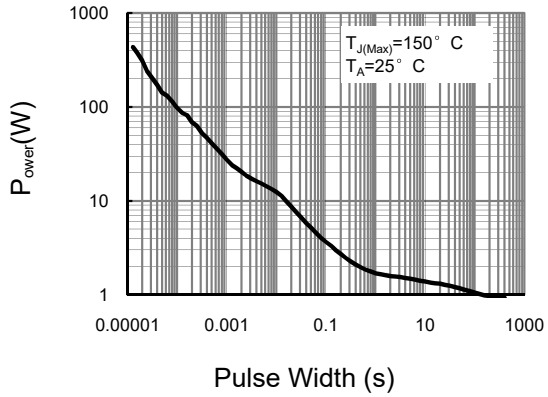


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

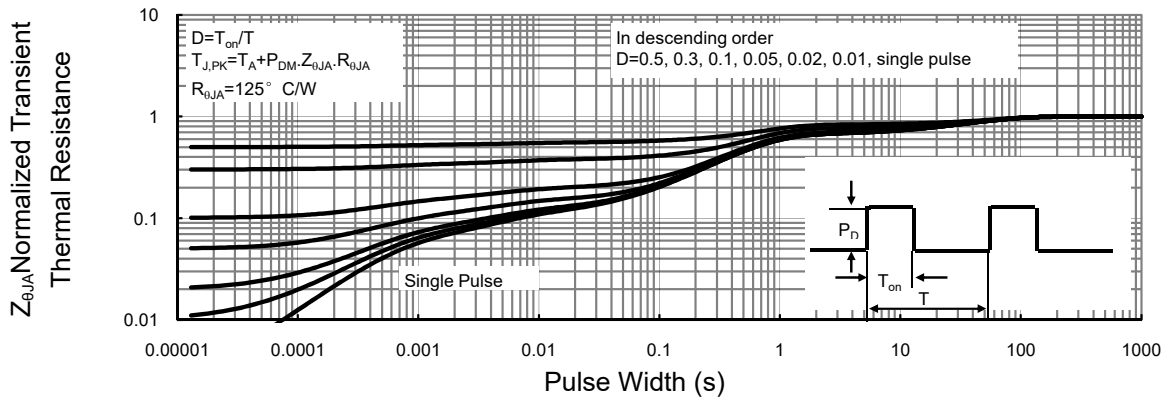
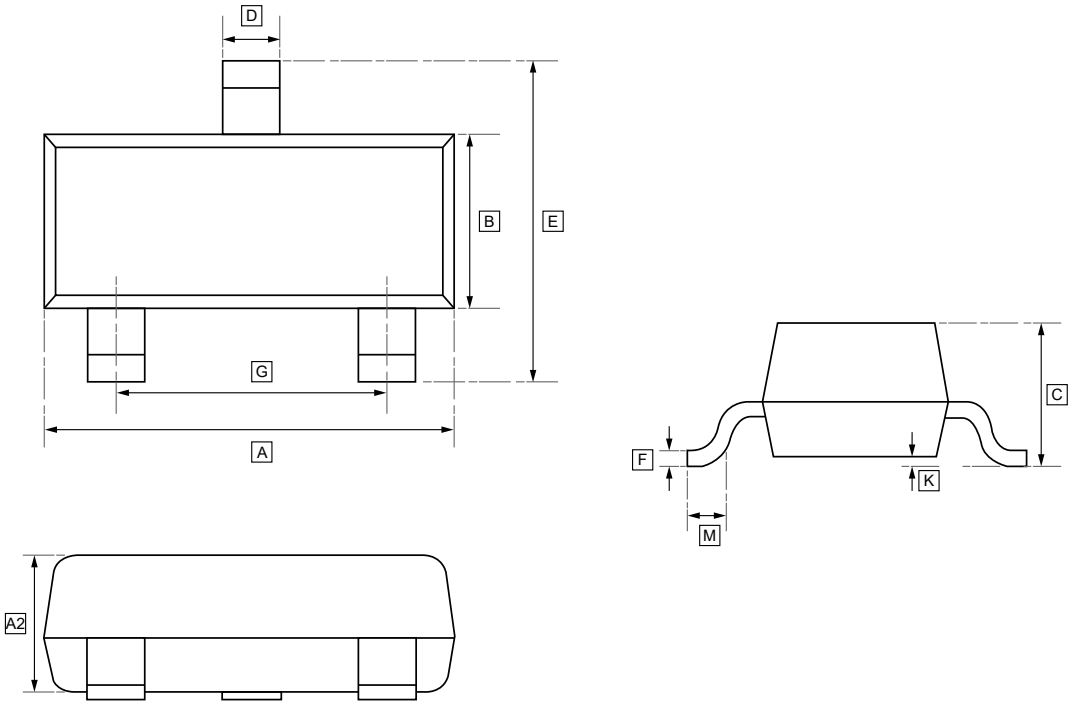


Figure 11: Normalized Maximum Transient Thermal Impedance

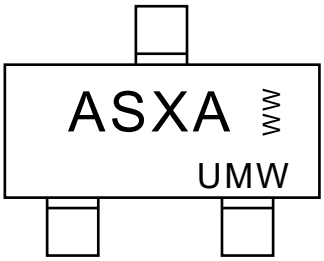
8.SOT-23 Package Outline Dimensions



DIMENSIONS (mm are the original dimensions)

Symbol	A	B	C	D	E	G	K	M	A2	F
Min	2.85	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

9.Ordering information



WW: Batch Code

Order Code	Package	Base QTY	Delivery Mode
UMW AO3423A	SOT-23	3000	Tape and reel

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