UMW AO3409A

-30V P-Channel MOSFET

1.Description

The AO3409A uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge. This device is suitable for use as a load switch or in PWM applications.

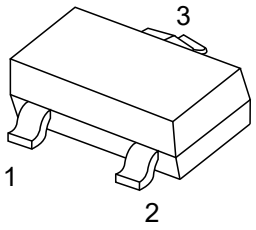
2.Features

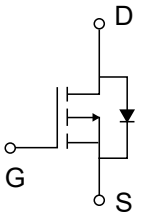
- $V_{DS\ (V)}$=-30V
- I_D=-2.6A(V_{GS}=-10V)
- $R_{DS(ON)}$<90mΩ(V_{GS}=-10V)
- $R_{DS(ON)}$<150mΩ(V_{GS}=-4.5V)
- Pb−Free Package May be Available. The G−Suffix Denotes aPb−Free Lead Finish

3.Pinning information

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

SOT-23





4.Absolute Maximum Ratings T_A= 25°C

Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_A=25°C	I_D	-2.6	A
	T_A=70°C		-2.2	
Pulsed Drain Current		I_{DM}	-20	
Power Dissipation	T_A=25°C	P_D	1.4	W
	T_A=70°C		1	
Themal Resistance. Junction-to-Ambient		R_{thJA}	125	°C/W
Themal Resistance. Junction-to-Case		R_{thJC}	80	°C/W
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C

5.Electrical Characteristics T_A= 25°C

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	V_{DSS}	I_D=250μA, V_{GS}=0V	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-24V, V_{GS}=0V			-1	μA
		V_{DS}=-24V, V_{GS}=0V, T_J=55°C			-5	
Gate-Body leakage current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-1	-1.9	-3	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-2.6A		77	110	mΩ
		T_J=125°C		90	140	
		V_{GS}=-4.5V, I_D=-2A		100	150	mΩ
On state drain current	$I_{D(ON)}$	V_{DS}=-4.5V, V_{DS}=-5V	-5			A
Forward Transconductance	g_{FS}	V_{DS}=-5V, I_D=-5A	3	3.8		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-15V, f=1MHz		302	370	pF
Output Capacitance	C_{oss}			50.3		pF
Reverse Transfer Capacitance	C_{rss}			37.8		pF
Gate resistance	R_g	V_{GS}=0V, V_{DS}=0V, f=1MHz	3.5	7.2	11	Ω
Total Gate Charge (10V)	Q_g	V_{GS}=-4.5V, V_{DS}=-15V, I_D=-2.6A		6.8	9	nC
Total Gate Charge (4.5V)				2.4		nC
Gate Source Charge	Q_{gs}			1.6		nC
Gate Drain Charge	Q_{gd}			0.95		nC
Turn-On DelayTime	$t_{D(on)}$	V_{GS}=-10V, V_{DS}=-15V, R_L=5.8Ω, R_{GEN}=3Ω		7.5		ns
Turn-On Rise Time	t_r			3.2		ns
Turn-Off DelayTime	$t_{D(off)}$			17		ns
Turn-Off Fall Time	t_f			6.8		ns
Body Diode Reverse Recovery Time	t_{rr}	I_F=-2.6A, dI/dt=100A/μs		16.8	22	ns
Body Diode Reverse Recovery Charge	Q_{rr}	I_F=-2.6A, dI/dt=100A/μs		10		nC
Maximum Body-Diode Continuous Current	I_S				-2	A
Diode Forward Voltage	V_{SD}	I_S=-1A, V_{GS}=0V		-0.82	-1	V

* Repetitive rating, pulse width limited by junction temperature.

6.1Typical Characterisitics

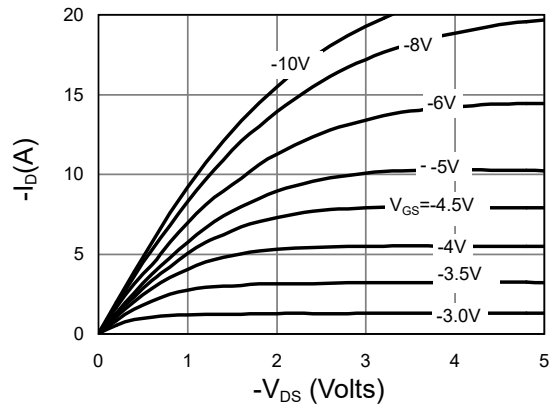


Figure 1: On-Region Characteristics

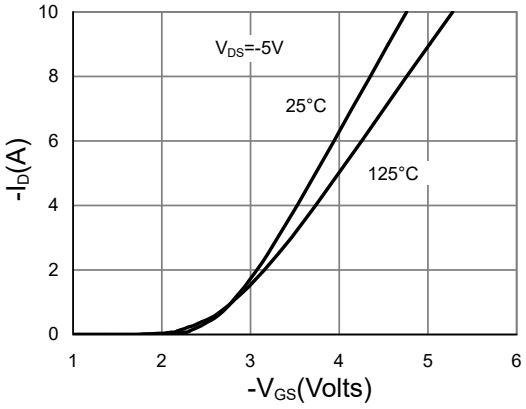


Figure 2: Transfer Characteristics

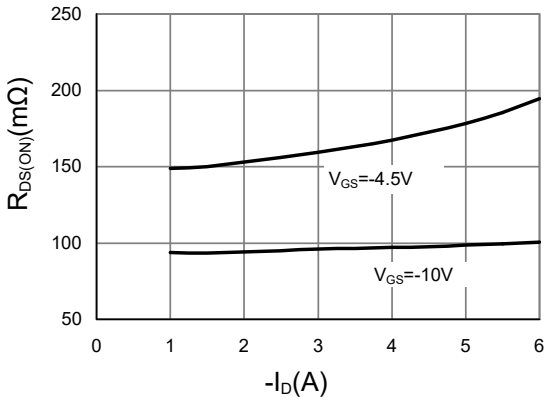


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

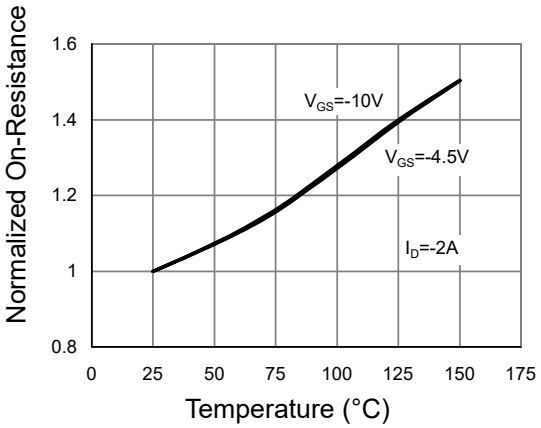


Figure 4: On-Resistance vs. Junction Temperature

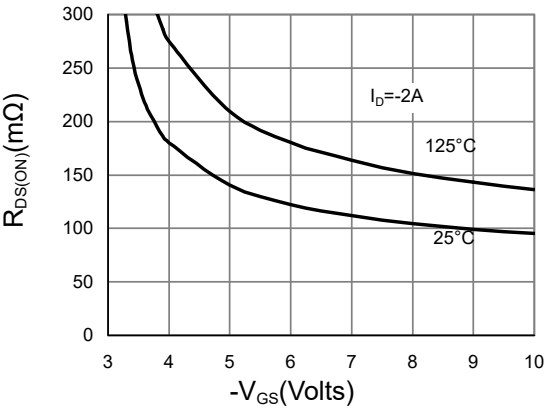


Figure 5: On-Resistance vs. Gate-Source Voltage

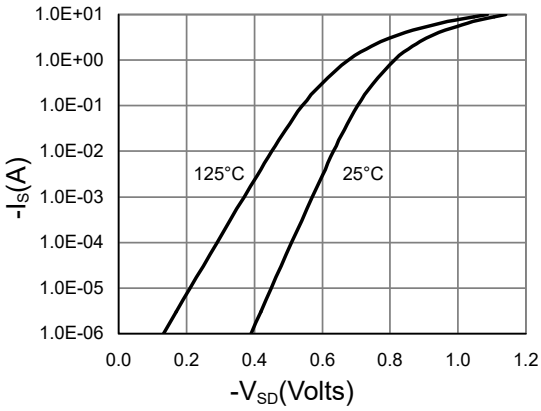


Figure 6: Body-Diode Characteristics

6.2Typical Characterisitics

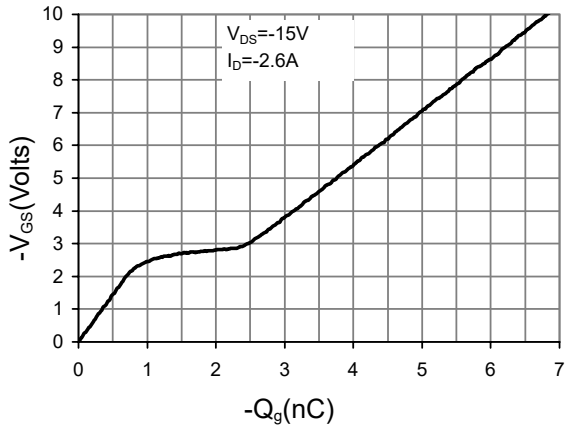


Figure 7: Gate-Charge Characteristics

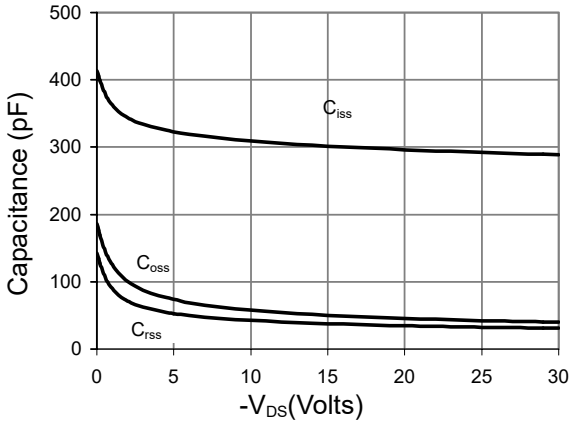


Figure 8: Capacitance Characteristics

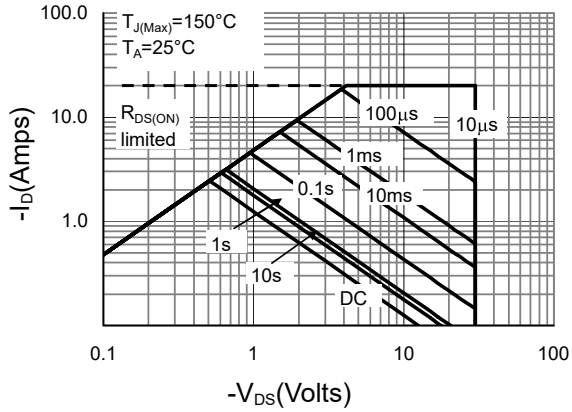


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

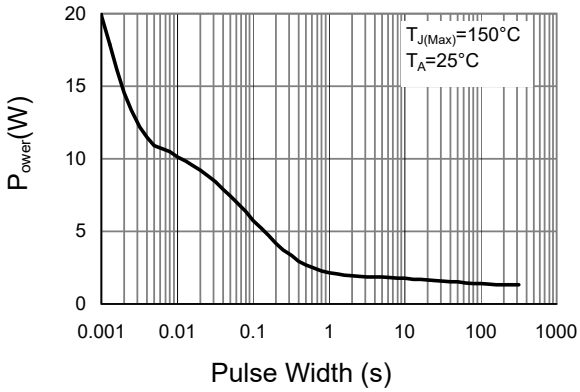


Figure 10: Single Pulse Power Rating Junction-to -Ambient (Note E)

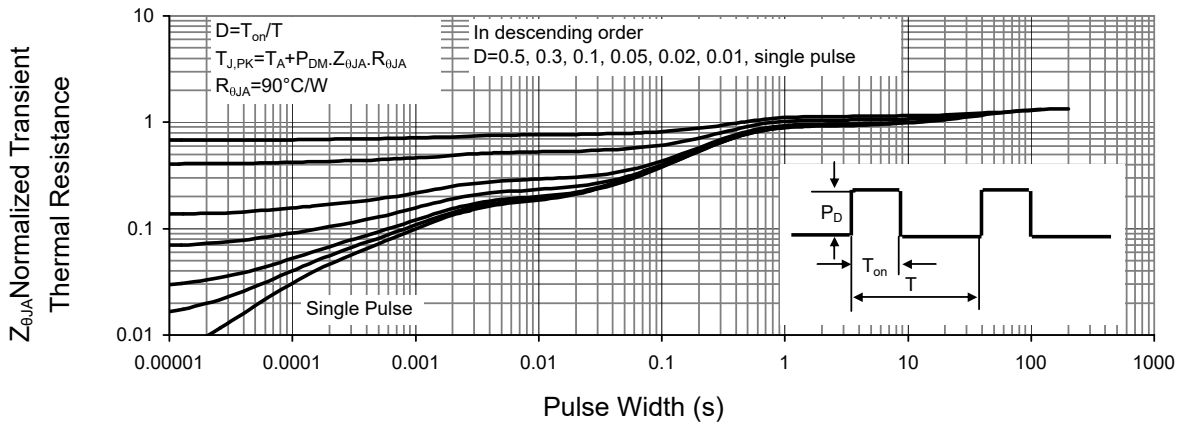
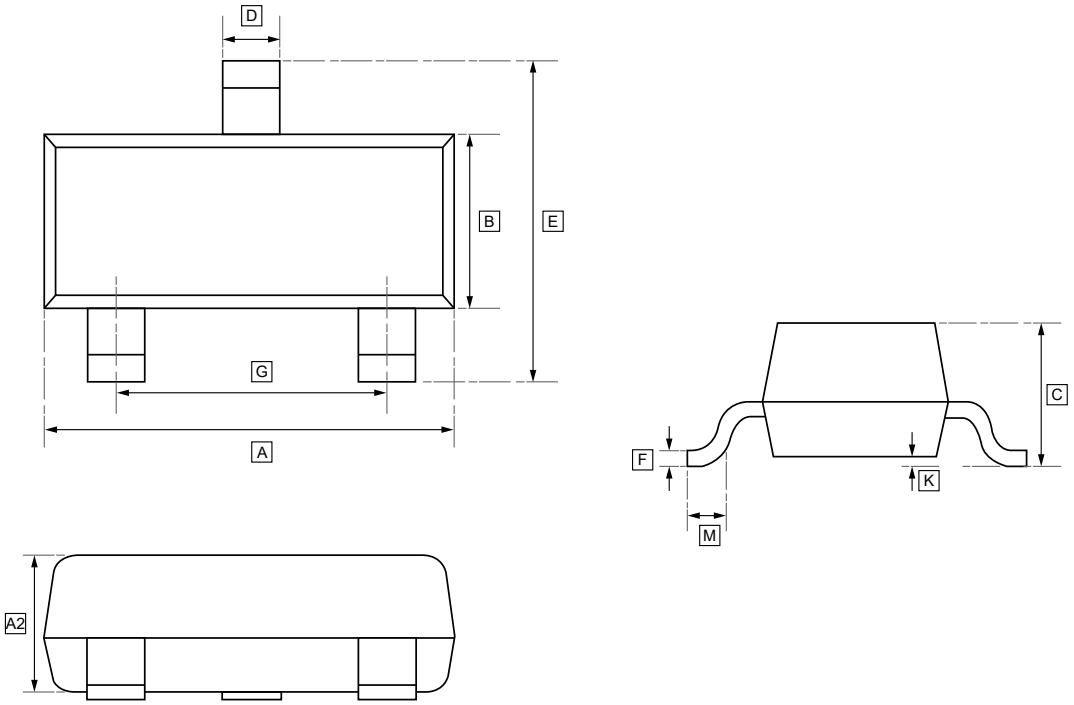


Figure 11: Normalized Maximum Transient Thermal Impedance

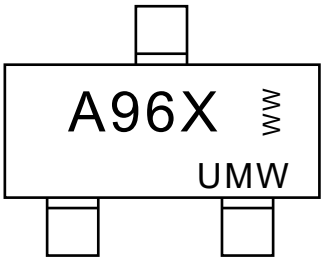
7.SOT-23 Package Outline Dimensions



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

8.Ordering Information



WW: Batch Code

Order Code	Package	Base QTY	Delivery Mode
UMW AO3409A	SOT-23	3000	Tape and reel

9.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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