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.

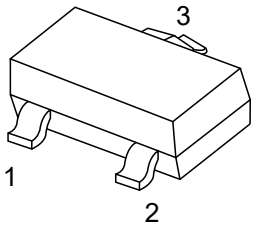
2.Features

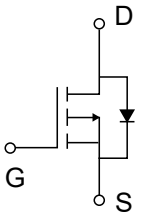
- $V_{DS\ (V)}$=-30V
- I_D=-2.6A(V_{GS}=-10V)
- $R_{DS(ON)}$<90mΩ(V_{GS}=-10V)
- $R_{DS(ON)}$<150mΩ(V_{GS}=-4.5V)
- Pb−Free Package May be Available. The G−Suffix Denotes aPb−Free Lead Finish

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

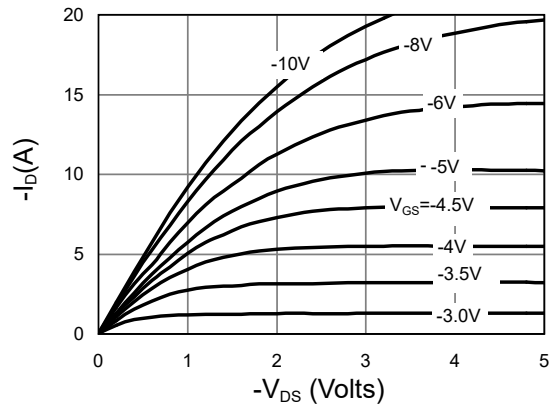


Figure 1: On-Region Characteristics

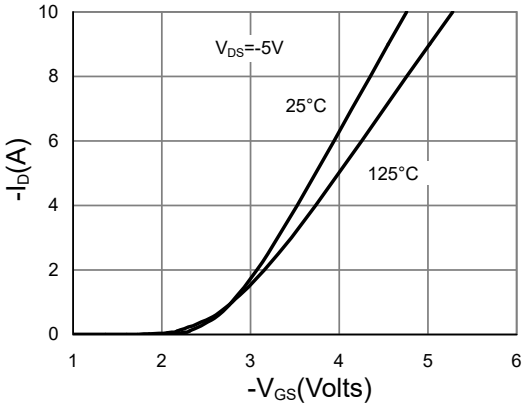


Figure 2: Transfer Characteristics

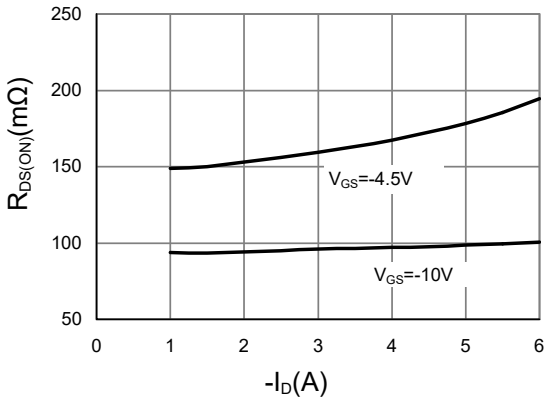


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

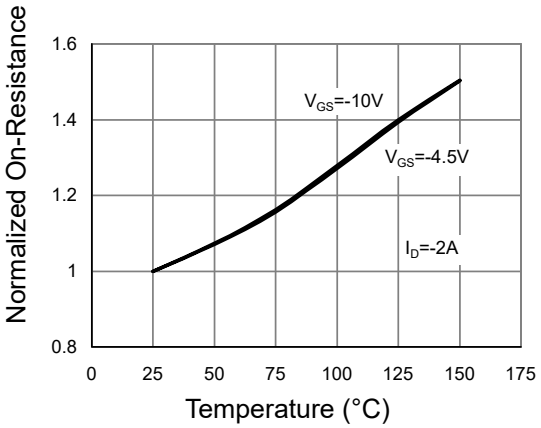


Figure 4: On-Resistance vs. Junction Temperature

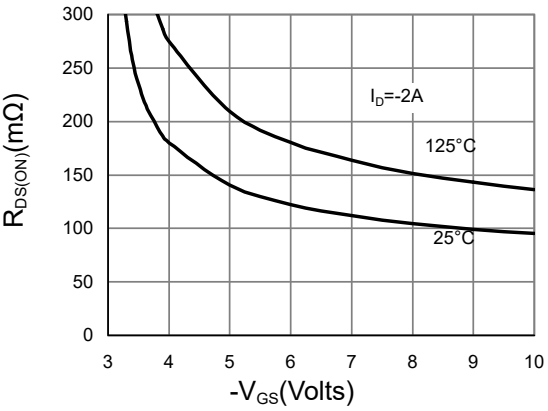


Figure 5: On-Resistance vs. Gate-Source Voltage

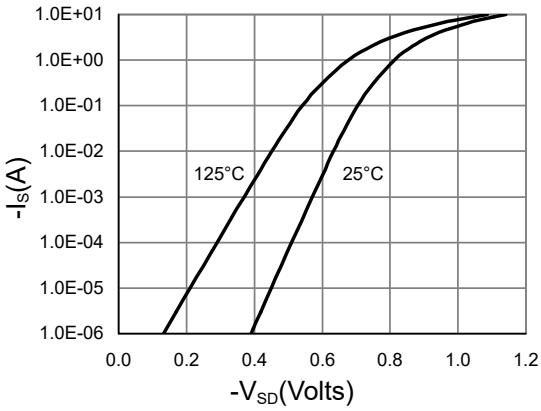


Figure 6: Body-Diode Characteristics

6.2Typical Characterisitics

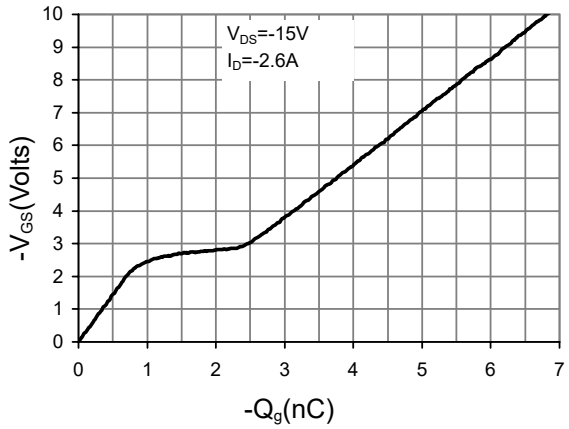


Figure 7: Gate-Charge Characteristics

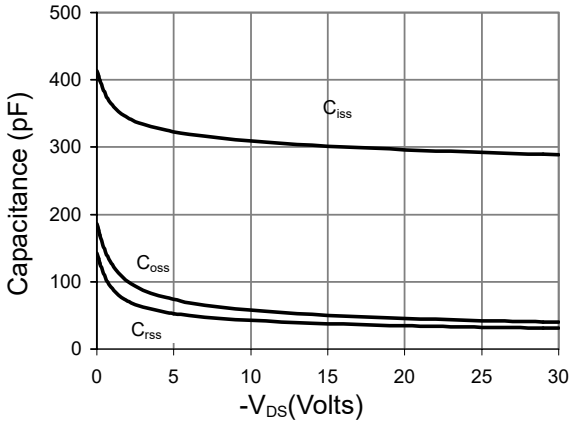


Figure 8: Capacitance Characteristics

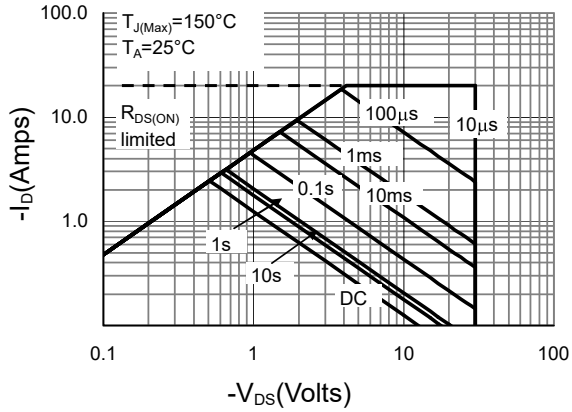


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

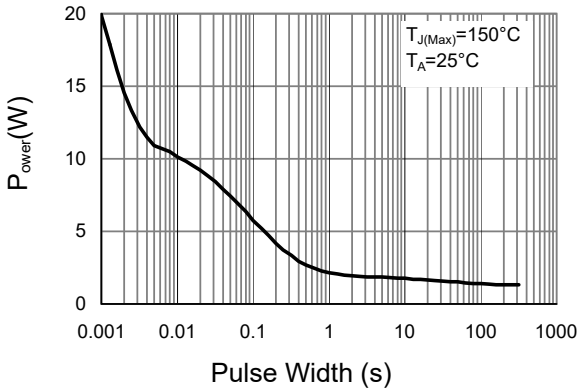


Figure 10: Single Pulse Power Rating Junction-to -Ambient (Note E)

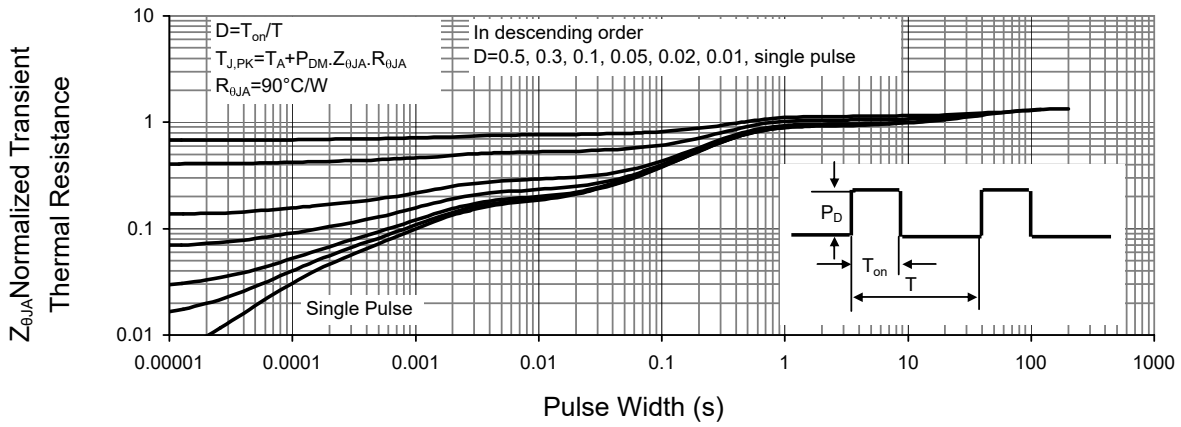
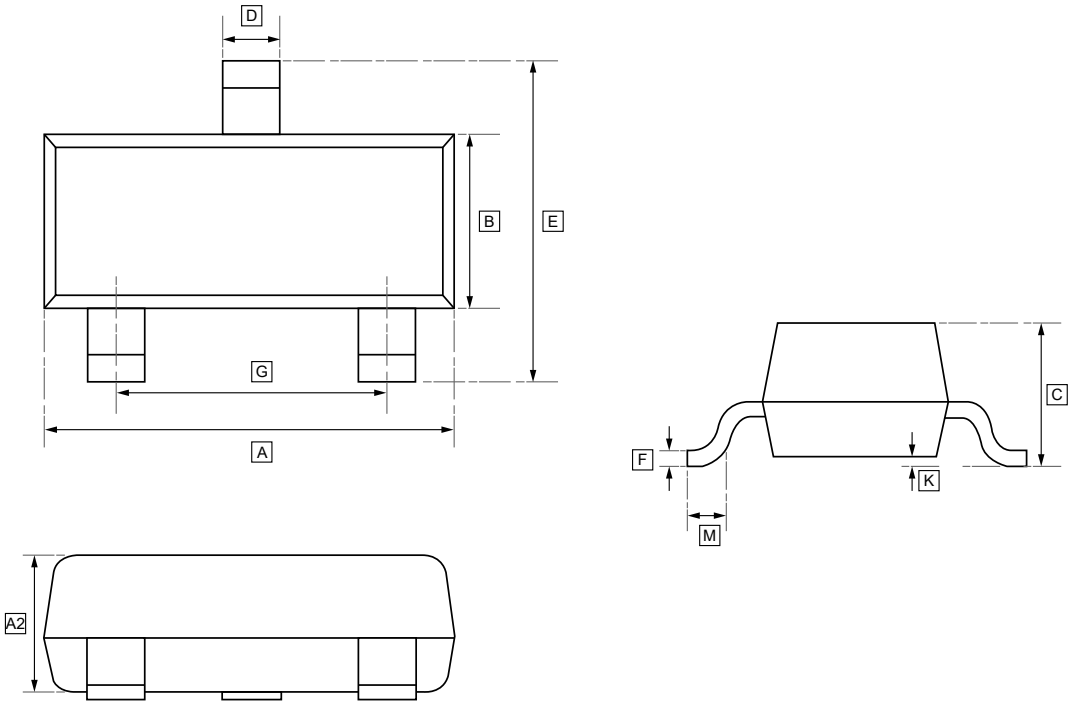


Figure 11: Normalized Maximum Transient Thermal Impedance

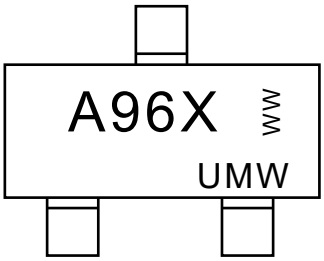
7.SOT-23 Package Outline Dimensions



DIMENSIONS (mm are the original dimensions)

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

8.Ordering information



WW: Batch Code

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

9.Disclaimer

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