UMW AO3400A

30V N-Channel MOSFET

1.Description

The AO3400A uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltage as low as 2.5V. This device is suitable for use as a load switch or in PWM application.

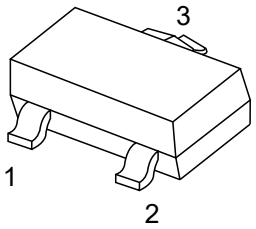
2.Features

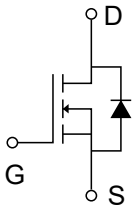
- $V_{DS\ (V)}$= 30V
- I_D=5.8A
- $R_{DS(ON)}$＜17mΩ(V_{GS}=10V)
- $R_{DS(ON)}$＜20mΩ(V_{GS}=4.5V)
- $R_{DS(ON)}$＜24mΩ(V_{GS}=2.5V)

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}	±12	V
Continuous Drain Current	T_A=25°C	I_D	5.8	A
	T_A=70°C		4.9	
Pulsed Drain Current *		I_{DM}	30	
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}	60	°C/W
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C

* Repetitive rating, pulse width limited by junction temperature.

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}=±12V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	0.7	1.1	1.4	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=5.8A		17	27	mΩ
		V_{GS}=4.5V, I_D=5A		20	31	
		V_{GS}=2.5V, I_D=4A		24	48	mΩ
On state drain current	$I_{D(ON)}$	V_{GS}=4.5V, V_{DS}=5V	30			A
Forward Transconductance	g_{FS}	V_{DS}=5V, I_D=5A		33		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=15V, f=1MHz		823	1050	pF
Output Capacitance	C_{oss}			99		pF
Reverse Transfer Capacitance	C_{rss}			77		pF
Gate resistance	R_g	V_{GS}=0V, V_{DS}=0V, f=1MHz		1.4	3.6	Ω
Total Gate Charge	Q_g	V_{GS}=4.5V, V_{DS}=15V I_D=5.8A		9.7	12	nC
Gate Source Charge	Q_{gs}			1.6		nC
Gate Drain Charge	Q_{gd}			3.1		nC
Turn-On DelayTime	$t_{D(on)}$	V_{GS}=10V, V_{DS}=15V R_L=2.7Ω, R_{GEN}=3Ω		3.3	5	ns
Turn-On Rise Time	t_r			4.8	7	ns
Turn-Off DelayTime	$t_{D(off)}$			26.3	40	ns
Turn-Off Fall Time	t_f			4.1	6	ns
Body Diode Reverse Recovery Time	t_{rr}	I_F=5A, dI/dt=100A/μs		16	20	ns
Body Diode Reverse Recovery Charge	Q_{rr}	I_F=5A, dI/dt=100A/μs		8.9	12	nC
Maximum Body-Diode Continuous Current	I_S				2.5	A
Diode Forward Voltage	V_{SD}	I_S=-1A, V_{GS}=0V		0.71	1	V

6.1Typical Characterisitics

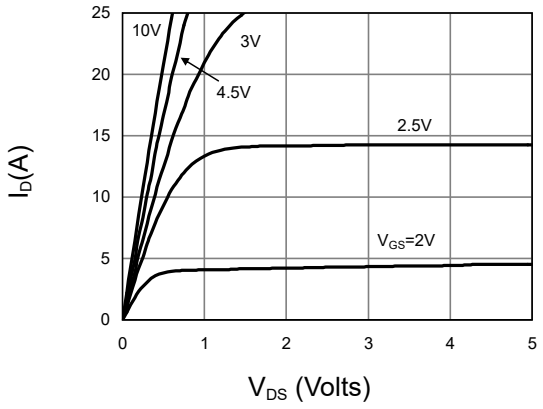


Fig 1: On-Region Characteristics

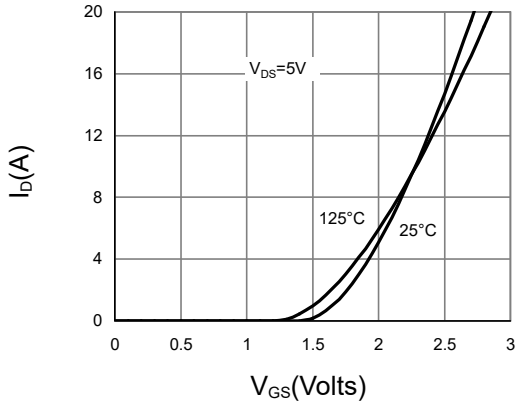


Figure 2: Transfer Characteristics

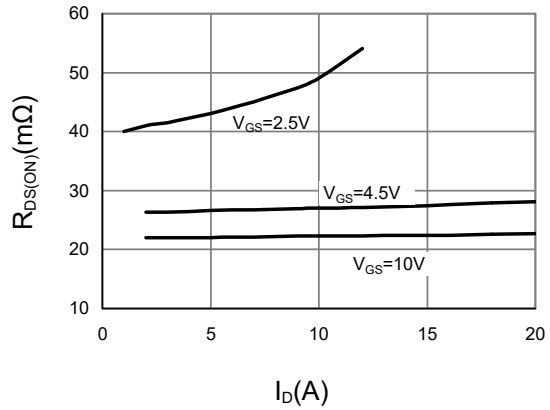


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

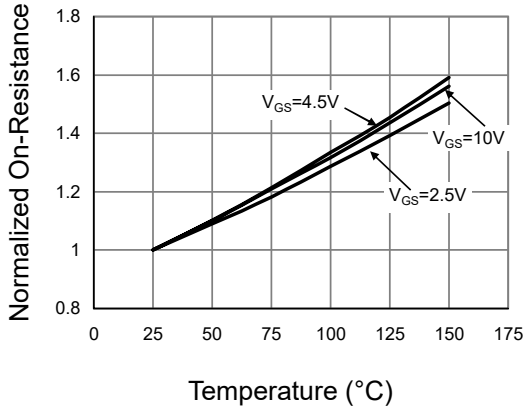


Figure 4: On-Resistance vs. Junction Temperature

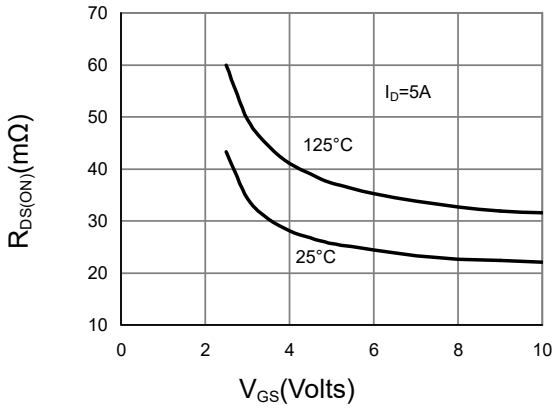


Figure 5: On-Resistance vs. Gate-Source Voltage

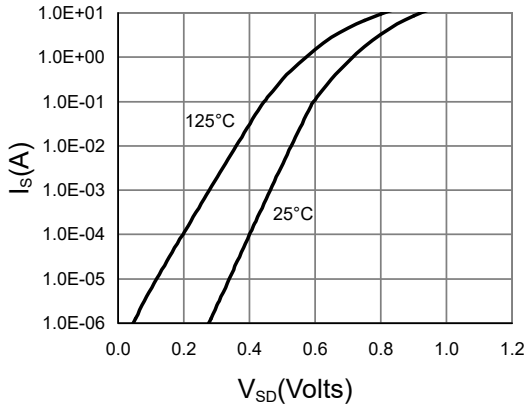


Figure 6: Body-Diode Characteristics

6.2Typical Characterisitics

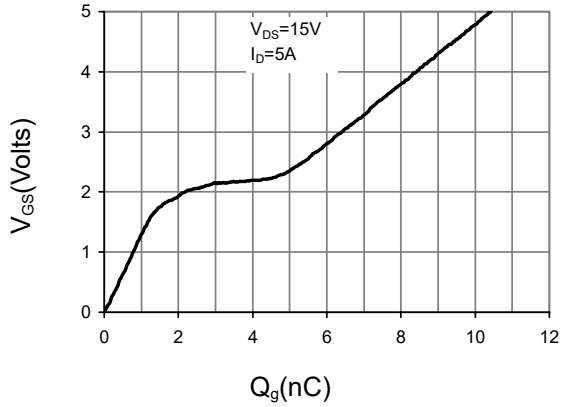


Figure 7: Gate-Charge Characteristics

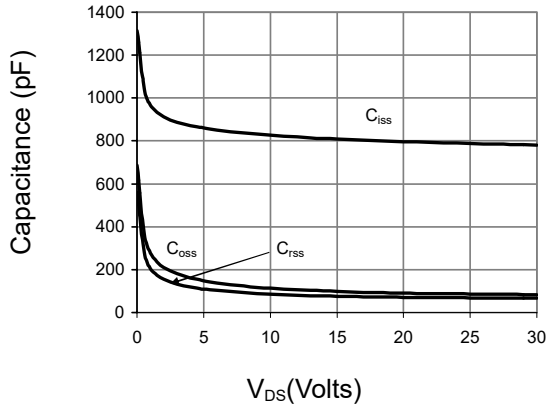


Figure 8: Capacitance Characteristics

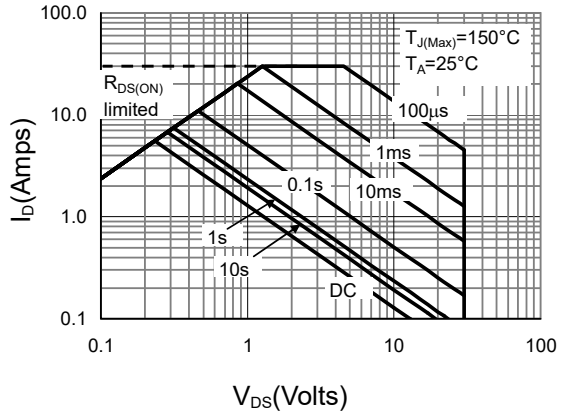


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

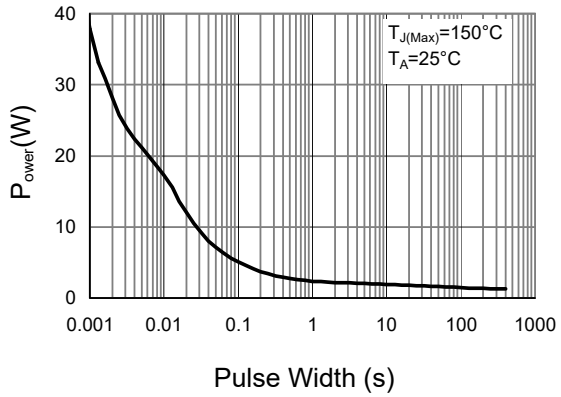


Figure 10: Single Pulse Power Rating Junction-to -Ambient (Note E)

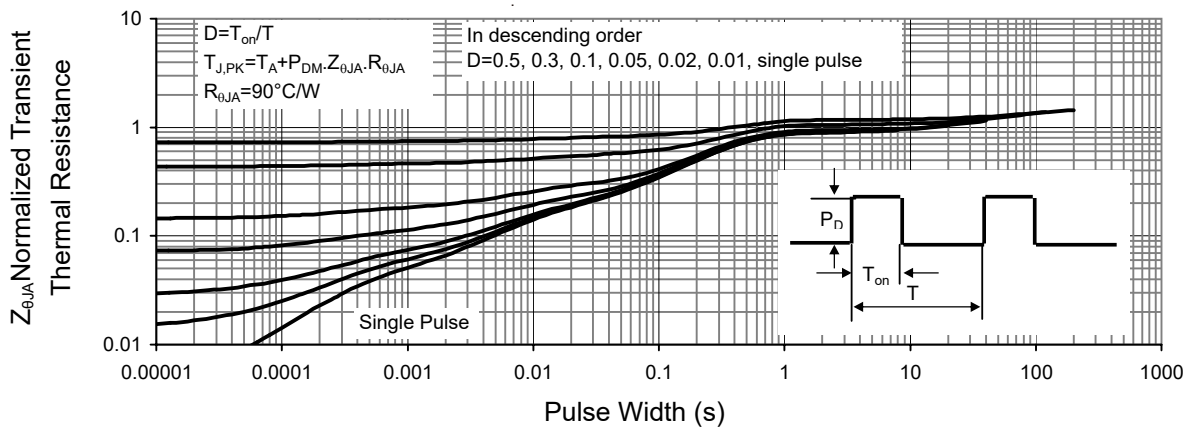
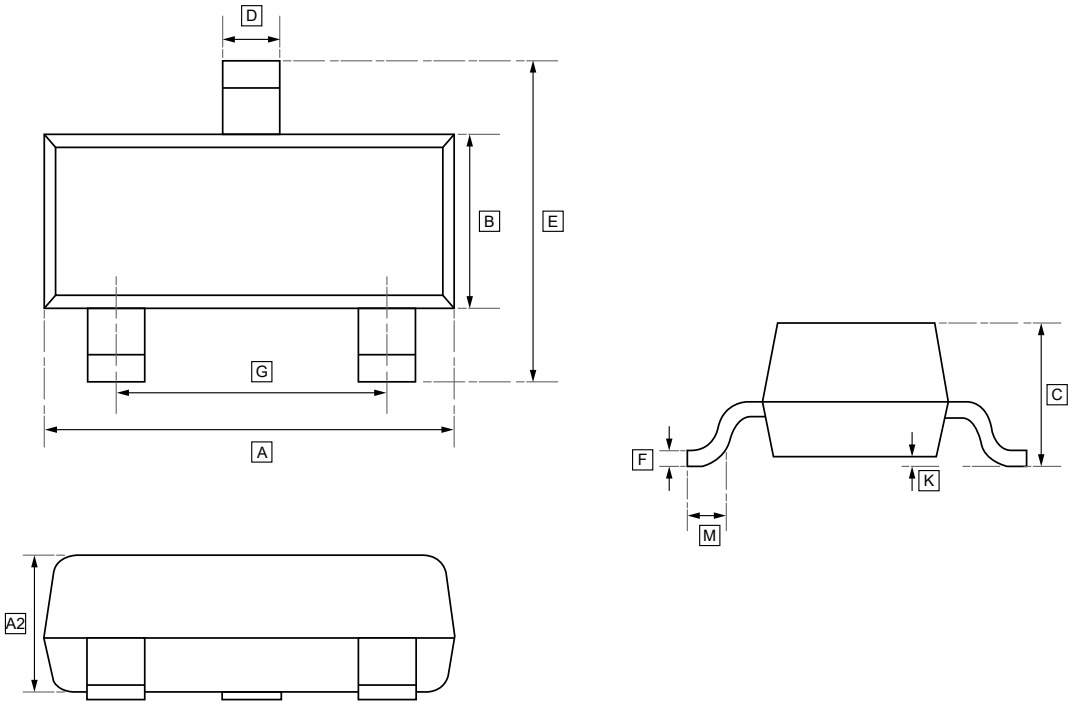


Figure 11: Normalized Maximum Transient Thermal Impedance

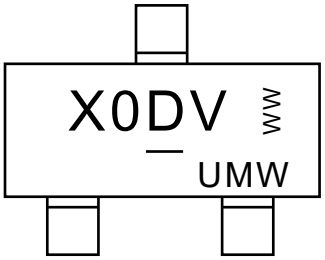
7.SOT-23 Package Outline Dimensions



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 AO3400A	SOT-23	3000	Tape and reel

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