UMW AQ3530-01FTG

1.Description

This AQ3530 unidirectional diode provides a high level of protection for electronic equipment that may be exposed to electrostatic discharges (ESD). This robust component can safely absorb repetitive ESD strikes above the maximum level specified in the IEC 61000-4-2 international standard (Level 4, ±8kV contact discharge) without performance degradation.

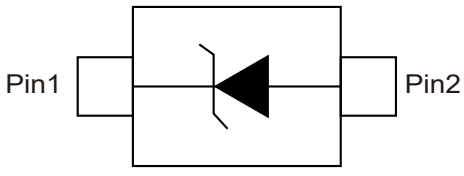
2.Features

- ESD, IEC 61000-4-2, ±22kV contact, ±30kV air
- EFT, IEC 61000-4-4, 40A (t_P=5/50ns)
- Lightning, 2.5A (8/20μs as defined in IEC 61000-4-5 2nd edition)
- Low capacitance of 0.15pF (TYP) at 3GHz
- ESD, ISO 10605, 330pF 330Ω, ±22kV contact, ±20kV air
- Facilitates excellent signal integrity
- PPAP capable

3.Applications

- Ultra-high speed data lines
- USB 3.1, 3.0, 2.0
- HDMI 2.0, 1.4a, 1.3
- DisplayPort (TM)
- V-by-One ®
- LVDS interfaces
- Automotive application
- Consumer, mobile and portable electronics
- Tablet PC and external storage with high speed interfaces

4.Pinning information



SOD-323

5.Absolute Maximum Ratings

Parameter	Symbol	Value	Units
Peak Current (tp=8/20μs)	I_{PP}	2.5	A
Junction Temperature	T_{OP}	-40 to 150	°C
Storage Temperature	T_{STOR}	-55 to 150	°C

CAUTION: Stresses above those listed in “Absolute Maximum Ratings” may cause permanent damage to the component. This is a stress only rating and operation of the component at these or any other conditions above those indicated in the operational sections of this specification is not implied.

6.Electrical Characteristic (T_{OP}=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Reverse stand-off voltage	V_{RWM}	I_R=1μA			5	V
Breakdown Voltage	V_{BR}	I_R=1mA	7.5	8.5		V
Reverse Leakage Current	I_{LEAK}	V_R=5V		0.02	0.1	μA
Clamp Voltage [1]	V_C	I_{PP}=2.5A, t_p=8/20μs, I/O to GND		12.5	15	V
Dynamic Resistance [2]	R_{DYN}	TLP, t_p=100ns, I/O to GND		0.78		Ω
ESD Withstand Voltage [1]	V_{ESD}	IEC 61000-4-2 (Contact)	±22			kV
		IEC 61000-4-2 (Air)	±30			kV
Diode Capacitance[1,3]	$C_{I/O-GND}$	Reverse Bias=0V, f=3GHz		0.3		pF

Notes:

1. Parameter is guaranteed by design and/or component characterization.
2. Transmission Line Pulse (TLP) with 100ns width, 2ns rise time, and average window t1=70ns to t2= 90ns.
3. Package sizes larger than 0201 can add parasitic capacitance, inductance and resistance.

7.1Typical characteristic

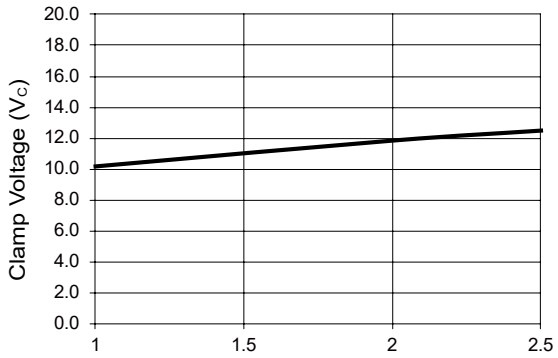


Fig 1. Clamping voltage vs. I_{PP} for 8/20μs waveshape

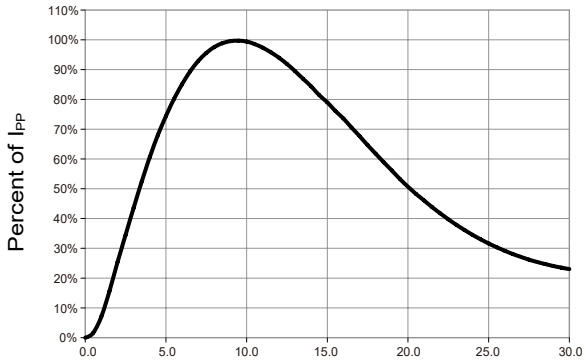


Fig 2. 8/20μs Pulse Waveform

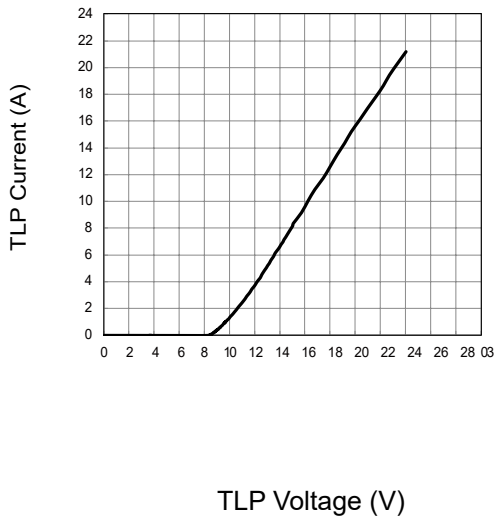


Fig 3. Positive Transmission Line Pulsing (TLP) Plot

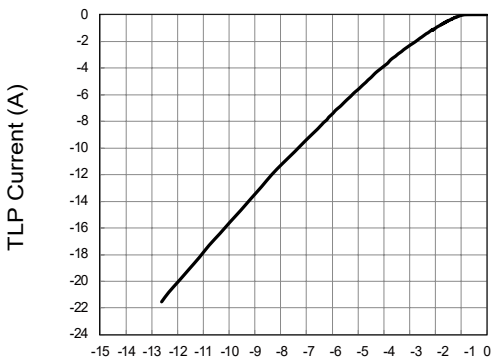


Fig 4. Negative Transmission Line Pulsing (TLP) Plot

7.2Typical characteristic



Fig 5. IEC 61000-4-2 +8 kV Contact ESD Clamping Voltage

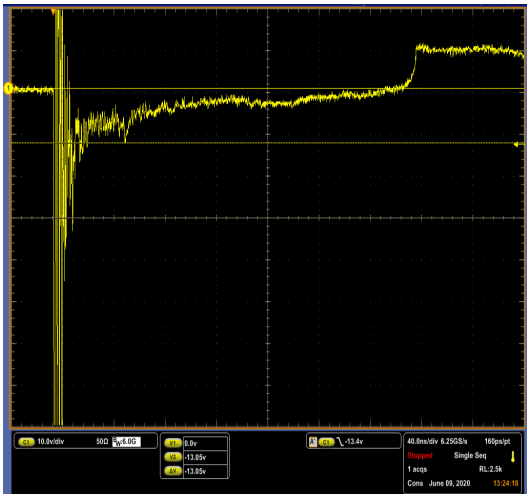


Fig 6. IEC 61000-4-2 -8 kV Contact ESD Clamping Voltage

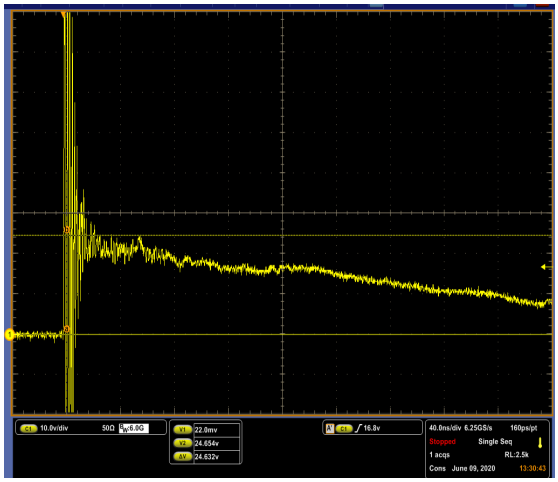


Fig 7. ISO10605 (C:330pF, R:330Ω) contact discharge plot at +8 kV

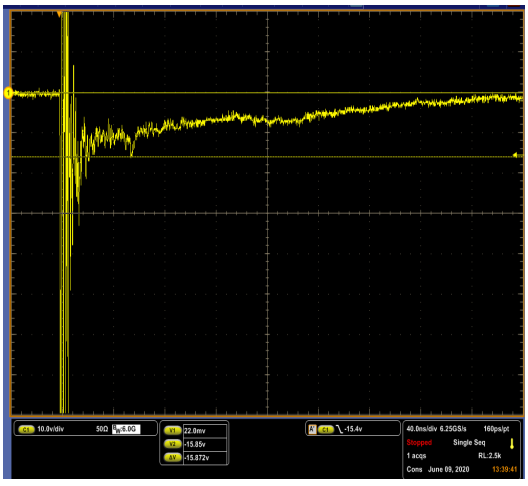
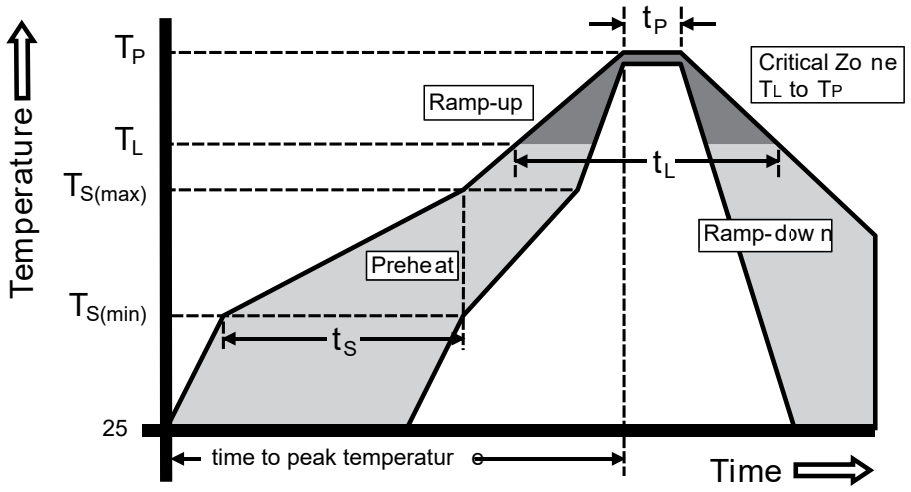


Fig 8. ISO10605 (C:330pF, R:330Ω) contact discharge plot at -8 kV

8.Soldering parameters

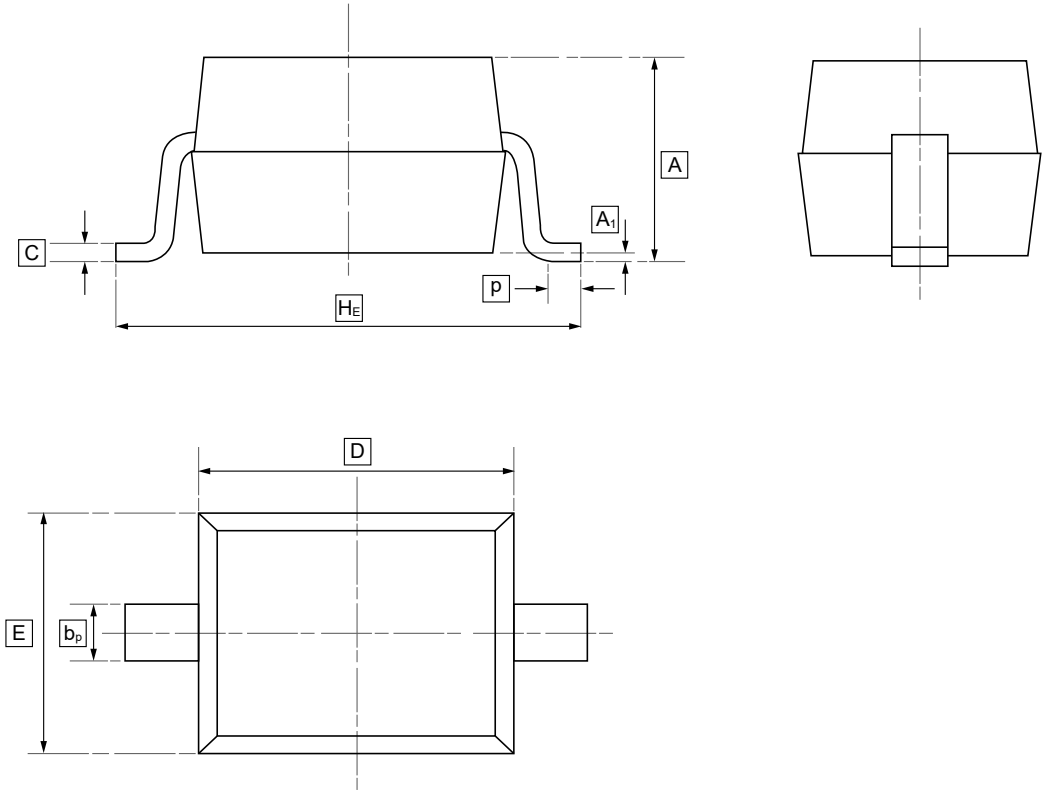
Reflow Condition		Pb-Free assembly (see FIG.2)
Pre Heat	-Temperature Min ($T_{s(min)}$)	150°C
	-Temperature Max ($T_{s(max)}$)	200°C
	-Time (Min to Max) (t_s)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T_L) (Liquidus)	217°C
	-Temperature(T_L)	60-150 secs.
Peak Temp (T_p)		+260 $^{+0/-5}$ °C
Time within 5°C of actual Peak Temp (T_p)		20-40 seconds
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp (T_p)		8 min. Max
Do not exceed		260°C



9.Product Characteristics

Lead Plating	Matte Tin
Lead Material	Copper Alloy
Lead Coplanarity	0.0004 inches (0.102mm)
Substitute Material	Silicon
Body Material	Molded Epoxy
Flammability	UL Recognized compound meeting flammability rating V-0

10.SOD-323 Package Outline Dimensions



DIMENSIONS (mm are the original dimensions)

Symbol	A	b_p	C	D	E	H_E	A_1	p
Min	0.80	0.25	0.10	1.50	1.15	2.30	0.01	0.20
Max	1.20	0.40	0.15	1.80	1.35	2.80	0.10	0.50

11.Ordering information



ww: Batch Code

Order Code	Package	Base QTY	Delivery Mode
UMW AQ3530-01FTG	SOD-323	3000	Tape and reel

12.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.

When applying our products, please do not exceed the maximum rated values, as this may affect the reliability of the entire system. Under certain conditions, any semiconductor product may experience faults or failures. Buyers are responsible for adhering to safety standards and implementing safety measures during system design, prototyping, and manufacturing when using our products to prevent potential failure risks that could lead to personal injury or property damage.

Unless explicitly stated in writing, UMW products are not intended for use in medical, life-saving, or life-sustaining applications, nor for any other applications where product failure could result in personal injury or death. If customers use or sell the product for such applications without explicit authorization, they assume all associated risks.

When reselling, applying, or exporting, please comply with export control laws and regulations of China, the United States, the United Kingdom, the European Union, and other relevant countries, regions, and international organizations.

This document and any actions by UMW do not grant any intellectual property rights, whether express or implied, by estoppel or otherwise. The product names and marks mentioned herein may be trademarks of their respective owners.