UMW AQ3522-01LTG

1.Description

The AQ3522 integrates ultra low capacitance diodes to provide protection for electronic equipment that may experience destructive electrostatic discharges (ESD).This robust component can safely absorb repetitive ESD strikes above the maximum level specified in the IEC61000-4-2 international standard (Level 4, ±8kV contact discharge) without performance degradation.

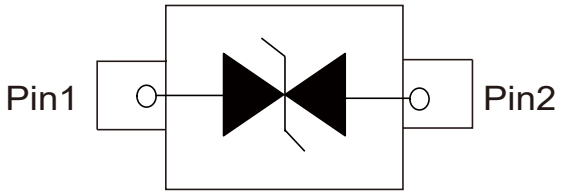
2.Features

- 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 of0.15pF (TYP) at 3GHz
- ESD, ISO 10605, 330pF, 330Ω, ±21kV contact ±23kV air

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

4.Pinning information



SOD-523

5.Absolute Maximum Ratings

Parameter	Symbol	Value	Units
Peak Current (t_p=8/20μs)	I_{PP}	2.5	A
Junction Temperature	T_{OP}	-45 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.

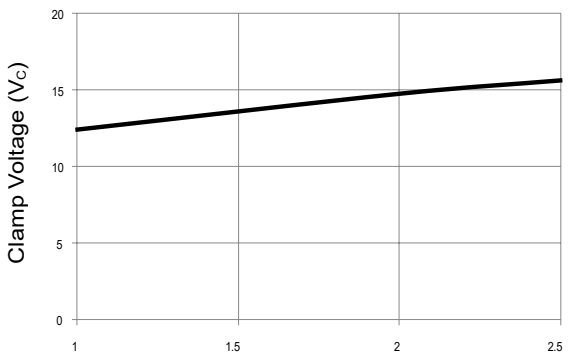
6.Electrical Characteristic (T_{OP}=25°C unless otherwise noted)

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	8.5	9.2		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 I/O		15.5	18	V
Dynamic Resistance [2]	R_{DYN}	TLP, t_p=100ns, I/O to I/O		1.2		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]	$C_{I/O-I/O}$	Reverse Bias=0V, f=3GHz		0.15		pF

Notes:

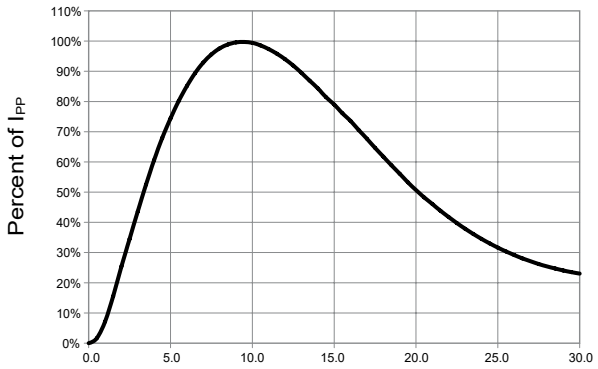
1. Parameter is guaranteed by design and/or component characterization.
2. Transmission Line Pulse (TLP) with 100ns width, 2ns rise time, and average window t1=70ns to t2= 90ns.
3. Package sizes larger than 0201 can add parasitic capacitance, inductance and resistance.

7.1Typical characteristic



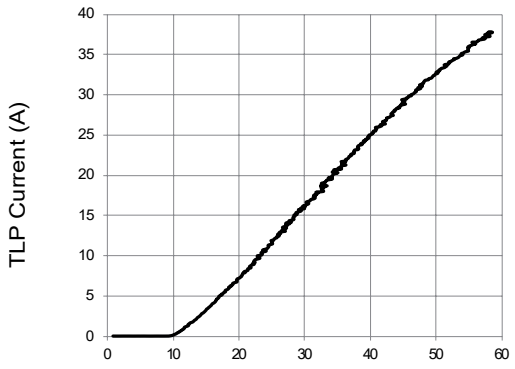
Peak Pulse Current-I_{PP}(A)

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



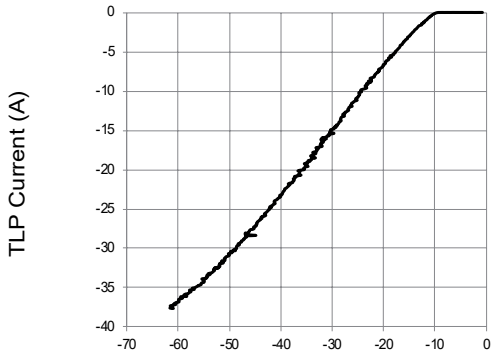
Time (μs)

Fig 2. 8/20μs Pulse Waveform



TLP Voltage (V)

Fig 3. Positive Transmission Line Pulsing (TLP) Plot



TLP Voltage (V)

Fig 4. Negative Transmission Line Pulsing (TLP) Plot

7.2Typical characteristic

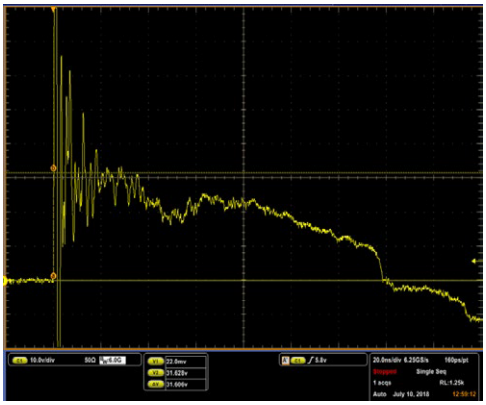


Fig 5. IEC 61000-4-2 +8 kV Contact ESD Clamping Voltage

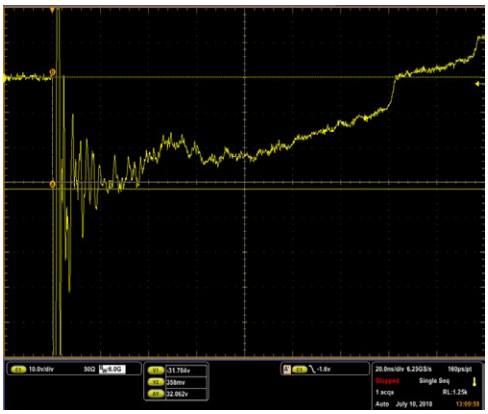


Fig 6. IEC 61000-4-2 -8 kV Contact ESD Clamping Voltage

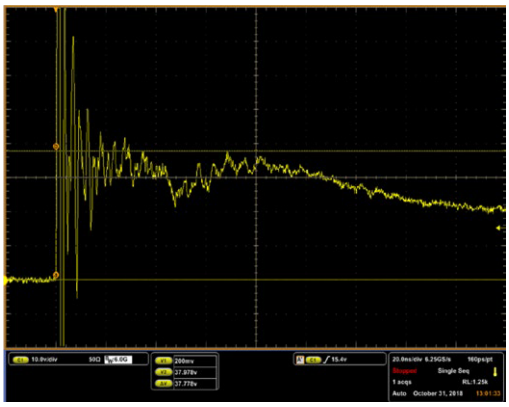


Fig 7. ESD ISO10605 +8 kV Contact ESD Clamping Voltage

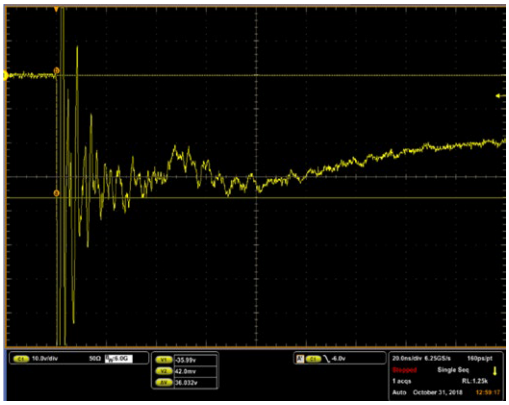
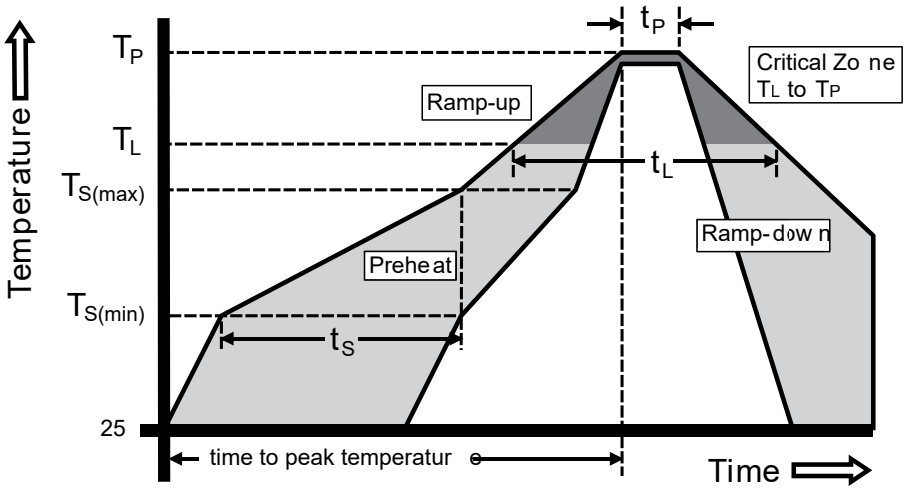


Fig 8. ESD ISO10605 -8 kV Contact ESD Clamping Voltage

8.Soldering parameters

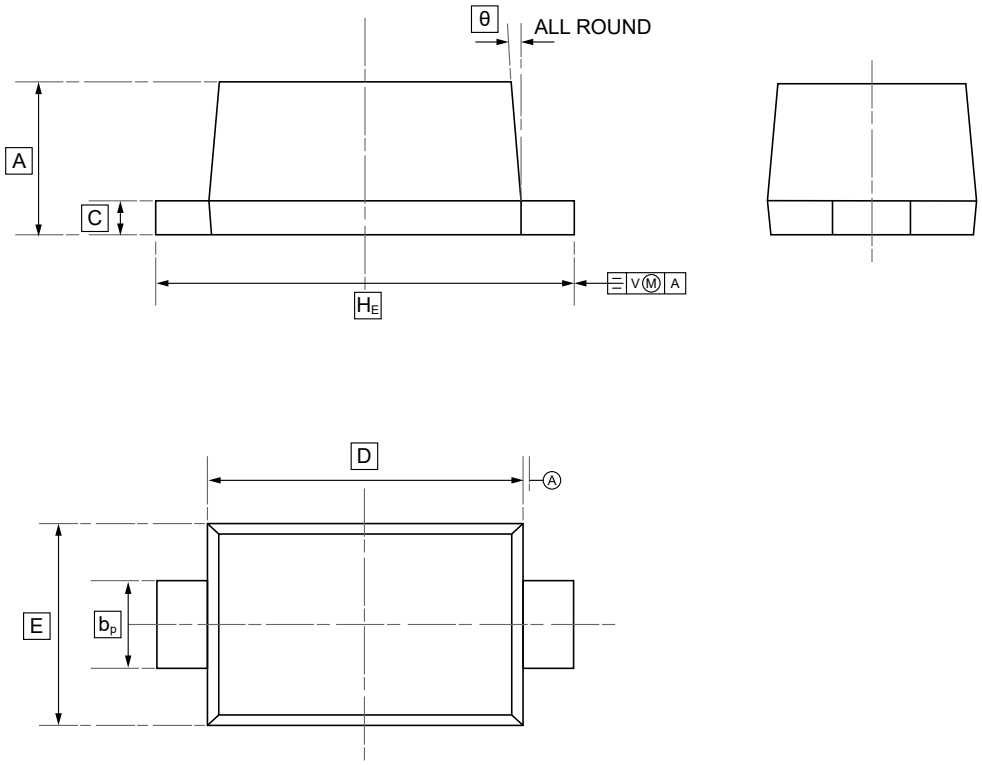
Reflow Condition		Pb-Free Assembly
Pre Heat	-Temperature Min ($T_{s(min)}$)	150°C
	-Temperature Max ($T_{s(max)}$)	200°C
	-Time (Min to Max) (t_s)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T_L) (Liquidus)	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

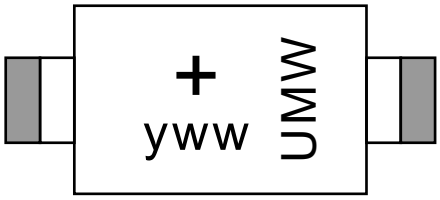
10.SOD-523 Package Outline Dimensions



DIMENSIONS (mm are the original dimensions)

Symbol	A	b_p	C	D	E	H_E	θ
Min	0.58	0.3	0.100	1.15	0.75	1.5	5°
Max	0.68	0.4	0.135	1.25	0.85	1.7	

11.Ordering information



yww: Batch Code

Order Code	Package	Base QTY	Delivery Mode
UMW AQ3522-01LTG	SOD-523	3000	Tape and reel

12.Disclaimer

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