

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, $\pm 8\text{kV}$ contact discharge) without performance degradation.

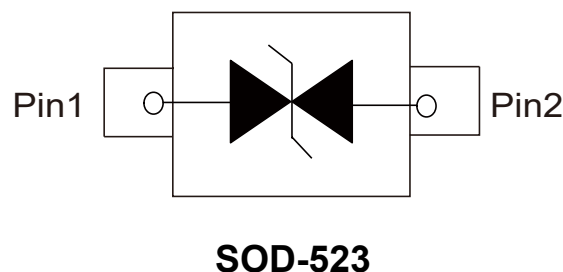
2.Features

- ESD, IEC 61000-4-2, $\pm 22\text{kV}$ contact, $\pm 30\text{kV}$ air
- EFT, IEC 61000-4-4, 40A ($t_p=5/50\text{ns}$)
- Lightning, 2.5A ($8/20\mu\text{s}$ as defined in IEC 61000-4-5 2nd edition)
- Low capacitance of 0.15pF (TYP) at 3GHz
- ESD, ISO 10605, 330pF , 330Ω , $\pm 21\text{kV}$ contact $\pm 23\text{kV}$ 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





5. Absolute Maximum Ratings

Parameter	Symbol	Value	Units
Peak Current ($t_p=8/20\mu s$)	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 ($T_{OP}=25^{\circ}C$ unless otherwise noted)

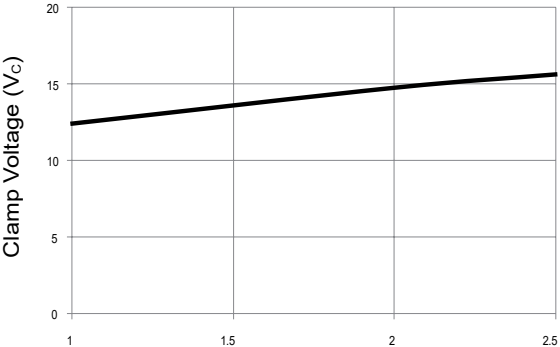
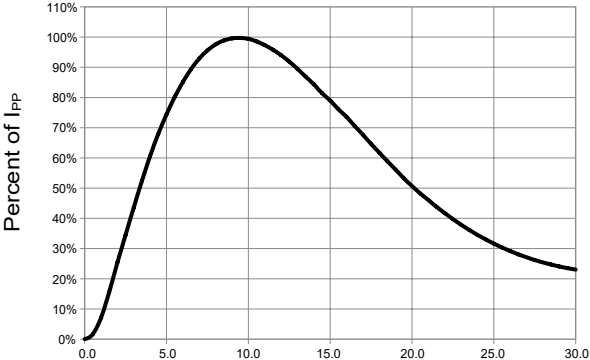
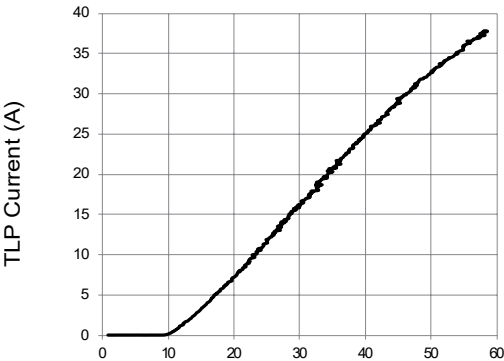
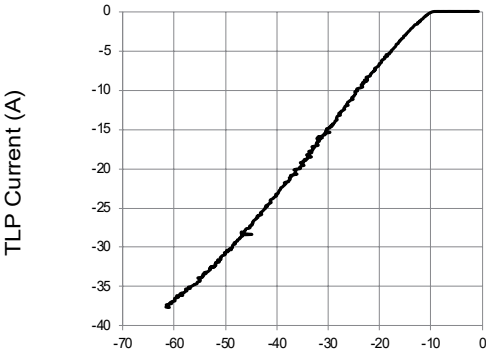
Parameter	Symbol	Conditions	Min	Typ	Max	Units
Reverse stand-off voltage	V_{RWM}	$I_R=1\mu A$			5	V
Breakdown Voltage	V_{BR}	$I_R=1mA$	8.5	9.2		V
Reverse Leakage Current	I_{LEAK}	$V_R=5V$		0.02	0.1	μA
Clamp Voltage ¹	V_C	$I_{PP}=2.5A$, $t_p=8/20\mu s$, I/O to I/O		15.5	18	V
Dynamic Resistance ²	R_{DYN}	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 $t_1=70ns$ to $t_2=90ns$.
3. Package sizes larger than 0201 can add parasitic capacitance, inductance and resistance.



7.1Typical characteristic

 Clamp Voltage (V_c) Peak Pulse Current-I_{PP}(A)	 Percent of I_{PP} Time (μs)	Fig 1. Clamping voltage vs. I_{PP} for 8/20 μs waveshape	Fig 2. 8/20 μs Pulse Waveform
 TLP Current (A) TLP Voltage (V)	 TLP Current (A) TLP Voltage (V)	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

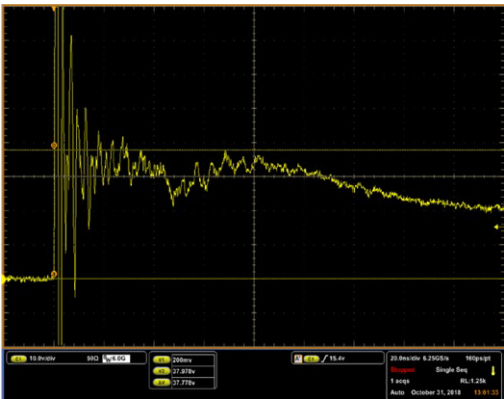


Fig 7. ESD ISO10605 +8 kV Contact ESD Clamping Voltage

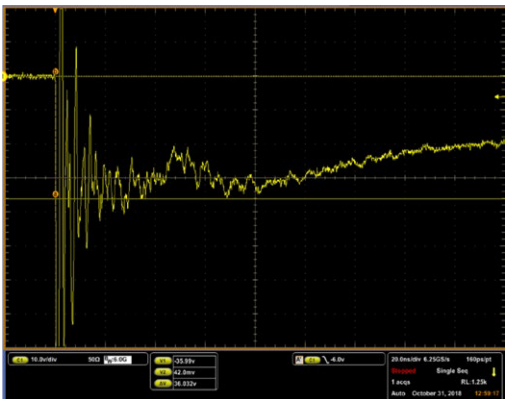
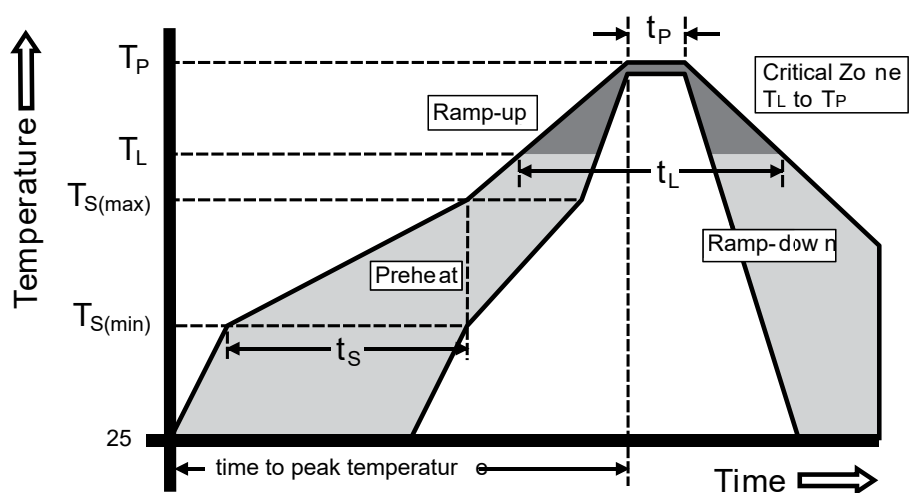


Fig 8. ESD ISO10605 -8 kV Contact ESD Clamping Voltage



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



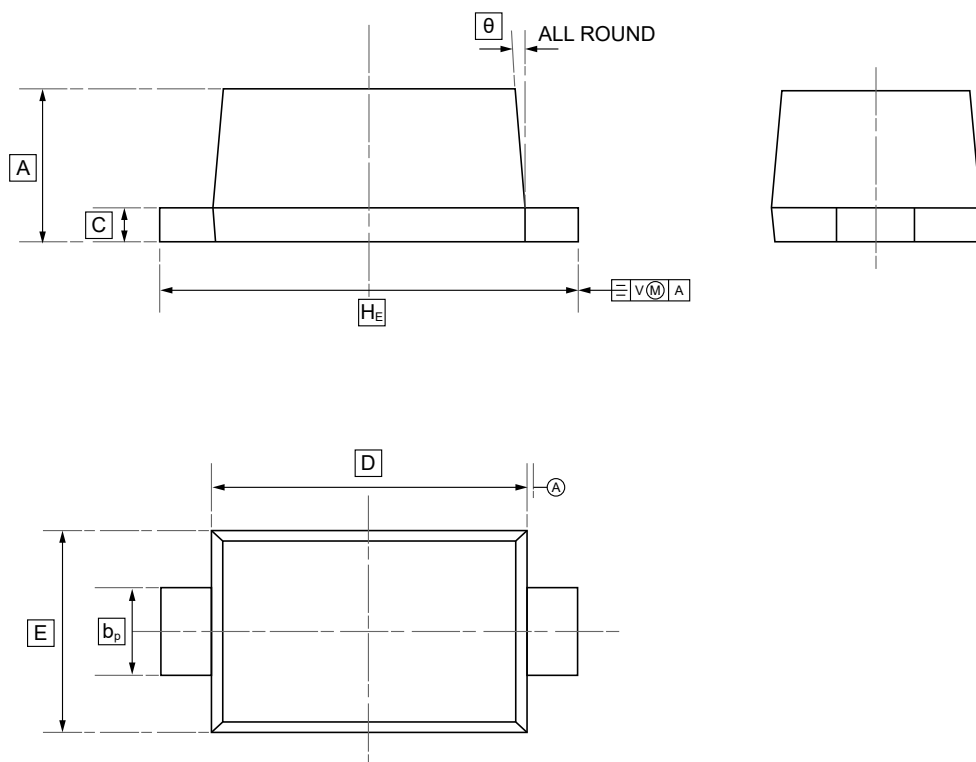


9.Product Characteristics

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

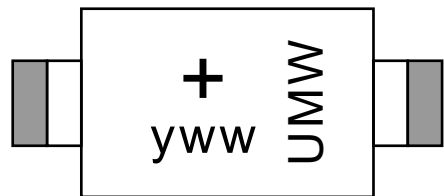


DIMENSIONS (mm are the original dimensions)

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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