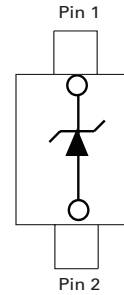


**Description**

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. The extremely low loading capacitance also makes it ideal for protecting high speed signal pins such as V-By-One<sup>®</sup>, HDMI, USB3.0 and USB2.0.



**Features**

- ESD, IEC 61000-4-2, ±22kV contact, ±30kV air
- EFT, IEC 61000-4-4, 40A (t<sub>p</sub>=5/50ns)
- Lightning, 2.5A (8/20µs as defined in IEC 61000-4-5 2nd edition)
- Low capacitance of 0.3pF (TYP) at 3GHz
- ESD, ISO 10605, 330pF  
330Ω, ±22kV contact, ±20kV air
- Facilitates excellent signal integrity
- PPAP capable

**Applications**

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

**Absolute Maximum Ratings**

Symbol	Parameter	Value	Units
$I_{PP}$	Peak Current ( $t_p=8/20\mu s$ )	2.5	A
$T_{OP}$	Operating Temperature	-40 to 150	°C
$T_{STOR}$	Storage Temperature	-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.

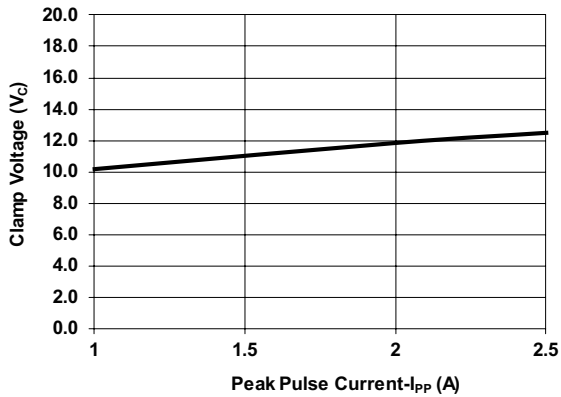
**Electrical Characteristics  $-(T_{OP}=25^\circ C)$**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Reverse Standoff Voltage	$V_{RWM}$	$I_R=1\mu A$			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	$\mu A$
Clamp Voltage <sup>1</sup>	$V_C$	$I_{PP}=2.5A, t_p=8/20\mu s, I/O$ to GND		12.5	15	V
Dynamic Resistance <sup>2</sup>	$R_{DYN}$	TLP, $t_p=100ns, I/O$ to GND		0.78		$\Omega$
ESD Withstand Voltage <sup>1</sup>	$V_{ESD}$	IEC 61000-4-2 (Contact)	$\pm 22$			kV
		IEC 61000-4-2 (Air)	$\pm 30$			kV
Diode Capacitance <sup>1,3</sup>	$C_{I/O-GND}$	Reverse Bias=0V, $f=3GHz$		0.30		pF

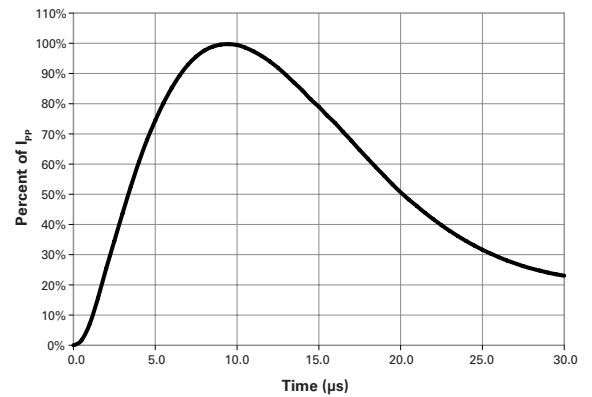
Note:

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

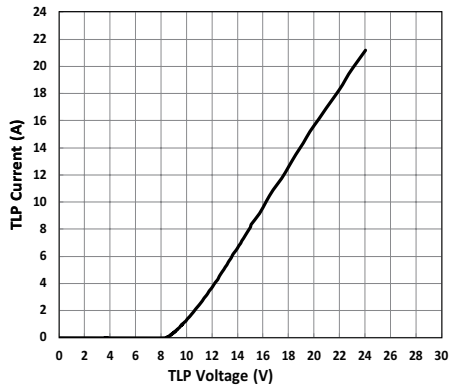
**Clamping voltage vs.  $I_{PP}$  for 8/20 $\mu s$  waveshape**



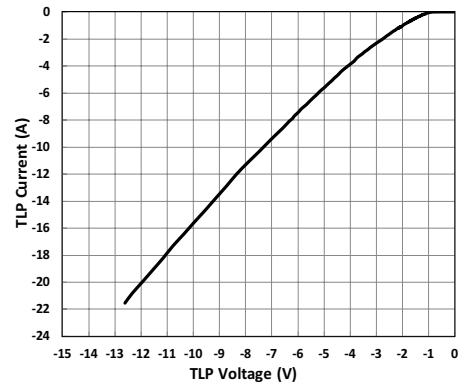
**8/20 $\mu s$  Pulse Waveform**



Positive Transmission Line Pulsing (TLP) Plot



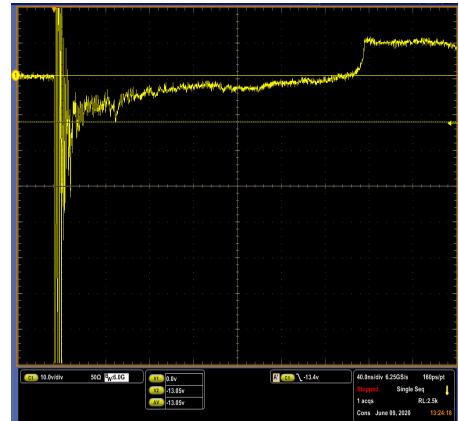
Negative Transmission Line Pulsing (TLP) Plot



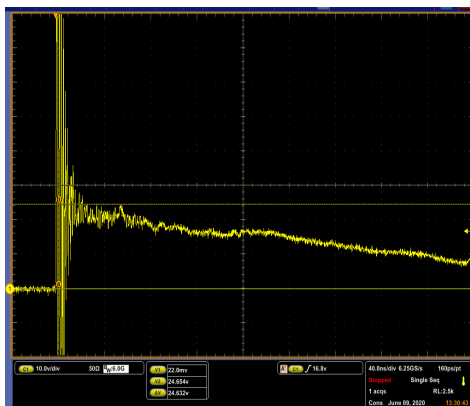
IEC 61000-4-2 +8 kV Contact ESD Clamping Voltage



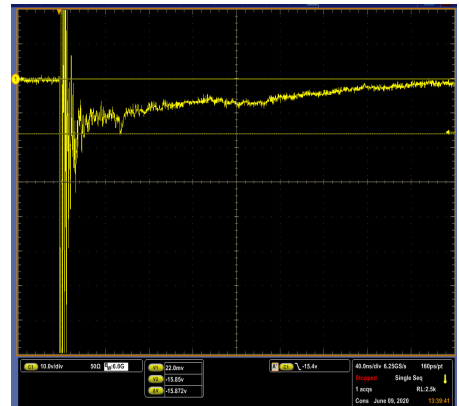
IEC 61000-4-2 -8 kV Contact ESD Clamping Voltage



ISO10605 (C:330pF, R:330?) contact discharge plot at +8kV

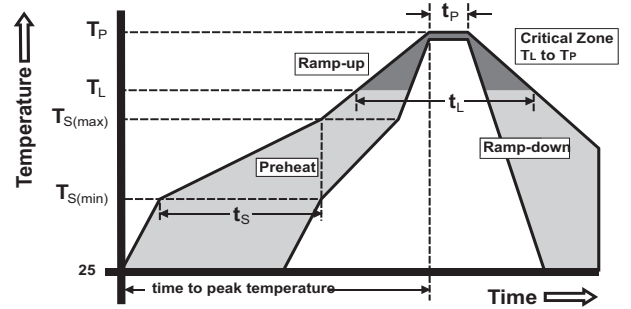


ISO10605 (C:330pF, R:330?) contact discharge plot at -8kV



**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 (Liquidus) Temp ( $T_L$ ) to peak		3°C/second max
$T_{s(max)}$ to $T_L$ - Ramp-up Rate		3°C/second max
Reflow	- Temperature ( $T_L$ ) (Liquidus)	217°C
	- Temperature ( $t_L$ )	60 – 150 seconds
Peak Temperature ( $T_p$ )		260 <sup>+0/-5</sup> °C
Time within 5°C of actual peak Temperature ( $t_p$ )		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature ( $T_p$ )		8 minutes Max.
Do not exceed		260°C



**Product Characteristics**

<b>Lead Plating</b>	Matte Tin
<b>Lead Material</b>	Copper Alloy
<b>Lead Coplanarity</b>	0.004 inches(0.102mm)
<b>Substrate Material</b>	Silicon
<b>Body Material</b>	Molded Compound
<b>Flammability</b>	UL Recognized compound meeting flammability rating V-0

**Marking**

**Ordering information**

Order code	Package	Base qty	Delivery mode
UMW AQ3530-01FTG	SOD-323	3000	Tape and reel

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