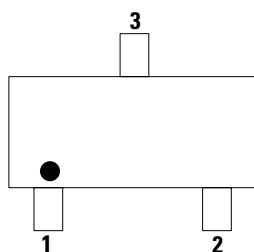


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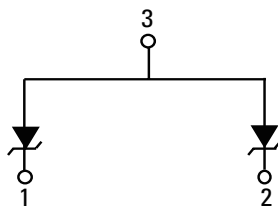
18 V, 0.6 pF, 10 kV, 2 Ch-uni TVS Low Cap in SC70-3L



Pinout



Functional Block Diagram



Description

The AQ3118-02JTG is a low-capacitance, TVS Diode Array designed to provide 2 channel protection against ESD (electrostatic discharge) and lightning induced surges.

This robust device can safely absorb repetitive ESD strikes at the maximum level specified in the IEC 61000-4-2 international standard (Level 4, ± 8 kV contact discharge) without performance degradation and safely dissipate 2 A of 8/20 μ s surge current (IEC61000-4-5 2nd edition).

Features

- ESD, IEC 61000-4-2, ± 10 kV contact, ± 15 kV air
- EFT, IEC 61000-4-4, 40 A (5/50 ns)
- Maximum surge tolerance, IEC 61000-4-5 2nd edition, 2.0 A (8/20 μ s)
- I/O to I/O is Ultra-low capacitance of 0.3 pF (TYP@ $V_R = 0$ V)
- Low leakage current of 50 nA (TYP) at 18 V
- Halogen-free, lead-free and RoHS compliant
- Moisture sensitivity level (MSL-1)
- AEC-Q101 qualified and PPAP capable

Applications

- Automotive
- USB 2.0, USB 3.0
- Near Field Communications
- RF Signal ESD Protection
- RF Switching, Power Amplifier and Antenna ESD Protection

Life Support Note:

Not Intended for Use in Life Support or Life Saving Applications

The products shown herein are not designed for use in life sustaining or life saving applications unless otherwise expressly indicated.

AQ3118-02JTG**18 V, 0.6 pF, 10 kV, 2 Ch-uni TVS Low Cap in SC70-3L****Absolute Maximum Ratings**

Symbol	Parameter	Value	Units
I_{PP}	Peak Current ($t_p = 8/20 \mu s$)	2	A
T_{OP}	Operating Temperature	-40 to 150	°C
T_{STOR}	Storage Temperature	-55 to 150	°C

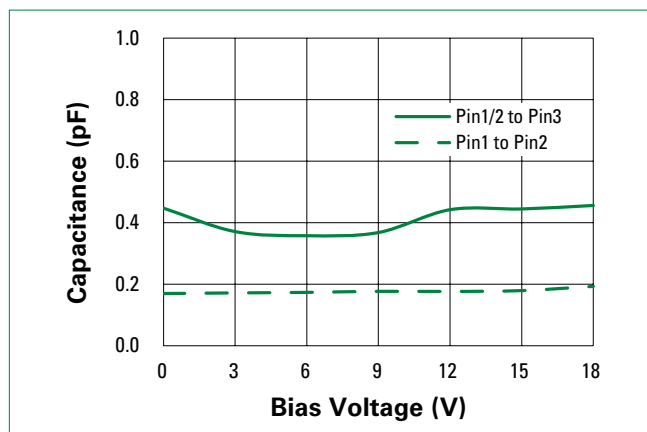
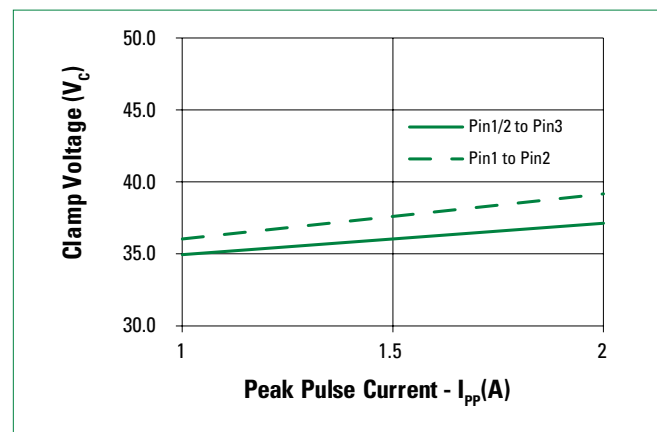
Caution: Stresses above those listed in "Absolute Maximum Ratings" may cause permanent damage to the component. This is a stress only rating and operation of the component at these or any other conditions above those indicated in the operational sections of this specification is not implied.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Reverse Standoff Voltage	V_{RWM}				18	V
Breakdown Voltage	V_{BR}	$I_R = 1 \text{ mA}$		25		V
Reverse Leakage Current	I_{LEAK}	$V_R = 18 \text{ V}$		10	50	nA
Clamp Voltage ¹	V_C	$I_{PP} = 1 \text{ A}, t_p = 8/20 \mu s$, Pin 1/2 to Pin 3		31	35	V
		$I_{PP} = 2 \text{ A}, t_p = 8/20 \mu s$, Pin 1/2 to Pin 3		34	38	V
		$I_{PP} = 16 \text{ A}, t_p = 0.2/100 \text{ ns (TLP)}$, Pin1/2 to Pin3		45		V
Dynamic Resistance ^{1,2}	R_{DYN}	TLP, $t_p = 100 \text{ ns}$, Pin 1/2 to Pin 3		0.75		Ω
ESD Withstand Voltage ^{1,3}	V_{ESD}	IEC 61000-4-2 (Contact Discharge)	± 10			kV
		IEC 61000-4-2 (Air Discharge)	± 15			kV
Diode Capacitance ¹	$C_{I/O-GND}$	Reverse Bias = 0 V, $f = 1 \text{ MHz}$; Pin 1/2 to Pin 3		0.6	0.9	pF
	$C_{I/O-I/O}$	Reverse Bias = 0 V, $f = 1 \text{ MHz}$; Pin 1 to Pin 2		0.3	0.45	pF

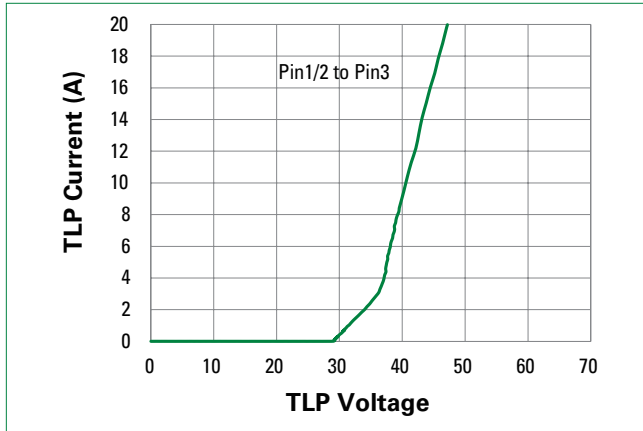
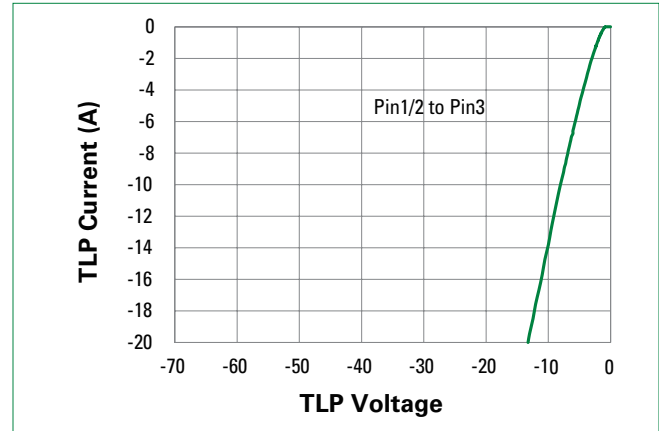
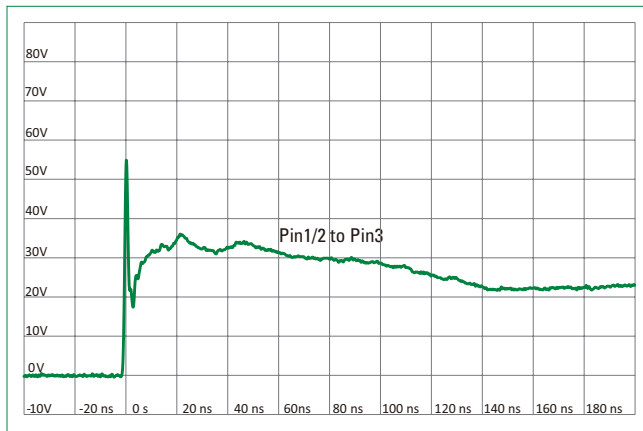
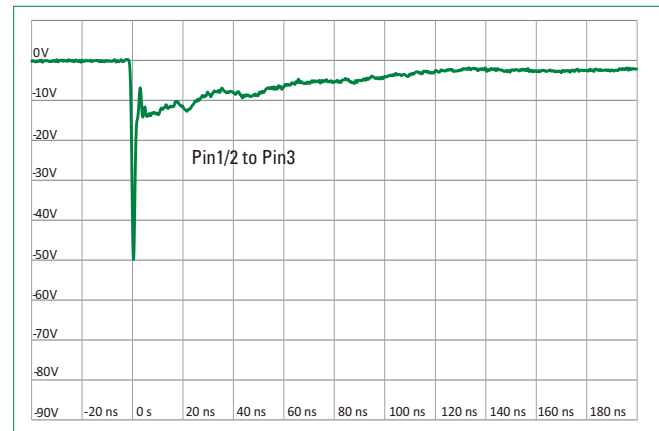
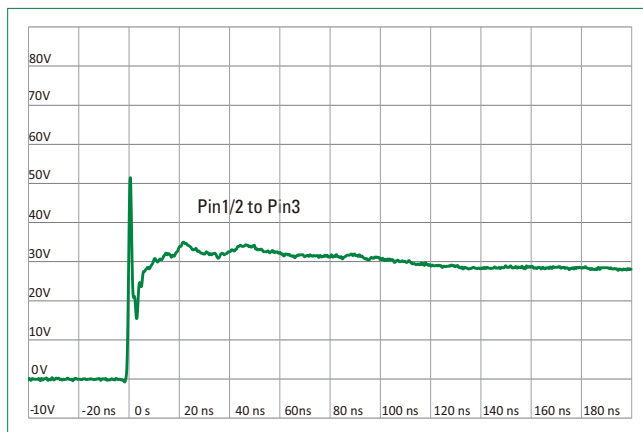
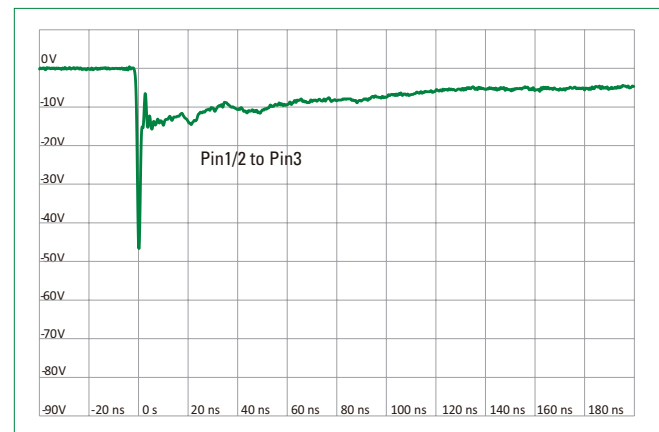
Note:

- Parameter is guaranteed by design and/or component characterization.
- Transmission Line Pulse (TLP) with 100ns width, 0.2 ns rise time, and average window $t_1 = 70 \text{ ns}$ to $t_2 = 90 \text{ ns}$.
- Device stressed with ten non-repetitive ESD pulses according to IEC61000-4-2 ($R = 330 \Omega$, $C = 150 \text{ pF}$).

Capacitance vs. Reverse Bias**Clamping Voltage vs I_{PP}** 

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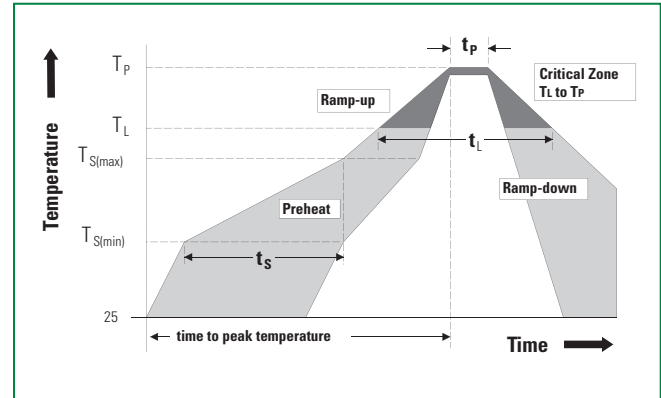
Positive Transmission Line Pulsing (TLP) Plot**Negative Transmission Line Pulsing (TLP) Plot****IEC 61000-4-2 +8 kV Contact ESD Clamping Voltage****IEC 61000-4-2 -8 kV Contact ESD Clamping Voltage****ISO10605 Contact Discharge Plot at +8 kV****ISO10605 Contact Discharge Plot at -8 kV**

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18 V, 0.6 pF, 10 kV, 2 Ch-uni TVS Low Cap in SC70-3L

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 – 120 seconds
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 ^{+0/-5} °C
Time Within 5 °C of Actual Peak Temperature (t_p)		30 seconds
Ramp-down Rate		6 °C/second max
Time 25 °C to Peak Temperature (T_p)		8 minutes max
Do Not Exceed		260 °C



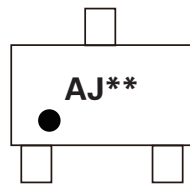
Ordering Information

Part Number	Package	Min. Order Qty.
AQ3118-02JTG	SC70-3L	3000

Product Characteristics

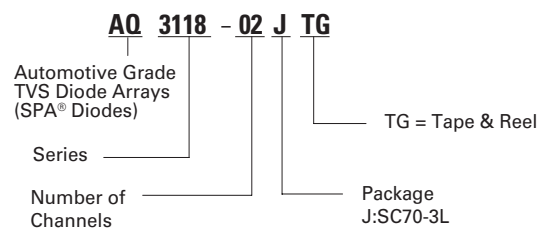
Lead Plating	Matte tin
Lead Material	Copper alloy
Body Material	Molded compound
Flammability	UL recognized compound meeting flammability rating V-0

Part Marking System



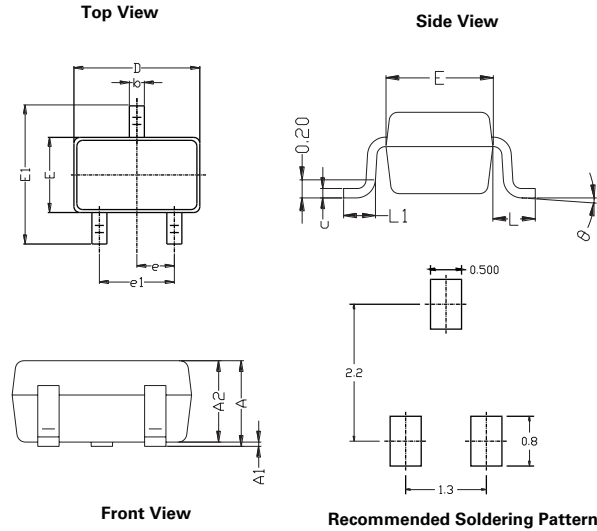
AJ = Part code
 * = Assembly code
 * = Date code

Part Numbering System

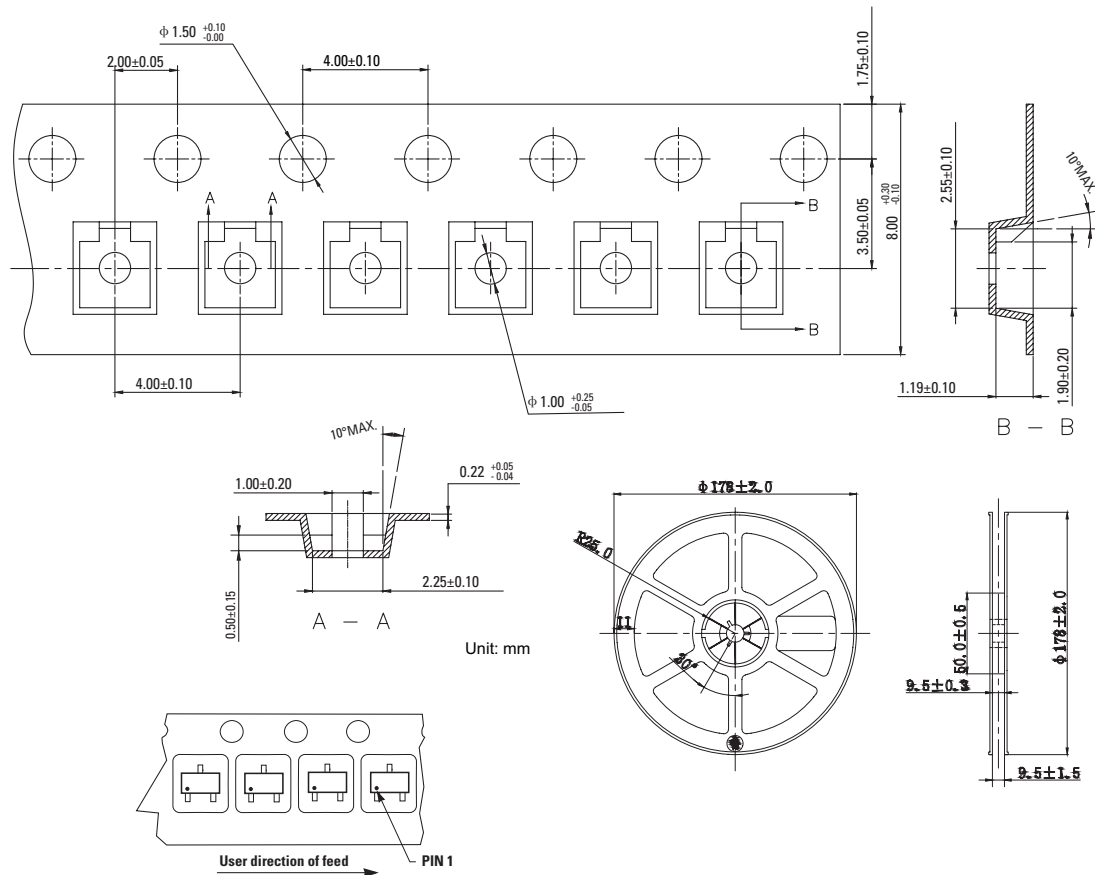


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Package Dimensions

Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.90	1.10	0.035	0.043
A1	0.00	0.10	0.000	0.004
A2	0.90	1.00	0.035	0.039
b	0.20	0.40	0.008	0.016
C	0.08	0.15	0.003	0.006
D	2.00	2.20	0.079	0.087
E	1.15	1.35	0.045	0.053
E1	2.15	2.40	0.085	0.094
e	0.650 Typ		0.026 Typ	
e1	1.20	1.40	0.047	0.055
L	0.53 Ref		0.021 Ref	
L1	0.26	0.45	0.010	0.018
θ	0°	8°	0°	8°

Embossed Carrier Tape & Reel Specification

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