

DATA SHEET

**ELECTROSTATIC DISCHARGE
PROTECTION DEVICES**

INDUSTRIAL / CONSUMER

UAQ02C12L01

RoHS compliant & Halogen free



Product specification— March 27, 2021 V.1



ElectroStatic Discharged Protection Devices (ESD) Data Sheet

Description

The UAQ02C12L01 includes back-to-back TVS diodes fabricated in a proprietary silicon avalanche technology to provide protection for electronic equipment that may experience destructive electrostatic discharge (ESD). This robust diodes can safely absorb repetitive ESD strikes up to the maximum level specified in the IEC61000-4-2 international standard without performance degradation.

The back-to-back configuration provides symmetrical ESD protection for data lines when AC signals are present.

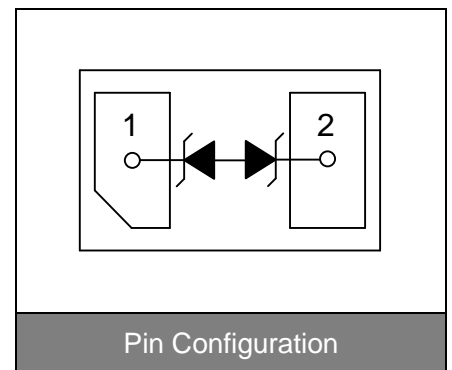


Contact : ±8kV
Air : ±15kV



Features

- IEC61000-4-2 ESD 15KV Air, 8KV contact compliance
- DFN0603 surface mount package
- Working voltage:12V
- Low leakage current
- Low operating and clamping voltages
- Lead Free/RoHS compliant
- Flammability rating UL 94V-0
- Meets MSL level 1, per J-STD-020
- Marking: C12



Applications

- Cellular Handsets and Accessories
- Personal Digital Assistants
- Set Top Boxes, Game Consoles
- Smart Phones
- External Storage
- Ultrabooks, Notebooks
- Tablets, eReaders

Maximum Ratings

Rating	Symbol	Value	Unit
ESD voltage (Contact discharge)	V_{ESD}	± 8	kV
ESD voltage (Air discharge)		± 15	
Lead soldering temperature	T_L	260	°C
Storage & operating temperature range	T_{STG}, T_J	-50~+150	°C

Electrical Characteristics (T_J=25°C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V _{RWM}				12	V
Reverse breakdown voltage	V _{BR}	I _{BR} =1.0mA	13.3			V
Reverse leakage current	I _R	V _R =12V			1.0	μA
Clamping voltage (tp=8/20μs)	V _C	I _{PP} =3.0A		20	25	V
Peak pulse current (tp=8/20μs)	I _{PP}				3	A
ESD Clamping voltage (TLP)	V _C	I _{PP} =8.0A		20		V
ESD Clamping voltage (TLP)	V _C	I _{PP} =16A		25		V
ESD Dynamic Turn-on Resistance	R _{dy}			0.6		Ω
Off state junction capacitance	C _J	0Vdc,f=1MHz		4	5	pF

Typical Characteristics Curves

Figure 1. Pulse Waveform

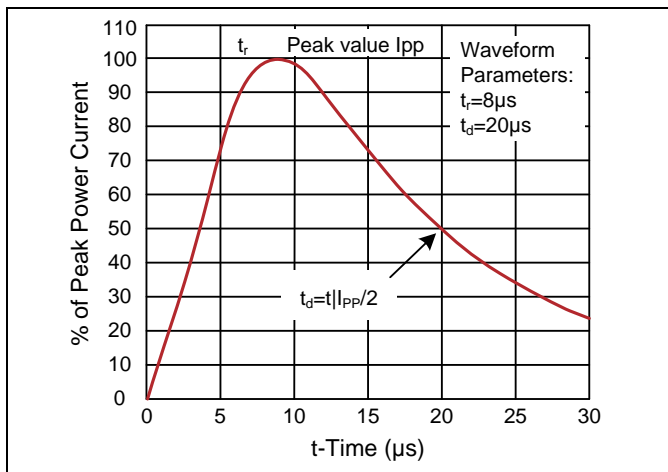


Figure 2. Clamping Voltage vs. Peak Pulse Current

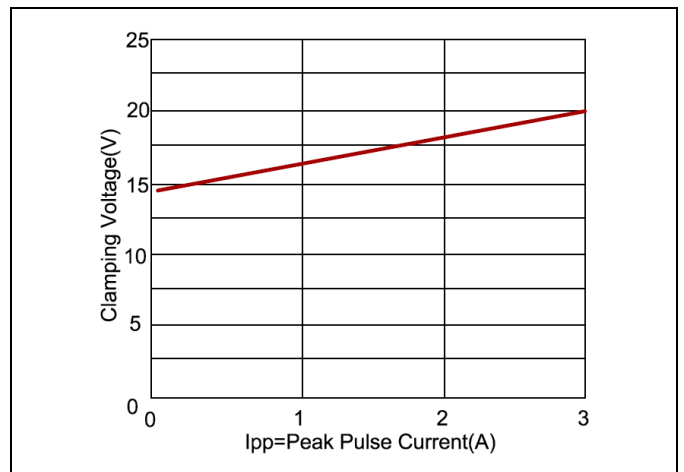


Figure 3. Capacitance vs. Reverse Voltage

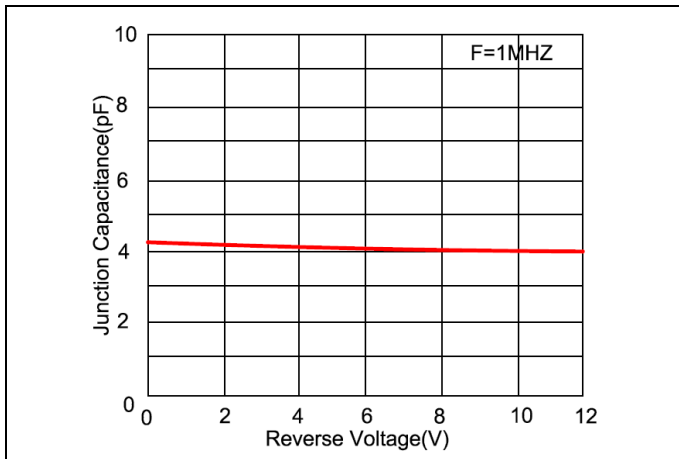
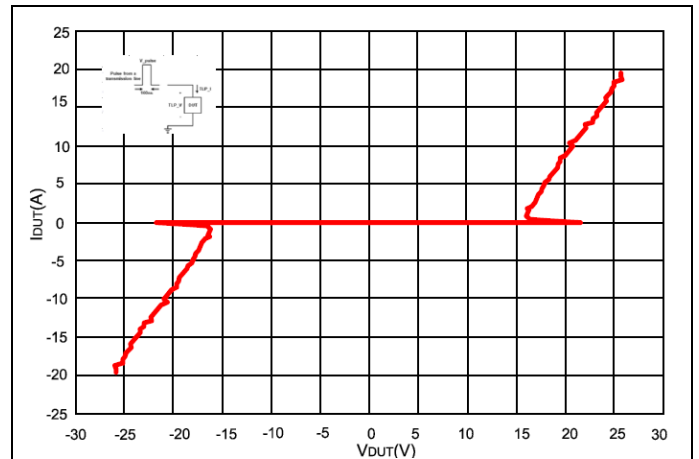
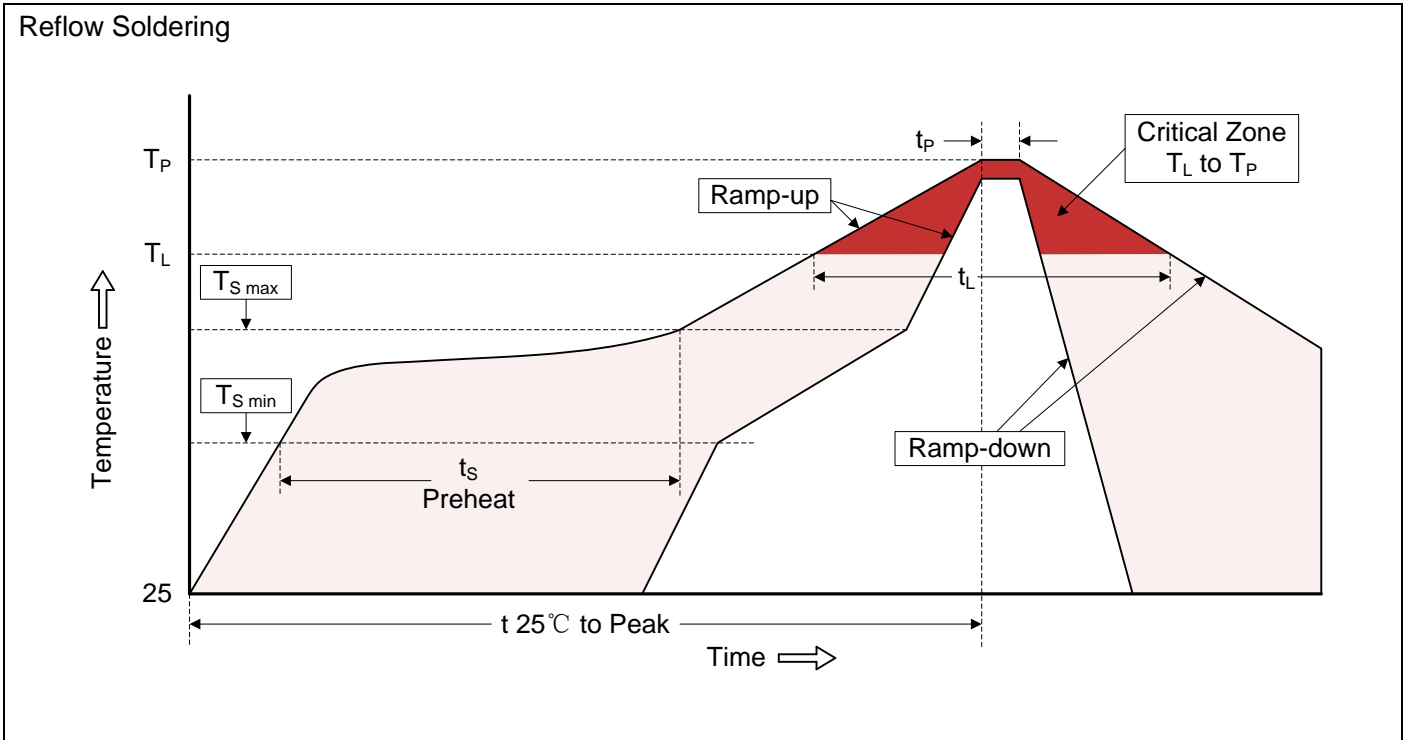


Figure 4. Transmission Line Pulsing (TLP) Measurement



Recommended Soldering Conditions



Recommended Conditions

Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3°C/second max.
Preheat -Temperature Min ($T_{S\ min}$) -Temperature Max ($T_{S\ max}$) -Time (min to max) (t_s)	150°C 200°C 60-180 seconds
$T_{S\ max}$ to T_L -Ramp-up Rate	3°C/second max.
Time maintained above: -Temperature (T_L) -Time (t_L)	217°C 60-150 seconds
Peak Temperature (T_P)	260°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	8 minutes max.

Dimensions (DFN0603/QFN-0201)

Symbol	Dimension (mm)			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.57	0.63	0.022	0.025
B	0.27	0.33	0.011	0.013
C	0.22	0.28	0.009	0.011
D	0.12	0.18	0.005	0.007
E	0.40		0.016	
F	0.24	0.30	0.009	0.012
G	-	0.01	-	0.0004

Packaging

Tape		Symbol	Dimension (mm)		
		W	8.00±0.30		
		P0	4.00±0.10		
		P1	2.00±0.10		
		P2	2.00±0.10		
		D0	Φ1.55±0.10		
		D1	Φ0.20±0.05		
		E	1.75±0.10		
		F	3.50±0.10		
		A	0.50±0.10		
		B	0.75±0.10		
		K	0.40±0.05		
		t	0.20±0.05		
		Reel		D	Φ178.0±2.0
				D2	Φ13.00.
W1	9.50				
Quantity: 10000PCS					