



**THE DATASHEET OF  
UBQ10A03L04**



# DATA SHEET

**ELECTROSTATIC DISCHARGE  
PROTECTION DEVICES**

**INDUSTRIAL / CONSUMER**

UBQ10A03L04

RoHS compliant & Halogen free



Product specification—July 04, 2023 V.2



## Electrostatic Discharged Protection Devices (ESD) Data Sheet

### Description

UBQ10A03L04 is a ultra low capacitance TVS array designed to protect high speed data interfaces. This series has been specifically designed to protect sensitive components which are connected to high-speed data and transmission lines from over-voltage caused by electrostatic discharge (ESD), cable discharge events (CDE), and electrical fast transients (EFT). It has a typical capacitance of only 0.3pF between I/O pins. This allows it to be used on circuits operating in excess of 3GHz without signal attenuation. They may be used to meet the ESD immunity requirements of IEC61000-4-2, Level 4 ( $\pm 15\text{kV}$  air,  $\pm 8\text{kV}$  contact discharge). They are designed for easy PCB layout by allowing the traces to run straight through the device. The combination of small size low capacitance and high level of ESD protection makes them a flexible solution for applications such as HDMI, UDI, Display Port™, MDDI, Serial ATA and Infiniband circuits.



Contact :  $\pm 20\text{kV}$   
Air :  $\pm 25\text{kV}$

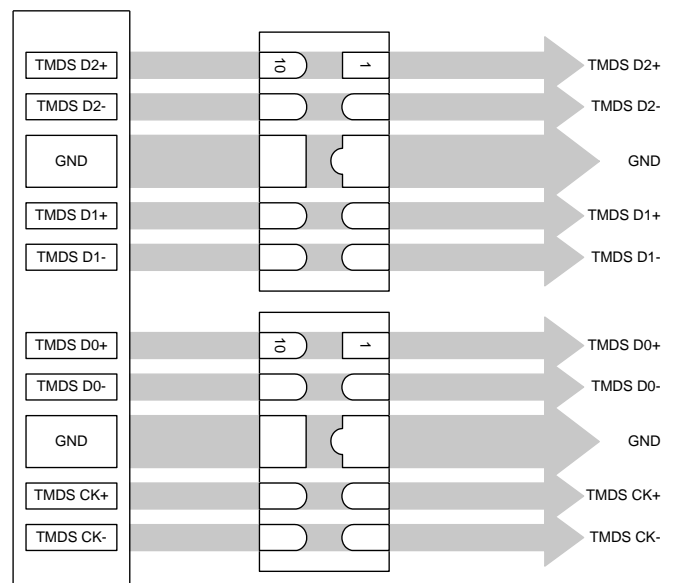
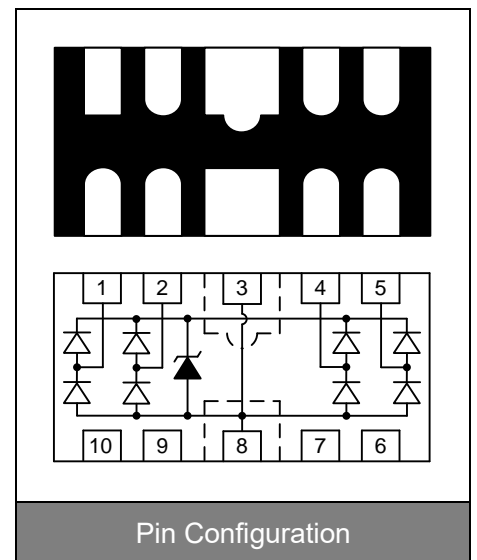


### Features

- QFN-10 (2.5×1.0×0.5mm) surface mount package
- Protects four I/O lines
- Working voltage: 3.3V
- Low leakage current
- Low operating and clamping voltages
- Solid-state silicon avalanche technology
- Lead Free/RoHS compliant
- Solder reflow temperature: Pure Tin-Sn, 260~270°C
- Flammability rating UL 94V-0
- Meets MSL level 1, per J-STD-020
- Marking: B 34

### Applications

- High Definition Multimedia Interface (HDMI 1.4)
- Digital Visual Interface (DVI)
- Unified Display Interface (UDI)
- Display Port Interface
- MDDI Ports
- PCI Express
- Serial ATA



## Maximum Ratings

Rating	Symbol	Value	Unit
ESD voltage (Contact discharge)	$V_{ESD}$	$\pm 20$	kV
ESD voltage (Air discharge)		$\pm 25$	
Storage & operating temperature range	$T_{STG}, T_J$	-55~+150	$^{\circ}C$

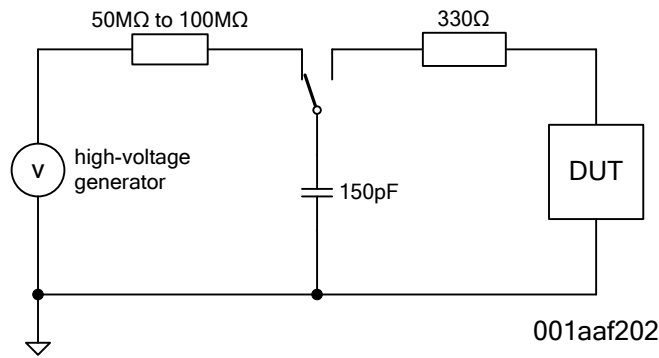
## Electrical Characteristics ( $T_J=25^{\circ}C$ )

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	$V_{RWM}$				3.3	V
Reverse breakdown voltage	$V_{BR}$	$I_{BR}=1mA$	4.5			V
Reverse leakage current	$I_R$	$V_R=3.3V$ Each I/O pin			1	$\mu A$
Clamping voltage ( $t_p=8/20\mu s$ )	$V_C$	$I_{PP}=1A$			8.5	V
Clamping voltage ( $t_p=8/20\mu s$ )	$V_C$	$I_{PP}=4A$			15	V
Peak pulse current ( $t_p=8/20\mu s$ )	$I_{PP}$				4	A
Off state junction capacitance	$C_J$	0Vdc, f=1MHz I/O pin to GND		0.6		pF
		0Vdc, f=1MHz Between I/O pins		0.3		pF

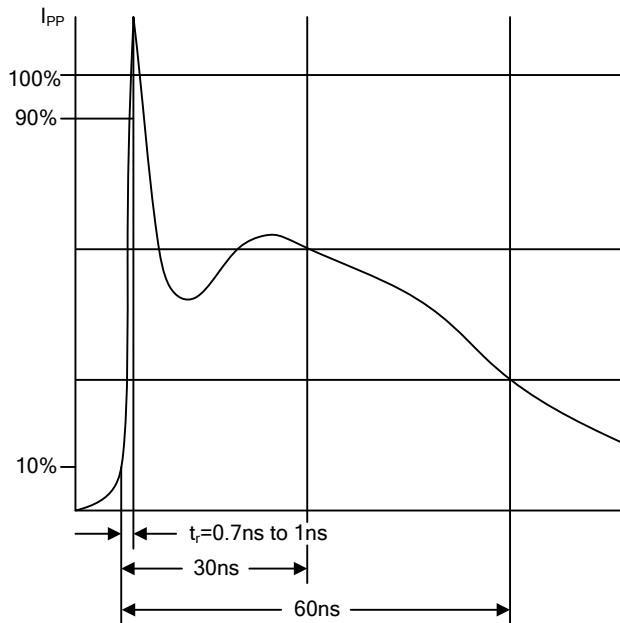
## ESD Protection Standards

### IEC61000-4-2

Interfaces of consumer electronic equipment are widely specified according to the International Electrotechnical Commission standard IEC61000-4-2. This standard is not targeted towards particular devices but towards general equipment, systems and subsystems that may be involved in electrostatic discharge. consists of a 150pF capacitor and a 330Ω series resistor representing the counterpart to the Device Under Test (DUT).

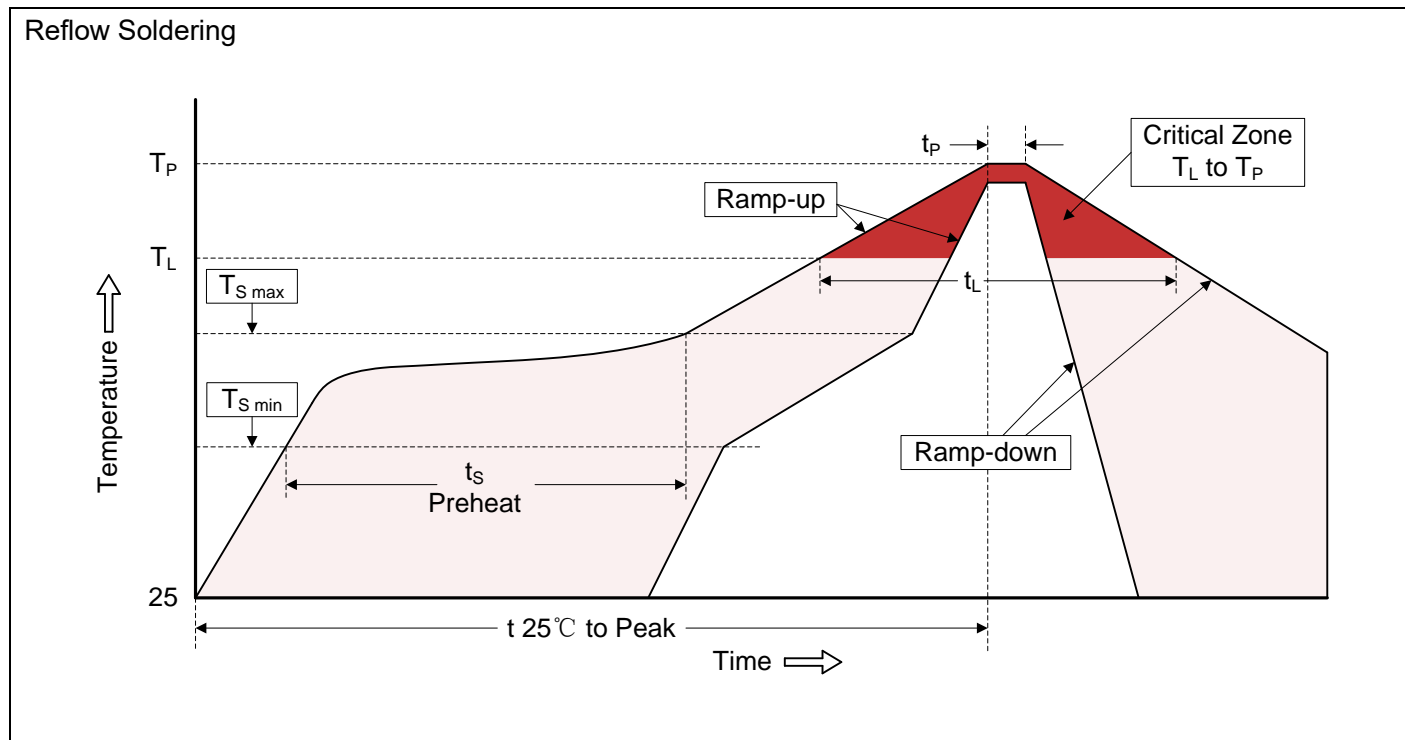


Test circuit according IEC61000-4-2



ESD surge according IEC61000-4-2

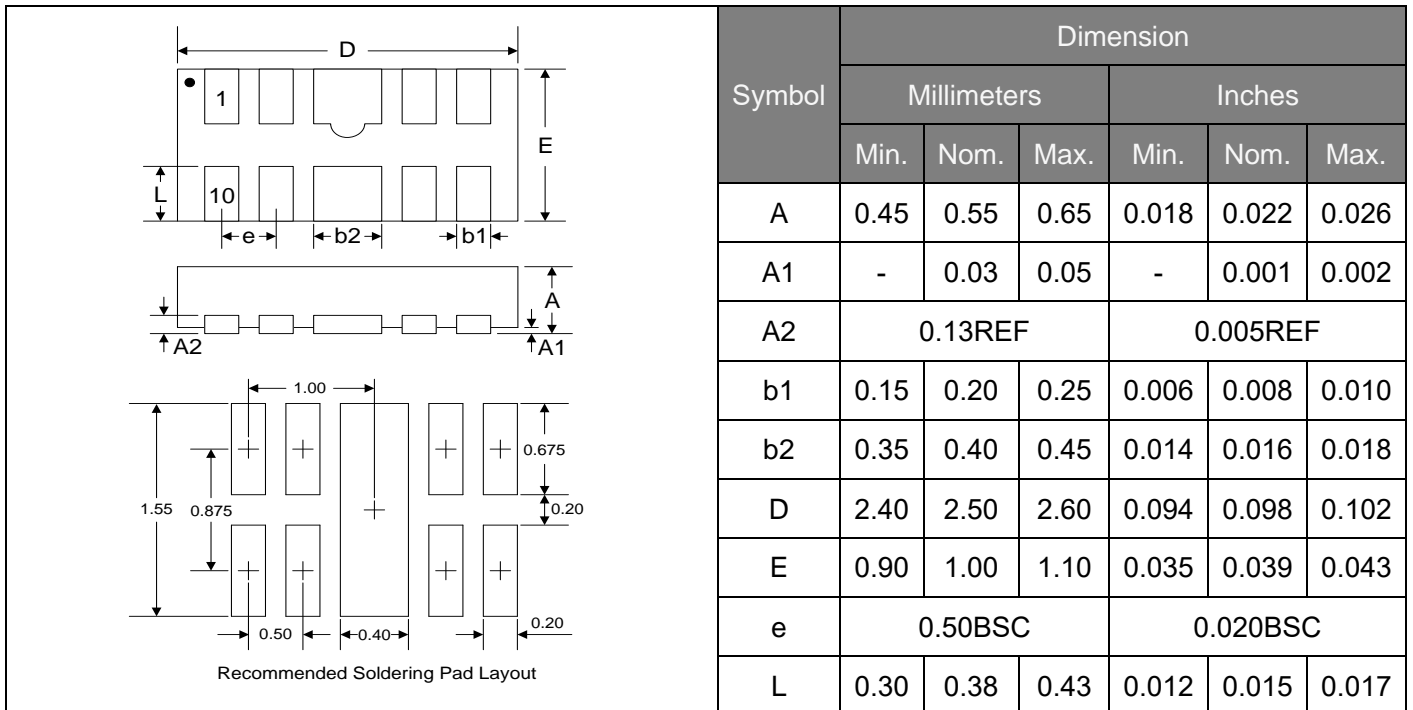
**Recommended Soldering Conditions**



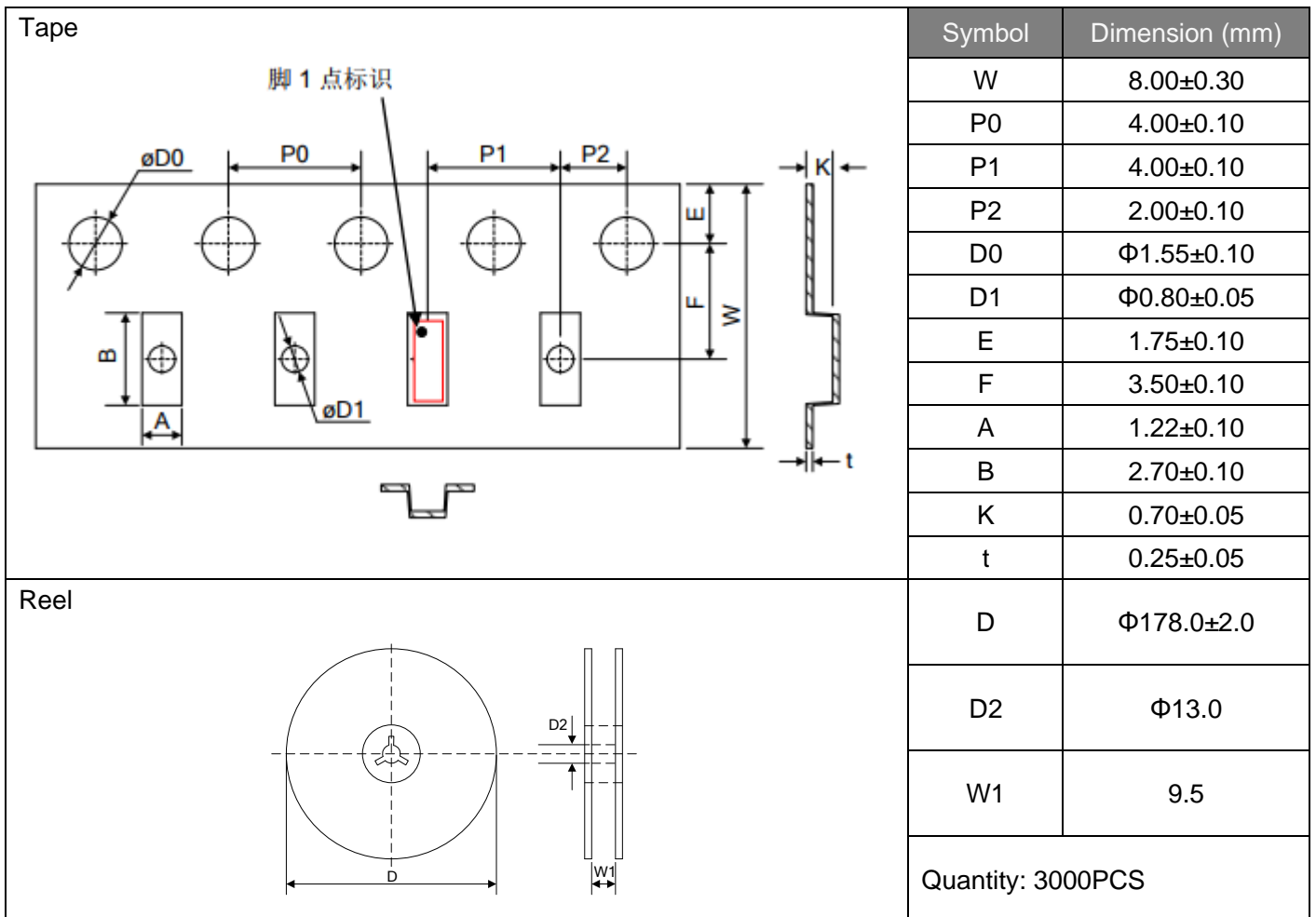
Recommended Conditions

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 (QFN-10)**



**Packaging**



## LEGAL DISCLAIMER

YAGEO, its distributors and agents (collectively, "YAGEO"), hereby disclaims any and all liabilities for any errors, inaccuracies or incompleteness contained in any product related information, including but not limited to product specifications, datasheets, pictures and/or graphics. YAGEO may make changes, modifications and/or improvements to product related information at any time and without notice.



YAGEO makes no representation, warranty, and/or guarantee about the fitness of its products for any particular purpose or the continuing production of any of its products. To the maximum extent permitted by law, YAGEO disclaims (i) any and all liability arising out of the application or use of any YAGEO product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for a particular purpose, non-infringement and merchantability.

YAGEO products are designed for general purpose applications under normal operation and usage conditions. Please contact YAGEO for the applications listed below which require especially high reliability for the prevention of defects which might directly cause damage to the third party's life, body or property: Aerospace equipment (artificial satellite, rocket, etc.), Atomic energy-related equipment, Aviation equipment, Disaster prevention equipment, crime prevention equipment, Electric heating apparatus, burning equipment, Highly public information network equipment, data-processing equipment, Medical devices, Military equipment, Power generation control equipment, Safety equipment, Traffic signal equipment, Transportation equipment and Undersea equipment, or for any other application or use in which the failure of YAGEO products could result in personal injury or death, or serious property damage. Particularly **YAGEO Corporation and its affiliates do not recommend the use of commercial or automotive grade products for high reliability applications or manned space flight.**

Information provided here is intended to indicate product specifications only. YAGEO reserves all the rights for revising this content without further notification, as long as products are unchanged. Any product change will be announced by PCN.

## Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

-  [View UBQ10A03L04 on WIN SOURCE](#)
-  [Yageo Information](#)

## Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management