

DATA SHEET

**ELECTROSTATIC DISCHARGE
PROTECTION DEVICES**

INDUSTRIAL / CONSUMER

UBQ10A05L04HI

RoHS compliant & Halogen free



Product specification— March 27, 2021 V.2



Electrostatic Discharged Protection Devices (ESD) Data Sheet

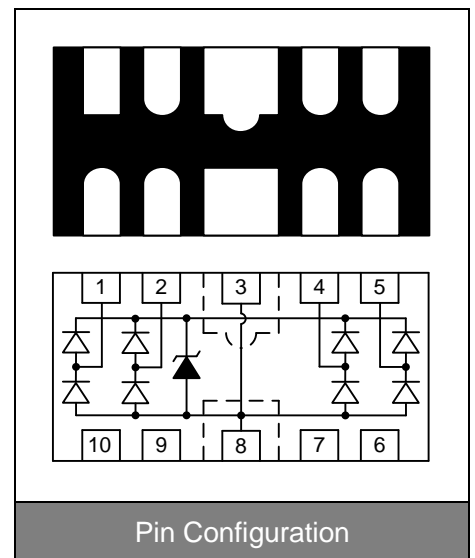
Description

UBQ10A05L04HI is a ultra low capacitance TVS array designed to protect high speed data interfaces. It 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. It may be used to meet the ESD immunity requirements of IEC61000-4-2. It is 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.



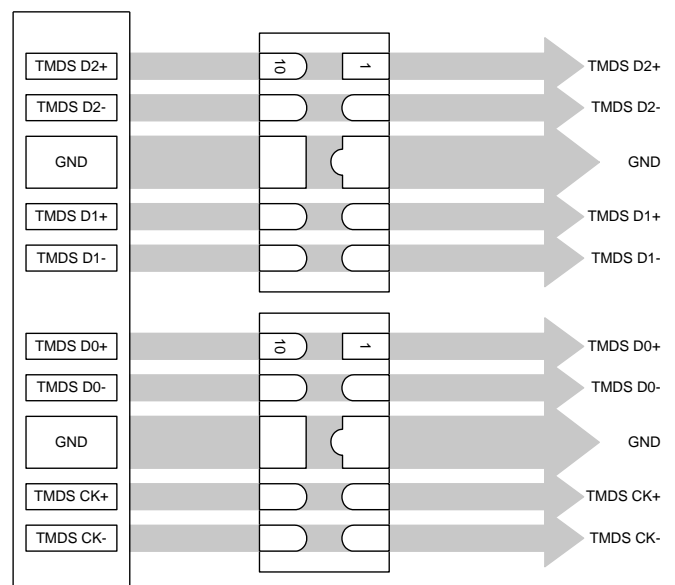
Features

- IEC61000-4-2 ESD 20kV Air, 20kV contact compliance
- QFN-10 (2.5×1.0×0.5mm) surface mount package
- Protects four I/O lines
- Working voltage: 5V
- 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 54



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}	± 20	kV
ESD voltage (Air discharge)		± 20	
Storage & operating temperature range	T_{STG}, T_J	-55~+150	°C

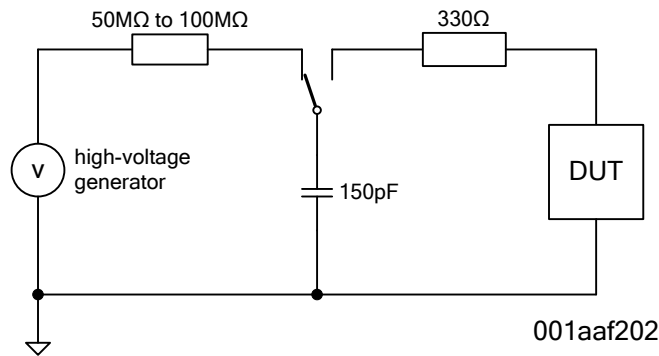
Electrical Characteristics ($T_J=25^\circ\text{C}$)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V_{RWM}				5	V
Reverse breakdown voltage	V_{BR}	$I_{BR}=1\text{mA}$	6			V
Reverse leakage current	I_R	$V_R=5\text{V}$ Each I/O pin			1	μA
Clamping voltage ($t_p=8/20\mu\text{s}$)	V_C	$I_{PP}=1\text{A}$			9.8	V
Clamping voltage ($t_p=8/20\mu\text{s}$)	V_C	$I_{PP}=4\text{A}$			15	V
Peak Pulse Current ($t_p=8/20\mu\text{s}$)	I_{PP}				5	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

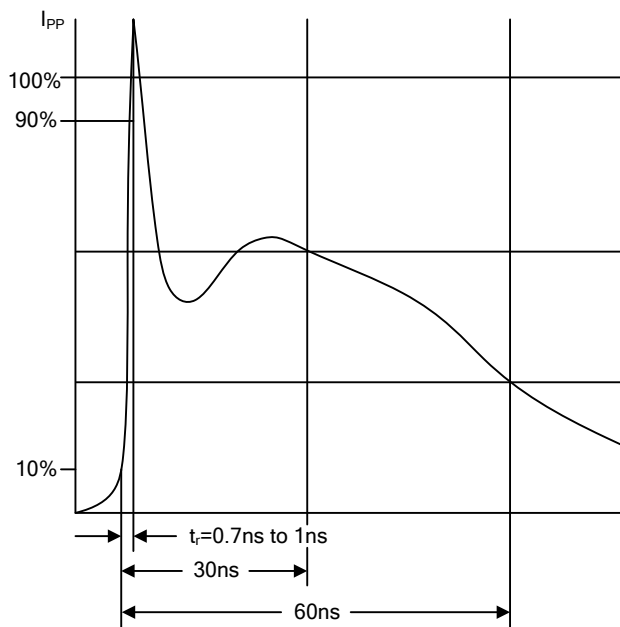
ESD Protection Standards

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).

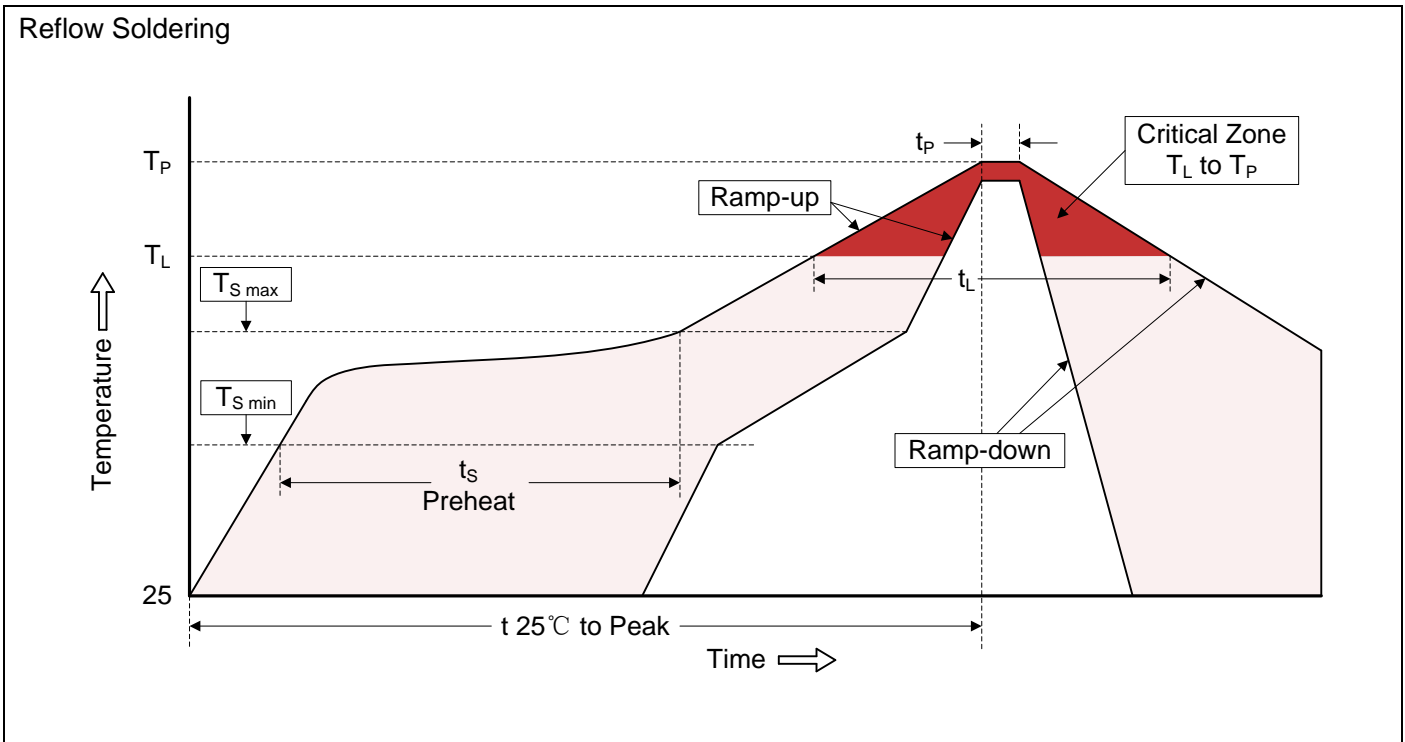


Test circuit according IEC61000-4-2



ESD surge according IEC61000-4-2

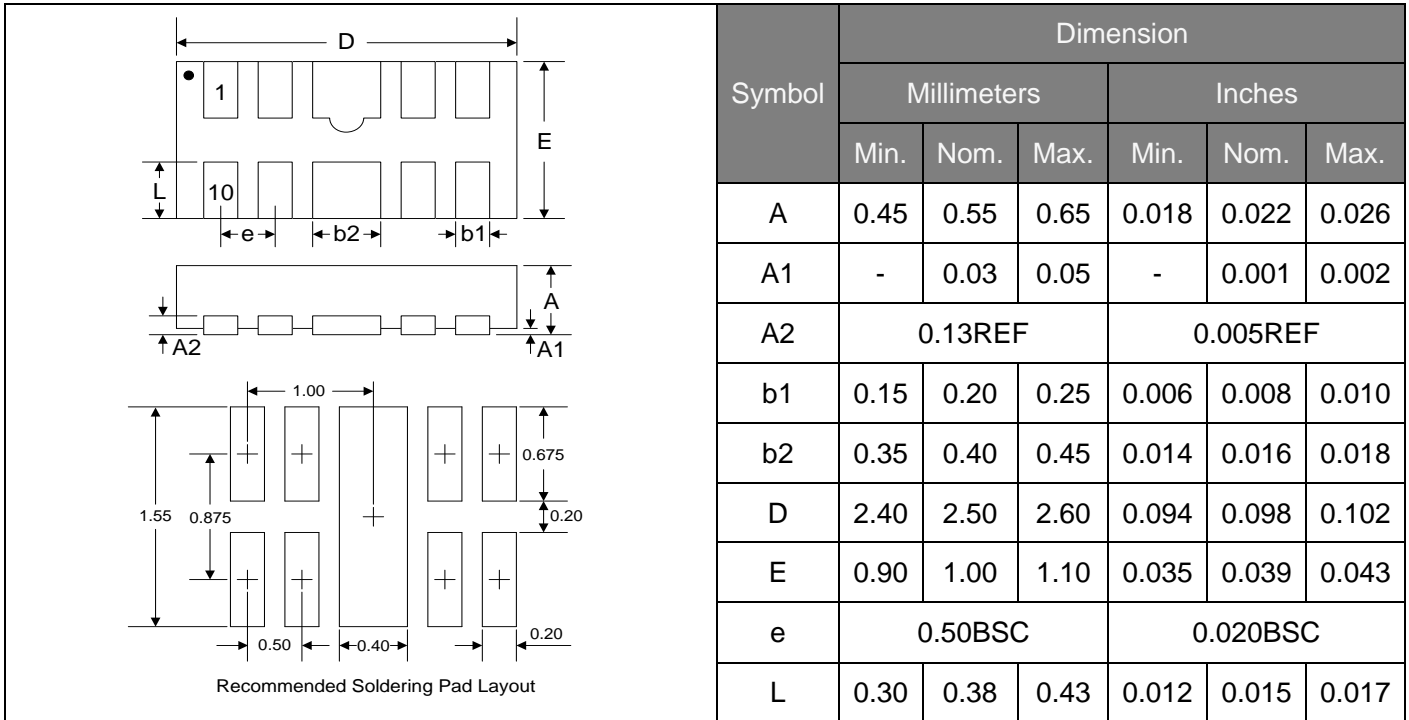
Recommended Soldering Conditions



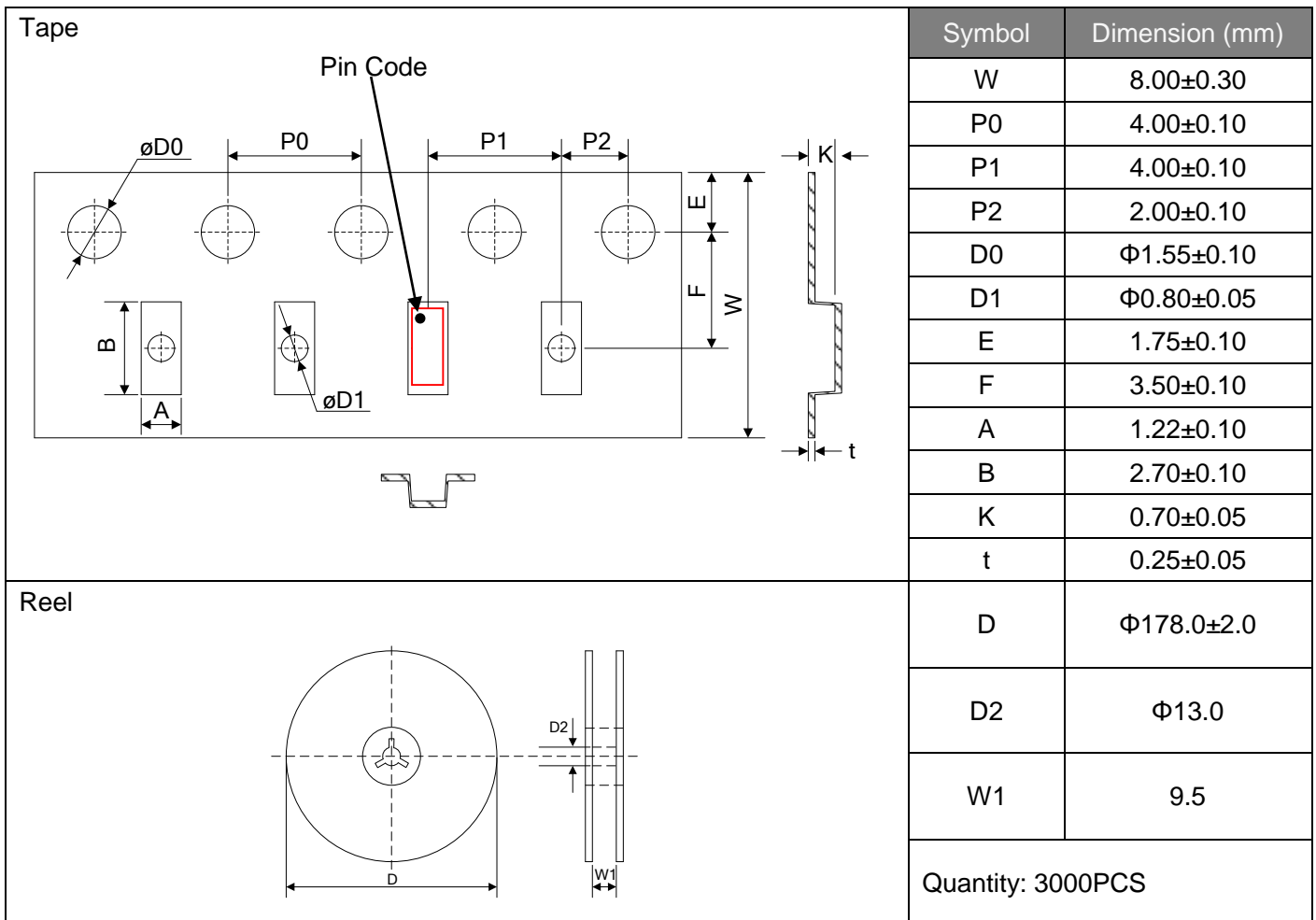
Recommended Conditions

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



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