

Electrostatic Discharged Protection Devices (ESD) Data Sheet

Description

UAT14A15L03 is surge rated diode arrays designed to protect high speed data interfaces. It has been specifically designed to protect sensitive components which is connected to data and transmission lines from overvoltage caused by electrostatic discharge (ESD), electrical fast transients (EFT), and lightning.

The unique design of the device incorporates one surge rated, and two data lines. Low capacitance steering diodes and a TVS diode in a single package. The low capacitance array configuration allows the user to protect two high speed data or transmission lines.

The two inductance construction minimizes voltage overshoot during high current surges.

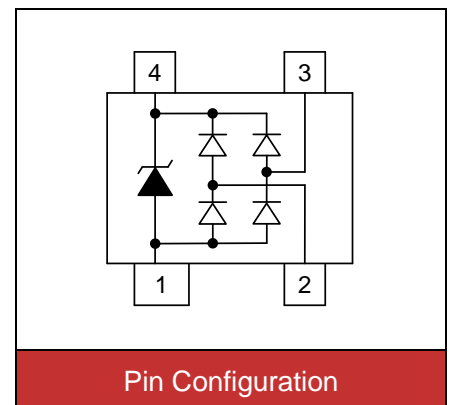


Contact : $\pm 20\text{kV}$
Air : $\pm 20\text{kV}$



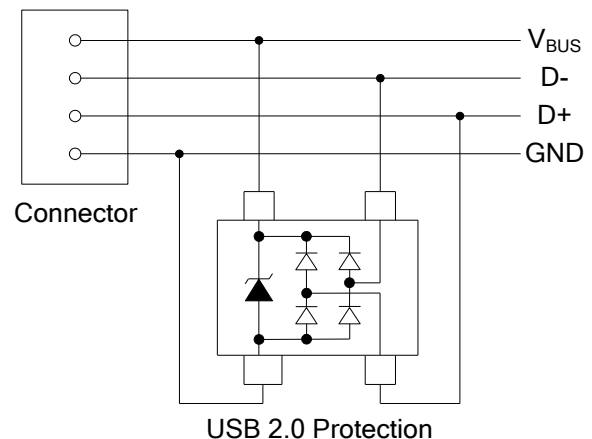
Features

- IEC61000-4-2 ESD 20KV Air, 20KV contact compliance
- SOT-143 surface mount package
- Protects two high-speed data lines and one power line
- Array of surge rated, low capacitance diodes
- Working voltage:15V
- Low leakage current
- Low clamping voltage
- Solid-state silicon avalanche technology
- 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 SL5



Applications

- USB power and data line protection
- Ethernet 10BaseT
- Video line protection
- I²C bus protection
- WAN/LAN equipment
- ISDN S/T interface
- Microcontroller input protection
- Portable electronics



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 |

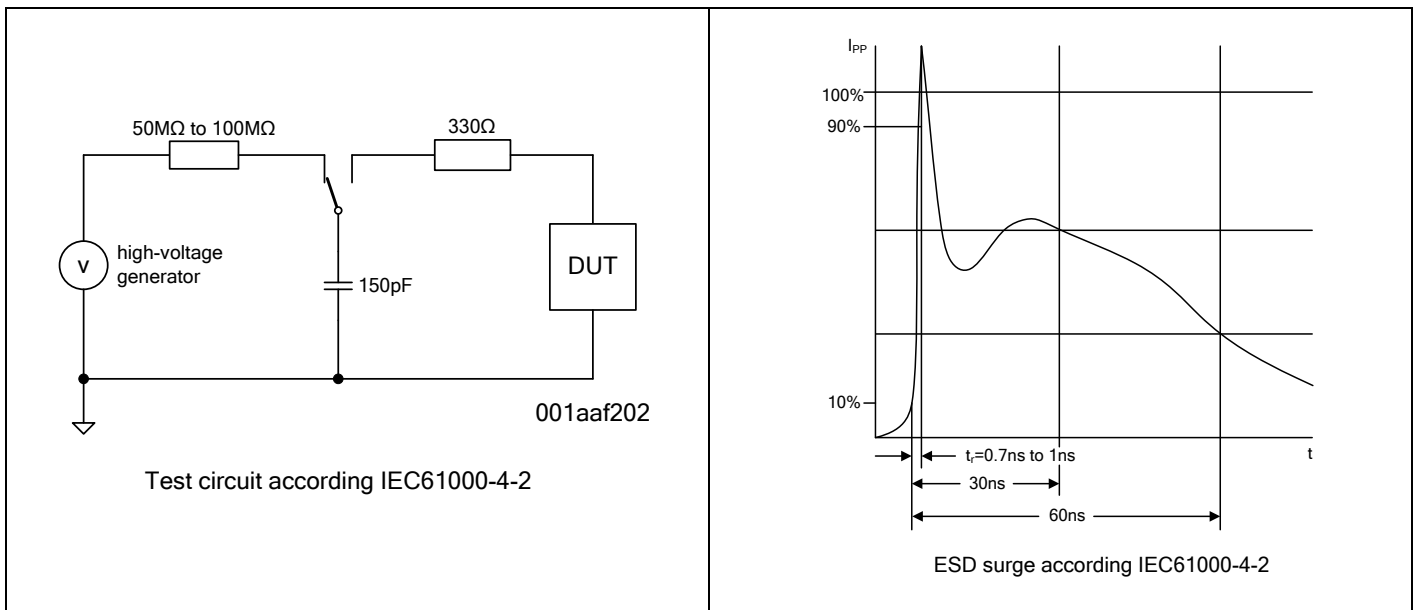
Electrical Characteristics ($T_J=25^{\circ}\text{C}$)

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|----------------------------------------------|-----------|------------------------------------------|------|------|------|---------------|
| Reverse stand-off voltage | V_{RWM} | | | | 15 | V |
| Reverse breakdown voltage | V_{BR} | $I_{BR}=1\text{mA}$ | 16.7 | | | V |
| Reverse leakage current | I_R | $V_R=15\text{V}$ | | | 1 | μA |
| Clamping voltage ($t_p=8/20\mu\text{s}$) | V_C | $I_{PP}=1\text{A}$ | | | 30 | V |
| Clamping voltage ($t_p=8/20\mu\text{s}$) | V_C | $I_{PP}=2\text{A}$ | | | 35 | V |
| Peak pulse current ($t_p=8/20\mu\text{s}$) | I_{PP} | | | | 2 | A |
| Off state junction capacitance | C_J | 0Vdc, f=1MHz Between I/O pins and GND | | 0.8 | 1 | pF |

ESD Protection Standards

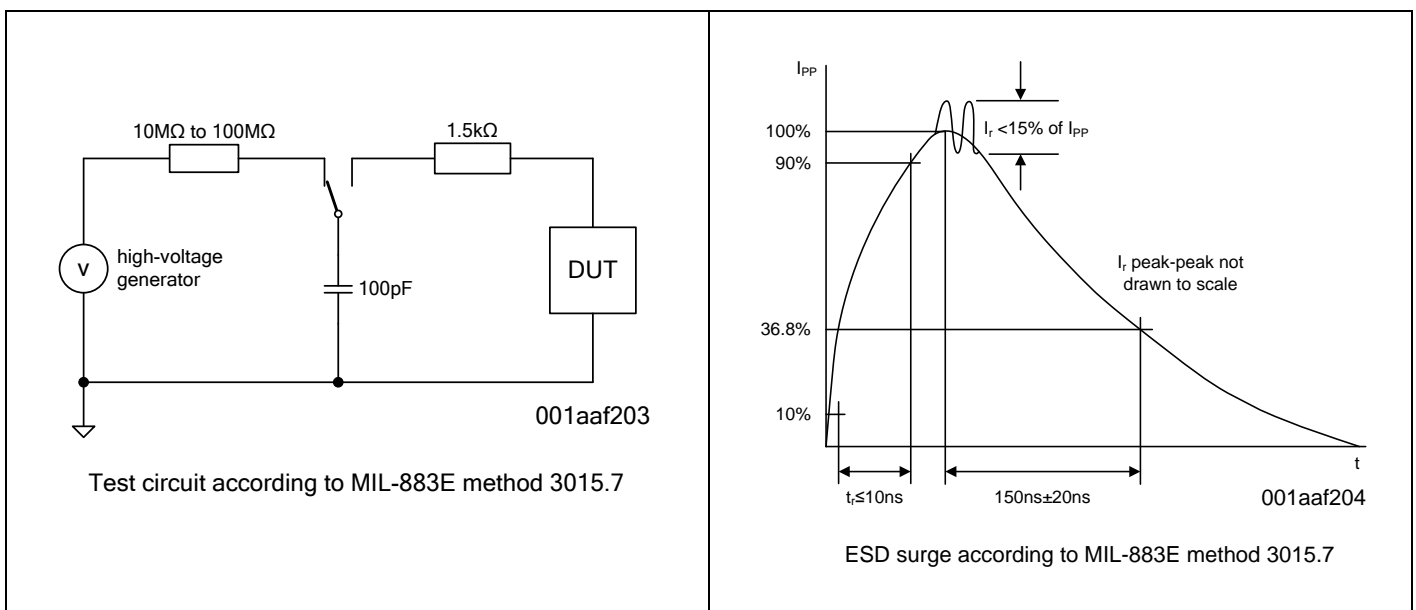
IEC61000-4-2

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).

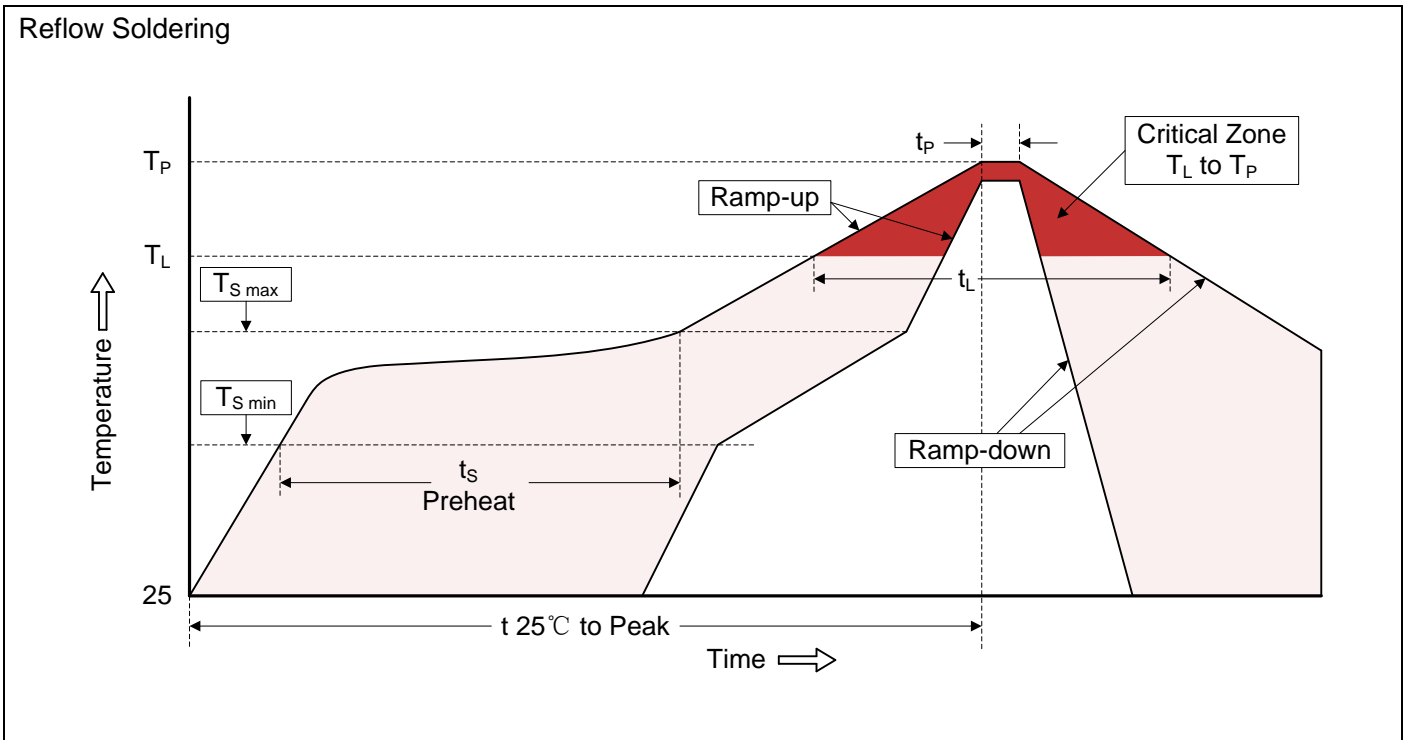


Human Body Model (HBM, MIL-883E method 3015.7)

The HBM standard simulates an ESD surge generated by human contact to electronic components.



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 (SOT-143)

| Symbol | Dimension | | | |
|--------|-------------|------|--------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 2.79 | 3.04 | 0.110 | 0.120 |
| B | 1.90 | | 0.075 | |
| C | 0.76 | 0.93 | 0.030 | 0.037 |
| D | 0.36 | 0.50 | 0.014 | 0.020 |
| E | 1.19 | 1.40 | 0.047 | 0.055 |
| F | - | 2.50 | - | 0.098 |
| G | 1.70 | | 0.067 | |
| H | 0.15 | - | 0.006 | - |
| J | 0.08 | 0.15 | 0.003 | 0.006 |
| K | - | 0.13 | - | 0.005 |
| L | - | 1.14 | - | 0.045 |

Recommended Soldering Pad Layout

Packaging

| Tape | Symbol | Dimension (mm) |
|------|-------------------|----------------|
| | W | 8.00±0.30 |
| P0 | 4.00±0.10 | |
| P1 | 4.00±0.10 | |
| P2 | 2.00±0.10 | |
| D0 | Φ1.55±0.10 | |
| D1 | Φ1.05±0.05 | |
| E | 1.75±0.10 | |
| F | 3.50±0.10 | |
| A | 3.05±0.15 | |
| B | 2.78±0.15 | |
| K | 1.20±0.10 | |
| t | 0.20±0.05 | |
| Reel | D | Φ178.0±2.0 |
| | D2 | Φ13.0 |
| | W1 | 9.5 |
| | Quantity: 3000PCS | |