

Electrostatic Discharged Protection Devices (ESD) Data Sheet

Description

The device 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 four data lines. Low capacitance steering diodes and a TVS diode in a single package. The low capacitance array configuration allows the user to protect four high speed data or transmission lines.

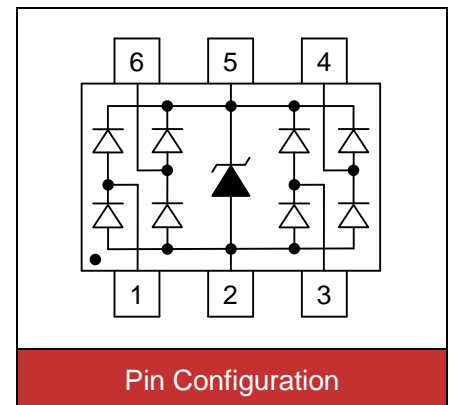


Contact : ±8kV
Air : ±15kV



Features

- IEC61000-4-2 ESD 15KV Air, 8KV contact compliance
- Protects four high-speed data lines and one power line
- Array of surge rated, low capacitance diodes
- Working voltage: 5V
- Low leakage current
- Low clamping voltage
- 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
- UAT36A05L05 (Marking: B T35), SOT-363
- UAT56A05L05 (Marking: B T55), SOT-563



Applications

- | | |
|--|---|
| <ul style="list-style-type: none"> ● USB power and data line protection ● 10/100/1000 Ethernet ● Video line protection ● I²C bus protection | <ul style="list-style-type: none"> ● WAN/LAN equipment ● ISDN S/T interface ● Microcontroller input protection ● Portable electronics |
|--|---|

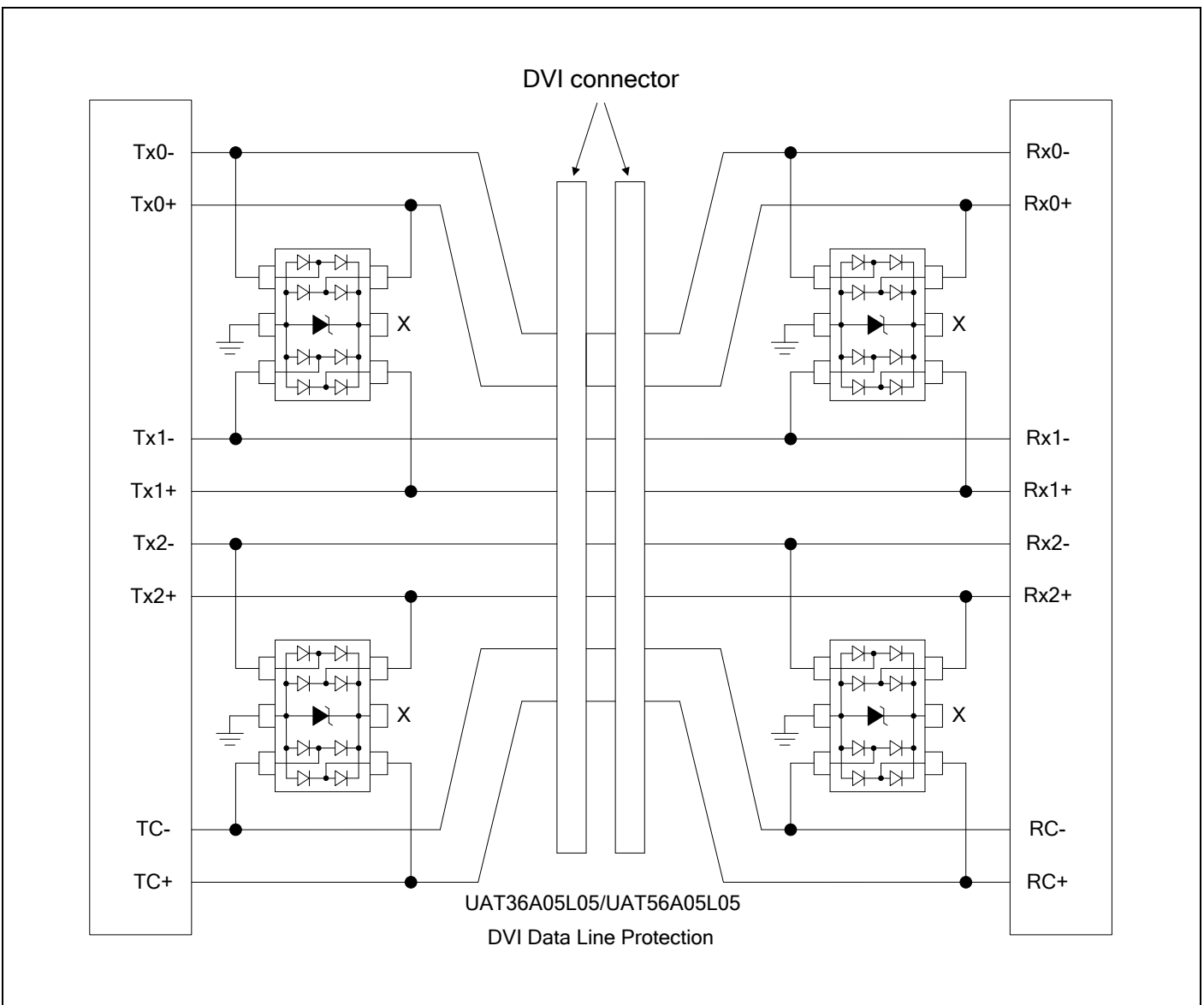
Maximum Ratings

| Rating | Symbol | Value | Unit |
|---------------------------------------|-----------------------------------|----------|------|
| Peak pulse current (tp=8/20µs) | I _{PP} | 3 | A |
| ESD voltage (Contact discharge) | V _{ESD} | ±8 | kV |
| ESD voltage (Air discharge) | | ±15 | |
| Storage & operating temperature range | T _{STG} , T _J | -55~+150 | °C |

Electrical Characteristics (T_J=25°C)

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|--------------------------------|------------------|--|------|------|------|------|
| Reverse stand-off voltage | V _{RWM} | | | | 5 | V |
| Reverse breakdown voltage | V _{BR} | I _{BR} =1mA | 6 | | | V |
| Reverse leakage current | I _R | V _R =5V Each I/O pin | | | 1 | μA |
| Clamping voltage (tp=8/20μs) | V _C | I _{PP} =1A | | | 9.8 | V |
| Clamping voltage (tp=8/20μs) | V _C | I _{PP} =2A | | | 15 | V |
| Off state junction capacitance | C _J | 0Vdc, f=1MHz Between I/O pins and GND | | 1 | | pF |

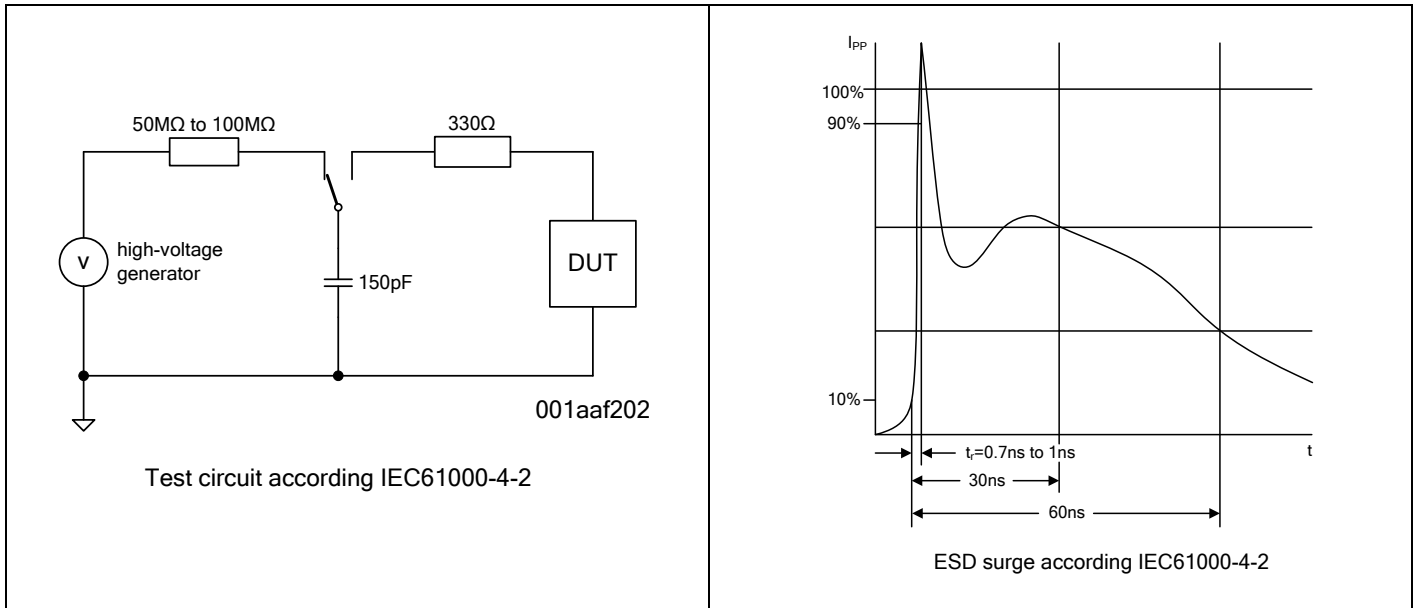
Applications Information



ESD Protection Standards

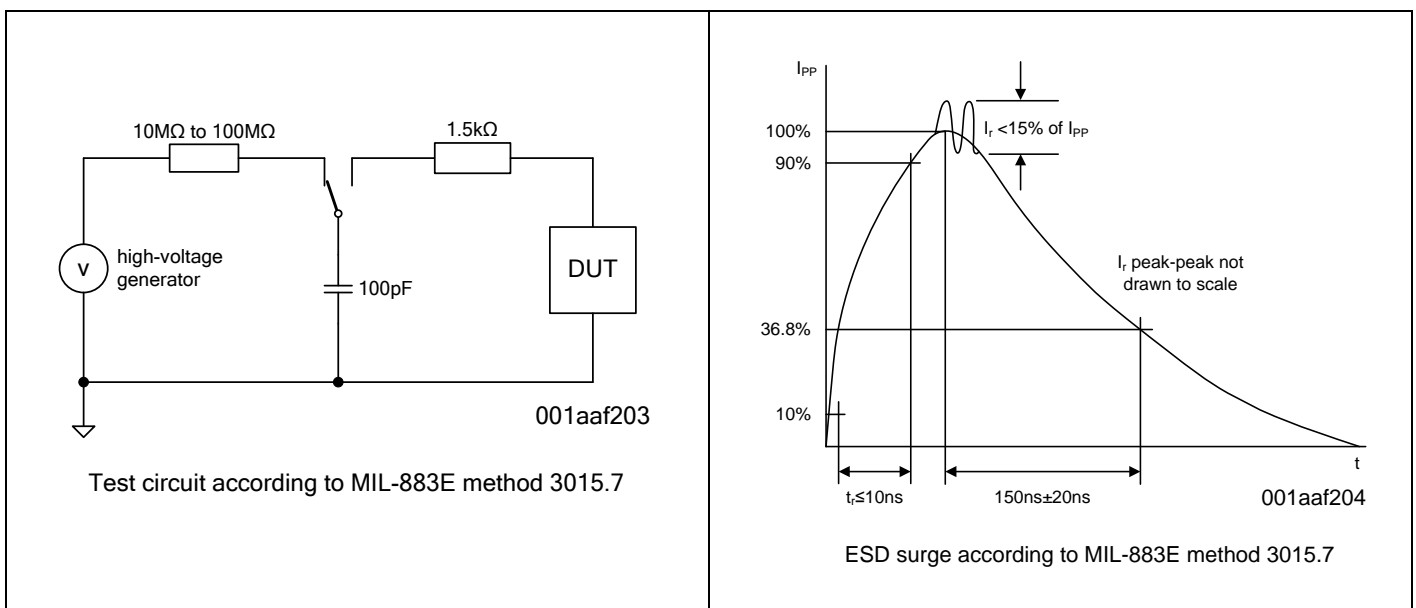
IEC61000-4-2

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).



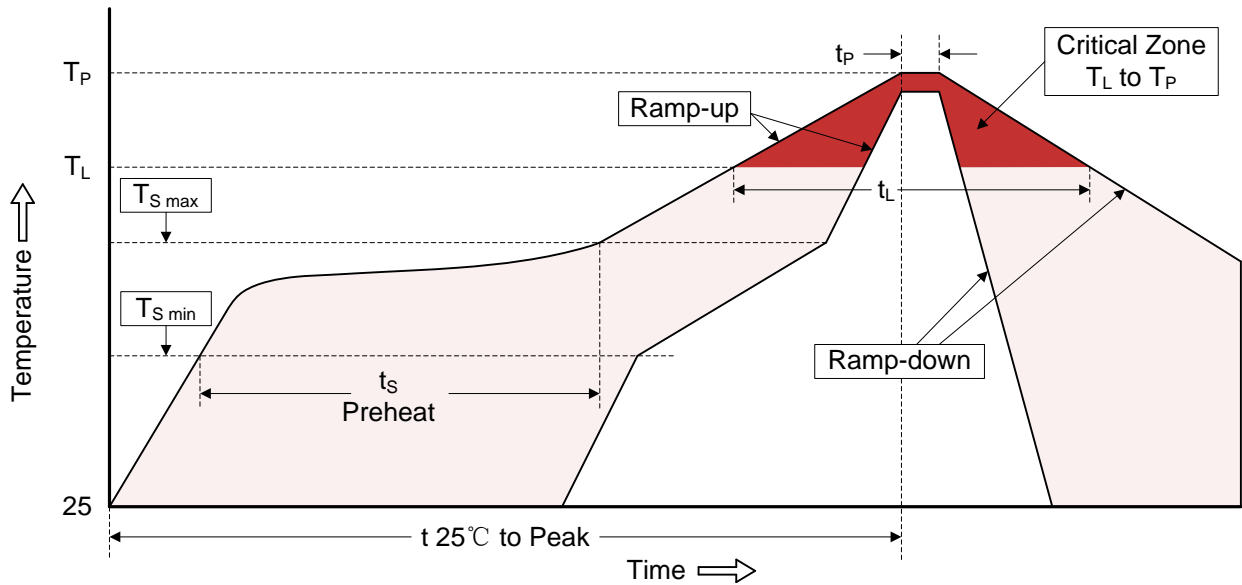
Human Body Model (HBM, MIL-883E method 3015.7)

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



Recommended Soldering Conditions

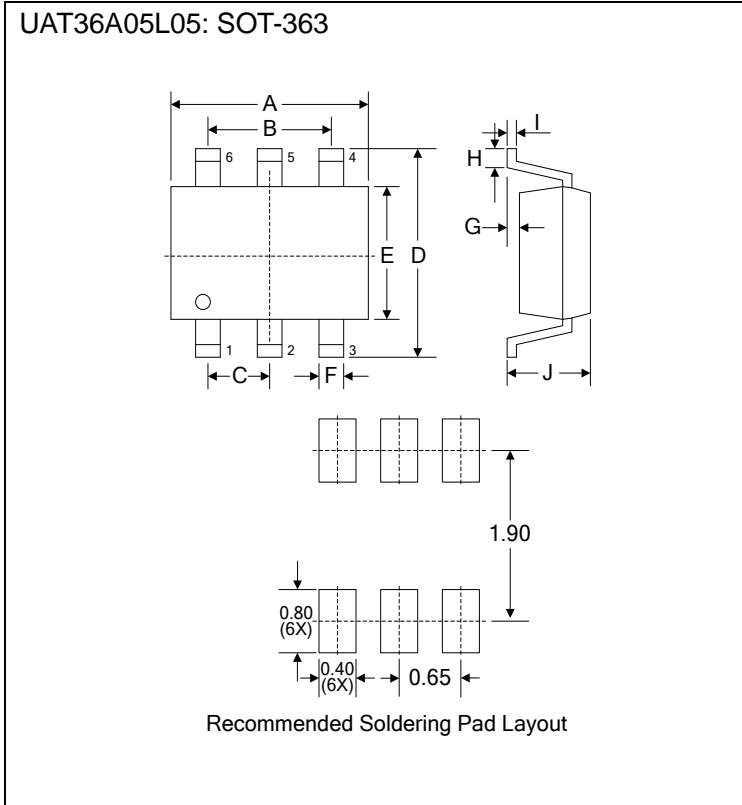
Reflow Soldering



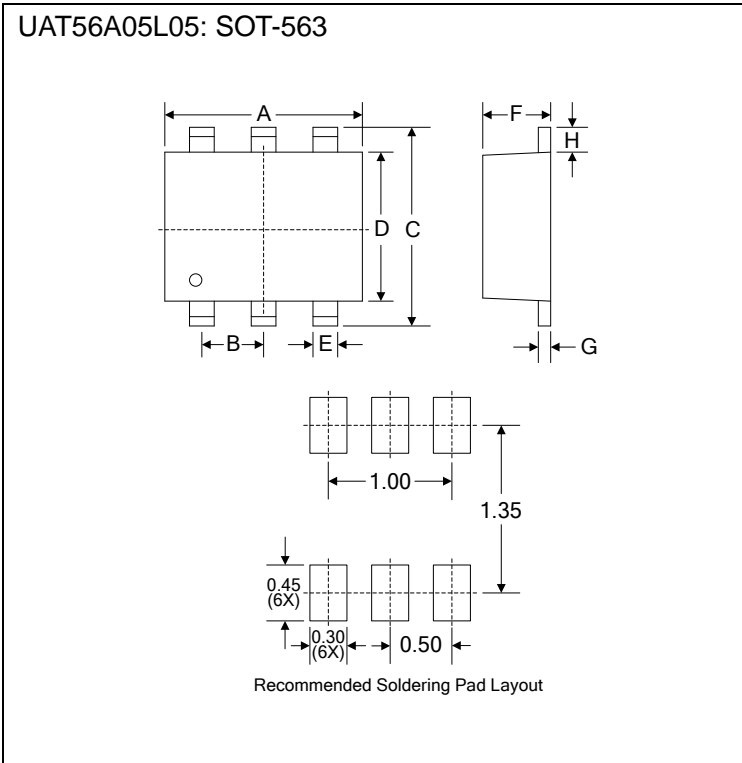
Recommended Conditions

| 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



| Symbol | Dimension | | | |
|--------|-------------|------|--------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 1.85 | 2.15 | 0.073 | 0.085 |
| B | 1.30 | | 0.051 | |
| C | 0.65 | | 0.026 | |
| D | 1.90 | 2.30 | 0.075 | 0.091 |
| E | 1.10 | 1.40 | 0.043 | 0.055 |
| F | 0.15 | 0.30 | 0.006 | 0.012 |
| G | - | 0.10 | - | 0.004 |
| H | 0.25 | - | 0.010 | - |
| I | 0.10 | 0.25 | 0.004 | 0.010 |
| J | 0.80 | 1.00 | 0.031 | 0.039 |

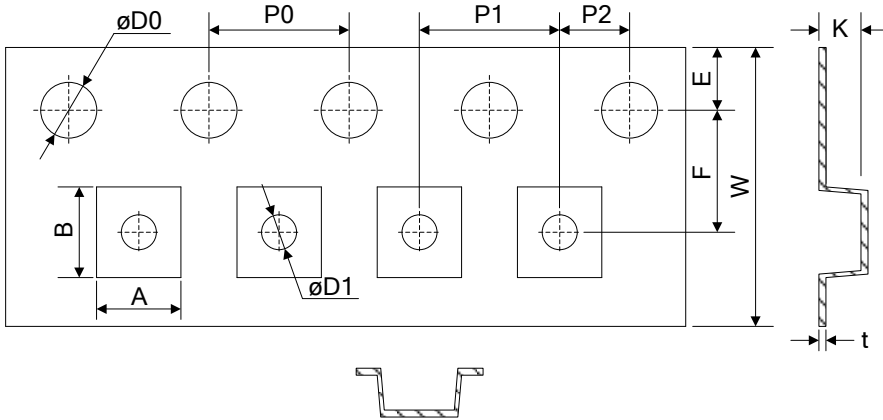


| Symbol | Dimension | | | |
|--------|-------------|------|----------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 1.50 | 1.70 | 0.059 | 0.067 |
| B | 0.50BSC | | 0.020BSC | |
| C | 1.50 | 1.70 | 0.059 | 0.067 |
| D | 1.10 | 1.30 | 0.043 | 0.051 |
| E | 0.17 | 0.27 | 0.007 | 0.011 |
| F | 0.50 | 0.60 | 0.020 | 0.024 |
| G | 0.08 | 0.18 | 0.003 | 0.007 |
| H | 0.10 | 0.30 | 0.004 | 0.012 |

Packaging

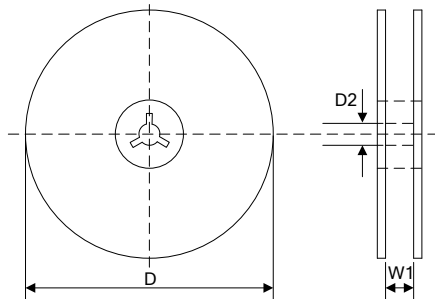
UAT36A05L05: SOT-363

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 | 2.30±0.10 |
| B | 2.45±0.10 |
| K | 1.15±0.10 |
| t | 0.25±0.05 |

Reel

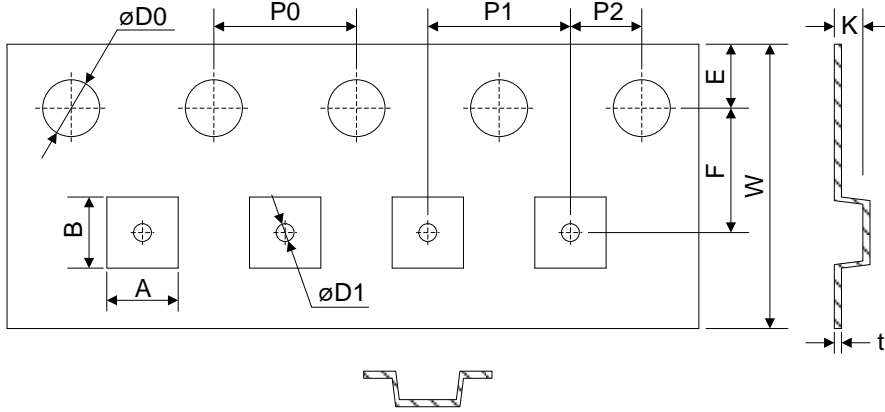


| | |
|-------------------|------------|
| D | Φ178.0±2.0 |
| D2 | Φ13.0 |
| W1 | 9.5 |
| Quantity: 3000PCS | |

Packaging

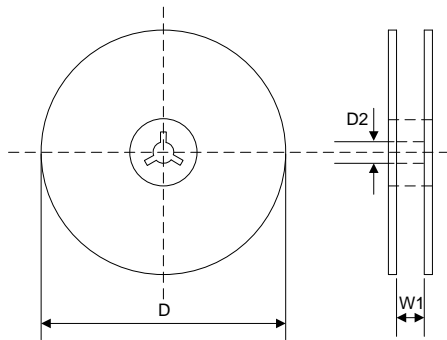
UAT56A05L05: SOT-563

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 | Φ0.50±0.05 |
| E | 1.75±0.10 |
| F | 3.50±0.10 |
| A | 1.90±0.10 |
| B | 1.95±0.10 |
| K | 0.70±0.10 |
| t | 0.20±0.05 |
| D | Φ178.0±2.0 |
| D2 | Φ13.0 |
| W1 | 9.5 |
| Quantity: 3000PCS | |

Reel



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