## Description

The DC0504S5 is a low capacitance TVS array, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive high-speed data lines. The DC0504S5 has low capacitance with a typical value at 3.5pF, and complies with the IE61000-4-2(ESD) standard with ±15kV air and ±8kV contact discharge. It is assembled into a 5-pin lead-free SOT-553 package. The combination of small size, low capacitance and high level of ESD protection make it ideal for cellular, notebooks, desktops, and other portable applications.

## Features

- Low capacitance: 3pF typical(I/O to I/O)
- Ultra low leakage: nA level
- Operating voltage: 5V
- Low clamping voltage
- Up to 4-lines protects
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge: ±15kV
    - Contact discharge: ±8kV
  - IEC61000-4-5 (Lightning) 2A (8/20μs)
- RoHS Compliant

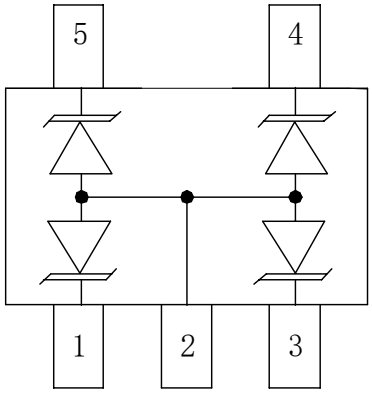
## Mechanical Characteristics

- Package: SOT-553
- Lead Finish: Matte Tin
- Case Material: “Green” Molding Compound.
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections: See Diagram Below
- Marking Information: See Below

## Applications

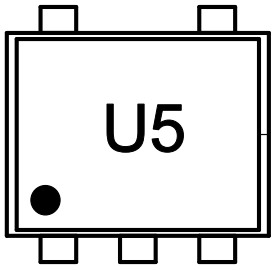
- Cellular Handsets and Accessories
- Notebooks and Handhelds
- Personal Digital Assistants
- Portable Instrumentation
- Digital Cameras
- Peripherals
- Audio Players, Keypads, Side Keys, LCD Displays

## Dimensions and Pin Configuration




Circuit and Pin Schematic

## Marking Information




U5 = Device Marking Code
Dot indicates pin1

## Ordering Information

| Part Number | Marking | Packaging | Reel Size |
|---|---|---|---|
| DC0504S5 | U5 | 3000/Tape & Reel | 7 inch |

## Absolute Maximum Ratings ($T_A$=25°C unless otherwise specified)

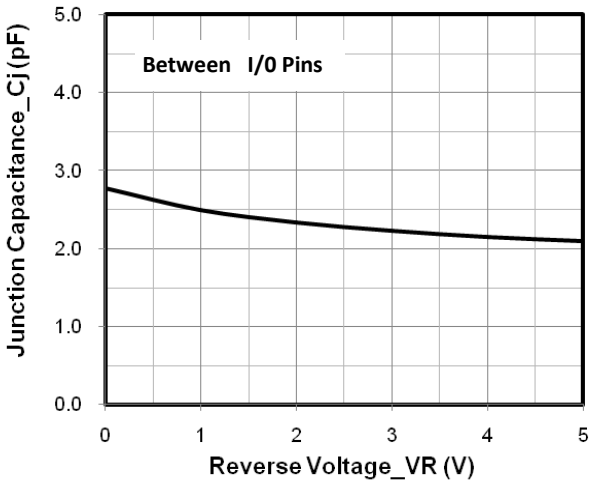
| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Peak Pulse Power (8/20μs) | Ppk | 25 | W |
| Peak Pulse Current (8/20μs) | $I_{PP}$ | 2 | A |
| ESD per IEC 61000−4−2 (Air)<br>ESD per IEC 61000−4−2 (Contact) | $V_{ESD}$ | ±15<br>±8 | kV |
| Operating Temperature Range | $T_J$ | −55 to +125 | °C |
| Storage Temperature Range | Tstg | −55 to +150 | °C |

## Electrical Characteristics ($T_A$=25°C unless otherwise specified)

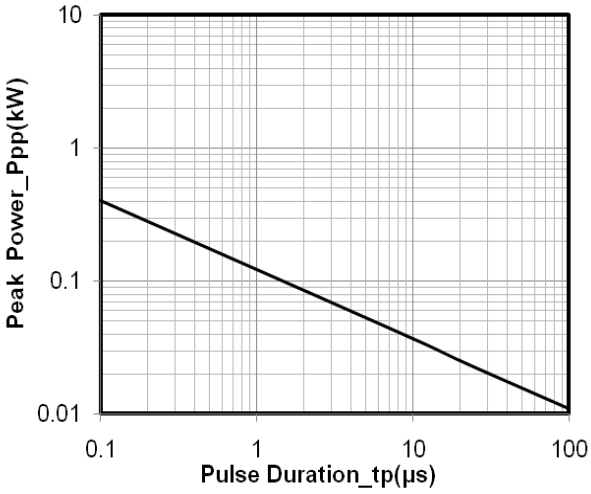
| Parameter | Symbol | Min | Typ | Max | Unit | Test Condition |
|---|---|---|---|---|---|---|
| Reverse Working Voltage | $V_{RWM}$ | | | 5 | V | |
| Breakdown Voltage | $V_{BR}$ | 6 | | | V | $I_T$ = 1mA, any I/O to pin 2 |
| Reverse Leakage Current | $I_R$ | | | 0.1 | μA | $V_{RWM}$ = 5V |
| Clamping Voltage | $V_C$ | | | 10.5 | V | $I_{PP}$ = 1A (8 x 20μs pulse) |
| Clamping Voltage | $V_C$ | | | 12.5 | V | $I_{PP}$ = 2A (8 x 20μs pulse) |
| Junction Capacitance | $C_J$ | | 3 | | pF | VR = 0V, f = 1MHz, between I/O pins |
| Junction Capacitance | $C_J$ | | 6 | | pF | VR = 0V, f = 1MHz, any I/O to pin 2 |

Note 1: I/O pins are Pin 1, 3, 4 and 5

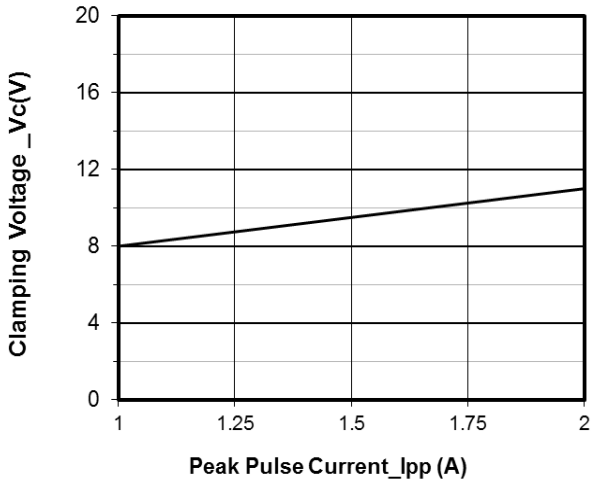
## Typical Performance Characteristics ($T_A$=25℃ unless otherwise Specified)



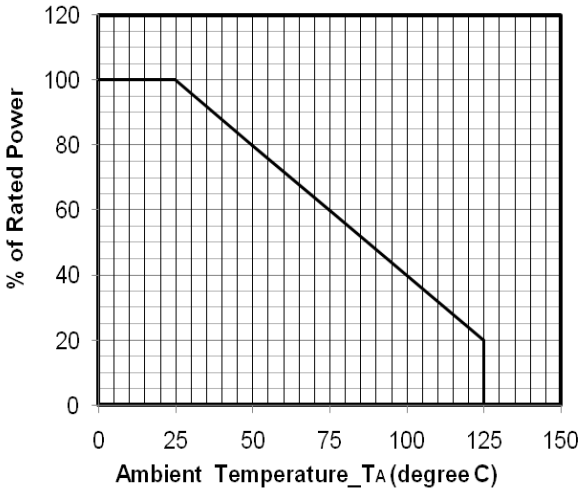

**Junction Capacitance vs. Reverse Voltage**



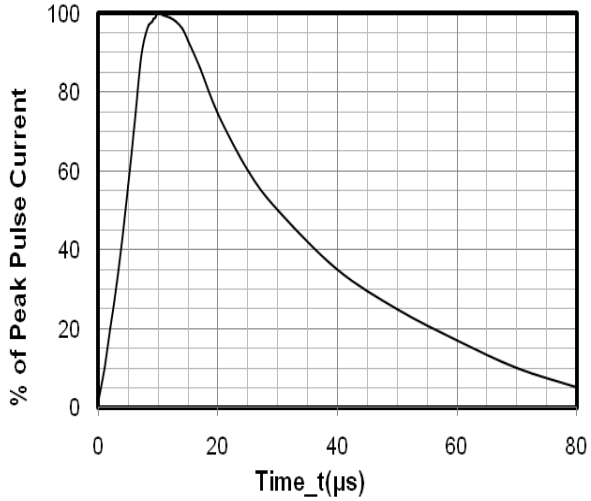

**Peak Pulse Power vs. Pulse Time**



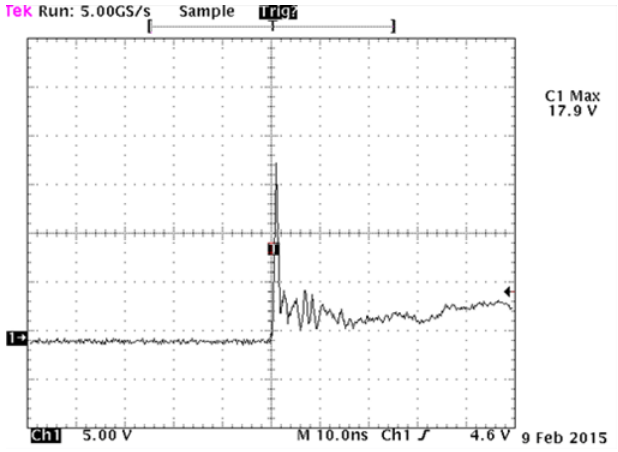

**Clamping Voltage vs. Peak Pulse Current (tp = 8/20us)**




**Power Derating Curve**




**8 X 20μs Pulse Waveform**

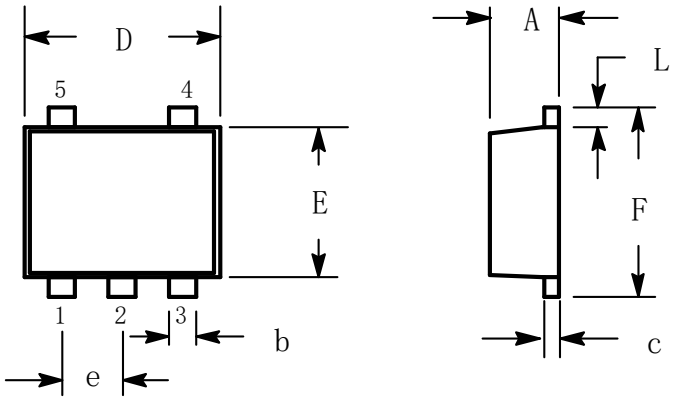



**Note：Data is taken with a 10x attenuator**

**ESD Clamping Voltage**

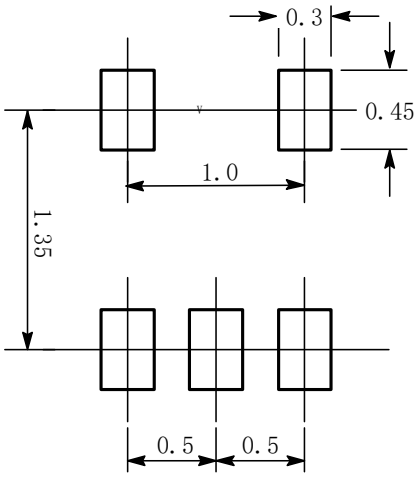
**+8 kV Contact per IEC61000−4−2**

## SOT-553 Package Outline Drawing




| DIM | DIMENSIONS | | | | | |
|---|---|---|---|---|---|---|
| | MILLIMETERS | | | INCHES | | |
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 0.50 | 0.55 | 0.60 | 0.020 | 0.022 | 0.024 |
| b | 0.17 | 0.22 | 0.27 | 0.007 | 0.009 | 0.011 |
| c | 0.08 | 0.13 | 0.18 | 0.003 | 0.005 | 0.007 |
| D | 1.50 | 1.60 | 1.70 | 0.059 | 0.063 | 0.067 |
| e | 0.50 BSC | | | 0.020 BSC | | |
| E | 1.10 | 1.20 | 1.30 | 0.043 | 0.047 | 0.051 |
| L | 0.10 | 0.20 | 0.30 | 0.004 | 0.008 | 0.012 |
| F | 1.50 | 1.80 | 1.70 | 0.059 | 0.063 | 0.067 |

## Suggested Land Pattern




NOTE: CONTROLLING DIMENSION: MILLIMETERS

## Contact Information

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