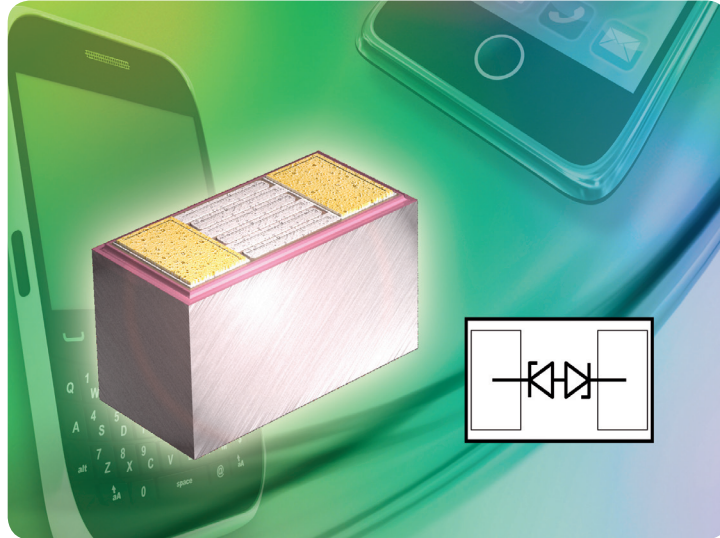


# BISY ESD PROTECTION DIODE

## VCUT05D1-SD0



### Surface-Mount VCUT05D1-SD0 ESD Protection Diode



#### KEY BENEFITS

- Ultra-compact CLP0603 package
  - Tiny 0.6 mm by 0.3 mm footprint
  - Very low package height of < 0.3 mm
- Low capacitance of 10 pF
- Low leakage current of < 0.1  $\mu$ A at the working voltage of 5.5 V
- Reverse breakdown voltage of 8 V at 1 mA
- Lead (Pb)-free device
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC

#### APPLICATIONS

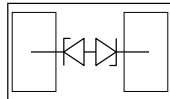
- ESD protection in portable electronics, including gaming systems, digital cameras, MP3 players, mobile phones and smart phones

#### RESOURCES

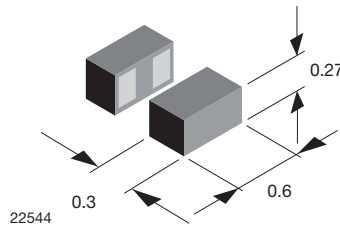
- Datasheet: VCUT05D1-SD0 - <http://www.vishay.com/doc?83443>
- For technical questions contact [ESDprotection@vishay.com](mailto:ESDprotection@vishay.com)



## Bidirectional Symmetrical (BiSy) Single-Line ESD Protection Diode in CLP0603



22543



22544

### MARKING (example only)



22454

1 = Year code  
Open circle = Month code and pin 1  
XY = Type code

### FEATURES

- Ultra compact CLP0603 package
- Low package height < 0.3 mm
- 1-line ESD-protection
- Working range  $\pm 5.5$  V
- Low leakage current < 0.1  $\mu$ A
- Low load capacitance  $C_D = 10$  pF
- ESD-protection acc. IEC 61000-4-2  
 $\pm 30$  kV contact discharge  
 $\pm 30$  kV air discharge
- Lead plating: Au (e4)
- Lead material: TiNiAg
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC


**RoHS  
COMPLIANT**
**GREEN  
(5-2008)\*\***

### Note

\*\* Please see document "Vishay Material Category Policy":  
[www.vishay.com/doc?99902](http://www.vishay.com/doc?99902)

### ORDERING INFORMATION

| DEVICE NAME  | ORDERING CODE      | TAPED UNITS PER REEL<br>(8 mm TAPE ON 7" REEL) | MINIMUM ORDER QUANTITY |
|--------------|--------------------|--|------------------------|
| VCUT05D1-SD0 | VCUT05D1-SD0-G4-08 | 15 000   | 15 000                 |

### PACKAGE DATA

| DEVICE NAME  | PACKAGE NAME | TYPE CODE | WEIGHT  | MOLDING COMPOUND<br>FLAMMABILITY RATING | MOISTURE<br>SENSITIVITY LEVEL        | SOLDERING CONDITIONS  |
|--------------|--------------|-----------|---------|---|--------------------------------------|---|
| VCUT05D1-SD0 | CLP0603      | D1        | 0.12 mg | UL 94 V-0                               | MSL level 1<br>(according J-STD-020) | 260 °C/10 s at terminals<br>Reflow soldering<br>according JEDEC STD-020 |

### ABSOLUTE MAXIMUM RATINGS

| PARAMETER             | TEST CONDITIONS   | SYMBOL    | VALUE         | UNIT |
|-----------------------|---|-----------|---------------|------|
| Peak pulse current    | acc. IEC 61000-4-5, 8/20 $\mu$ s/single shot                            | $I_{PPM}$ | 6             | A    |
| Peak pulse power      | Pin 1 to pin 2<br>acc. IEC 61000-4-5; $t_p = 8/20$ $\mu$ s; single shot | $P_{PP}$  | 78            | W    |
| ESD immunity          | Contact discharge acc. IEC61000-4-2; 10 pulses                          | $V_{ESD}$ | $\pm 30$      | kV   |
|                       | Air discharge acc. IEC61000-4-2; 10 pulses                              |           | $\pm 30$      |      |
| Operating temperature | Junction temperature  | $T_J$     | - 55 to + 145 | °C   |
| Storage temperature   |   | $T_{stg}$ | - 55 to + 150 | °C   |

### CUT THE SPIKES WITH VCUT05D1-SD0

The VCUT05D1-SD0 is a Bidirectional and Symmetrical (BiSy) ESD-protection device which clamps positive and negative overvoltage transients to ground. Connected between the signal or data line and the ground the VCUT05D1-SD0 offers a high isolation (low leakage current, low capacitance) within the specified working range. Due to the short leads and small package size of the tiny CLP0603 package the line inductance is very low, so that fast transients like and ESD-strike can be clamped with minimal over- or undershoots.

### ELECTRICAL CHARACTERISTICS ( $T_{amb} = 25$ °C, unless otherwise specified)

| PARAMETER                 | TEST CONDITIONS/REMARKS                | SYMBOL        | MIN. | TYP. | MAX. | UNIT    |
|---------------------------|--|---------------|------|------|------|---------|
| Protection paths          | Number of lines which can be protected | $N_{channel}$ | -    | -    | 1    | lines   |
| Reverse stand-off voltage |  | $V_{RWM}$     | -    | -    | 5.5  | V       |
| Reverse voltage           | at $I = 0.1$ $\mu$ A                   | $V_R$         | 5.5  | 7.5  | 8.5  | V       |
| Reverse current           | at $V = 5.5$ V                         | $I_R$         | -    | -    | 0.1  | $\mu$ A |
| Reverse breakdown voltage | at $I = 1$ mA                          | $V_{BR}$      | 6.5  | 8    | 9    | V       |
| Reverse clamping voltage  | at $I_{PP} = 1$ A                      | $V_C$         | -    | 8.8  | 10   | V       |
|                           | at $I_{PP} = I_{PPM} = 6$ A            | $V_C$         | -    | 11   | 13   | V       |
| Capacitance               | at $V = 0$ V; $f = 1$ MHz              | $C_D$         | -    | 10   | 13   | pF      |
|                           | at $V = 2.5$ V; $f = 1$ MHz            | $C_D$         | -    | 8.5  | -    | pF      |

Revision: 11-Oct-11