



CeraDiode

Features and benefits for customer applications

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1 Bidirectional ESD protection to IEC 61000-4-2 (level 4)

All CeraDiodes satisfy requirements to the IEC 61000-4-2 international ESD standard, level 1 to 4 and are tested within the scope of the human body model (330 Ω /150 pF).

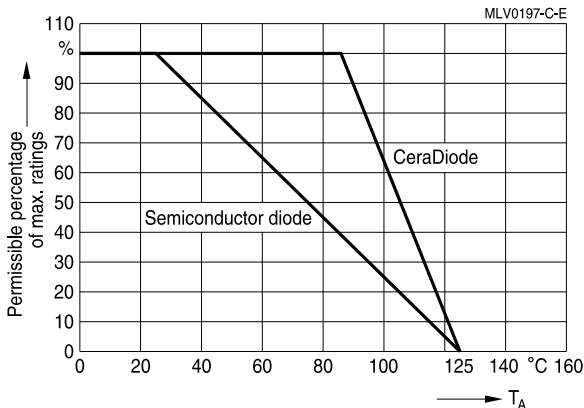
- Designed for uni and bidirectional lines
- Routes all ESD events, both positive and negative, safely to ground
- Suitable for DC working voltages up to 30 V

Single and array surface mount package in case sizes

- single 0201 (no equivalent semiconductor package available)
- single 0402 (semiconductor package SOD-723)
- single 0603 (semiconductor package SOD-523)
- single 1003 (semiconductor package SOD-323)
- array 0506 (semiconductor package SOT-666)
- array 0508 (no equivalent semiconductor package available)
- array 0612 (no equivalent semiconductor package available)
- array 1012 (semiconductor package SOT-23 6L)

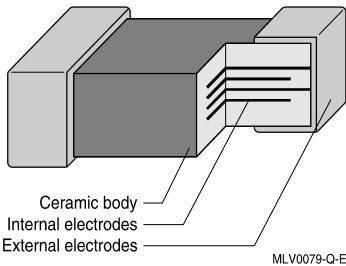
2 No change in ESD protection performance at temperatures up to 85 °C (temperature derating)

Because they contain millions of pn-junctions, CeraDiodes offer a huge volume for energy absorption. This results in constant high ESD protection performance up to 85 °C. In contrast, semiconductor diodes have only one pn-junction for energy absorption. Their ESD protection performance thus declines after 25 °C.

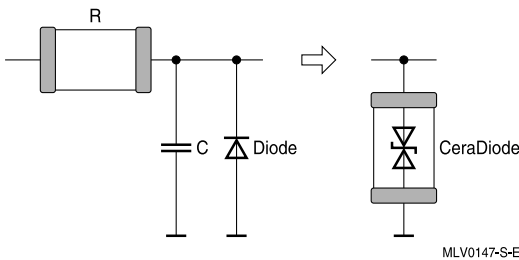


3 Use of parasitic capacitance for RFI suppression and high-frequency filtering (replacement of additional MLCC)

Thanks to their construction with internal electrodes, CeraDiodes offer both ESD protection and sufficient capacitance for RFI suppression and high-frequency filtering. One CeraDiode can replace a semiconductor diode and a capacitor. Its high-frequency behavior is similar to a C0G ceramic capacitor. Moreover, there is no need for a series resistor to limit the current. The CeraDiode consequently saves both space and costs. If a low capacitance is required, e.g. for ESD protection of high-speed data lines, the product range contains CeraDiodes with capacitance values down to 0.6 pF.



Cross-section through a CeraDiode



Resistor + capacitor + semiconductor diode replaced by one CeraDiode

4 Surge current capability

CeraDiodes are designed for ESD protection. Depending on their individual construction, however, some of them (CeraDiode standard series) can also withstand surge currents. The maximum permissible ratings for surge-current and thus for energy absorption of these surge-current-capable devices depend on the pulse shape, pulse duration and the number of times this load is repeated during the overall lifetime. CeraDiodes designed to handle surge current have in most cases greater surge-current capability than semiconductor diodes.

5 Low parasitic inductance

Semiconductor diodes are soldered to a board by wire tags. These can produce high parasitic inductance, which in turn has a significant influence on the clamping voltage of the diode (the higher the parasitic inductance, the higher the clamping voltage). The CeraDiode has no such wire terminals, i.e. any parasitic inductance is much smaller, and with that its influence on the clamping voltage is also reduced.

6 Further features

- Low leakage current
- Fast response time <0.5 ns
- Lead-free nickel barrier terminations suitable for lead-free soldering
- RoHS-compatible