

Solder laser diodes to PCB to prevent ESD



Overview

ESD can easily damage diode lasers, decreasing performance immediately or over time. Work on a grounded workbench or surface with anti-static floors and a case ground. Use grounded tweezers and. Successfully protecting a system against electrostatic discharge (ESD) is largely dependent on the printed circuit board (PCB) design. It is said that there are two types of researchers—those who have destroyed laser. This application note describes precautions in the use of laser diodes. Usually, during transport and usage it either has a metal bar bridging anode and cathode or has to be connected to the power supply to prevent charge buildup. Static electricity generated by non-conductive materials—like plastic packaging or even the human body—can reach up to 50,000 volts.



Article Content

Sep 12, 2025

Comprehensive summary of common methods and

In order to eliminate the interference and damage of electrostatic discharge (ESD) to electronic equipment, a variety of technical means need to be

Feb 01, 2026

How to Prevent ESD Damage in SMT Assembly Process: A

11. Conclusion Preventing ESD damage in the SMT assembly process is essential to ensuring the quality, reliability, and performance of electronic devices. By understanding the causes

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How to Design an ESD Protection Circuit for Your PCBs

ESD protection is essential for PCB reliability, preventing static electricity from damaging sensitive components. Effective

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Precautions for Laser Diodes

We have a rather expensive laser diode which is prone for ESD damage. Usually, during transport and usage it either has a metal bar bridging anode and cathode or has to be connected to

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Electrostatic Discharge in PCBs: Risks, Effects

Learn how to prevent ESD effect through PCB layout design and grounding protective measures like TVS and clamping diodes. With examples

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PCB ESD Protection

What is PCB ESD protection?This guide explores standard, design strategies, implementation methods, and verification processes for

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Guide to Laser Soldering: Process, Pros & Method

Reduce PCB defects with laser soldering! Discover how laser soldering enables micro-joining, compare the benefits with traditional methods,

Jul 20, 2025

Laser-diode Electronics: How to protect your laser diode

Take these steps to protect your laser diodes from electrostatic discharge, excessive current levels, current spikes, and transients.

Oct 28, 2025

Can I solder a laser diode directly to a PCB?

I am using a laser diode in a device and I am trying to figure out what needs to happen for it to interface with the rest of the electronics. It is a 1W laser diode and the diode will be turned on

Dec 11, 2025

Protecting Your Laser Diode from Electrostatic Discharge (ESD)

Laser diodes generate heat during operation and may be susceptible to damage due to excessive heat. A mounting of thermal sinking solution must be sufficient to maintain device within

Aug 24, 2025

Implementing ESD Protection in PCB Design: Strategies

Proper ESD protection is crucial to ensure reliability, especially in high-speed and high-frequency applications. This article explores key strategies

Aug 02, 2025

ESD Protection Layout Guide (Rev. A)

With the proper TVS selected, designing a PCB Layout that leverages the strategies outlined in this ESD Layout Guide will provide the PCB designer with an avenue towards successfully protecting a system

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Beginner's Guide to ESD Protection Circuit Design for

Here are some ESD protection circuit design options you can use in your next PCB and some PCB layout best practices for your new product.

Jun 13, 2026

Protecting Your Laser Diode from Electrostatic Discharge (ESD)

Despite being very reliable under normal operating conditions, diode lasers can be destroyed or damaged by electrical or static discharges (ESD). Precautionary guidelines to handling

Jan 12, 2026

How do you protect a laser diode? Essential Strategies for Preventing ...

Learn key strategies to protect sensitive laser diodes from electrical spikes and thermal stress, ensuring longevity and reliable performance.

May 28, 2026

What is ESD and How Does it Affect My PCB Design?

We've compiled a complete guide to ESD protection for PCBs and your electronics. Implement these guidelines for enclosure-level ESD protection and to

Apr 16, 2026

Beginner's Guide to ESD Protection Circuit Design for

By strategically placing an ESD protection circuit in your design, you might prevent failure of a sensitive circuit. ESD protection circuit design happens

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Laser Soldering

Wolf laser soldering machines use high-power diode lasers from Jenoptik AG, Jena, which is one of the leading laser-diode producer. The laser soldering machines can have different structures:

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How to Design an ESD Protection Circuit for Your PCBs

By implementing static discharge and TVS diodes, you can redirect harmful currents to the ground. Proper placement and selection of these diodes are crucial to mitigate risks and enhance the

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How to Avoid Electrostatic Discharge (ESD) Damage

To prevent ESD damage when handling PCBs and semiconductor devices, follow these precautions: Wear ESD-safe finger cots or gloves when opening and

Nov 25, 2025

How to improve laser diode lifetime! Advice

Laser diodes have increased in output power and the increased power means added waste heat to contend with. The mounting or heatsinking of the

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Electrostatic Discharge (ESD) Protection Design Guide

Following our electrostatic discharge (ESD) protection design guide is a surefire way to ensure ESD protection for your circuits.

Nov 06, 2025

Accessories: Preventing ESD and power surges in laser

Protection from electrostatic discharge (ESD) and power surges can be ensured with specifically designed components added to the laser system.

Apr 30, 2026

Fortifying Your Circuits: Unveiling Effective ESD

ESD Protection Devices ESD protection devices like transient voltage suppressors (TVS diodes), metal-oxide varistors (MOVs), and ESD protection

Dec 07, 2025

Protecting Diode Lasers from Electro-Static Discharge (ESD)

Diode lasers are very reliable under normal operating conditions. However, like most semiconductor devices, they can be damaged or destroyed by inadvertent electrical or static discharges (ESD).

Oct 26, 2025

Ensuring Safe Operation and Accurate Characterization

Laser diodes are very sensitive to electrostatic discharge (ESD), current/ voltage transients, and temperature changes, and extra care must be taken to ensure the

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