SOLID STATE DIVISION

PRODUCT INFORMATION

Precautions when handling photodiode array with amplifier

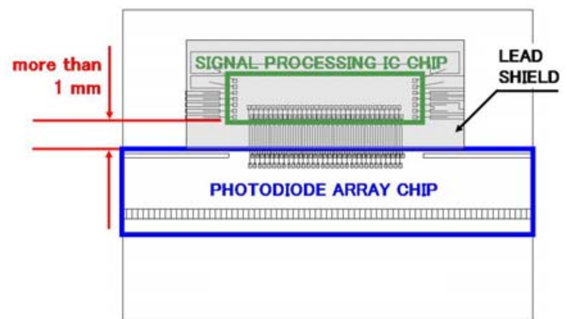
Take the following precautions when handling a photodiode array with amplifier.

< Precautions for detector design >

The photodiode array chip is exposed, so be careful not to smear or scratch the surface. The photodiode array characteristics might degrade if operated at high humidity, so put it in a hermetically sealed enclosure or case. Gold wires are used to connect the photodiode array chip to the signal processing IC chip and also to connect each chip to the board. These gold wires for wire bonding are very thin, so they easily break if subjected to mechanical stress. The signal processing IC chip and its wire bonding section are covered with resin for protection. However, if excessive force is applied to this section, the protective resin may be elastically deformed, causing the gold wires to break, so never touch this section. When installing the photodiode array, be careful not to cause the board to warp.

The signal processing IC chip characteristics deteriorate if exposed to X-rays. So, use a lead shield as shown in figure 1 to ensure that the signal processing IC chip is not exposed to X-rays. The shield size must be at least 1 mm larger all around than the signal processing IC chip. However, this 1 mm margin may not be sufficient depending on the incident angle of X-rays. Provide an even larger shield as long as it does not cover the photodiode active area. Since the optimal shield thickness depends on the operating conditions, calculate it by taking the attenuation coefficient of lead into account.

Figure1: Enlarged view of signal processing IC wires



< Precautions during handling and assembly >

< Electrostatic precautions >

As showing above, the signal processing IC chip is protected against static electricity. However, in order to prevent electrostatic damage, take electrostatic countermeasures such as grounding yourself, as well as the workbench and tools. Also protect the IC chip from surge voltages which might be caused by peripheral equipment.

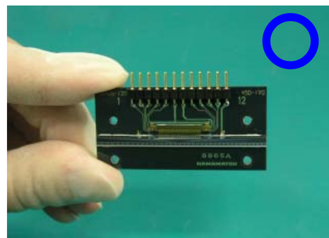
< Handling precautions >

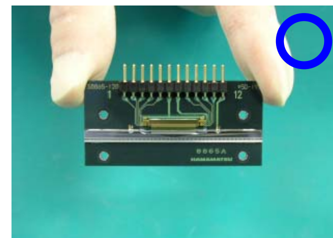
Do not apply excessive stress to the signal processing IC chip, photodiode array chip and bonding wire section. Doing so might cause trouble such as open-circuit faults or bonding wire breakage.

Blow air to remove dust or debris if it gets on the signal processing IC chip, photodiode array chip and bonding wire section. And please never wash it with the solvent.

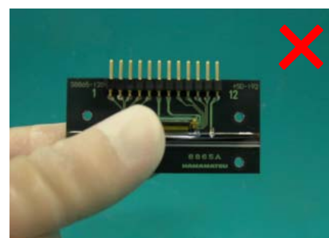
Hold the device by the edge of the board as shown in photos "good examples". Never touch the signal processing IC chip, photodiode array chip and bonding wire section as shown in photos "bad examples". (Same for devices with phosphor screen affixed)

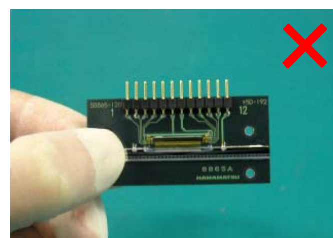
Good examples





Bad examples





The contents are subject to change without notice.