

Handling Procedures to Avoid Trapped Charges

AN54886/D

APPLICATION NOTE ABSTRACT

This application note provides guidelines on preventing the generation of trapped charges.

INTRODUCTION

Image sensor products can be sensitive to electrical chargestransferred from external electrical fields and stored in the pixel array ("trapped charge"). The trapped charge can XIf possible, remove particles on top of the glass by create unwanted optical effects, which appear as random darkspots in the image, typically several pixels in diameter.

Improperhandling of the image sensor generates trapped charges. Improper handling includes any operation that creates an electrostatic charge, for example, wiping the XIf the above procedure does not remove the particle, use cover glass with nor ESD protective wipes.

appropriate point of use filtering system is in place to prevent particle contamination from the ionizing gun.

This application note discusses specific procedures to minimize creation of trappecharges. Refer to Application Note AN52561, Image Sensor Handling Best Practices general handling procedure recommendations.

Prevention of Trap Charge

Trappecharges can be avoided by proper handling of the sensor.onsemi ensures proper handling throughout the manufacturing, testing, and shipping processes, and maintains testing procedures to ensure that image sensor products do not exhibit trapped charges when shipped. It is equally important for the customer to implement proper handling in receiving, testing, and board and system manufacturing operations at customer sites. The following guidelines should be observed when handling image sensors.

- XFollow ESD protocols defined in JESD625. The handling protocols must be periodically tested to validate their effectiveness.
- XHandle image sensor devices while wearing a grounded wrist strap and ESD protective gloves.
- XMaintain a proper anti static environment where image sensor devices are handled. This environment includes grounded conductive surfaces and ionized air streams, as determined by ESD auditing.
- XLimit physical contact with the sensor cover glass. Such contact can induce an electro static charge. All contact with the device must be done while wearing a grounded wrist strap.
- XDo not use any protective tape to cover the glass. The application or removal of the tape can induce electrostatic charge.

- XAn electrostatic charge can be induced when cleaning the device; therefore, if cleaning of the glass lid is necessary, consider the following:
- XAlways wear ESD protective nitrile gloves (recommended NiProtect CC529) when handling image sensors.
- blowing with an ionizedN2 gun. If N2 is not available, use an ionized clean digir gun. Ensure that the appropriate point of use filtering system is in place to prevent particle contamination from the ionizing gun.

 XIf the above procedure does not remove the particle, use an ESD protective wipe (type S1091PRT from Puritech or RTMKC002 from distributor Hans J. Michael GMBH) to do a local cleaning with isopropyl alcohol (IPA), either extra pure or VLSI grade. Wet the wipe

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