adesto® TECHNOLOGIES

Technical Brief

Storage and Handling of Wafer Products

1.0 Introduction

This application note provides guidelines for the storage and handling of Adesto wafer products that have been shipped to the customer and are eventually to be used in the assembly of SiP or chip modules.

2.0 Scope

This procedure addresses Adesto wafer products only and does not contain information pertaining to PCB or landing pattern guidelines associated with WLCSP (Wafer Level Chip Scale Packaging), BGA or flip-chip assembly applications.

3.0 Storage Conditions

Adesto wafer products are shipped with no backside metallization, however moisture-sensitive materials such as Al, CU, and NI that are subject to oxidation, are utilized in the bond pad construction of the wafer and therefore an RH-controlled environment, in accordance with JEDEC and IPC standards, is required for proper storage of the product.

4.0 Electrostatic Discharge Conditions

Adesto wafer products are packed for shipment in anti-static materials including closed-cell polyethylene foam and Tyvek layers for separation. In order to prevent damage to the product is required that handling be conducted in accordance with JESD625, Requirements for Handling Electrostatic-Discharge-Sensitive (ESDS) Devices.

5.0 UV Exposure

Adesto wafer products are based on floating gate technology and, as such, are susceptible to UV light exposure. These non-volatile memories (NVM) contain reference and configuration settings that are accomplished via programming of specific cells during the standard factory test process before shipment to the customer. Exposure of the wafer product to UV light of sufficient intensity and duration could affect the stored charge in said specific cells, thereby rendering the factory settings corrupted and the product permanently non-functional.

Please note that the cleaning procedure subsequent to the customer's module or SiP assembly process can be critical since some plasma used for the cleaning processes are known to generate UV light.

Table 1. Shelf Life of Bare Die/Wafers

Relative Humidity	Bond Pad Material	Back Side Metallization	Estimated Shelf Life (yrs.)
< 30%	Ti/TiN/AlCu	none	6
< 50%	Ti/TiN/AlCu	none	4
< 60%	Ti/TiN/AlCu	none	3
< 80%	Ti/TiN/AlCu	none	< 1

Wafer/Die Product is rated at MSL of 1. Baking is not required, but dry pack is required during storage to prevent oxidation.

Adesto recommends storage conditions of 30°C maximum and RH < 30%.

Reference:

- IPC/JEDEC Standard J-STD-033, Standard for Handling, Packing, Shipping, and Use of Moisture/ Reflow-Sensitive Surface-Mount Devices
- Standard JESD625, Requirements for Handling Electrostatic-Discharge-Sensitive (ESDS) Devices
- Standard EIA-541, Packaging Material Standards for ESD-Sensitive Items
- EIA Standard EIA-583, Packaging Material Standards for Moisture-Sensitive Items
- Joint IPC/JEDEC Standard J-STD-020, Moisture/Reflow Sensitivity Classification for Non-hermetic Solid-State Surface-Mount Devices