Storage of Products Supplied by Infineon Technologies

About this document

Mission

This guideline gives recommendations for the storage of Infineon products.

Such recommendations are subject to storage time and storage conditions (temperature, relative humidity, packing medium and environmental conditions as defined in IEC 61760-2 for components and IEC 62258 for wafer dice).

Scope and purpose

This guideline applies to all products supplied by Infineon Technologies.

Infineon products are technologically advanced, mass-produced semiconductors. A product is a wafer, a device or a module made ready for delivery. It is tested or untested, identified (marked), and packed in intimate and proximity packing materials. Examples of products are:

- Devices packed (dry as well as non-dry) in tubes, trays, tapes, and reels
- Mounted wafers (sawn or unsawn) packed in frame shippers or PE-bags
- Wafers packed in wafer shippers

Specific storage conditions (e.g. storage time) of products or a product family may be subject to a product specification for the specific product or product family.

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1 Abbreviations / Terminology

Term	Definition
BPL	Barecode Product Label on the outer Infineon packing.
Component	Component is a collective term used as synonym for discrete and integrated semiconductor products.
Device	A Device is a microcircuit that normally contains one chip within a package.
Die	A die, (plural: dice) is an unpackaged semiconductor device with terminals for electrical interconnects, sawn from a wafer.
Film frame	The preferred term for packing material for mounting diced wafers.
Lead frame	(Synonym: system carrier) is the part of the package from which the leads are formed. The chip is fastened (glued, mounted, etc.) onto the lead frame and wired to the leads
Modules	Modules are more complex than devices. They can combine several chips or devices.
Package	That part of the device that encloses the chip or chips
System	A System consists of two or more products that work together at an optimum in an application. The system description specifies the features, the interaction of the products, and the interface to the user application.
Wafer	A wafer is flat disk of semiconductor material in which similar chips are simultaneously processed and then separated for implanting in devices or modules.

2 References

- IEC 61760-2 Edition 2 Surface mounting technology – Part 2 Transportation and storage conditions of surface mounting devices (SMD) –Application guide
- IEC 62258-1 Semiconductor die products – Edition 1 Part 1: Requirements for procurement and use
- IEC TR 62258-3 Edition 2 Part 3: Recommendation for good practice in handling, packing and storage
- MIL PRF-131K: BARRIER MATERIALS, WATERVAPORPROOF,GREASEPROOF, FLEXIBLE, HEAT-SEALABLE
- JEDEC Standard 033: Handling, Packing, Shipping and Use of Moisture/Reflow Sensitive Surface Mount Devices

3 Storage Requirements

3.1 Wafers Unsawn

Humidity indicator card (HIC) is not allowed for packing of wafers and dice.

Only released material shall be used for storage.

For minimum environmental conditions for semiconductor technologies please refer to IEC 62258-3.[1)]

Storage Type	Storage Measures	Ambient Atmosph.	Ambient Temperature	Maximum Storage Time
Wafers, bumped wafers etc. in boxes	Packed, evacuated, N2 purged, sealed in moisture barrier bag, (MBB) [2)] with desiccant [3)])	Air	15-30°C	36 months

The storage time starts with last shipment out of FE production, respective shipment into the wafer test area (comment: technically the final pad treatment needs to be finished).

If storage without MBB is intended the storage in N2 cabinet according to IEC 62258-3 is required.

By reducing contamination sources (e.g. hazardous gases) corrosion risks are significantly reduced.

Products shall be processed before the end of the maximum storage time defined above. Processing beyond expiring date may increase the risk of reduced processability, malfunction or non-function.

1 IEC 62258-3 (item 9.4 long-term storage environment)

2 Acc. to MIL PRF-131J (Aug. 1998)

3 Number of desiccant units to be calculated acc. JEDEC Standard 033

3.2 Wafers Diced and Mounted on Film Frames

Material	Storage Measures	Ambient Atmosph.	Conditions Temperature / Relative Humidity	Maximum Storage Time
Dice incl. bumped wafers (e.g. Flip Chip)	Sealed in MBB with desiccant [3],N2 purged	Air	Acc. to IEC 62258-3 [4]	Regular: 6 months (if not otherwise specified or qualified)
	Sealed in PE-bags only applicable for non-humidity-sensitive products [5]	Air	Acc. to IEC 62258-3 [4]	

The storage time starts with laminating wafer on foil.
If storage without MBB is intended then storage in N2 cabinet according to IEC 62258-3 is required.
By reducing contamination sources (e.g. hazardous gases) corrosion risks are significantly reduced.
Products shall be processed before the end of the maximum storage time defined above.
Processing beyond expiring date may increase the risk of reduced processability, malfunction or non-function.

3 Number of desiccant units to be calculated acc. JEDEC Standard 033
4 IEC 62258-3 (item 9.4 long-term storage environment): Temperature 17°C – 25°C (recommended storage temperature range)
5 PE-bags are used sometimes for single wafers

3.3 Dice (singulated bare die)

Storage Type	Storage Measures	Ambient Atmosph.	Conditions Temperature / Relative Humidity	Maximum Storage Time
in Waffle Pack	evacuated, N2 purged, sealed in MBB with desiccant [3)]	Air	Acc. to IEC 62258-3 [4)]	36 months
Adhesive baked punched carrier tape	with adhesive baked punched carrier tape incl. of desiccant [3)] sealed in MBB	Air	Acc. To IEC 62258-3 [4)]	6 months
in Blister Tapes	protected by cover tape. Reels with blister tape, N2 purged incl. of desiccant [3)] sealed in MBB	Air	Acc. To IEC 62258-3 [4)]	12 months

If storage without MBB is intended the storage in N2 cabinet according to IEC 62258-3 is strongly recommended.

The storage time starts with the date code on the BPL.

By reducing contamination sources (e.g. hazardous gases) corrosion risks are significantly reduced.

Products shall be processed before the end of the maximum storage time defined above. Processing beyond expiring date may increase the risk of reduced processability, malfunction or non-function.

3 Number of desiccant units to be calculated acc. JEDEC Standard 033

4 IEC 62258-3 (item 9.4 long-term storage environment): Temperature 17°C – 25°C (recommended storage temperature range)

3.4 Packed Devices and Modules

Storage Material	Storage Measures	Ambient Atmosphere	Ambient Conditions Temp./ RH [6]	Maximum Storage Time
Non-dry pack (1) All packages except that packages listed below under Nondry pack (2)	Original packing	Air	5-40°C / 10% - 75%	36 months
Non-dry pack (2) • Infineon's wafer level (i) ball grit arrays and (ii) packages (xWLy) • xDSOFy • xDSOSPy (TPMS), except PG-DSOSP-14-8x • xDSOPy • xWDSONy • xVLGAy	Original packing	Air	5-40°C / 10% - 75%	24 months
IGBT Modules with solder terminals,IGBT and BIP modules with TIM pre-applied	Original packing	Air	5°C -40°C / 10% - 75%	24 months
Dry pack: Packed, evacuated, desiccant [3], Humidity Indicator Card (HIC) sealed moisture barrier bag	Original packing	Air	5-40°C / < 90% [7]	36 months
Chip Card Modules	Original packing	Air	5-40°C / 10% - 75%	36 months
IGBT modules with PressFIT terminals [8]; IGBT and BIP Modules with screw terminals	Original packing	Air	5-40°C / 10% - 75%	60 months
Pressure contact discs - hermetically sealed	Original packing	Air	5-40°C / 10% - 75%	60 months

By reducing contamination sources (e.g. hazardous gases) corrosion risks are significantly reduced.

The storage time starts with the date code.

Products shall be processed before the end of the maximum storage time defined above. Processing beyond expiring date may increase the risk of reduced process ability, malfunction or non-function.

6 According to IEC 61760-2 (see clause 5 Storage Conditions); also valid for modules.

3 Number of desiccant units to be calculated acc. JEDEC Standard 033

7 Condensation and bedewing shall be avoided.

8 For soldering of PressFIT terminals, storage type "IGBT Modules with solder terminals" applies.

Revision history

Major changes since previous revision

Revision history

Version	Description
V7.0; 2018-06-21	Revision changes
V6.0; 2017-07-07	New template
V5.0; 2017-03-24	Change of ownership
V4.0; 2016-11-24	Editorial revision
V3.0; 2016-11-22	Editorial revision
V2.0; 2016-11-15	Regular revision
V1.0; 2009-06-22	New edition

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