PRESERVATION, PACKAGING AND DESPATCH OF ESCC COMPONENTS

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1 SCOPE

This specification defines the general requirements for the preservation, packaging and despatch of components produced under the ESCC system of specifications. The requirements specified herein apply to all suppliers of components (ESCC qualified and non-qualified) including the original component Manufacturer, and authorized distributors and procurement agents.

2 APPLICABLE DOCUMENTS

The following documents form part of, and shall be read in conjunction with, this specification.

2.1 ESCC SPECIFICATONS

(a) ESCC Basic Specification No. 21700, General Requirements for the Marking of ESCC Components.

(b) ESCC Basic Specification No. 23800, Electrostatic Discharge Sensitivity Test Method.

(c) ESCC Basic Specification No. 24900, Minimum Requirements for Controlling Environmental Contamination of Components.

2.2 OTHER (REFERENCE) DOCUMENTS

(a) IEC Technical Report 62258-3: Semiconductor die products – Part 3: Recommendations for good practice in handling, packing and storage.

(b) J-STD-033: IPC/Jedec Standard for Handling, Packing, Shipping and Use of Moisture, Reflow, and Process Sensitive Devices.

(c) JESD31: JEDEC Standard No. 31, General Requirements for Authorized Distributors of Commercial and Military Semiconductor Devices.

(d) JESD625: JEDEC Standard No. 625, Requirements for Handling Electrostatic-Discharge-Sensitive (ESDS) Devices.

3 DEFINITIONS

The following definitions apply to this document:

Container:	A generic term for any receptacle which holds, restrains or encloses an item.
Final Package:	A container, holding 1 or more intermediate packages, used for transportation of items to the Orderer.
Identification:	The application of appropriate markings to ensure that the identity of an item is unfailingly indicated after preservation and each stage of packing.
Intermediate Package:	A container holding 2 or more primary packages.
Packaging:	The operations involved in the preparation of items for transit and delivery. The term includes preservation, identification and packing.
Packing:	An operation by which items are wrapped and/or placed in containers, etc.
Preservation:	The cleaning of an item and the application of a suitable temporary protective barrier, where necessary, to maintain the item in prime condition.
Primary Package:	A container, envelope or wrap to act as the first mechanical protection and normally to hold an individual item.
Special Packaging:	A system of packaging specially developed to suit the needs of a particular item, usually involving special designs for containers, fittings, etc.

4 PRESERVATION AND PACKAGING REQUIREMENTS

4.1 GENERAL

Components ordered to ESCC specifications shall be packaged in such a manner that they are:

(a) Adequately safeguarded against mechanical or electrical injury during transportation to the Orderer.

(b) Protected against deterioration due to humidity.

(c) Suitable for storage, in their primary packages, for a period of 1 year over a temperature range of +10 to +40°C, at relative humidity of up to 65%.

(d) Easily identified after preservation and each stage of packing.

The protection to be provided by any specific package depends on the severity of the risks to which it is expected to be subjected during transport and storage.

Responsibility for the assessment of the packaging required for any particular order rests with the Supplier. The Supplier shall ensure that the following requirements are fulfilled when packaging ESCC components.

Specific requirements and recommendations for handling, packaging and storage of semiconductor die components are given in Para. 4.1.1.

4.1.1 Specific Requirements and Recommendations for Handling, Packaging and Storage of Semiconductor Die Components

Recommendations for good practice in handling, packaging and storage of semiconductor die components are given in IEC TR 62258-3.

Any specific requirements applicable to a particular semiconductor die component with respect to handling, packaging and storage shall be as specified in the applicable Detail Specification.

4.1.2 Additional Specific Requirements for Handling, Packaging, Storage and Shipping of Non-Hermetically Sealed and Plastic Encapsulated Semiconductor Components

Additional requirements for handling, packaging, storage and shipping of non-hermetically sealed and plastic encapsulated semiconductor components are given in J-STD-033.

4.2 PRESERVATION

If the item to be packaged requires protection against atmospheric humidity, a temporary protective barrier or preservation shall be applied.

The method of preservation and material used must have no adverse effect on the component or cause deterioration in any form.

The form of preservation shall be such that it is easily removable without the need for special equipment and without dismantling the component.

4.3 PRIMARY PACKAGE

Each component shall be enclosed in a primary container. Dependent on the type of component, this may take the form of a container, envelope, wrap, etc. The primary container shall provide protection against contamination and the hazards of normal handling and indoor storage. In the case of components sensitive to electrostatic discharge, as defined in ESCC Basic Specification No. 23800, the primary container shall provide appropriate static dissipative properties.

Primary packages shall be easily opened without the need for special tools and, wherever practicable, re-closure shall be possible.

The primary package shall be constructed of material which can be used directly in clean rooms and cleanliness-controlled areas. It shall not include materials that are particle-shedding or permeate gaseous contamination at levels equal to, or greater than, those specified for such areas.

4.3.1 Manual Handling

For components intended for manual or individual handling by the user the primary package shall normally enclose one component. A primary package may contain more than one component when practicality so demands as, for example, in the use of waffle packages to hold chip devices.

4.3.2 Automatic or Semi-automatic Handling

For components intended to be handled automatically or semi-automatically by the user, e.g. in robotic assembly, the primary package shall normally enclose a number of components. This approach for primary packaging shall be applied to items such as tape and reel cassettes, pre-oriented die in waffle packs, integrated circuit sticks etc.

4.4 INTERMEDIATE PACKAGE

Dependent on the type of component being packaged, 2 or more primary packages shall be packaged into a secondary container. Intermediate packages shall only contain ESCC components, in their primary package, of the same type, date code and lot code, and which have been manufactured and tested against the same Detail Specification.

Intermediate packages shall be easily opened, leaving the enclosed components intact in their primary packages, without the need for special tools. Wherever practicable, re-closure shall be possible.

4.5 FINAL PACKAGE

For transportation to the Orderer, 1 or more intermediate packages shall be assembled into a final container. Wherever physically possible, the size of a final package shall be such that it can be handled by one person.

The design of the final package shall be such that bulk and weight are kept to a minimum, consistent with affording adequate protection in the known handling, transportation and storage environments. Supports, filling, cushions, etc. shall be used as applicable.

The final package shall withstand a free fall of 1.5 metres onto a firm concrete base without any evidence of damage to the components, primary packages and intermediate packages. Provided this requirement is met, minor damage (e.g. abrasions, small dents) to the final package is acceptable.

4.6 HANDLING AND TRANSPORTATION

All packaging shall be designed to ensure that no deterioration of the components occurs whilst in transit from one location to another. In those instances where packages are liable to be transported by air, proper provision shall be made for changes in atmospheric pressure and temperature.

4.7 CONTINUITY OF PROCESSES

Packaging shall be carried out with the minimum delay at the place of manufacture. Cleaning, preservation and packaging shall be carried out as a continuous process. All locations at which components are received, stored and packaged shall be so arranged that a high degree of cleanliness is maintained and that contamination after any cleaning step is avoided.

4.8 QUALITY ASSURANCE PROVISIONS

The Supplier is responsible for ensuring that the packaging conforms to the requirements of this specification and the purchase order.

In all stages of the packaging processes, the selection of materials used and their methods of application shall be such that no reaction with, or damage to, the components occurs.

4.9 SPECIAL PACKAGING

When requirements for special packaging arise, these will be negotiated between the Orderer and the Supplier and specified in the Purchase Order.

4.10 IDENTIFICATION OF THE CONTENTS OF PACKAGES

The content of each container shall be clearly identified as follows.

4.10.1 Marking of Primary Packages

The full marking to be applied to the component is defined by the applicable Detail Specification. If the full marking is not applied to the component or if the full marking is not visible through the primary package, then it shall be marked on the primary package or applied to it by use of a label or equivalent means. In addition, the following shall be marked on the primary package or package label:

(a) Primary package quantity.
(b) Date when packaged.

4.10.1.1 Multiple Components

Where the primary package is designed for multiple components, e.g. for purposes of automatic handling, the required primary package marking shall be applied where possible directly to the primary package or to an attached label. Where this is impractical then the requirement is to identify each primary package uniquely. An identification card or sheet bearing the corresponding unique identifier shall accompany the specific primary package within the intermediate package. The card or sheet shall provide the full marking. In the case of serialisation, the card or sheet shall additionally record the serial numbers and their physical location within the primary package.

4.10.2 Marking of Intermediate Packages

Intermediate packages shall be marked with all of the data specified for primary packages.

Serial numbers, if applicable, may be shown as a range if consecutive, but must be individually listed if not.

In addition, the intermediate package quantity shall be shown.

4.10.3 Marking of Final Packages

Final packages, in addition to the name and address of the Consignee, shall be marked or labelled with the following:

(a) Purchase Order particulars (e.g. number, date, etc.).
(b) All particulars necessary for Customs clearance (if applicable).

4.10.4 Special Marking

Special marking, at any or all stages of packaging, may sometimes be required. It is always required for electrostatic sensitive devices and devices containing beryllium oxide utilising the warning signs defined in ESCC Basic Specification No. 21700.

As a minimum, warning signs shall be applied or attached to the primary packaging.

When special marking is necessary, the detailed requirements will be specified in the relevant Generic or Detail Specification, or the Purchase Order.

4.11 DOCUMENTATION

Each final package shall contain or have affixed to it 1 copy of the relevant invoice and the necessary documentation giving the following particulars:

(a) Purchase Order details.
(b) Name and address of the Orderer (if different from Consignee).
(c) Name, address and reference of the Supplier.
(d) Details of any temporary protective barrier applied and the preferred method of removal.

In addition, it may be a requirement that other documentation (e.g. test records, history sheets, etc.) accompanies a consignment and details concerning this will be specified in the relevant Generic or Detail Specification or Purchase Order.

4.12 PACKAGING OF REJECT OR ENVIRONMENTAL TEST COMPONENTS

Components which have been rejected on test or components which have undergone environmental tests (e.g. qualification samples), which are to be dispatched to the Orderer or to the ESCC Executive, shall be packaged separately from other deliverable components.

The general requirements of this specification shall apply. Primary, intermediate and final packages shall carry additional marking to indicate the status of the components (e.g. REJECT, QUALIFICATION SAMPLE, etc.).

5 DESPATCH REQUIREMENTS

The components, packaged, preserved, identified and documented as applicable and as specified herein, shall be despatched using suitable transportation means.

5.1 DESPATCH BY THE COMPONENT MANUFACTURER

Components may be despatched directly from the original component Manufacturer. In such cases, the Manufacturer shall meet the requirement of this specification, the relevant Generic and Detail Specifications, the Orderer's Purchase Order and, for qualified components, the PID.

5.2 DESPATCH BY OTHER AUTHORISED SUPPLIERS

Components may be ordered from and despatched by authorised distributors and procurement agents. In such cases, the supplier shall meet the requirement of this specification, ESCC Basic Specification No. 24900, the relevant Generic and Detail Specifications and the Orderer's Purchase Order.

Guidance for other authorised supplier handling of components is given in this specification, and in JESD31 and JESD625.