# LMMS PACKAGING STANDARD

## Packaging of Active & Passive Bare Die and Chips

### 1.0 SCOPE

This standard establishes the minimum acceptable methods of packaging bare die and chips. The components may be active or passive and may or may not be ESD sensitive. This standard does not normally allow for individual packaging of these components.

### 2.0 REQUIREMENTS

2.1 General

2.1.1 Die and chips shall be packaged and packed in approved microelectronic environmental control areas.

2.1.2 Die and Chips are to be protected from physical, mechanical and ESD damage by using the best standard commercial practices.

2.1.3 The materials used within the unit packaging shall not degrade die or chips or be incompatible with production processes.

2.2 Lot/Date Type Coding

2.2.1 The Chip Identifier Code shall correspond to the code labeled on each individual die or chip and shall be traceable to the device type and masking steps ( as applicable).

2.2.2 An Inspection Lot shall consist of a die of a single device type from wafer lots which have completed the fabrication process within the same six month period from the same foundry, using the same processes, techniques, controls and design. The die or wafers of the same inspection lot shall be submitted at one time as a batch for the known good die processing, screening and acceptance evaluations. Identification of an inspection lot shall be maintained from the time a lot is formed. The inspection lot number shall be traceable to the wafer lot number(s).

A wafer lot is defined as a quantity of wafers which are processed together as a single group from the diffusion lot formation to the completion of metallization and passivation and are produced from the same production line from the same bulk of basic starting materials, using the same techniques, processes, facilities, controls and design. The wafer lot number shall be traceable to the wafer acceptance record.

Parts of a single device type for the same purchase order shall be manufactured from wafers which have completed the fabrication process within the same six month period from the same foundry, using the same processes, techniques, controls and design. (Gold bumping of wafer die bond pads, when required, for the known good die processing is considered a post wafer–fabrication process and is not included in the six month window.)

Multiple inspection lots can be used within the same purchase order for the P/N (part number); however, only parts from the same inspection lot shall be packaged within the same unit packaging.

2.3 Unit Packaging

2.3.1 The quantity per unit package is variable, depending upon type of unit packaging and order quantity.

2.3.2 The "/suffix letter" following the P–133R1 (P–133, Revision 1) callout identifies the required type of unit packaging per Table 1.

| Table 1 | |
|---|---|
| P–133R1/G | 2x2 Gelpak (VR/16–CC–00–B–X4) or equivalent |
| P–133R1/K | 4x4 Gelpak (VR–44/16–CC–00–B–X4) or equivalent |
| P–133R1/W | ESD Waffle Tray |
| Contact the buyer if packaging is unobtainable, differs from the configuration specified or is not compatible with the die or chip | |

2.4 Intermediate Packaging

2.4.1 Intermediate Packaging shall be consistent with good standard commercial packaging practices.

2.5 Packing (Shipping Container)

2.5.1 Packing shall protect each item and package during ordinary handling and shipping and shall meet the minimum requirements of the common carriers for safe transportation in an economic manner.

2.6 Marking

2.6.1 Marking of the Unit Package shall include:

Quantity per Unit Package

Part Number per contracting document

Purchase Order Number

Chip Identification Code

Inspection Lot Number

Supplier/Manufacturer Identity

Special markings as specified/appropriate (ESD caution label, bar code, etc)

2.6.2 Markings on Unit Packaging are to be placed atop the unit container. As a minimum, the part number and inspection lot number (which may be in the form of a bar code) shall be repeated on the bottom of unit containers.

2.6.3 Marking of Intermediate Packaging shall be the same as the Unit Packing. If the Unit Packaging markings are readily visible through the intermediate packaging, intermediate packaging markings may be omitted.

2.6.4 Marking of Packing shall include:

Supplier Name and Address

Part Number per contracting document

Purchase Order Number

Destination

Total Number of Parts

Any applicable special markings or labels

## 3.0 QUALITY ASSURANCE

Packaging shall be accomplished in such a manner as to prevent damage to, or degradation of, the packaged items during normal transportation and delivery activities. It shall be the prerogative of LMMS to return damaged items, at the vendor's expense, when such damage is attributable to improper or inadequate vendor packaging.

## 4.0 NOTES

Gelpak is a commercial unit packaging system available from the Gel–Pak Company located in Sunnyvale, California.