



**Guidelines for Unit Packing
for Integrated Circuits - Tubes (Rails)**

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NATIONAL ELECTRONIC DISTRIBUTORS ASSOCIATION

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Introduction

Growing global competition for the industries which comprise the predominant users of electronic components, particularly semiconductor products, is resulting in a continuous evolution in customers' practices and their vendor performance expectations. Customer preferred vendor programs for manufacturers and distributors are a growing trend. Stringent performance evaluations for product integrity, correctness of deliveries and related service parameters have resulted from these market driven quality initiatives and remain integral to such approved vendor programs.

Within the semiconductor customer community, the quest for improved product quality, shorter time-to market cycles and zero-defect product manufacturing is rapidly advancing. Customer demands on their vendor base (distributors and manufacturers alike) also include greater demands for ESD protection, inspection of products, and a shortening window for the range of acceptable date codes for products.

In order for Distributors to maximize their efficiency and maintain the integrity of the manufacturers' packaging, Distributors need to receive product from the Manufacturers in standard quantities by semiconductor device types. The adoption of this practice will assist Distributors in selling and maintaining product in uniform, full tube quantities thereby maintaining the quality of the product by decreasing the need to open Manufacturers' factory sealed packaging.

The whole semiconductor industry must adapt its practices to meet the customers' service and quality demands to be competitive within the OEM community. Distributors believe that adherence to a service quality standard responsive to customers' demands is the approach most likely to bring market demands and industry practice back into harmony.

In order for Distributors and Manufacturers to meet the increased service and quality needs of the end user, NEDA has actively promoted the development and implementation of standardized packaging, handling, and labeling practices.

The result of these ongoing efforts will allow the Distribution community to better serve their broad customer base with increased gains in efficiency and productivity. The overriding goal of Distributors throughout this process remains the timely delivery of product to the customer while minimizing the invasion of the Manufacturer's various levels of packaging thereby maintaining the "factory sealed quality" of the product.

A NEDA Task Force comprised of distributors and their suppliers was formed to develop standards and recommendations responsive to these needs. During 1992, The NEDA Semiconductor Packing and Handling Task Force developed this Guideline to provide uniform quantities of semiconductor product by device type. Subsequently, the NEDA Board of Directors, in September, 1992, approved publication of this document as an official NEDA Guideline.

NEDA Distributors and the Task Force would like to emphasize the following:

1. When these efforts began, the industry had nothing addressing these issues.
2. While they may not represent ultimate or ideal long term solutions for either the manufacturers or the distributors, this Guideline represents an important starting point from which to build.
3. Compliance will not happen overnight. All parties can use these items as goals to work towards over a reasonable length of time. Compliance will be monitored with the continuously revised publication of the accompanying Implementation Matrix.
4. While this Guideline may not share unanimous agreement, a majority consensus generally endorses it.
5. Compliance by manufacturers and distributors with these Guidelines is strictly voluntary.
6. In some instances, a middle ground may exist. Over time, this group may wish to reconvene in some manner to discuss the addition of other items and possible implementation of some of the comments that have been raised. Over time, it would seem reasonable to expect all parties to move towards a common ground as manufacturer and distributor capabilities mutually evolve in an attempt to better serve customer needs.

The following distributors and manufacturers participated in the Task Force which developed these Guidelines:

Anthem Electronics

Arrow Electronics

Bell Industries

Hall-Mark Electronics

Avnet Electronics

Marshall Industries

Pioneer-Standard Electronics

Wyle Laboratories/EMG

Advanced Micro Devices

Analog Devices

Chips and Technologies

Cypress Semiconductor

Harris Semiconductor

Intel

Lattice Semiconductor

Linear Technology

Motorola

National Semiconductor

SGS-Thomson

Signetics

Teledyne Components

Texas Instruments

Superseded by JEP 130

Guidelines for Unit Packing for Integrated Circuits - Tubes (Rails)

1.0 SCOPE.

- 1.1 This guideline establishes the requirements for unit container packing of integrated circuits in tubes (rails) and for the next level of tube container.
- 1.2 Although compliance with this guideline is voluntary, its common use is expected and encouraged. This guideline may be specified as a requirement by both distributor and end user (OEM).
- 1.3 This guideline applies to commercial and military product. There is no conflicting military standard.

2.0 DEFINITIONS.

- 2.1 Unit Container. The first container applied to a single or several component(s). For purposes of this guideline, examples of unit containers are tubes, rails, and magazines.
- 2.2 Intermediate Product Package or Container. A wrap, box, bag, or bundle that contains one or more unit containers of identical items.

3.0 APPLICABLE REFERENCE DOCUMENTS.

- 3.1 MIL-S"TD-129 "Marking for Shipment and Storage."
ETA 556-A "Outer Shipping container Bar Code label Standard"
EIA 541 "Packaging Material Standards for ESD Sensitive Items."

4.0 REQUIREMENTS.

- 4.1 Tubes, Rails (Unit Containers). Tube configurations shall be in accordance with existing industry practice, however the specification for overall tube length shall be 22 inches maximum (XX cm.) excluding stoppers or other cushioning materials inserted in the tube.

The number of devices loaded into each tube shall be in accordance with Table 1 which specifies device count per tube by package configuration and lead count. The distance between stoppers or end stops or other mechanisms to contain the devices within the tube shall be determined by the supplier.

The tube should be made of such a material that the device marking is visible through the tube under normal warehouse conditions.

4.2 Full Tube Quantities.

All boxes or packages must be of a quantity to eliminate the presence of partial tubes. Partial tubes under the AUP of \$5.00 (Distributor price), will not be accepted. All distributors will order all semiconductors in full tube quantities for parts less than \$5.00 AUP. Distributors will return only in full tube quantities those same part numbers purchased in full tube quantities, excluding quality defects.

4.3 Boxes, Cartons etc... (Intermediate Product Package or Containers).

Intermediate product package or container overall length (outer dimensions) shall be 23 1/2 inches maximum.

Superseded by JEP150

TABLE 1

**Standard Device Count per Tube
by Package Configuration and Lead Count**

Pin Count	Package Type	Device Count Per Tube
8 / .30	CDIP	48
8 / .30	PDIP	50
8 / .15	SOIC	98
14 / .30	CDIP	25
14 / .30	PDIP	25
14 / .15	SOIC	50
14 / .30	SOIC	50
16	CDIP	25
16	PDIP	25
16 / .15	SOIC	48
16 / .30	SOIC	48
18	CDIP	20
18	PDIP	20
18	PLCC	35
18	SDIP	20
18	SOIC	40
20	CDIP	19
20	PDIP	18
20	PLCC	46
20 / .30	SOIC	38
22 / .30	CDIP	17
22 / .40	CDIP	17
24 / .30	PDIP	15
24 / .40	PDIP	15
24 / .30	CDIP	15
24 / .40	CDIP	15
24 / .60	CDIP	15
24 / .30	PDIP	15
24 / .40	PDIP	15
24 / .60	PDIP	15
24	PLCC	37
24 / .30	SOIC	30

TABLE 1

**Standard Device Count per Tube
by Package Configuration and Lead Count**

Pin Count	Package Type	Device Count Per Tube
26 / .60	PDIP	9
28 / .30	CDIP	13
28 / .60	CDIP	13
28 / .30	PDIP	13
28 / .40	PDIP	13
28 / .60	PDIP	13
28	PLCC	37
28	SOIC	26
28	SOJ	26
32	CDIP	11
32 / .60	PDIP	11
32	PLCC	30
32	PLCCR	30
32	SOIC	23
32	SOJ	23
40 / .60	CDIP	9
40	PDIP	9
42 / .60	CDIP	8
44	PLCC	26
48	CDIP	7
48	PDIP	7
48	SDIP	7
50	PDIP	7
52	PLCC	23
64 / .60	PDIP	6
64 / .90	PDIP	5
68	PLCC	18
84	PLCC	15