Background Statement for SEMI DRAFT Document 4964A
NEW STANDARD: SPECIFICATION FOR LEADFRAME STRIP SIZE

Note: This background statement is not part of the balloted item. It is provided solely to assist the recipient in reaching an informed decision based on the rationale of the activity that preceded the creation of this document.

Note: Recipients of this document are invited to submit, with their comments, notification of any relevant patented technology or copyrighted items of which they are aware and to provide supporting documentation. In this context, “patented technology” is defined as technology for which a patent has issued or has been applied for. In the latter case, only publicly available information on the contents of the patent application is to be provided.

Background
Attached Standard document specified strip sizes of QFP (Quad Flat Package) and SOP (Small Outline Package) leadframes intended for use in leadframe manufacturing and package assembly processes which help CAD design standardization which are used at the manufacturing processes and transportation.
It can also be promoted to establish the standardized open stamping tools to reduce the stamping tool cost and manufacturing cycle times. This also can execute the reduction of packaging cases by standardizing the casing dimension.
Strip sizes are specifies by the following categories for QFP and SOP designs:;

- Package sizes
- Pin count

The letter ballot 4964 was issued for Cycle 3, 2010, however, it didn’t attain a 60% return by the closing date for voting. 4964A is issued for Cycle 6 with changes. PLEASE VOTE on this ballot for it to move on to the next stage of review.

The result of this ballot will be reviewed at Japan Packaging Committee scheduled in November 5th, 2010 at SEMI Japan office.
SEMI Draft Document 4964A
NEW STANDARD: SPECIFICATION FOR LEADFRAME STRIP SIZE

1 Purpose
1.1 Purpose of this document is to standardize the strip size specification of leadframe. This defines the width and length of a leadframe strip.

2 Scope
2.1 This specification is applicable to various types of QFP (Quad Flat Package) leadframe strips and SOP (Small Outline Package) leadframe strips.

2.2 This standard can be used as a specification when purchasing these leadframe.

2.3 The configuration of unit designs should be made per the IC chip information, so this document does not cover the unit size design or configuration.

NOTICE: This standard does not purport to address safety issues, if any, associated with its use. It is the responsibility of the users of this standard to establish appropriate safety and health practices and determine the applicability of regulatory or other limitations prior to use.

3 Limitations
3.1 Other dimensional requirement to strip design should be determined by the agreement between leadframe manufacturers and uses. This specification defines only for the Strip Size.

4 Referenced Standards and Documents
4.1 ASME standard

4.1.1 ASME Y14.5 - 1994 — Geometric Dimensioning and Tolerancing

5 Terminology
5.1 Acronyms

5.1.1 QFP — Quad Flat Package
5.1.2 SOP — Small Outline Package
5.1.3 xQFP — multi type of QFP
5.1.4 xSOP — multi type of SOP

5.2 Definitions

5.2.1 Number of Unit — Quantity of a unit in one leadframe strip

5.2.2 Package — A finished form of Semiconductor device that includes several materials such as encapsulant, wire, die attach material, interposer (metal or organic) and so on

5.2.3 Package Size — three dimensional sizes (width, length, height) of a IC package body. In this document, width, length and height are referred as package body size without leads.

6 Requirements
6.1 Drawing Conventions and Practices

6.1.1 Controlling dimensions are millimeters (mm).


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6.1.3 Dimensions specified in ¶6.2 are designed nominal. The design nominal is the finished nominal.

6.2 Strip Dimensions

6.2.1 Nominal size of 70mm (width) × 250mm (length) shall be for standardization for both xQFP leadframe and xSOP leadframe.

6.2.2 Nominal size of 78mm (width) × 250mm (length) shall be only for package size 28 × 28 xQFP leadframe.

6.2.3 General tolerance of strip size shall be +/- 0.15mm for both strip sizes.

6.3 Layout of unit location

6.3.1 Unit Layout in a strip shall be reference for design work per below-mentioned. These values can be changed by the agreement between leadframe providers and their users at the individual business stage.

6.3.2 xQFP Leadframe Strip layout

Table 1 xQFP Strip Size and Layout Dimension

<table>
<thead>
<tr>
<th>Package Size</th>
<th>Strip Size (Width × Length)</th>
<th>Number of Units</th>
<th>a</th>
<th>b</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 × 7</td>
<td>70 × 250</td>
<td>5 × 15</td>
<td>16.700</td>
<td>12.750</td>
</tr>
<tr>
<td>10 × 10</td>
<td>70 × 250</td>
<td>4 × 12</td>
<td>20.850</td>
<td>16.000</td>
</tr>
<tr>
<td>12 × 12</td>
<td>70 × 250</td>
<td>3 × 10</td>
<td>25.000</td>
<td>23.000</td>
</tr>
<tr>
<td>14 × 14</td>
<td>70 × 250</td>
<td>3 × 10</td>
<td>25.000</td>
<td>21.500</td>
</tr>
<tr>
<td>14 × 20</td>
<td>70 × 250</td>
<td>3 × 8</td>
<td>31.300</td>
<td>21.500</td>
</tr>
<tr>
<td>20 × 20</td>
<td>70 × 250</td>
<td>2 × 8</td>
<td>31.300</td>
<td>31.000</td>
</tr>
<tr>
<td>24 × 24</td>
<td>70 × 250</td>
<td>2 × 7</td>
<td>35.800</td>
<td>33.000</td>
</tr>
<tr>
<td>28 × 28</td>
<td>78 × 250</td>
<td>2 × 6</td>
<td>41.750</td>
<td>36.800</td>
</tr>
</tbody>
</table>

6.3.3 xSOP Leadframe Strip layout

6.3.3.1 Strip layout shall be determined by the users based on the package sizes.

6.3.4 Outline of Leadframe Strip

6.3.4.1 See Figure 1.

![Figure 1 xQFP Leadframe Strip Outline](image)

7 Related Documents

7.1 SEMI G51 — Specification for Plastic Molded (Metric) Quad Flat Pack

7.2 SEMI G28 — Specification for Leadframe for Plastic Molded SO Packages

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