

SEMI G9-89

SPECIFICATION FOR STAMPED LEADFRAMES FOR PLASTIC MOLDED DUAL-IN-LINE SEMICONDUCTOR PACKAGES

This Standard was technically approved by the Assembly & Packaging Global Technical Committee.

NOTICE: This Standard or Safety Guideline has an Inactive Status because the conditions to maintain Current Status have not been met. Inactive Standards or Safety Guidelines are available from SEMI and continue to be valid for use.

1 Preface

1.1 This Specification is a guideline for the stamping manufacture of leadframes for plastic molded dual-in-line semiconductor packages. It is a design guideline for packaging engineers, leadframe stampers and mold manufacturers, and has been developed to meet the requirements of automatic bonding.

2 Applicable Documents

2.1 This Document specifically refers to:

SEMI G4 — Specification for Integrated Circuit Leadframe Materials Used in the Production of Stamped Leadframes

SEMI G10 — Standard Method of Mechanical Measurement

SEMI G21 — Specification for Plating Integrated Circuit Leadframes

2.2 Related information may also be found in:

MIL-STD-105¹ — Sampling Procedures and Tables for Inspection by Attributes

MIL-STD-883 — Test Methods and Procedures for Microelectronics

3 Selected Definitions

3.1 *burr* — a fragment of excess material either horizontal or vertical attached to the leadframe.

3.2 *camber* — curvature of the leadframe strip edge (see Figure 1).

3.3 *coil set* — longitudinal bowing of the leadframe strip length (see Figure 2).

3.4 *coined area* — reference lead flat surface.

3.5 *crossbow* — transverse bowing of the leadframe (see Figure 3.)

3.6 *functional area* — the die attach pad and the lead tips.

3.7 *lead flat surface* — area on the lead tips that is suitable and available for wire bonding. This is generally achieved by coining on stamped leadframes and is also known as the coined area on such leadframes.

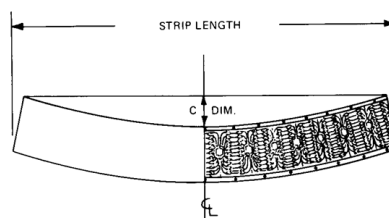


Figure 1
Camber

¹ United States Military Standards, Available through the Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120-5099, USA; Telephone: +1.215.697.3321.

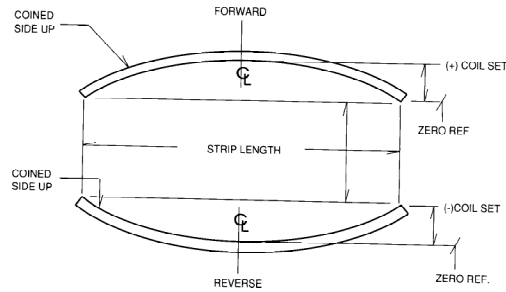


Figure 2
Coil Set

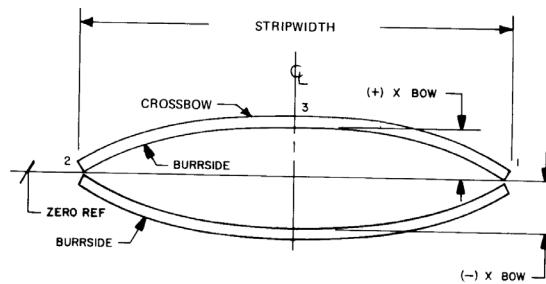


Figure 3
Crossbow

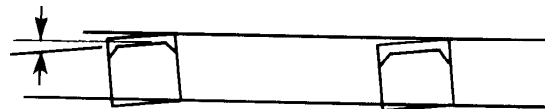


Figure 4
Lead Twist

(insert on received)

Figure 5
Stamped Leadframe Terminology

3.8 *lead twist* — angular rotation on bonding fingers (see Figure 4).

3.9 *pits* — shallow surface depressions or craters in the leadframe material.

3.10 *slug marks* — random dents in the leadframe caused by foreign material in the stamping die.

3.11 *stamped leadframe terminology* — see Figure 5.

3.12 *Z plane* — lead and pad planarity require a reference in the Z dimensions. The recommendation for the reference plane, hereafter called the 'Z' plane, is the average of the two dambars when measured at their geometric center. This reference method is incorporated into SEMI G10.

4 Ordering Information

4.1 Purchase orders for leadframes for plastic molded dual-in-line semiconductor packages furnished to this Specification shall include the following items:

1. Part Specification
2. Material