

SEMI G51-90 (Reapproved 0811) SPECIFICATION FOR PLASTIC MOLDED (METRIC) QUAD FLAT PACK LEADFRAMES

This Standard was technically approved by the global Assembly & Packaging Technical Committee. This edition was approved for publication by the global Audits and Reviews Subcommittee on July 1, 2011. Available at www.semiviews.org and www.semi.org in August 2011; originally published in 1990.

NOTICE: This Document was reapproved with minor editorial changes.

1 Preface

1.1 This Specification defines the acceptance criteria for leadframes designed for assembly of JEDEC proposed registered Publication 95 Standard Outlines for the Metric Quad Flat Pack Family Packages. It is a design guideline for packaging engineers, leadframe stampers and etchers, and mold and trim/form tooling manufacturers. It has been developed to meet the requirements of assemblers using automatic and manual equipment.

2 Applicable Documents

2.1 *Order of Precedence* — To avoid conflicts, the order of precedence when ordering tooling shall be as follows:

1. Purchase Order
2. This Specification
3. Referenced Documents

3 Referenced Standards and Documents

3.1 SEMI Standards and Safety Guidelines

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

SEMI G10 — Standard Method for Mechanical Measurement of Plastic Package Leadframes

SEMI G18 — Standard for Integrated Circuit Leadframe Material Used in the Production of Etched Frames

SEMI G21 — Specification for Plating Integrated Circuit Leadframes

3.2 ASME Standards¹

ASME Y14.5 M-1982 — Dimensioning and Tolerancing

3.3 JEDEC Standards²

Reg. Prop. 11-286 — Metric Quad Flat Pack Family (Gullwing)

3.4 Military Standards³

MIL-STD-105 — Sampling Procedures and Tables for Inspection by Attributes

4 Terminology

4.1 Definitions

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

4.1.2 *camber* — curvature of the leadframe strip edge. (See Figure 1.)

¹ Available through American National Standards Institute, 25 West 43rd Street, New York, NY 10036, USA; Telephone: 212.642.4900, Fax: 212.398.0023, <http://www.ansi.org>

² Joint Electron Device Engineering Council, 3103 North 10th Street, Suite 240-S, Arlington, VA 22201, USA; Telephone: 703.907.7560, Fax: 703.907.7583, <http://www.jedec.org>

³ United States Military Standards, Available through the Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120-5099, USA; Telephone: 215.697.3321.

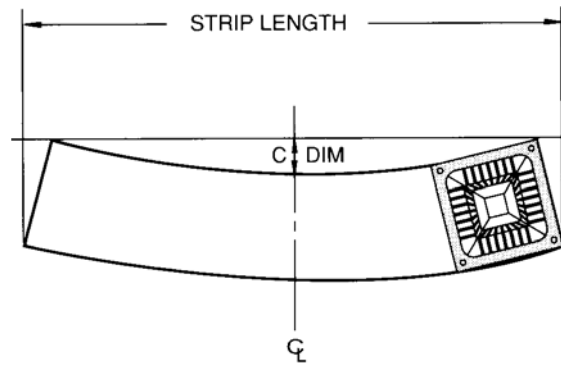


Figure 1
Camber

4.1.3 *coil set* — longitudinal bowing of the leadframe. (See Figure 2.)

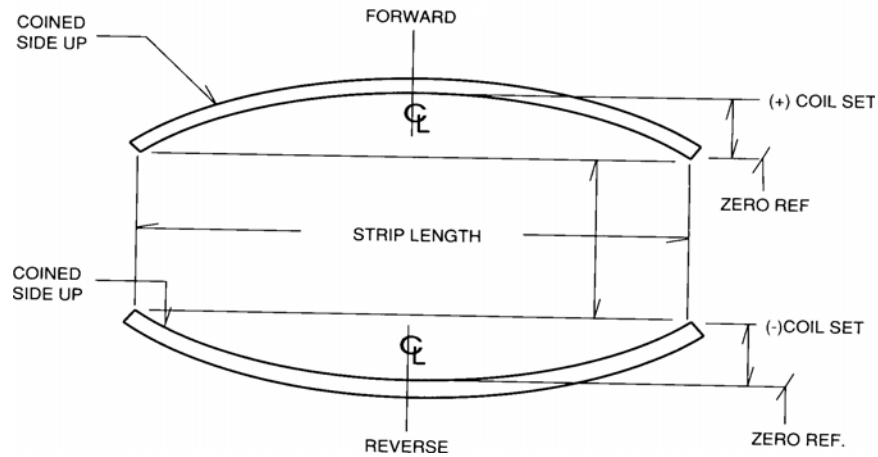


Figure 2
Coil Set

4.1.4 *coined area* — that area at the tip end of the bond fingers coined to produce a flattened area for functional use. (See Figure 3.)

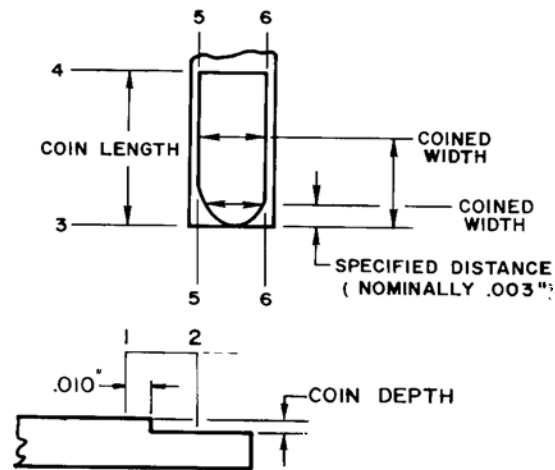


Figure 3
Coined Area

4.1.5 *crossbow* — Transverse bowing of the leadframe. (See Figure 4.)

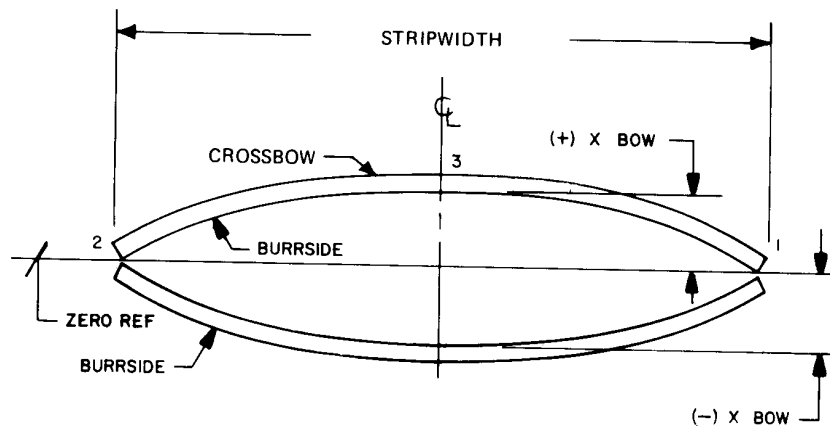


Figure 4
Crossbow

4.1.6 *lead twist* — Angular rotation of bonding fingers. (See Figure 5.)

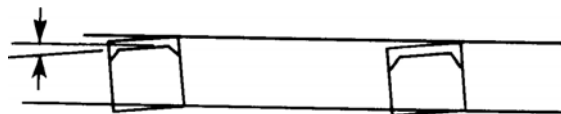


Figure 5
Lead Twist

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