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Semiconductor Leadframe Package with Improved Locking Mechanism Design on Leads

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Abstract**—*The paper presents an augmentation and improvement on locking mechanism and anchoring on leads of semiconductor leadframe package.***

Keywords**—** *Locking mechanism; anchoring; leadframe; semiconductor package.*

I. Overview

- Existing semiconductor leadframe package construction is consist of a semiconductor die bonded on top of the pad by epoxy glue or die attach film (DAF) material
- Connection between leads and internal circuitry of the die is linked through the wire (or wirebond/bondwire)
- Ultimately, the semiconductor leadframe package is encapsulated by the molding compound

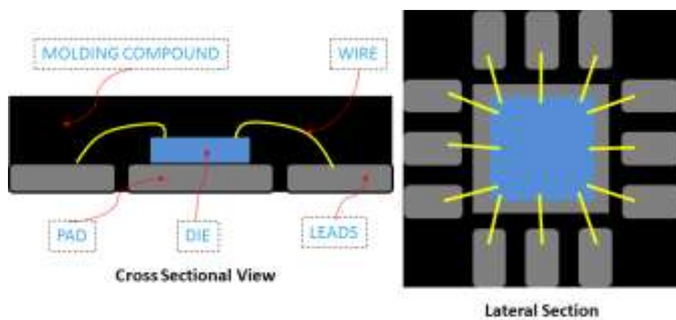

Fig. 1. Semiconductor leadframe package.

II. Problem Identification

- Delamination at the lead area of Device C causing the defined wire to lift or crack during reliability test

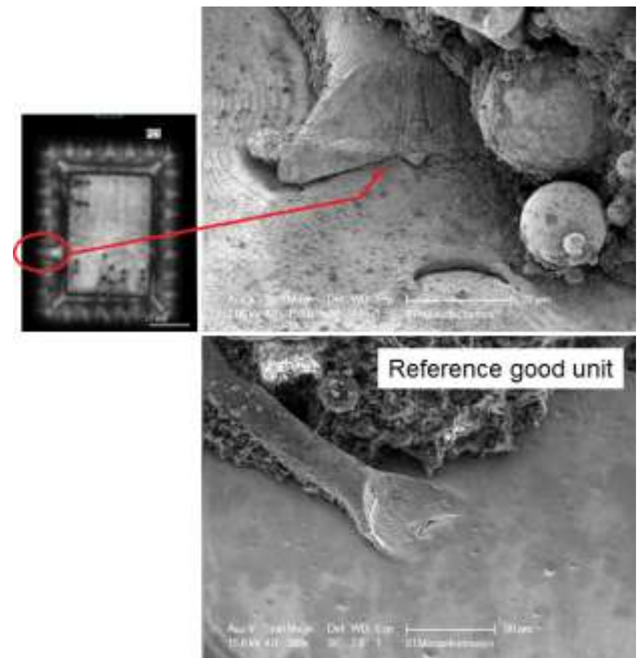

Fig. 2. Scanning electron microscope (SEM) showing Device C delamination.

III. Package Design Solution

- Design has the same package construction and outline as the existing semiconductor leadframe package, but this time with the integration of locking mechanism and anchoring at every leads of the package

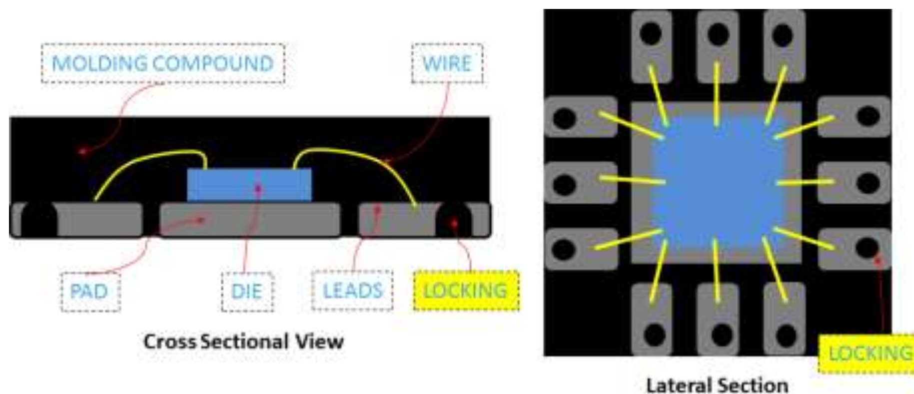

Fig. 3. Semiconductor leadframe package with locking mechanism and anchoring on leads.

- Improved lead design with locking mechanism and anchoring helps eliminate delamination on the lead portion