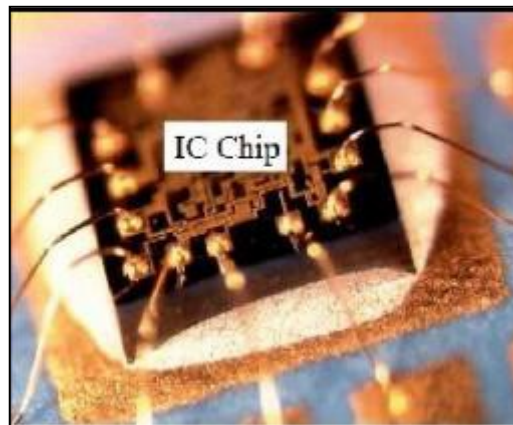


Virtual Training Course Outline

Pre Cap Visual Inspection per Mil-Std-883 (TM 2017) (4 Sessions)

Hybrids/MCMs/RF Microwave Modules all require a visual inspection step just prior to encapsulation or hermetic seal. This is a critical process step that requires a high degree of operator skill and understanding of what to look for and reject as part of the inspection process. This course defines the inspection criteria based on traditional Mil Spec requirements in conjunction with industry accepted best commercial practices. Over 250 color photographs of actual production defects are reviewed and discussed in detail. The students are exposed to a variety of defects and how the defects relate to the materials and process flow. Students learn what to look for as part of Pre Cap visual inspection and how to interpret and apply the very latest MIL-STD-883 criteria.



The course is intended for quality assurance personnel, inspectors, QEs and Process engineers, component engineers and lead operators and others responsible for inspection of the hardware prior to the final package sealing process.

The following is an approximation of what will be covered in each online or “virtual” training session.

Session 1: Introduction and Overview

- Mil Spec Visual Inspection Requirements Flowdown
- Component ID
- Foreign Material or F.O.D. inspection and source requirements

- Session 2: Component Attach
- TM 2017 Low mag IC/MMIC die and substrate attach inspection criteria and non-planar capacitor/resistor criteria
 - Solder Criteria
- Session 3: Wire and Ribbon Bonding
- TM 2017 Low mag wire and ribbon bond inspection criteria
- Session 4: High Mag IC Die and MMIC Inspection and Passives
- TM 2010 IC High Mag Inspection criteria
 - MIL-STD-750 Die level Inspection Criteria TM 2017 Table 1
 - TM 2032 Passive Component inspection criteria for substrates, capacitors, inductors and resistors

Course Outline

- Hybrid Materials and Processing Overview
 - Review of terminology
- General Inspection Guidelines and Procedures
 - Visual inspection requirements flow down
 - MIL-PRF-38534 MIL-STD-883 TM 2017 TM 2010 TM 2032
- Pre Cap Visual Inspection Criteria
 - High mag MMIC and IC die inspect of active devices per TM 2010
 - Defects related to wafer fab, saw and break, probe test etc.
 - Thick film/thin film substrate defects e.g., cracks, chipouts Laser Trim defects
 - Passive component inspection per TM 2032
 - Epoxy die attach, fillet criteria for active and passive elements Eutectic solder attach
 - Epoxy attach of chip capacitors and chip resistors
 - Wirebond defects, e.g., excessive squash out, heel cracks, misplaced bonds, etc. ball bonds, wedge bonds, ribbon bonds and heavy wedge aluminum
- Foreign Material Identification and Contamination Control
- External Visual Inspection Criteria (Optional)
- Course Summary
- Student Examination Test and Review
- Student Feedback and Course Critique