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Hybrid Incoming Visual Inspection

1 DAY

Hybrids, microcircuits and microwave modules all require a visual inspection at various points throughout the manufacturing process flow. MIL-PRF-38534 requires a high magnification incoming inspection as part of element evaluation per MIL-STD-883 TM 2010. Incoming visual inspection 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. Silicon and GaAs wafer fabrication processes are explored in detail along with thick and thin film substrate processing. Color photographs of actual production defects are reviewed and discussed. Students will understand the basic fabrication processes and the typical kinds of defects that result from poorly controlled processes

The course is intended for quality assurance personnel, inspectors, lead operators and others responsible for incoming inspection and at other points in the process flow prior to final package seal.

Course Outline

Hybrid Materials and Processing Overview
Review of Terminology

Wafer Fabrication Processes
Silicon wafer processes
Gallium arsenide GaAs wafer fabrication
Thick and thin film processes

Review of Defects Found at Incoming
Defects related to wafer fab, saw and break
Airbridge and channel damage
Excessive probe marks
Chips, cracks and scratches
Residual photo resist and other defects
Thick film/thin film substrate defects, e.g., cracks, chipouts
Laser trim defects
Passive components, diodes, plate capacitors, MLCs
Hermetic packages and what to look for

Course Summary
Student Examination Test and Review
Student Feedback and Course Critique