

# QUALITY ASSURANCE & MANUFACTURING FLOW STANDARD MOLDED PROCESS

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## **PRODUCTION CONTROL MATERIAL RECEIPT**

Critical raw materials received.



## **QUALITY CONTROL GATE – INCOMING INSPECTION**

Raw materials inspected against DS-IMP procurement specifications.



## **WAFER FABRICATION**

Raw wafers are processed through diffusion, photolithography, implant, thin films, and etch. All areas use SPC to control the process.



## **QUALITY CONTROL DURING WAFER FABRICATION**

- A) Critical Dimensions
- B) Oxide Thickness
- C) Thin Film Thickness
- D) Sheet Resistivity
- E) Reflectivity
- F) CV Drift
- G) Mask Alignment
- H) Particles
- I) Etch Completion
- J) Visual Defects



## **QUALITY CONTROL GATE – WAFER ACCEPTANCE**

- A) Visual – Each wafer is visually inspected under a microscope for defects, mask alignment, and mask sequence.
- B) Parametric Test – Five specially designed test sites on each wafer are tested for process and product parameters to verify processing integrity.



## **100% DIE ELECTRICAL TEST**

All die are either 100% or sampled at electrical sort and tested for functionality and parameter conformance to wafer sort limits. Yields used for process, design, and test analysis.

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## QUALITY CONTROL MONITOR – DIE ELECTRICAL TEST

Visual Inspection for:

- A) Process Defects
- B) Probe Scratches or Other Damage
- C) Electrical Test Anomalies
- D) Correct Probe Marks



## SHIP WAFERS TO ASSEMBLY



## 100% WAFER SAW

100% Saw through and clean.



## QUALITY CONTROL MONITOR – SAW

- A) RI Wafer Resistivity
- B) Kerf Width
- C) Chips and Cracks

Criteria:

- A) Misscribed Die
- B) Scratches
- C) Smooth Cut



## QUALITY CONTROL GATE – OPTICAL INSPECTION

Per MIL-STD 883C Method 2010.8 Condition B  
LTPD = 5%



## DIE MOUNT



## QUALITY CONTROL MONITOR – DIE MOUNT INSPECTION

Die adhesion test by subcontracted assembler.

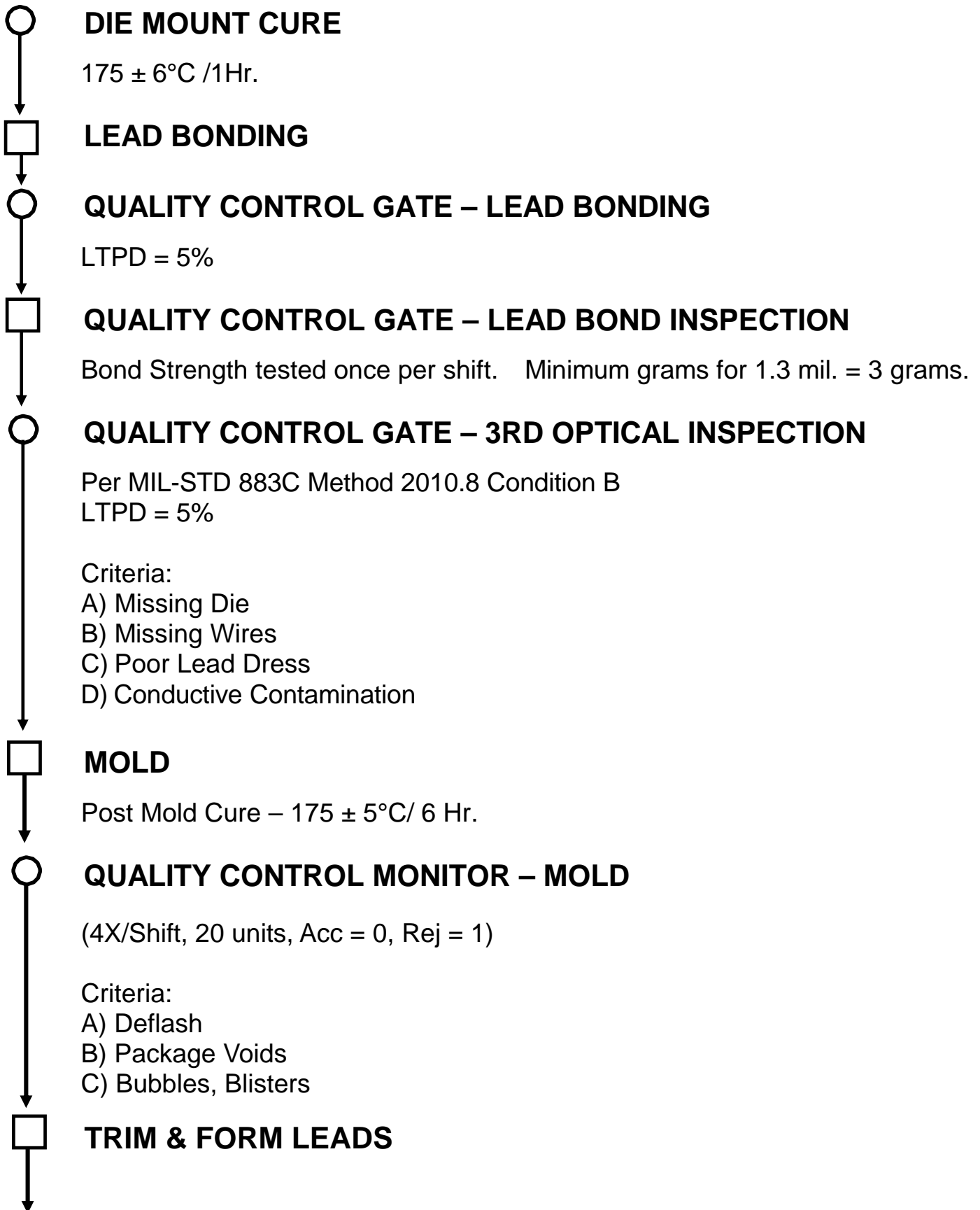
Visual inspection (4 dice 1X/ Machine/ Shift, 20 units, Acc = 0, Rej = 1)

Criteria:

- A) Scratches, Cracks on Die
- B) Die Placement, Orientation
- C) Stray Epoxy

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## QUALITY CONTROL MONITOR – TRIM & FORM

(4X/Shift, 20 units, Acc = 0, Rej = 1)

Criteria:

- A) Lead Defects
- B) Burrs or Incomplete Trim
- C) Mold Flash



## PURE TIN PLATING



## QUALITY CONTROL GATE –ELECTROPLATE

LTPD = 5%

Criteria:

- A) Missing Plating
- B) Extraneous Solder
- C) Flaking, Peeling



## QUALITY CONTROL GATE – SOLDER THICKNESS

X-ray fluroderm on 12points/package/machine/shift, from 2 strips  
The pure tin thickness=400 microinch minimum



## QUALITY CONTROL MONITOR – SOLDERABILTY

Per MIL-STD 883C Method 2003 - 6 units

Criteria:

- A) 100% Coverage on Functional Area of Lead
- B) Solder Bridging, Lump, Ball
- C) Contamination



## MARK



## QUALITY CONTROL MONITOR – MARK

(4X/Shift, 20 units, Acc = 0, Rej = 1)

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Criteria:

- A) Illegible Marking
- B) Incomplete Marking
- C) Marking Placement



## **MARK CURE**

160 ± 5°C/ 1Hr.



## **QUALITY CONTROL MONITOR – MARK PERMANENCY**

Per MIL-STD 883C Method 2015  
(2X/Shift, 22 units, Acc = 0, Rej = 1)



## **PRODUCTION FINAL TEST (25°C)**

Every unit tested for conformance to all guaranteed datasheet parameters.



## **QUALITY CONTROL GATE – ELECTRICAL TEST (25°C)**

A sample is pulled per MIL-STD 105D to guarantee an outgoing electrical AQL of 0.1% for guaranteed electrical parameters.



## **PRODUCTION FINAL VISUAL INSPECTION**

Every unit checked for correct marking, orientation, and any package defects obtained during assembly, test, or production conditioning.



## **QUALITY CONTROL GATE – FV INSPECTION**

A sample is pulled per MIL-STD 105D to guarantee an AQL of 0.1% for visually rejectable defects.



## **PRODUCTION PRODUCT LABELING & PACKAGING**



## **SHIP TO DS-IMP**



## **QUALITY CONTROL MONITOR – INCOMING INSPECTION**

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