

QUALITY ASSURANCE & MANUFACTURING FLOW STANDARD MOLDED PROCESS

□ PRODUCTION CONTROL MATERIAL RECEIPT

Critical raw materials received.

○ QUALITY CONTROL GATE – INCOMING INSPECTION

Raw materials inspected against Maxim procurement specifications.

□ WAFER FABRICATION

Raw wafers are processed through diffusion, photolithography, implant, thin films, and EPI (if required). 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**

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□ **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

○ **DIE MOUNT CURE**

175 ± 6°C /1Hr.

□ **LEAD BONDING**

○ **QUALITY CONTROL GATE – LEAD BONDING**

LTPD = 5%

□ **QUALITY CONTROL GATE – LEAD BOND INSPECTION**

Bond Strength tested once per shift. Minimum grams for 1.3 mil. = 3 grams.

○ **QUALITY CONTROL GATE – 3RD OPTICAL INSPECTION**

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

Criteria:

- A) Missing Die
- B) Missing Wires
- C) Poor Lead Dress
- D) Conductive Contamination

□ **MOLD**

Post Mold Cure – 175 ± 5°C/ 6 Hr.

○ **QUALITY CONTROL MONITOR – MOLD**

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

Criteria:

- A) Deflash
- B) Package Voids
- C) Bubbles, Blisters

TRIM & FORM LEADS



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

LEAD SOLDER PLATING OR SOLDER DIPPING



QUALITY CONTROL GATE – SOLDER DIP/SOLDER PLATE

LTPD = 5%

Criteria:

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

QUALITY CONTROL GATE – SOLDER THICKNESS



X-ray fluroderm on 5 units/lot
Solder Dip = 200 microinch minimum
Solder Plate = 300 microinch minimum

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○ **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)

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)

□ **FINAL VISUAL INSPECTION**

Criteria:

- A) Marking Defects
- B) Lead Defects
- C) Package Defects

○ **QUALITY CONTROL GATE – FV1**

AQL = .025%

□ **PACK AND SHIP TO MAXIM**

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○ **QUALITY CONTROL MONITOR – INCOMING INSPECTION**

Criteria:

- A) Check Mark Quality and Permanency per MIL-STD 883C Method 2015.4
- B) Check Lead Form and Plating Quality
- C) Check Solderability
- D) Check for any Gross Package or Lead Deformities

□ **INCOMING ELECTRICAL TEST (HOT)**

Test all parameters guaranteed by the datasheet at temperature.
AQL = 0.1%

○ **QUALITY CONTROL GATE – ELECTRICAL TEST (HOT)**

Sample pulled per MIL-STD 105D to guarantee an AQL level of 0.1% minimum for HOT Test parameters.

□ **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 VISUAL INSPECTION**

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

○ **QUALITY CONTROL GATE – VISUAL INSPECTION**

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

□ **PRODUCTION PRODUCT LABELING**

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