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.

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 ASSURANCE & MANUFACTURING FLOW
STANDARD MOLDED PROCESS

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

(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)

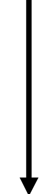
Criteria:
- A) Lead Defects
- B) Burrs or Incomplete Trim
- C) Mold Flash

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

QUALITY ASSURANCE & MANUFACTURING FLOW
STANDARD MOLDED PROCESS

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

QUALITY ASSURANCE & MANUFACTURING FLOW
STANDARD MOLDED PROCESS

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.

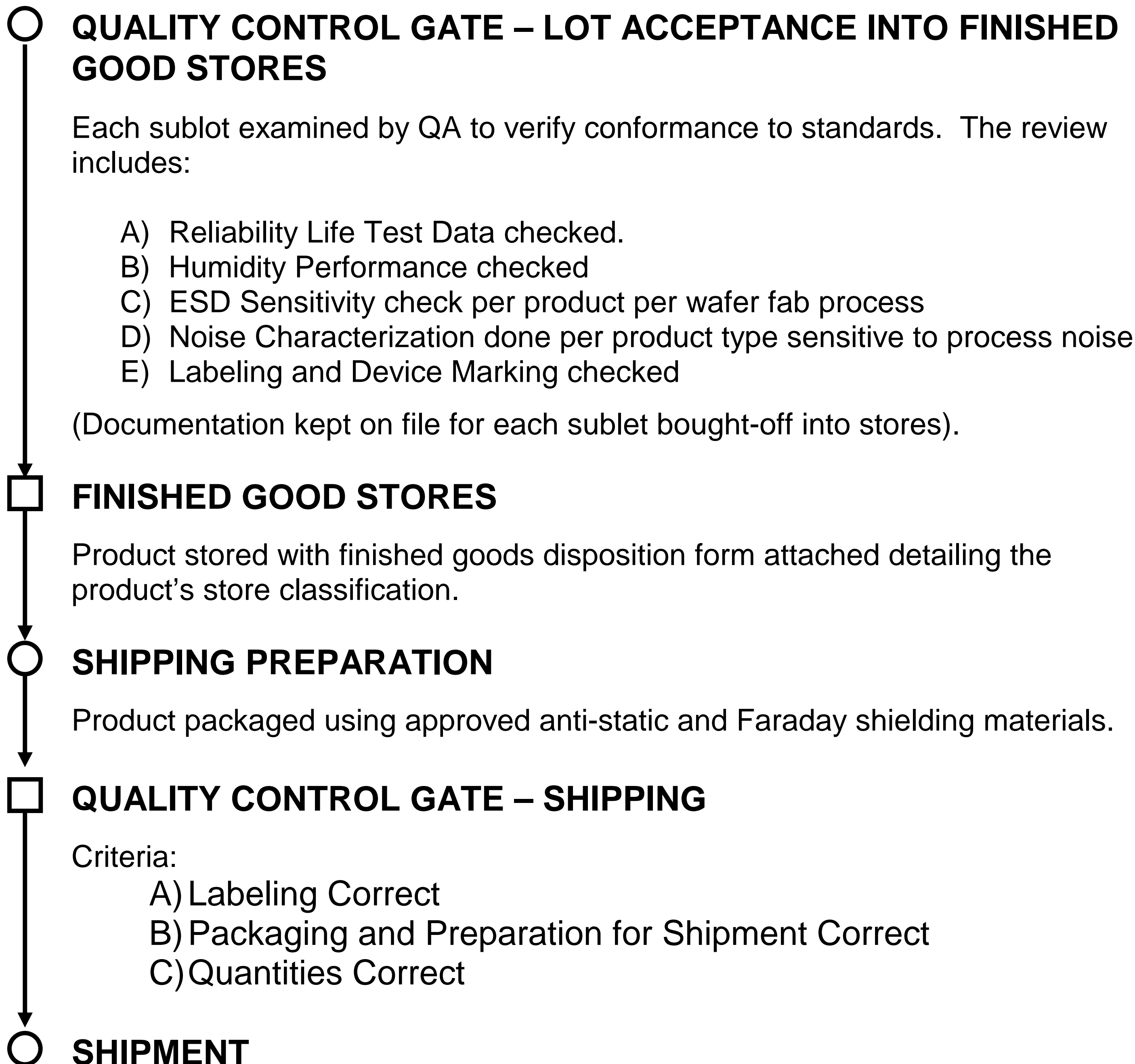
PRODUCTION VISUAL INSPECTION

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



QUALITY CONTROL GATE – LOT ACCEPTANCE INTO FINISHED GOOD STORES

Each sublot examined by QA to verify conformance to standards. The review includes:

A) Reliability Life Test Data checked.
B) Humidity Performance checked
C) ESD Sensitivity check per product per wafer fab process
D) Noise Characterization done per product type sensitive to process noise
E) Labeling and Device Marking checked

(Documentation kept on file for each sublet bought-off into stores).

FINISHED GOOD STORES

Product stored with finished goods disposition form attached detailing the product's store classification.

SHIPPING PREPARATION

Product packaged using approved anti-static and Faraday shielding materials.

QUALITY CONTROL GATE – SHIPPING

Criteria:

A) Labeling Correct
B) Packaging and Preparation for Shipment Correct
C) Quantities Correct

SHIPMENT

MAXIM