REVISIONS (Δ DENOTES CHANGE)				
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A	2019/03/05	306034	INITIAL RELEASE	J. VANDEUSEN
B	2021/01/21	309973	Update procurement specification formats, remove MIL-STD-981, Clarify EE data IAW MIL-PRF-38534 Rev L release.	J. VANDEUSEN

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES -TOLERANCES- FRACTIONS DECIMALS ANGLES

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THIRD ANGLE PROJECTION

TTM Technologies

PROCUREMENT SPECIFICATION FOR SUB-ASSEMBLIES

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1.0 PURPOSE:

The purpose of this document is to define the supplier requirements of all procured sub-assemblies used in devices. This document is used in conjunction with Document #81000.

2.0 APPLICATION:

This procedure shall apply to all sub-assemblies as follows:

2.1 **Condition A** - Elements to be used in compliance with MIL-PRF-38534 Class H devices. Element evaluation shall be performed IAW MIL-PRF-38534 Class H and data provided with delivery.

2.2 **Condition B** - Elements intended to be used in full compliance with MIL-PRF-38534 Class H but element evaluation will be the responsibility of the user. Supplier/Mfg is responsible for 100% visual and electrical.

2.3 **Condition C** - Elements to be used on devices which do not impose MIL-PRF-38534 element evaluation.

2.4 **Condition D** - Elements to be used in compliance with MIL-PRF-38534 Class K devices. Element evaluation shall be performed IAW MIL-PRF-38534 Class K and data provided with delivery.

3.0 DEFINITIONS:

3.1 **Sub-Assembly** - A standalone functional device with more than one element mounted on a substrate or in a package (ie. optocoupler, optical isolator, rf sub-assembly).

3.2 **Wafer Lot** - Wafer lots consist of semiconductor wafers formed into lots at the start of wafer fabrication for homogeneous processing as a group. Each lot is assigned a unique identifier or code to provide traceability and maintain lot integrity throughout the fabrication process. Wafer lot processing as a homogeneous group is accomplished by any of the following procedures, providing process schedules and controls are sufficiently maintained, to assure identical processing in accordance with process instructions of all wafers in the lot:

a. Batch processing of all wafers in the wafer lot through the same machine process steps simultaneously.

b. Continuous or sequential processing (wafer by wafer or batch portions of wafer lot) of all wafers through the same machine or process steps.

c. Parallel processing of portions of the wafer lot through multiple machines or process stations on the same certified line, provided statistical quality control (SQC) assures and demonstrates correlation between stations and separately processed portions of the wafer lot.

3.3 **Production Lot** - A production lot consists of a device type manufactured from the same basic raw materials on the same production line, processed under the same manufacturing techniques and controls using the same type of equipment. Each lot shall be assigned a unique identification that provides traceability to all processing steps.

3.4 **Inspection Lot** - An inspection lot shall consist of sub-assemblies of a single circuit type submitted at one time for inspection to determine compliance with the applicable requirements and acceptable criteria.

3.5 **Element Evaluation** - As applicable to this specification shall consist of sub-assemblies evaluated IAW MIL-PRF-38534.

3.6 **Environmentally Controlled Area** - An area which exhibits the following conditions:

3.6.1 Temperature shall be 25°C (+3/-5°C)

3.6.2 Class 8 per ISO 14644-1, -2 or Class 100,000 per MIL-STD-209

3.6.3 Humidity - RH 30 to 65%

3.6.4 Positive Pressure .01" water column or greater

3.6.5 Element Storage shall be in a nitrogen atmosphere dry box.

4.0 REQUIREMENTS:

4.1 **General:**

4.1.1 All material and processes used by the sub-assembly mfg will be suitable for polymeric adhesive and/or solder mounting.

As applicable to the design, pad metallization shall be suitable for thermosonic, ultrasonic and/or thermo compression bonding of gold or aluminum wire and shall be capable of withstanding a pull test as specified per MIL-STD-883, Method 2011.

4.1.2 All electrical test (100%) and visual inspection (100%) shall be done before encapsulation (as applicable) provided all rejects are identified and removed from the lot.

4.2 Packaging Requirements:

4.2.1 Packaging:

Elements shall be packaged to prevent damage during shipment and for automated assembly (use of gel packs are preferred).

4.2.2 Package Marking:

The element part number, manufacturer's name, manufacturer's lot number and quantity shall appear on each pack. All samples and test data shall be identified by its device type, manufacturer's name and manufacturer's lot number. Markings shall be sufficient for inspection lot traceability.

4.2.3 Certificate of Compliance:

As defined in document #81000.

5.0 PROCEDURE:

5.1 Condition A - Supplier requirements for sub-assemblies (Class H by vendor).

5.1.1 The supplier shall perform 100% electrical testing at 25°C to ensure compliance to the manufacturer's electrical data book and/or element drawing. Devices shall be capable of operating over full temperature range to minimum and maximum electrical data book specifications/element drawing.

5.1.2 The supplier shall have an accepted internal document for visual inspection to MIL-STD-883, Method 2017 and MIL-STD-750 Method 2069, 2070, 2072, 2073 as applicable.

5.1.3 The supplier shall perform 100% visual inspection to an in-house control document in an environmentally controlled area and ensure compliance to all visual and mechanical specifications.

5.1.4 Sub-Assembly Element Evaluation shall be performed by the supplier for each production lot in accordance with MIL-PRF-38534 for Class H elements.

5.1.5 Delivery Conditions:

a. **Packaging** - Packaging shall be IAW section 4.2 Packaging Requirements.

b. **Marking** - The device type, manufacturer's name, quantity and lot number shall appear on each pack. All samples and test data shall be identified by its device type, manufacturer's name and lot number. Markings shall be sufficient for production lot traceability.

c. **Required Documentation** - Supplier performance data to be submitted with the production lot:
   1. Sub-Assembly Element Evaluation screening/attributes Data
   2. Test Data

d. **Certificate of Compliance** as defined in Document #81000.

5.2 Condition B - Supplier requirements for sub-assemblies (Class H EE by user).

5.2.1 The supplier shall have an accepted internal document for Visual Inspection to MIL-STD-883 Method 2017 and MIL-STD-750 Method 2069, 2070, 2072, 2073 as applicable. The supplier shall perform visual inspection 100% in an environmentally controlled area and ensure compliance to all mechanical specifications.

5.2.2 Each shall be 100% electrically tested at 25°C to ensure compliance to the manufacturer's electrical database and/or element drawing. Devices shall be capable of operating over full temperature range to minimum and maximum electrical data book specifications.

5.2.3 Delivery conditions shall be in accordance with 5.1.5.

5.3 **Condition C** - Supplier requirements for sub-assemblies (Industrial)

5.3.1 The supplier shall perform 100% electrical testing at 25°C to manufacturers databook.

All electrical rejects shall be removed from the lot.