

NOTICE OF CHANGE

TINCH-POUND

MIL-STD-9768
NOTICE 1
8 December 1989

The documentation and process conversion measures necessary to comply with this notice shall be completed by 1 March 1990

MILITARY STANDARD

CERTIFICATION REQUIREMENTS FOR JAN MICROCIRCUITS

TO ALL HOLDERS OF MIL-STD-9768:

1. THE FOLLOWING PAGES OF MIL-STD-9768 HAVE BEEN REVISED AND SUPERSEDE THE PAGES LISTED:

NEW PAGE	DATE	SUPERSEDED PAGE	DATE
11	8 December 1989	11	12 February 1988
12	8 December 1989	12	12 February 1988
12a	8 December 1989	NEW	---

2. RETAIN THIS NOTICE AND INSERT BEFORE TABLE OF CONTENTS.

3. Holders of MIL-STD-9768 will verify that page changes and additions indicated above have been entered. This notice page will be retained as a check sheet. This issuance, together with appended pages, is a separate publication. Each notice is to be retained by stocking points until the military standard is completely revised or canceled.

NOTE: The margins of this notice are marked with asterisks to indicate where changes (additions, modifications, corrections, deletions) from the previous notice were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous notice.

CONCLUDING MATERIAL

Custodians:

Army - ER
Navy - EC
Air Force - 17
NASA - NA

Preparing activity:
NASA - NA

Agent:
DLA - ES

Review activities:

Army - AR, MI
Navy - SH
Air Force - 11, 19, 85, 99
DLA - ES

(Project 5962-1199)

User activities:

Army - SM
Navy - AS, CG, MC, OS

AMSC N/A

FSC 5962

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5.2.14 Sealing. Type of material and seals (solder, vitrious glass) used in production of package (TO-5, flatpack, cerdip, LCC, etc.), and the method (beam welding, resistance welding, belt furnace, etc.) shall be specified. The following shall also be specified: pre-seal bake (time, temperature, atmospheric conditions), temperature or power, moisture content of sealing environment in ppm, flow rate of gases, profile and welding controls (pressure, power, time), cleaning, and package orientation.

5.2.15 Marking. The techniques, procedures, and materials used for marking shall be specified.

5.2.16 Foreign material contamination (FMC). Procedures for a FMC control program shall be documented in accordance with MIL-STD-883, method 2010, paragraph 3. The procedures and the results of the required audits and subsequent corrective action(s) shall be made available for the qualifying activity's review. Records shall cover at least the previous three-month period except where not possible (e.g. new certification).

5.2.17 Process monitor programs. Process monitor programs required by MIL-M-38510, paragraph 3.4.1.2.7 shall have provisions for the following:

5.2.17.1 Wire bonding. The manufacturer shall monitor the wire bond strength in accordance with the manufacturer's documented procedure. The frequency of this procedure shall be performed at machine setup as a minimum. At the manufacturer's option, this procedure shall consider shift start and stop, change of operators, spools, packages, wire size, lot size, and other related factors.

5.2.17.2 Die attachment. The manufacturer shall monitor the die attachment integrity in accordance with the manufacturer's documented procedure. This procedure shall be performed at each equipment setup as a minimum. At the manufacturer's option, this procedure shall consider other related factors.

5.2.17.3 Lid sealing. The manufacturer shall monitor, as a minimum, glass frit packages for seal integrity in accordance with the manufacturer's documented procedure. A sample and test plan shall be available for review by the qualifying activity.

5.2.17.4 Lead trimming and final lead finish thickness. The manufacturer shall monitor the package lead lengths to assure meeting the applicable military detail specification for proper lead length and the final lead finish thickness in accordance with MIL-M-38510. The frequency of the lead length monitor shall be performed at each equipment setup as a minimum. A sample and test plan shall be available for review by the qualifying activity.

5.2.17.5 Inspection by scanning electron microscope (SEM). A continuing SEM program shall be established to ensure adequate process control and coverage of metallization at oxide steps, contact openings, and general metallization. A monthly (minimum frequency) SEM evaluation shall be performed on product which is in the manufacturing process. The SEM program shall establish routine control over metallization processes by process families or inspection of products.

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5.3.3 Stability of devices. To assure the stability of each process step in producing devices, the manufacturer shall have documented procedures to show that they have developed and are using tests such as high temperature reverse bias, BV_{CE0} , BV_{DS} , BV_{GO} , h_{FE} , I_{CB0} , I_{EB0} , V_T , sheet resistivity, or others. The manufacturer may be required to demonstrate these tests to the qualifying activity. Records, such as X-bar, R charts (see figure 2), shall be available with parameter limits that show control of the process used for producing devices.

5.3.4 CV plotting. Current CV plots or equivalent in accordance with method 5007 of MIL-STD-883 shall be made available to the qualifying activity. CV plotting may be required to be performed during the audit.

5.3.5 Induced wafer defects. When requested by the qualifying activity, the manufacturer shall demonstrate that the quantity of induced dislocations and other defects are not sufficient to be deleterious to the characteristics of the junctions, oxide layers or other structures built in or on the substrate.

5.3.6 Photoresist pinholes. The test method and the maximum density of pinholes shall be specified for each photoresist type.

5.3.7 Masks. The defect density (size, hard and soft, etc.) allowable on working masks, and cleaning and inspection frequencies shall be specified.

5.3.8. Epitaxy. The stacking fault count allowable of the epi-layer shall be specified and recorded.

5.3.9 Stability of conductors. The tests specified in 5.3.9.1 and 5.3.9.2 are applicable, as a minimum, to manufacturing lines on which devices having any of the following are manufactured:

- a. Conductor line widths narrower than 2 microns
- b. Multilevel structures
- c. Conductors other than doped aluminum, gold, titanium tungsten, polysilicon, or nichrome.

NEW PAGE