

| INCH-POUND |

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SUPERSEDING  
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## MILITARY SPECIFICATION

## SEMICONDUCTOR DEVICES, PACKAGING OF

This specification is approved for use by all Departments and Agencies of the Department of Defense

## 1. SCOPE

1.1 Scope. This specification covers the requirements for the preservation, packing, and container marking of semiconductor devices such as transistors and diodes (FSC 5961), fiber optic devices (FSC's 6025, 6026, 6030, 6032, 6033, and 6040), and heat sinks and mounting pads (FSC 5999) (see 6.1).

## 2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2)

## SPECIFICATIONS

## FEDERAL

- PPP-C-795 - Cushioning Material, Packaging (Flexible Closed Cell) Plastic Film for Long Shipping Cycle Applications.
- PPP-C-1752 - Cushioning Material, Packaging, Unicellular Polyethylene Foam, Flexible.
- PPP-C-1797 - Cushioning Material, Resilient, Low Density, Unicellular Polypropylene Foam.
- PPP-C-1842 - Cushioning Material, Plastic, Open Cell (for Packaging Applications).

## MILITARY

- MIL-P-116 - Preservation, Methods of.
- MIL-B-117 - Bags, Sleeves, and Tubing - Interior Packaging.
- MIL-S-19500 - Semiconductor Devices, General Specification For.
- DOD-D-24620 - Detectors, PIN, and APD Fiber-Optic, (Metric).
- DOD-S-24622 - Sources, Light Emitting Diode (LED), Fiber Optic, General Specification For.
- MIL-H-38527 - Mounting Pads, Electrical-electronic Component, General Specification For.
- MIL-B-81705 - Barrier Materials, Flexible, Electrostatic-free, Heat Sealable.
- MIL-H-87111 - Heat Sink, Electrical-electronic Component.

## STANDARDS

## FEDERAL

- FED-STD-123 - Marking for Shipment (Civil Agencies).

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Defense Electronics Supply Center, ATTN: DESC-EPE, 1507 Wilmington Pike, Dayton, Oh 45444-5292 using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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## MILITARY

- MIL-STD-129 - Marking for Shipment and Storage.
- MIL-STD-202 - Test Methods for Electronic and Electrical Component Parts.
- MIL-STD-750 - Test Methods for Semiconductor Devices.
- MIL-STD-1686 - Electrostatic Discharge Program for Protection of Electrical and Electronic Parts, Assemblies and Equipment.
- MIL-STD-2073-1 - DOD Material Procedures for Development and Application of Packaging Requirements.
- MIL-STD-2073-2 - Packaging Requirement Codes.
- MIL-STD-45662 - Calibration System Requirements.

## HANDBOOKS

- MIL-HDBK-263 - Electrostatic Discharge Control Handbook for Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices).

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.2 Non-Government publications. The following document(s) form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of the documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.2).

## AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- ASTM D 3953 - Flat Steel Strap and Connectors.

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

## 3. REQUIREMENTS

3.1 Shipments to Government activities.

3.1.1 General. The packaging terms used herein shall be in accordance with the definitions listed in MIL-STD-129, MIL-STD-1686, MIL-STD-2073-1, and MIL-HDBK-263. The following general requirements apply, as applicable, to levels A, B, and C.

3.1.1.1 Pairs and sets. Semiconductor devices furnished in pairs or sets under one national stock number (NSN) shall be unit packaged as one pair or one set, as applicable. When specified in a detail specification, matched diodes shall be packaged with a statement to that effect. Unless otherwise specified, unit of issue (e.g., each, pair, set, etc.) shall be individually unit packed.

3.1.1.2 Hardware. Hardware accompanying semiconductor devices shall be protected and enclosed within the unit pack in a manner that will not damage the device or pack. When practical or when the semiconductor devices are not otherwise protected, the hardware should be mounted on each device.

3.1.1.3 Physical protection. Semiconductor devices and accessories shall be packaged in a manner that will ensure compliance with the applicable requirements of MIL-P-116 as well as those specified herein.

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**3.1.1.4 Wrapping and cushioning and lead protection for semiconductor devices.** Leads and terminals, excluding axial leaded devices, shall be protected by container design, die-cut inserts, vials, or noncorrosive supporting materials or devices to prevent damage to the item or packaging. Leads or terminal shall extend outward and be maintained in a configuration as manufactured without causing undue loads or stresses capable of causing damage to the devices. Materials used to maintain item position and lead configuration shall permit item removal and replacement without bending the leads. All semiconductor devices shall be wrapped or cushioned with noncorrosive materials which shall not crumble, flake, powder, or shed. In addition, nonstatic generating materials shall be used for semiconductor devices susceptible to electric field force damage. For these susceptible devices, materials conforming to type II of MIL-B-81705 or bags conforming to MIL-B-117, type I, class A, style 2 shall be used as wraps or pouches, respectively. Alternatively, cushioning materials conforming to PPP-C-795, class 2; PPP-C-1752, type VII, class 4; PPP-C-1797, type II; or PPP-C-1842, type III may be used. Any materials used shall be in accordance with MIL-STD-2073-2, table IV for wrapping materials and table V for cushioning materials. No special protection is required for axial leaded devices that are not electrostatic discharge sensitive (ESDS).

**3.1.1.5 Electrostatic and electromagnetic shielding and corrosion protection.** Electrostatic and electromagnetic (as well as protection from corrosion, and contamination) shall be provided by placing the wrapped or cushioned semiconductor device in heat sealed bags fabricated with material conforming to MIL-B-117, type I, class F, style 1. For immediate use applications and for those instances where no exposure to electrostatic or electromagnetic fields are anticipated, barrier material conforming to type II of MIL-B-81705, to meet level C protection requirements, may be used. Electrostatic and electromagnetic shielding protection shall be mandatory for all:

- a. Mixer diodes (microwave diodes).
- b. MOSFET transistors (insulated gate field effect).
- c. Junction field-effect transistors.
- d. Silicon controlled rectifiers (SCR).
- e. Small signal Schottky diodes (Schottky barrier).
- f. RF (semiconductor devices not otherwise named which operate at a frequency above 1 gigahertz).

**3.1.2 Preservation.** Preservation shall be in accordance with level A or C as specified (see 6.2).

**3.1.2.1 Level A.**

**3.1.2.1.1 Cleaning.** Semiconductor devices and accessories shall be clean or be cleaned in accordance with MIL-P-116, process C-1 if necessary.

**3.1.2.1.2 Drying.** Semiconductor devices and accessories shall be dry or be dried in accordance with MIL-P-116 if necessary.

**3.1.2.1.3 Preservatives.** Contact preservatives shall not be used.

**3.1.2.1.4 Unit packs.**

**3.1.2.1.4.1 Semiconductor devices.** Semiconductor devices, including fiber optic devices MIL-D-24620 detectors and MIL-S-24622 light emitting diodes (LED), shall be unit packed one each and protected in accordance with the requirements contained herein.

**3.1.2.1.4.2 Accessories when separately acquired.** MIL-M-38527 mounting pads shall be unit packed in accordance with MIL-P-116, method III. Quantity unit packs for other than five each shall be specified (see 6.2). MIL-H-87111 heat sinks shall be unit packed in accordance with MIL-P-116, method III. Quantity unit packs shall be one each (see 6.2).

**3.1.3 Intermediate containers.** The use of intermediate containers shall be in accordance with MIL-STD-2073-1.

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3.1.4 Packing. Packing shall be level A, B, or C as specified (see 6.2).

3.1.4.1 Packing and unitization or palletization. Packing and unitization or palletization shall conform to the requirements of MIL-STD-2073-1 for the level cited. When the quantity of a stock numbered item being shipped level A to a single destination comprises a shipping container whose volume is less than 1 cubic foot (.02832 cubic meter) and weight is less than 25 pounds (11.3398 kilograms), packing shall be as specified for level B.

3.1.5 Marking.

3.1.5.1 Military. In addition to any special marking required by the contract or order, marking for levels A, B, and C shall be in accordance with the requirements of MIL-STD-129 and, when applicable, as specified in 3.1.5.1.1.

3.1.5.1.1 Special requirements. When required by the contract or order, containers shall be marked as specified.

3.1.5.1.1.1 Electrostatic discharge sensitive (ESDS) electronic devices. Unit, intermediate, and exterior packs containing ESDS devices susceptible to damage from electric field forces (see MIL-HDBK-263 for definition of electric field) shall be marked in accordance with MIL-STD-129 requirements.

3.1.5.1.1.2 MIL-S-19500 semiconductor devices, additional marking. The unit packs of those semiconductor devices acquired in conformance with MIL-S-19500, shall be additionally marked with the following:

- a. JAN prefix.
- b. Type designation.
- c. Manufacturer's designating symbol.
- d. Assembly plant code.
- e. Lot identification code.
- f. Inspection date.
- g. Reinspection date (if reinspection is applicable).
- h. Country of origin.

Serialization may be included as a serialization range of individual serialized devices.

3.1.6 Civil agencies. When specified in the contract or order (see 6.2), the marking of domestic shipments for civil agencies shall be in accordance with FED-STD-123.

3.1.7 First article and quality conformance inspections. First article and quality conformance inspections and test shall be required as specified in 4.4 and 4.5, respectively. Samples for these tests shall be furnished in accordance with the procedures outlined in 4.4 and 4.5. The performance of the visual and dimensional inspections, rough handling tests, and leakage tests shall conform to the inspections and tests outlined in 4.6.1, 4.6.2.1, and 4.6.2.2, respectively.

3.1.7.1 Functional requirements.

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3.1.7.1.1 Rough handling test (when specified, see 6.2). When packs have been tested in accordance with 4.6.2.1, all material and components comprising each pack shall be free from damage or evidence of displacement which might affect the use of the preservation method or pack. The semiconductor devices and associated accessories within the tested packs shall show no visible signs of damage. When specified in the contract (see 6.2), functional tests in accordance with the group A inspection requirements of the commodity specification shall be conducted on those semiconductor devices subjected to the rough handling test to determine freedom from operational malfunction. The examination of the devices tested under this group A inspection shall be in accordance with the visual and mechanical inspection requirements specified in method 2071 of MIL-STD-750 or the commodity specification.

3.1.7.1.2 Leakage test (when applicable). When a barrier enclosed unit pack has been tested in accordance with 4.6.2.2, there shall be no evidence of moisture within the unit pack.

3.1.7.1.3 Workmanship. The quality of workmanship shall assure acceptance of the completed preservation, packing, and marking requirements in accordance with the inspections specified in section 4.

### 3.2 Shipments to non-Government activities.

3.2.1 Non-ESD sensitive semiconductor devices. Shipments to original equipment manufacturers (OEM) and packaging distributors shall be in accordance with good commercial practices.

3.2.2 ESD sensitive semiconductor devices. Shipments of ESD sensitive semiconductor devices to OEM's and packaging distributors shall conform to the requirements as shown in table I and 3.1.1.5.

3.2.2.1 Packaging material surface resistivity. Tape and reel, waffle pack, and other type carriers used in packaging shall have a surface resistivity of less than  $10^{12}$  ohms per square.

3.2.2.2 Container. Tape and reel, waffle pack, and other type carriers used in packaging, if required, shall be placed in a bag conforming to MIL-B-117, type I, class A, style 2 or class F, style 1 using barrier material conforming to MIL-B-81705 type I, II, or III as specified (see 6.2.2).

## 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order (see 6.2), the contractor is responsible for the performance of all inspection requirements (examinations and tests) as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in this specification where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall meet all requirements of section 3. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

4.1.2 Test equipment and inspection facilities. Test and measuring equipment and inspection facilities of sufficient accuracy, quality, and quality to permit performance of the required inspection shall be established and maintained by the contractor. The establishment and maintenance of a calibration system to control the accuracy of the measuring and test equipment shall be in accordance with MIL-STD-45662.

4.1.3 Inspection conditions. All inspections shall be performed in accordance with the test conditions specified in the general requirements of MIL-STD-202.

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TABLE I. Shipments to non-Government facilities.

MIL-S-19500	Physical protection	Bag material/ construction	Marking	Part outline
<u>1/</u> Class 1 ESD sensitive				
<u>Diodes:</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	
Mixer (microwave)	Use materials with surface resistivity less than $10^{12}$ ohms per square	Tape and reel wrapped in MIL-B-81705, type I, II, or III material, if required (see 6.2.2); waffle and tube packs made of or wrapped in MIL-B-81705, type I, II, or III material, if required (see 6.2.2)	See 3.1.5	
/128				Coaxial
/130				Coaxial
/183				Coaxial
/186				Coaxial
/191				
/232				Coaxial
/233				
/234				Coaxial
/238				Coaxial
/250				
/321				Coaxial
/322				Coaxial
/334				Coaxial
/352				Coaxial
/353				Coaxial
/362				Coaxial
/364				
Schottky barrier				
/553	Same as mixer	Same as mixer	See 3.1.5	D04
/554				D05
/567				D05
<u>Thyristor:</u>				
Silicon Controlled Rectifier(SCR)				
/108	Same as mixer	Same as mixer	See 3.1.5	T048
/168				T064
/198				
/203				T0208ms
/204				T094
/276				T05
/280				T094
/372				
/386				
/419				T018
/513				T018
<u>Transistor:</u>				
Junction field-effect				
/292	Same as mixer	Same as mixer	See 3.1.5	
/294				
/295				

See footnotes at end of table.

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TABLE I. Shipments to non-Government facilities - Continued.

MIL-S-19500	Physical protection	Bag material/ construction	Marking	Part outline
<u>1/</u> Class 1 ESD sensitive				
/295				
/296	<u>2/</u>	<u>2/</u>	<u>2/</u>	
/375				T072
/378				T072
/385				T018
/428				T072
/430				T071
/431				T018
/476				T018
/571				T072
/579				DIP
MOSFET				
/542	Same as mixer	Same as mixer	See 3.1.5	T03
/543				T03
/547				T039
/555				T039
/556				T039
/557				T039
/562				T03
/563				T020SAF
/564				T039
/565				T03 and T039
/566				T03 and T039
/568				T061
/569				T066
/570				T039
/591				T03
/592				T0254
/593				T0254
/594				T03
/596				T0254
RF				
/301	Same as mixer	Same as mixer	See 3.1.5	T072
/341				T039
/343				T072
/398				T039
/426				T072
/442				
/453				T039
/522				T0244
/584				

1/ All semiconductor devices not defined in table I shall be preserved and packaged as defined in 6.2.2 herein. The packaging marking shall be as defined in 3.1.5.

2/ The first requirement cited for each device type shall apply to the remaining detail specifications in this column, except as noted.

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4.2 Classification of inspections. The inspections specified herein are classified as follows:

- a. Materials inspection (see 4.3).
- b. First article inspection (see 4.4).
- c. Quality conformance inspection (see 4.5).

4.3 Materials inspection. Materials inspection shall consist of certification supported by verifying data that the materials used are in accordance with the applicable requirements specified herein.

4.4 First article inspection. When specified (see 6.2), first article inspection shall be performed by the contractor, after award of contract and prior to production at a time and location acceptable to the Government. First article inspection shall not be required:

- a. When there have been no changes in material, processes, or packaging design that will adversely affect the item protection since the last recorded inspection.
- b. When the acquisition activity waives requirements for first article inspection.
- c. When level C protection is specified.
- d. When prior successful inspection was conducted on a like item and pack (subject to approval of the administrative contracting officer).

4.4.1 Sample size. One sample unit consisting of a level A or level B, as applicable, fully packed shipping container shall be submitted for first article inspection. The sample for the rough handling test shall consist of the pack selected for the first article inspection. The sample for the leakage test shall be five unit packs selected at random for the first article exterior (shipping container).

4.4.2 Inspection routine. The sample shall be subjected to the inspections specified in tables II and III. The leakage test, when applicable, shall follow the rough handling test.

4.4.3 Failures. One or more failures shall be cause for refusal to grant first article approval.

4.4.4 Resubmission of first article sample. If the sample fails to pass first article inspection, the contractor shall change the preservation and packing processes to correct the cause of the deficiency. First article inspection shall be performed on a corrected sample to prove that the corrective action is acceptable.

TABLE II. Visual and dimensional inspections.

Major defects	Requirement paragraph	Method paragraph
Packaging materials not conforming to referenced specification requirements	3.1.1.4, 3.1.1.5, and 3.2.2	4.6.1
Insufficient field force protection (shielding)	3.1.1.4, 3.1.1.5, and 3.2.2	
Punctured or improperly fabricated barrier bag	3.1.1.4, 3.1.1.5, and 3.2.2	
Unclean or improperly cleaned items	3.1.2.1.1	
Incorrect preservation method	3.1.2	
Wrong quantity per unit pack	3.1.2.1.4.1 and 3.1.2.1.4.2	
Nonusable or incorrect applications of intermediate containers	3.1.3	
Improper box closures	3.1.4	
Omitted, incorrect, or illegible marking	3.1.5	



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TABLE III. Functional inspections.

Major defects	Requirement paragraph.	Method paragraph
Rough handling (when specified)	3.1.7.1.1	4.6.2.1
Leakage (when applicable)	3.1.7.1.2	4.6.2.2

4.5 Quality conformance inspection. This inspection shall consist of the inspections and tests specified in tables II and III, respectively.

4.5.1 Shipments to Government activities.

4.5.1.1 Inspection lot. An inspection lot, as far as practicable, shall consist of unit or exterior (shipping) packs produced under essentially the same conditions and offered for inspection at one time. For the purpose of selecting samples to be inspected and tested for compliance with the requirements of this specification, either items in process or completed packs except as stated herein, may be combined into lots without regard to individual items, contracts, or the quantities therein. Unit packs of the same size and made from the same packaging materials may be grouped together except when item complexity, item value, or the complexity of the preservation method warrants that the inspection of such items be performed on a separate basis. A separate application of the sampling or inspection procedure shall be made on these items. The combination of the items to be subjected to inspection shall be determined by either the Government or the contractor, subject to the approval of the Government.

4.5.1.2 Visual and dimensional inspection. Visual and dimensional inspection shall consist of those inspections specified in table II.

4.5.1.3 Sample plan. A sample of five packages shall be randomly selected. If one or more defects are found, the inspection lot shall be screened and the defective packages removed. A new sample of five packages shall be randomly selected. If any of the defects are found in the second sample, the inspection lot shall be rejected and shall not be supplied as in compliance with this specification.

4.5.1.4 Rejected lots. If an inspection lot is rejected, the contractor may rework it to correct the defects, or screen out the defective units, and resubmit for reinspection. Resubmitted lots shall be inspected using tightened inspection. Such lots shall be separate from new lots, and shall be clearly identified as reinspected lots.

4.5.1.5 Disposition of sample units. Sample units which have passed all the inspections specified in table II may be delivered on the contract, provided the lot is accepted.

4.5.2 Shipments to non-Government facilities. Shipments to non-Government facilities shall be for visual and dimensional inspections specified in table II.

4.5.3 Functional inspection. Functional inspection shall consist of the tests specified in table III.

4.5.3.1 Sampling plan. Sampling plan shall be as follows:

- a. One sample unit for the rough handling test shall be selected whenever the design of the item or package is changed.
- b. For unit packs requiring waterproof or water-vaporproof barriers, five sample units for the leakage test shall be selected daily at random from the first lot processed each day. Five additional samples shall be selected at random from the day's total production.

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- c. The leakage test shall be performed following the rough handling test on unit packs requiring waterproof or water-vaporproof barriers. Five sample units or the number of units contained within the shipping container (if less than five) shall be selected.

4.5.3.2 Failures. One or more failures shall be cause for rejection of the lot.

4.5.3.3 Disposition of sample units. Sample units which have passed the inspections specified in table III may be delivered on the contract if the lot is accepted and opened packs have been reprocessed.

4.5.3.4 Noncompliance. If a sample fails to pass the inspections specified in table III, the contractor shall take corrective action on the materials or processes or both, as warranted, on all unit, intermediate, and exterior (shipping) packs which can be corrected and which were processed under essentially the same conditions, with essentially the same materials, and which are considered subject to the same failure. Acceptance of the unit, intermediate, and exterior packs shall be discontinued until corrective action has been taken and the applicable inspections specified in table III have been repeated on additional sample units. All inspections or the inspection which the original sample failed shall be at the option of the Government. Inspections specified in table III may be reinstated; however, final acceptance shall be withheld until the reinspection in accordance with table III has shown that the corrective action was successful. In the event of failure after reinspection, information concerning the failure and corrective action taken shall be furnished to the administrative contracting officer.

4.6 Methods of inspection and tests.

4.6.1 Visual and dimensional inspections. Units, intermediate, and exterior packs shall be examined to verify that the materials, designs, methods, physical limitations, marking, and workmanship are in accordance with the applicable requirements (see 3.1 through 3.2).

4.6.2 Functional tests.

4.6.2.1 Rough handling. Packs shall be subject to the applicable rough handling tests and the interpretation of results or cause for rejection as specified in 3.1.7.1.1 and MIL-P-116.

4.6.2.2 Leakage. When a waterproof or water-vaporproof barrier is required, the unit pack shall be subjected to the applicable leakage test and interpretation of results specified in 3.1.7.1.2 and MIL-P-116.

## 5. PACKAGING

This section is not applicable to this specification.

## 6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The preservation, packing, and marking specified herein are intended for direct shipments to the Government and to original equipment manufacturers (OEM) and packaging distributors. Unless otherwise designated, the general requirements (3.1.1) and marking requirements (3.1.5) are applicable for the shipment of semiconductors and accessories to Government activities only.

6.2 Acquisition requirements.

6.2.1 Shipments to Government activities. Acquisition documents must specify the following:

- a. Title, number, and date of the specification.
- b. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1).
- c. Levels of preservation and packing (see 3.1.2 and 3.1.4).
- d. Quantity per unit pack, if other than specified (see 3.1.2.1.4.1 and 3.1.2.1.4.2).

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- e. Method of preservation, if other than that specified (see 3.1.2).
- f. If a unitized load is not required for shipment to one destination when total quantities are equal to 40 cubic feet (1.1328 cubic meters) or more (see 3.1.4.1).
- g. Whether any other standard or special marking is required (see 3.1.5).
- h. If FED-STO-123 is required for civil agency marking (see 3.1.6).
- i. If a rough handling test is required (see 3.1.7.1.1).
- j. If semiconductor devices functional tests are required (see 3.1.7.1).
- k. If the contractor is not responsible for the performance of all inspection requirements (see 4.1).
- l. If first article inspection is not required (see 4.4).

6.2.2 Shipments to non-Government activities. Acquisition documents should specify the following:

- a. Title, number, and date of the specification.
- b. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1).
- c. Levels of preservation and packing and specify the packaging material to be used if the item is an ESDS device (see 3.2.2.2 and MIL-STO-2073).
- d. Whether any standard or special markings are required.
- e. Quantity per unit pack.

6.3 Inspection for first article. The sample pack submitted for first article inspection (when satisfactorily performed as specified in 4.4) will serve as the production standard for subsequent packaging operations. The contractor should inform the acquisition activity or the activity administering the contract of the time and location of the inspection so that the Government representative will have an opportunity to witness the tests.

6.4 Definition. A hermetic seal is defined as a fusion of metal to metal, glass to glass, or metal to glass.

6.5 Subject term (key word) listing.

Electrostatic discharge protection  
 Environmental field force protection  
 Semiconductor device  
 Diode  
 Transistor  
 Packing  
 Physical protection  
 Shielding  
 Special marking

6.6 Changes from previous issue. Asterisks are not used in this revision to identify changes with respect to the previous issue, due to the extensiveness of the changes.

# STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

## INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

**NOTE:** This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

<b>I RECOMMEND A CHANGE:</b>		1. DOCUMENT NUMBER MIL-S-19491G	2. DOCUMENT DATE (YYMMDD)
3. DOCUMENT TITLE Semiconductor Devices, Packaging Of			
4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)			
5. REASON FOR RECOMMENDATION			
<b>6. SUBMITTER</b>			
a. NAME (Last, First, Middle)		b. ORGANIZATION	
c. ADDRESS (Include Zip Code)		d. TELEPHONE (Include Area Code) (1) Commercial (2) AUTOVON (If Applicable)	e. DATE SUBMITTED (YYMMDD)
<b>8. PREPARING ACTIVITY</b>			
a. NAME		b. TELEPHONE (Include Area Code) (1) Commercial (2) AUTOVON	
c. ADDRESS (Include Zip Code)		<b>IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:</b> Defense Quality and Standardization Office 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466 Telephone (703) 756-2340 AUTOVON 289-2340	