

NOTICE OF CHANGE

NOT MEASUREMENT SENSITIVE

MIL-STD-1285C
NOTICE 1
22 August 2003

DEPARTMENT OF DEFENSE
STANDARD PRACTICE

MARKING OF
ELECTRICAL AND ELECTRONIC PARTS

TO ALL HOLDERS OF MIL-STD-1285C:

1. THE FOLLOWING PAGES OF MIL-STD-1285C HAVE BEEN REVISED AND SUPERSEDE THE PAGES LISTED:

NEW PAGE	DATE	SUPERSEDED PAGE	DATE
2	27 September 1999	2	22 August 2003
3	27 September 1999	3	22 August 2003
4	27 September 1999	4	22 August 2003
5	27 September 1999	5	Reprinted without change
6	27 September 1999	6	22 August 2003
7	27 September 1999	7	22 August 2003
10	27 September 1999	10	22 August 2003
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29	27 September 1999	29	Reprinted without change
36	27 September 1999	36	22 August 2003
37	27 September 1999	37	Reprinted without change
38	27 September 1999	38	22 August 2003
39	27 September 1999	39	22 August 2003
40	27 September 1999	40	22 August 2003
41	27 September 1999	41	22 August 2003
42	27 September 1999	42	22 August 2003
43	27 September 1999	43	Reprinted without change
44	27 September 1999	44	Reprinted without change
45	27 September 1999	45	22 August 2003
46	27 September 1999	46	22 August 2003
47	27 September 1999	47	Reprinted without change

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

3. Holders of MIL-STD-1285C 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 standard is completely revised or canceled.

Custodians:
Army – CR
Navy – EC
Air Force – 11
NASA – NA

Preparing activity:
DLA – CC
(Project 59GP-0193)

AMSC N/A
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AREA 59GP

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2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section in sections 3, 4, and 5 of this standard. This section does not include documents cited in other sections of this standard or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must all specified requirements documents cited in sections 3, 4, and 5 of this standard, whether or not they are listed.

2.2 Government documents.

2.2.1 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 issue of these documents are supplement thereto, cited in the solicitation (see 6.2).

STANDARDS

DEPARTMENT OF DEFENSE

- MIL-STD-104 - Limits for Electrical Insulation Color.
- MIL-STD-129 - Military Marking for Shipment and Storage.
- MIL-STD-130 - Identification Marking of U.S. Military Property.
- MIL-STD-1686 - Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices) (Metric).

HANDBOOKS

DEPARTMENT OF DEFENSE

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

(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Document Automations and Production Service, Building 4D (DPM-DODSSP), 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.2.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issue are those cited in the solicitation.

H4/H8 Section A - Commercial and Government entity (CAGE) (Name to Code).

(Application for copies of Cataloging Handbook H4/H8 should be addressed to Commander, Defense Logistics Service Center, ATTN: DLSC-WP, Federal Center, Battlecreek, MI 49017-3084.)

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2.3 Non-Government publications. The following documents 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 documents not listed in the DoDISS are the issues of the documents cited in the solicitation.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Y10.5 - Letter Symbols for Quantities Used in Electrical Science and Electrical Engineering.

(Application for copies should be addressed to the American National Standards Institute, 1430 Broadway, New York, NY 10018.)

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME-Y14.100 - Engineering Drawing and Related Documentation Practices.

(Application for copies should be addressed to the American Society of Mechanical Engineers, 22 Law Drive, Post Office Box 2900, Fairfield, NJ 07007-2900.)

ELECTRONIC INDUSTRIES ALLIANCE (EIA)

EIA-359 - EIA Standard Colors for Color Identification and Coding.
EIA-STS-625 - Requirements for Handling Electrostatic-Discharge-Sensitive (ESDS) Devices.

(Application for copies should be addressed to the Electronic Industries Alliance, 2500 Wilson Boulevard, Arlington, VA 22201-3834.)

INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS (IEEE)

IEEE 315 - Graphic Symbols for Electrical and Electronic Diagrams.

(Application for copies should be addressed to the Institute of Electrical and Electronics Engineers (IEEE), Service Center, Post Office Box 1331, 445 Hoes Lane, Piscataway, NJ 08654-1331.)

2.4 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.

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3. DEFINITIONS

3.1 Acquisition document. The Department of Defense specification (including specification sheets, associated specifications, and military sheet form standards), engineering drawing, or specification used for acquisition purposes.

3.2 Altered item drawing. When the physical alteration of an existing item, such as that defined by an existing drawing, specification, or standard is required alteration will be depicted on an altered item drawing.

3.3 Commercial and Government Entity (CAGE). The five-position alpha numeric number assigned to manufacturing and nonmanufacturing organizations that design or manufacture-assemble an item of supply acquired and catalogued by DoD agencies (formerly FSCM, as specified in ASME Y-14.100).

3.4 Commercial item. A term which includes both supplies and parts of a class or kind which is regularly used for other than Government purposes and sold or traded in the course of conducting normal business operations.

3.5 Commercial off the shelf (COTS) products (also referred to as commercial products). Products in regular production sold in substantial quantities to the general public or industry at established market or catalog prices.

3.6 Design activity. The activity having responsibility for the design of an item. It may be a Government activity, contractor, vendor, or other.

3.7 Design activity, current. The activity currently having responsibility for the design, drawing preparation, and maintenance of the design. Current design activity could be the original design activity or a new activity that accepted transfer of responsibility from another Government activity or contractor.

3.8 Design activity, identification. The design activity's CAGE (see 3.3) or NATO Supply Code for Manufacturers (NSCM) (see 3.15).

3.9 Design activity, original. The activity that had original responsibility for the design of an item and whose drawing number and CAGE code appear in the title block of the drawing.

3.10 Document. The specifications, drawings, lists, standards, pamphlets, reports, or other information (printed or typewritten) relating to the design, acquisition, manufacture, test, or inspection of items under contract.

3.11 Electrostatic discharge (ESD) sensitive devices. Electronic parts having highly sensitive characteristics and delicate, miniaturized construction which are susceptible to damage or degradation, in various degrees, from environmental field forces (electrostatic, electromagnetic magnetic, or radioactive). This susceptibility also extends to the standard electronic modules, printed circuit boards, printed wiring boards and circuit card assemblies containing one or more of these sensitive electronic parts.

3.12 Functional marking. The symbols, letters, numbers, and similar marking applied to indicate polarity, circuitry, and similar functional characteristics.

3.13 Manufacturer. A person or firm who owns or leases and operates a factory or establishment that produces (on the premises) materials, supplies, articles, or equipment required under the contract (or for the general character described by the specifications, standards, and publications).

3.14 Manufacturer's identification. The actual manufacturer's name, CAGE (see 3.3), or NSCM (see 3.15) that identifies the place of manufacture.

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3.15 NATO supply code for manufacturers (NSCM). The five position alpha numeric code that is assigned to an organization entity, located in a country other than the United States or Canada, that maintains design control or is a source of supply for items acquired by agencies of the Federal Government, NATO member nations, and other participating friendly Governments (as specified in Cataloging Handbook H4/H8).

3.16 Order of precedence. The priority for selecting markings when minimum marking is specified.

3.17 Part or Identifying Number (PIN). The number used to identify an item. It is assigned by the design activity whose engineering drawings, specifications, standards, and inspection requirements control the design of the item. It may be a specification, drawing, part, model, type, or catalog number depending on the numbering system of the design activity.

3.18 Part or Identifying Number (PIN) marking. The typographical marking (method I) or color coding (method II) to be applied to the part, tag, label, or unit package to identify the part.

3.19 Physical characteristics marking. The symbols, letters, numbers, color codes, and similar markings applied to indicate terminals, leads, and similar physical characteristics.

3.20 Selected item drawing. Tightened or redefined acceptance criteria, such as selection for fit, reliability requirements, or limits within the capability range of existing items such as that depicted on an existing drawing, specification, or standard, will be delineated on a selected item drawing.

3.21 Sequence of markings. The order for specifying the physical location of markings selected in accordance with the order of precedence.

3.22 Source control drawing. A source control drawing depicts an existing commercial or vendor item which exclusively provides the performance, installation, and interchangeable characteristics required for one or more specific critical applications.

3.23 Special characteristics. The pertinent rating, operating characteristics, and other information necessary for the identification of the item.

3.24 Specification data. Information such as specification number, type, grade, class, or other identifying data.

3.25 Typographical marking. The marking of the part with printed letter or number characters.

3.26 Vendor item drawing. A vendor item drawing depicts an existing commercial item or vendor-developed item advertised or catalogued as available on an unrestricted basis on order as an "off-the-shelf" item or an item while not commercially available, is acquirable on order from a specified segment of an industry.

3.27 Warranty. A warranty is the contractual agreement between the Government and the contractor relative to the nature, usefulness, or condition of the item(s) furnished under the contract. Warranty duration is expressed in terms of hours, days, months, and number of operations. Warranty markings give notice to a user whether the item(s) is subject to the warranty provisions.

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4. GENERAL REQUIREMENTS

4.1 General. Functional and part identification marking shall be applied in the location specified in the acquisition document. Where size, surface condition, or other design considerations will not allow marking in accordance with either method I or II, the acquisition document shall specify the method of application (unit package, tag, or label), and the exact marking requirements. Special marking (caution warnings, radioactive) also shall be as specified in the acquisition document. Identification and marking requirements shall be in accordance with sections 4 and 5 of this standard, the applicable FSC section of this standard, and the peculiarities as included in the acquisition document. In the event of conflict between this standard and an acquisition document, the acquisition document shall govern. In the event of conflict between sections 4 and 5 and the requirements of the appendixes, the appendixes shall have precedence.

4.2 Marking process. Any marking process that will not adversely affect the function of the finished part may be used. Any tags used shall have all burrs and rough edges removed. In addition:

- a. Marking shall remain legible following completion of all inspections specified in the acquisition document for the normal life expectancy of the part (see 6.3).
- b. Marking materials shall be nonfading.
- c. Paper labels for attachment to part shall not be used.

4.3 Symbols. Symbols used in functional and part identification marking shall be in accordance with ANSI Y10.5 or IEEE 315.

4.4 Polarity and functional markings. Parts having polarized or other functional characteristics shall always be marked with a polarity symbol or indicators for special flow direction, rotation direction, and connections, as specified in the acquisition document. These markings, as applicable, take precedence over all other marking.

4.5 Part identification marking. Each part shall be marked in accordance with the full marking or minimum marking requirements stated herein, as specified in the acquisition document. Any other markings that may be applied to the part shall not interfere with, obscure, or confuse those specifications specified herein.

4.5.1 Approved standards marking (see ASME-Y14.100). An item covered by an approved standard and used without alteration or selection shall be identified by the standard PIN (such as MS number for Department of Defense specification sheets, see figure 1).

4.5.2 Approved government specification marking (ASME-Y14.100). An item covered by an approved government specification containing a part identification system and used without alteration shall be identified by that part identification (see figure 1).

4.5.3 Marking parts acquired from, but not manufactured by, the design activity (see MIL-STD-130). When the design activity uses subcontractors for manufacture of an item, but retains full design control, quality assurance control, and full responsibility to the acquiring activity for the delivered product, only the design activity's CAGE code is required as part of the identifying number. If design control, quality control, or delivered product warranty responsibility is delegated to such subcontractor, then the design activity's and subcontractor's CAGE codes are required to be marked on the item.

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RER65F1001M	M39XXX/1-1406L	- Identifying number
JAN ZZZ	JAN ZZZ	- "JAN" brand and trademark
12345 7133A	12345 7133A	- Source code; date code; lot symbol
1,000 Ω \pm 1%	140 μ F \pm 5% 6 V	- Characteristics and ratings
	XXXXXXXXX	- ESD symbol if required

FIGURE 1. Method I marking example for approved standards or government specifications (see 4.5.1 and 4.5.2)

4.5.4 Marking of altered or selected items (ASME-Y14.100). Items which are altered or selected from the controlling specification or standard shall be identified by CAGE code and a part number established by the using design activity drawing which depicts requirements for such alterations or selection.

4.5.5 Marking of source control items (see MIL-STD-130). When marking of source control items, they shall be marked with the design activity's CAGE or NSCM code, the source control notation (SOCN), and the source control part number; (such as, 12345SOCN80678932). The vendor's CAGE code and identifying number need not be removed.

4.5.6 Marking of vendor items (see MIL-STD-130). When marking vendor items, they shall be marked with the manufacturer's (vendor's) PIN preceded by the manufacturer's CAGE or NSCM code. The vendor drawing number shall not be used to physically reidentify the item from the original design activity's PIN. In the event that a vendor item is a commercial off the shelf (COTS) item, as specified in 4.5.7.

4.5.7 Marking of commercial off the shelf (COTS) items (see MIL-STD-130). COTS items marked with commercial identification and which present no identification difficulty may be exempt from additional marking requirements unless otherwise specified by contract or order. This exemption extends to vendor items identified as COTS.

4.5.8 Marking of reidentified items (see ASME-Y14.100). When items are identified by more than 15 characters (not including the CAGE or NSCM code), or do not meet the other requirements of ASME-Y14.100 and a design activity has no control over this assignment, it may assign a design activity control number to the item to meet the identification requirements of that standard (NOTE: DoD specifications that are authorized to exceed the 15 digit limitations are exempt from this requirement).

4.5.9 Method I (typographical marking). The applicable markings of table I shall be individually marked on the part or unit package where necessary. Letters shall be without serifs (sans-serifs) such as Gothic or Futura capitals, and the numeral shall be Arabic except when Roman numerals are used for type designation in DoD specifications and standards. Characters generated by automation techniques (such as interactive graphic systems or stencil) are permitted. Numbers, symbols, trademarks, and other like markings shall be similar in appearance and size to the lettering. When marking processes include the use of marking materials such as inks or paints, these materials shall contrast with the body color of the part to insure legibility. The acquisition document shall specify the sequence and division of line spacing of marking based on the order of precedence specified in table I. However, the sequence may deviate from the order of precedence to accommodate the part configuration and peculiarities of identification marking.

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5. DETAILED REQUIREMENTS

5.1 Physical characteristics marking. Physical characteristics marking shall be as specified in the acquisition document. When color-coding is required to identify "numbered" terminals, the colors shall conform to color sub-column of table II. When the electrical insulation of terminal leads is color coded to identify "numbered" terminals, the colors shall be in accordance with MIL-STD-104.

5.2 Typographical marking (method I). When method I marking is specified in the acquisition document, the general and detailed requirements shall be as specified herein.

5.2.1 Identifying number. The identifying number shall be as specified in the acquisition document. The identifying number may be a part number as specified in DoD specification ASME-Y14.100, a type number (such as 1N2100W or F-1A), or a type designation (such as RNR50C1050FM), or a number identifying a definitive acquisition document which specified the requirements for the part and the applicable CAGE codes of the manufacturer and design activity. All parts may be marked with a logo, in lieu of the CAGE code, if the product specification or contract so determines they are too small to be marked with a CAGE code.

5.2.2 Design activity code. The design activity CAGE code is part of the item identification number and where the manufacturer is not the design activity, both CAGE codes are required on the item except for DoD specification or approved standards parts (see 6.4). If the CAGE code and the part number are applied on one line, a dash or virgule shall separate the number from the code.

5.2.3 "JAN" and "J" marking. The "JAN" and "J" shall be applied only to parts when authorized by a DoD specification.

5.2.3.1 "JAN" and "J" marking (for DoD specifications only). The United States Government has adopted, and is exercising legitimate control over the certification marks "JAN" and "J", respectively, to indicate that items so marked or identified are manufactured to, and meet all the requirements of specifications. Accordingly, items acquired to, and meeting all of the criteria specified herein and in applicable specifications shall bear the certification mark "JAN" except that items too small to bear the certification mark "JAN" shall bear letter "J". The "JAN" and "J" shall be placed immediately before the part number except that if such location would place a hardship on the manufacturer in connection with such marking, the "JAN" or "J" may be located on the first line above or below the part number. Items furnished under contracts or orders which either permit or require deviation from the conditions or requirements specified herein or in applicable specification shall not bear "JAN" or "J". In the event an item fails to meet the requirements of this specification and the applicable specification sheets or associated specification, the manufacturer shall remove completely the military part number and the "JAN" or the "J" from the sample tested and also from all items represented by the sample. The "JAN" or "J" certification mark shall not be used on products acquired to contractor drawing or specifications. The United States Government has obtained Certificate of Registration Number 504,860 for the certification mark "JAN" and "JAN" and Registration Number 1,586,261 for the certification mark "J".

5.2.4 Source code. The source code shall identify the manufacturer's plant where the specified conformance inspection is performed, or where design and verification responsibility and control is exercised, and shall be the five digit alpha numeric number assigned in accordance with Cataloging Handbook H4/H8.

5.2.5 Date code. A four digit number shall identify the date of the inspection lot and shall be in accordance with the following:

- a. Year: The first digits shall correspond to the last two digits of the calendar year.
- b. Week: The last digits shall indicate the week of the calendar year. If only one number is required to indicate the week, it shall be preceded by a zero. The first week shall be considered the week in which the first Thursday of the year falls. The first day of the week shall be considered Sunday.

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5.2.6 Lot symbol. Where a lot symbol is required by the acquisition document, a single letter shall be used to identify a production lot. The letters shall be assigned alphabetically; however, letters "I", "O", "Q", "S", and "U" shall not be used. Where a single letter lot symbols do not cover the number of the lots produced, double letters (such as AA, BB, ... AB, AC,... BA) shall be used.

5.2.7 Characteristics and ratings. Characteristics and ratings shall be as specified in the acquisition document.

5.2.8 Distributor's symbol. The distributor's symbol may be marked on the part only when authorized by the manufacturer of the part.

5.3 Color coding (method II). When method II marking is applicable, requirements shall be specified in the acquisition document. Color codes for part identification marking shall be as specified in table II. Requirements shall be coded by using dots or bands as specified in the acquisition document.

5.3.1 Part. Certain parts shown in table II shall be identified as such by a single dot or band. This code element, which has no numerical or functional significance, shall be twice the width or diameter of all other code elements and shall simply signify that it is a particular kind of a part. This first code element shall determine from which direction to read the significant code elements. When specified in the acquisition document, the code element also shall indicate polarity or other terminal identification.

5.3.2 Electrical characteristics. Functional designations used to denote electrical characteristics, such as resistance, capacitance, and inductance shall be as specified in table II, unless otherwise specified in the FSC section.

5.3.3 Other characteristics and ratings. Other characteristics and ratings shall be as specified in the acquisition document.

5.4 Electrostatic discharge (ESD) sensitive device items.

- a. Electrical and electronic parts classified as sensitive to damage from electrostatic discharge in accordance with MIL-STD-1686 or EIA-STD-625 (as specified in each specification) and MIL-HDBK-263 shall be marked in accordance with the ESD symbol (see figure 2).
- b. Assemblies containing ESD parts shall be marked with the ESD symbol. This symbol shall be so located as to be readily visible when the assembly is installed in its next higher assembly, if applicable. When the physical size of the assembly precludes direct marking of the ESD symbol, the assembly shall be marked on an identification tag and attached securely to the assembly. The ESD unit pack shall be marked in accordance with MIL-STD-129.

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APPENDIX G

FSC 5935 - CONNECTORS

G.1 SCOPE

G.1.1 Scope. The following define the requirements that pertain to both commercial and military electronic devices. Where the requirements are not stated, refer to sections 4 and 5 herein. This appendix is a mandatory part of this standard. The information contained herein is intended for compliance.

This appendix establishes the marking requirements that apply to a specific FSC. These requirements are to be applied in addition to the requirements of sections 4 and 5 herein. In the event of conflict between this appendix and section 4 or 5, the appendix shall take precedence.

G.2 APPLICABLE DOCUMENTS. This section is not applicable to this appendix.

G.3 GENERAL REQUIREMENTS

G.3.1 Functional marking.

G.3.1.1 Functional marking. Functional marking shall be as specified in the acquisition document.

G.3.2 Part identification marking.

G.3.2.1 Connector marking. Marking of conductors shall conform to method I.

G.3.2.2 Marking location. All marking shall be on the shell of the connector unless space is not adequate for full part number or for legibility. In such cases the coupling ring may be marked. All marking shall be located in a position to ensure readability.

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APPENDIX H

FSC 5945 - RELAYS

H.1 SCOPE

H.1.1 Scope. The following define the requirements that pertain to both commercial and military electronic devices. Where the requirements are not stated, refer to sections 4 and 5 herein. This appendix is a mandatory part of this standard. The information contained herein is intended for compliance.

This appendix establishes the marking requirements that apply to a specific FSC. These requirements are to be applied in addition to the requirements of sections 4 and 5 herein. In the event of conflict between this appendix and section 4 or 5, the appendix shall take precedence.

H.2 APPLICABLE DOCUMENTS. This section is not applicable to this appendix.

H.3 GENERAL REQUIREMENTS

H.3.1 Functional marking.

H.3.1.1 Terminals. Terminals shall be marked in accordance with figure H-1. The contact arrangements and symbols are for reference only, and unless otherwise specified in the acquisition document, shall not be marked on the relay. Marking the terminal identification shall be on the circuit diagram only.

CONTACT ARRANGEMENTS, SYMBOLS AND TERMINAL MARKING [SEE NOTE 1]					
	SINGLE THROW		DOUBLE THROW		
	FORM "A"	FORM "B"	FORM "C"	FORM "K" SPOT	FORM "M"
	NORMALLY OPEN	NORMALLY CLOSED	(TWO POSITION)	3 POS CENTER OFF	3 POS CENTER DN
SINGLE BREAK					
DOUBLE BREAK	FORM "X"	FORM "Y"	FORM "Z"	FORM "KK"	FORM "MM"
NOTE: CONTACTS ARE SHOWN WITH COIL IS DE-ENERGIZE					

FIGURE H-1. Symbols and markings for terminals.

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APPENDIX J

FSC 5955 – PIEZOELECTRIC CRYSTAL UNITS AND OVENS

J.1 SCOPE

J.1.1 Scope. The following define the requirements that pertain to both commercial and military electronic devices. Where the requirements are not stated, refer to sections 4 and 5 herein. This appendix is a mandatory part of this standard. The information contained herein is intended for compliance.

This appendix establishes the marking requirements that apply to a specific FSC. These requirements are to be applied in addition to the requirements of sections 4 and 5 herein. In the event of conflict between this appendix and section 4 or 5, the appendix shall take precedence.

J.2 APPLICABLE DOCUMENTS. (This section is not applicable to this appendix.)

J.3 GENERAL REQUIREMENTS

J.3.1 Functional marking.

J.3.1.1 Crystal oven terminals marking (octal base). Pin-type terminals shall be marked so that when an octal-base crystal oven is viewed from the bottom, number 1 will be adjacent to and clockwise from the socket key. All other terminals shall be identified clockwise from this pin. Insulated, flexible leads shall be color-coded in accordance with MIL-STD-104.

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J.3.2 Part identification marking.

J.3.2.1 Oscillators and crystal units. The frequency shall be specified to the final Hertz and shall be identified by a fixed field of eight characters consisting of seven digits and a letter (H, K, M, or G) representing simultaneously, the decimal point and the appropriate multiplier as follows:

- Less than 1 Hertz and less than 1,000 Hertz, the letter "H" is used to represent the decimal point and multiplier.
- Greater than or equal to 1,000 Hertz, but less than 1 Megahertz, the letter "K" is used to represent the decimal point and multiplier.
- Greater than or equal to 1 Megahertz, the letter "M" is used to represent the decimal point and multiplier.
- Greater than or equal to 1 Gigahertz, the letter "G" is used to represent the decimal point and multiplier.

All digits preceding and following the letter (H, K, M, or G) of the group represent significant figures.

The following are examples of using the eight characters in constructing the specified frequency.

<u>Designation</u>		<u>Frequency</u>			
H0100000	to H9999999	.01	to .9999999	Hertz,	Inclusive
1H000000	to 9H999999	1.0	to 9.999999	Hertz,	Inclusive
10H00000	to 99H99999	10	to 99.99999	Hertz,	Inclusive
100H0000	to 999H9999	100	to 999.9999	Hertz,	Inclusive
1K000000	to 9K999999	1	to 9.999999	Kilohertz,	Inclusive
10K00000	to 99K99999	10	to 99.99999	Kilohertz,	Inclusive
100K0000	to 999K9999	100	to 999.9999	Kilohertz,	Inclusive
1M000000	to 9M999999	1	to 9.999999	Megahertz,	Inclusive
10M00000	to 99M99999	10	to 99.99999	Megahertz,	Inclusive
100M0000	to 999M9999	100	to 999.9999	Megahertz,	Inclusive
1G000000	to 9G999999	1	to 9.999999	Gigahertz,	Inclusive
10G00000	to 99G99999	10	to 99.99999	Gigahertz,	Inclusive
100G0000	to 999G9999	100	to 999.9999	Gigahertz,	inclusive

J.3.2.2 Marking location.

J.3.2.2.1 Crystal units marking. The identifying number, frequency, and source code shall be located symmetrically with respect to the center axis of the crystal holder.

J.3.2.2.2 Crystal ovens marking. Part identification shall be marked on the side of the case.

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APPENDIX K

FSC 5961 – SEMICONDUCTOR DEVICES

K.1 SCOPE

K.1.1 Scope. The following define the requirements that pertain to both commercial and military electronic devices. Where the requirements are not stated, refer to sections 4 and 5 herein. This appendix is a mandatory part of this standard. The information contained herein is intended for compliance.

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K.2 APPLICABLE DOCUMENTS.

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K.2.2 Government documents.

K.2.2.1 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.

SPECIFICATION

DEPARTMENT OF DEFENSE

MIL-PRF-19500 - Semiconductor Devices, General Specification for.

STANDARD

DEPARTMENT OF DEFENSE

MIL-STD-750 - Semiconductor Devices.

(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Document Automations and Production Service, Building 4D (DPM-DODSSP), 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

K.2.3 Order of precedence. In 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 regulation is unless exemption has been obtained.

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APPENDIX K

K.3 GENERAL REQUIREMENTS

K.3.1 Department of Defense specification devices.

K.3.1.1 Devices covered by MIL-PRF-19500. Marking of semiconductor devices covered by MIL-PRF-19500 and its associated specifications shall conform to method I and the following:

- a. Polarity marking (diodes and thyristors only).
- b. Type designation, including "JAN" or "JANTX" prefix as applicable (see K.3.1.6).
- c. Inspection lot identification code (see K.3.1.7).
- d. Manufacturer's designating symbol (see K.3.1.8).
- e. Manufacturer's identification (see K.3.1.9).
- f. Country of origin (see K.3.1.10).

K.3.1.2 Unit pack marking. All of the marking specified in all the above, except polarity, shall appear on the carton, box, plastic envelope, and so forth, used as the initial protection or wrapping for delivery. Marking shall be in accordance with MIL-STD-129. Duplicate information need not be repeated.

K.3.1.3 Special marking. If any special marking is used, it shall in no way interfere with or obscure the marking required in all the above and shall be completely separated therefrom.

K.3.1.4 Permanence of marking. Permanence of marking shall be in accordance with MIL-STD-750, method 1022.

K.3.1.5 Diodes and unidirectional thyristors polarity marking. The polarity shall be indicated by one of the following methods.

K.3.1.5.1 Diodes. Polarity marking shall be by either an arrow or diode graphic symbol with the arrow pointing towards the negative terminal for forward bias or by a single contrasting color band or dot adjacent to the cathode terminal for forward bias.

K.3.1.5.2 Thyristors. A graphic symbol for a thyristors with the arrow pointing towards the cathode terminal.

K.3.1.6 "JAN", "JANTX", "JANTXV", or "JANS" prefix. The type designation shall bear the prefix "JAN", "JANTX", "JANTXV", or "JANS", as applicable, except that for small devices, the prefix "J", "JX", "JV", or "JS", may be used.

K.3.1.7 Inspection lot date code. Semiconductor devices shall be marked by a code indicating the date the lot was submitted for inspection. The first two numbers in the code shall be the last two digit of the number of the year. The third and fourth numbers shall be two digits indicating the calendar week of the year. When the number of the week is a single digit, it shall be preceded by a zero. Reading from left to right or from top to bottom, the code number shall designate the year and the week, in that order. When more than one lot of a type is inspected for conformance within the same week, and inspection lot suffix letter shall be chosen, consisting of a single capitol letter, and shall appear on each semiconductor device immediately following the submission date. This letter shall be chosen by the manufacturer so that each inspection lot is uniquely identified by the submission date and by the lot-identification suffix letter, if one is required.

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APPENDIX K

K.3.1.8 Manufacturer's designating symbol. The designating symbol shall be used only by the manufacturer to whom it has been assigned and only on those devices manufactured at that manufacturer's plant. In the case of small devices, the manufacturer's designating symbol may be abbreviated by omitting the first "C" in the series of letters.

K.3.1.9 Manufacturer's identification. Semiconductor devices shall be marked with the name or trademark of the manufacturer who has contracted to manufacture devices for the Government or its equipment manufacturers, and at whose plant the specified conformance inspection has been performed. The identification of the equipment manufacturer may appear on the device only if the equipment manufacturer is also the device manufacturer. The name or trademark of only the original manufacturer shall appear on the device or initial container. Rebranding shall not be permitted.

K.3.1.10 Country of origin. The phrase "Made in U.S.A." shall be marked in small characters below or adjacent to other marking specified in paragraph 1 except that, for semiconductor devices made in foreign country, the phrase shall be changed accordingly.

K.3.1.11 Marking option. The manufacturer has the option of marking the entire lot or only the sample devices to be subjected to conformance inspection. If the manufacturer exercises the option to mark only the sample devices, the precedence shall be as follows:

- a. The sample devices shall be marked prior to performance of conformance inspection.
- b. At the completion of inspection, the marking of the sample devices shall be inspected for conformance to the requirements of this standard.
- c. The inspection lot represented by a conforming inspection sample shall then be marked and any specified visual and mechanical inspection performed.
- d. The marking materials and processing applied to the inspection lot shall be the same specifications as those used for the inspection sample.

K.3.2 Non-military specification devices.

K.3.2.1 Marking of devices other than MIL-PRF-19500. Marking of semiconductor devices covered by acquisition documents other than MIL-PRF-19500 shall conform to method I and the following order of precedence (see table I):

- a. Polarity marking (diodes and thyristors only, see K.3.1.5 of this appendix).
- b. Identifying number (see 5.2.1).
- c. Design activity code (see 5.2.2).
- d. Source code (see K.3.1.8 of this appendix).
- e. Date code and lot symbol (K.3.1.7 of this appendix).
- f. Manufacturer's identification (see K.3.1.9 of this appendix and note 2 of table I).
- g. Country of origin (see K.3.1.10 of this appendix).

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APPENDIX L

FSC 5962 – MICROELECTRONIC CIRCUIT DEVICES

L.1 SCOPE

L.1.1 Scope. The following define the requirements that pertain to both commercial and military electronic devices. Where the requirements are not stated, refer to sections 4 and 5 herein. This appendix is a mandatory part of this standard. The information contained herein is intended for compliance.

This appendix establishes the marking requirements that apply to a specific FSC. These requirements are to be applied in addition to the requirements of sections 4 and 5 herein. In the event of conflict between this appendix and section 4 or 5, the appendix shall take precedence.

L.2 APPLICABLE DOCUMENTS.

L.2.1 General. The documents listed in this section are specified in sections 3, 4, and 5 of this standard. This does not include documents cited in other sections of this standard or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document user are cautioned that they must meet all specified requirements documents cited in sections 3, 4, and 5 of this standard, whether or not they are listed.

L.2.2 Government documents.

L.2.2.1 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.

SPECIFICATION

DEPARTMENT OF DEFENSE

- MIL-PRF-38534 - Hybrid Microcircuits, General Specification for.
- MIL-PRF-38535 - Integrated Circuits (Microcircuits), Manufacturing, General Specification for.

(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Document Automations and Production Service, Building 4D (DPM-DODSSP), 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

L.2.4 Order of precedence. In 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 regulation is unless exemption has been obtained.

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APPENDIX L

L.3 GENERAL REQUIREMENTS

L.3.1 Department of Defense specification devices.

L.3.1.1 Marking. For marking requirements of microelectronic circuit devices covered by MIL-PRF-38534, and MIL-PRF-38535, and the associated specifications, see the applicable general specification (such as MIL-PRF-38534, or MIL-PRF-38535).

L.3.1.2 Marking of Standard Microcircuit Drawings (SMD's). For marking requirements of microelectronic circuit devices covered by SMD's see the applicable drawing. If any special marking (altered item drawing number) is used by the device supplier or user/equipment contractor, it shall be in addition to the existing/original marking as required in the applicable drawing and shall be visibly separate from and in no way interfere with the marking required by the SMD.

L.3.2 Permanency and legibility.

L.3.2.1 Permanence and legibility of marking. The marking shall be permanent, legible and shall meet the marking permanence requirements of the applicable general specification (such as, MIL-PRF-38534, or MIL-PRF-38535).

L.3.3 Non-military (SCD, VID, and AID) specification devices.

L.3.3.1 Acquisition documents other than Department of Defense specification devices. Marking of microelectronic circuit devices covered by acquisition documents other than MIL-PRF-38534, and MIL-PRF-38535 and SMD's shall conform to method I and the following order of precedence.

- a. Index point (for example, see MIL-PRF-38535).
- b. Part or Identifying Number (PIN) (see 5.2.1).
- c. Design activity code (see 5.2.2).
- d. Date code (for example, see MIL-PRF-38535).
- e. Lot symbol (see 5.2.6).
- f. Serialization, when applicable (for example, see MIL-PRF-38535).
- g. Manufacturer's identification (for example, see MIL-PRF-38535).
- h. Country of origin.
- i. Electrostatic discharge sensitivity identifier (for example, see MIL-PRF-38535).

L.3.3.2 Marking of altered or selected items (see ASME-Y14.100). Items which are altered or selected from the controlling specification or standard shall be identified by a part number established by the using design activity drawing which depicts requirements for such alterations or selection. The original number being replaced shall not be removed or obliterated.

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APPENDIX L

L.3.4 Functional marking.

L.3.4.1 Terminal index feature. An index feature shall be visible from the top or bottom of microelectronic circuit packages and located near the package periphery.

L.3.4.1.1 Peripheral lead packages. For the peripheral lead packages (flat pack and dual-in-line), convention shall be that when viewed from the top, terminal number 1 shall be adjacent to or immediately counterclockwise from the index feature. Other terminal positions shall then be successively numbered counterclockwise from terminal 1.

L.3.4.1.2 Axial lead packages. For axial lead packages, convention shall be that when viewed from the bottom, terminal 1 shall be the next terminal position clockwise from the terminal index feature.

L.3.5 Identification marking location.

L.3.5.1 Marking location and sequence. The QML (when applicable) part number, date code and ESDS identifier, if applicable shall be located on the top surface of leadless or leaded chip carrier packages, pin grid array packages, flat packages, or dual-in-line configurations and on either the top or the side of cylindrical packages (TO configurations and similar configurations). When the size of a package is insufficient to allow marking of special process identifiers on the top surface, the backside of the package may be used for these markings except the ESDS identifier, if applicable shall be marked on the top. Button cap flat packs with less than or equal to 16 leads may have the identifier marked on the ceramic. Backside marking with conductive or resistive ink shall be prohibited. For unpackaged the marking shall be located on the container. For unpackaged die, marking is to be located on the container.

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APPENDIX M

M.1 SCOPE

M.1.1 Scope. The following define the requirements that pertain to both commercial and military electronic devices. Where the requirements are not stated, refer to sections 4 and 5 herein. This appendix is a mandatory part of this standard. The information contained herein is intended for compliance.

This appendix establishes the marking requirements that apply to a specific FSC. These requirements are to be applied in addition to the requirements of sections 4 and 5 herein. In the event of conflict between this appendix and section 4 or 5, the appendix shall take precedence.

M.2 APPLICABLE DOCUMENTS. This section is not applicable to this appendix.

M.3 GENERAL REQUIREMENTS

M.3.1 Functional marking. No markings are defined.

M.3.2 Part identification marking.

M.3.2.1 Antennas, waveguides, and related equipment. Marking of antennas, waveguides, and related equipment shall conform to method I. Exceptions or additions to the requirements of section 5.2 shall be as specified in the acquisition document.

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APPENDIX N

FSC 5998 – ELECTRICAL AND ELECTRONIC ASSEMBLIES, BOARDS,
CARDS, AND ASSOCIATED HARDWARE PRINTED WIRING BOARDS

N.1 SCOPE

N.1.1 Scope. The following define the requirements that pertain to both commercial and military electronic devices. Where the requirements are not stated, refer to sections 4 and 5 herein. This appendix is a mandatory part of this standard. The information contained herein is intended for compliance.

This appendix establishes the marking requirements that apply to a specific FSC. These requirements are to be applied in addition to the requirements of sections 4 and 5 herein. In the event of conflict between this appendix and section 4 or 5, the appendix shall take precedence.

N.2 APPLICABLE DOCUMENTS.

N.2.1 General. The documents listed in this section are specified in sections 3, 4, and 5 of this standard. This does not include documents cited in other sections of this standard or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document user are cautioned that they must meet all specified requirements documents cited in sections 3, 4, and 5 of this standard, whether or not they are listed.

N.2.2 Government documents.

N.2.2.1 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.

SPECIFICATION

DEPARTMENT OF DEFENSE

MIL-P-50884	- Printed Wiring Board, Flexible or Rigid-Flex, General Specification for.
MIL-PRF-31032	- Printed Circuit Board/Printed Wiring Board, General Specification for.
MIL-PRF-55110	- Printed Wiring Boards, General Specification for.

(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Document Automations and Production Service, Building 4D (DPM-DODSSP), 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

N.2.3 Order of precedence. In 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 regulation is unless exemption has been obtained.

N.3 GENERAL REQUIREMENTS

N.3.1 Part identification marking.

N.3.1.1 Guides and extractors/ejectors marking. Card guides and card extractors/ejectors do not require marking of parts.

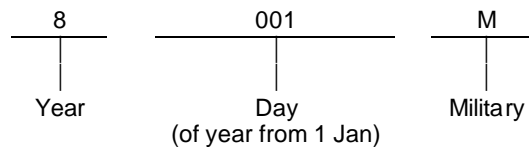
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APPENDIX N

N.3.1.2 Method I marking (for QPL parts). Unless otherwise specified in the acquisition document, marking of printed wiring boards shall conform to method I.

Each individual board, each qualification board, and each set of conformance test circuits strips (as opposed to each individual coupon) shall be marked in accordance with the master drawing, with the date and the manufacturer's CAGE code. All markings shall be compatible with materials and parts, legible after all tests, and in no case affect the board performance. Marking shall be tested in accordance with MIL-PRF-55110 and MIL-P-50884. In addition to this marking, the use of bar code marking is permissible. Coupon marking shall be representative of the board marking. The date code shall be formatted as follow:



This date shall reflect the first copper plating.

N.3.1.3 Method II marking (for QML parts). Marking of compliant printed boards and their associated test coupons shall be in accordance with MIL-PRF-31032 and the following requirements and the identification and marking provisions of the printed board procurement documentation. The marking shall be permanent, legible, complete, and shall meet the marking adhesion requirements of the associated specification. If any additional marking is used or required by the printed board procurement documentation, it shall in no way interfere with the marking required herein, and shall be visibly separated. Only the QML manufacturer is authorized to apply the QML brand.

N.3.1.3.1 Full marking. Unless otherwise specified by the printed board procurement documentation, the following full marking shall be placed on each printed board and test coupon strip:

- a. "QML" or "Q" brand.
- b. Part number.
- c. Lot date code.
- d. QML manufacturer's CAGE code.
- e. Traceability.

N.3.1.3.2 Minimum marking. When the physical size of the printed board precludes the placement of the information specified in N.3.1.3.1, the minimum marking shall be as specified in the printed board procurement documentation. In those cases where full marking requirements are not on the printed board, the full marking shall be placed on the unit package.

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APPENDIX O

FSC 5999 – ELECTRICAL AND ELECTRONIC COMPONENTS, MISCELLANEOUS
DELAY LINES

O.1 SCOPE

O.1.1 Scope. The following define the requirements that pertain to both commercial and military electronic devices. Where the requirements are not stated, refer to sections 4 and 5 herein. This appendix is a mandatory part of this standard. The information contained herein is intended for compliance.

This appendix establishes the marking requirements that apply to a specific FSC. These requirements are to be applied in addition to the requirements of sections 4 and 5 herein. In the event of conflict between this appendix and section 4 or 5, the appendix shall take precedence.

O.2 APPLICABLE DOCUMENTS. This section is not applicable to this appendix.

O.3 GENERAL REQUIREMENTS

O.3.1 Parts identification marking.

O.3.1.1 Mounting pads, gaskets, and heat sinks marking. Mounting pads, gaskets, and heat sinks do not require marking of parts.

O.3.1.2 Method I marking. Unless otherwise specified in the acquisition document, marking of delay lines shall conform to method I.

- a. "JAN" or "J" marking.
- b. Military part number.
- c. Index mark identification (next to pin 1, input).
- d. Manufacturer's source code or logo.
- e. Date code.

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