



AEROSPACE STANDARD

AS6294™/4

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Requirements for Plastic Encapsulated Discrete Semiconductors in Military and Avionics Applications

RATIONALE

This document provides requirements for screening and qualification of plastic encapsulated discrete semiconductors (PEDs) for use in military and avionics applications. The level of testing on PEDs depends on the application and reliability requirements of the system allocated to the PEDs. It is the responsibility of the user to assure compliance with the requirements specified herein, or to assure that any tailoring of requirements meets the end application requirements. This document addresses many of the concerns associated with PED construction and manufacturing, primarily the non-hermetic packaging and the supply chain situation of multiple material sets and assembly sites.

The approach to establishing PED reliability defined herein leverages several existing industry standards, including AEC Q101, AS6294/2, and SSB-1.

TABLE OF CONTENTS

1.	SCOPE	3
2.	REFERENCES	3
2.1	Applicable Documents	3
2.1.1	SAE Publications	3
2.1.2	ANSI Accredited Publications	3
2.1.3	IEC Publications	3
2.1.4	NASA Publications	3
2.1.5	Other Publications	4
2.2	Definitions	4
3.	GENERAL REQUIREMENTS	5
4.	DEVICE GRADES FOR PEDS	5
5.	DEVICE CHARACTERIZATION	5
5.1	PED Information and Construction Analysis	5
5.2	Radiation Hardness	5
5.2.1	Nuclear and Space Radiation	5
5.2.2	Atmospheric Radiation	5
6.	SCREENING AND PROCESS CONTROL	6
7.	HANDLING AND STORAGE REQUIREMENTS	6

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8.	QUALIFICATION AND REQUALIFICATION	6
8.1	Qualification for Grades T1 and T2.....	6
8.2	Qualification for Grades M1 and M2	6
8.3	Copper and Silver Wire Bonds.....	6
9.	NOTES	8
9.1	Revision Indicator.....	8
APPENDIX A	PED CAPABILITY REQUIREMENTS DETERMINATION.....	9
Figure 1	Sequential environments flow for Table 3, step 5 (sample size and conditions in accordance with Table 3).....	8
Table 1	PED grade description	5
Table 2	Qualification for PEDs	6
Table 3	Qualification for grades T1 and M1 PEDs.....	7

1. SCOPE

This standard documents and establishes common industry practices, and screening and qualification testing, of plastic encapsulated discrete semiconductors (PEDs) for use in military and avionics application environments.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and 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.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

ARP6338	Process for Assessment and Mitigation of Early Wearout of Life-Limited Microcircuits
AS6294/3	Requirements for Plastic Encapsulated Discrete Semiconductors in Space Applications
EIA-STD-4899	Requirements for an Electronic Components Management Plan
GEIA-STD-0003	Long Term Storage of Electronic Devices
SSB-1	Guidelines for Using Plastic Encapsulated Microcircuits and Semiconductors in Military, Aerospace, and Other Rugged Applications

2.1.2 ANSI Accredited Publications

Copies of these documents are available online at <http://webstore.ansi.org/>.

ANSI STD S20.20	Protection of Electrical and Electronic Parts, Assemblies and Equipment
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2.1.3 IEC Publications

Available from IEC Central Office, 3, rue de Varembe, P.O. Box 131, CH-1211 Geneva 20, Switzerland, Tel: +41 22 919 02 11, www.iec.ch.

IEC 62396-1	Process management for Avionics - Atmospheric Radiation Effects - Part 1: Accommodation of Atmospheric Radiation Effects via Single Event Effects within Avionics Electronic Equipment
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2.1.4 NASA Publications

NASA Technical Services, NASA STI Program STI Support Services, Mail Stop 148, NASA Langley Research Center, Hampton, VA 23681-2199, 757-864-9658, Fax: 757-864-6500, <http://ntrs.nasa.gov/>.

MSFC-STD-3012	Electrical, Electronic, and Electromechanical (EEE) Parts Management and Control Requirements for MSFC Space Flight Hardware
PEM-INST-001	Instructions for Plastic Encapsulated Microcircuit (PEM) Selection, Screening, and Qualification