



AEROSPACE STANDARD	AS6294™/2	
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Requirements for Plastic Encapsulated Microcircuits in Military and Avionics Applications		

RATIONALE

This document provides requirements for screening and qualification for use of plastic encapsulated microcircuits (PEMs) in military and avionics applications. The level of testing on PEMs depends on the application and reliability requirements of the system allocated to the PEMs. 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 PEM construction and manufacturing, primarily the non-hermetic packaging and the supply chain situation of multiple material sets and assembly sites.

The approach to establishing PEM reliability defined herein leverages several existing industry standards, including AEC Q100, JESD47, MSFC-STD-3012, and SAE SSB-1.

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1. SCOPE

This SAE Aerospace Standard (AS) documents and establishes common industry practices, and screening and qualification testing, of Plastic Encapsulated Microcircuits (PEMs) 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
AS6294/1	Requirements for Plastic Encapsulated Microcircuits in Space Applications
SAE SSB1	Guidelines for Using Plastic Encapsulated Microcircuits and Semiconductors in Military, Aerospace and Other Rugged Applications
EIA-STD-4899	Requirements for an Electronic Components Management Plan
GEIA-STD-0003	Long Term Storage of Electronic Devices

2.1.2 Automotive Electronics Council Publications

Copies of these documents are available online at www.aecouncil.com

AEC Q006	Qualification Requirements for Components using Copper (Cu) Wire Interconnects
AEC Q100	Failure Mechanism Based Stress Test Qualification for Integrated Circuits

2.1.3 International Electrotechnical Commission Publications

Copies of these documents are available online at 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 JEDEC Publications

Copies of these documents are available online at www.jedec.org.

JEP121	Requirements for Microelectronic Screening and Test Optimization
JESD16	Assessment of Average Outgoing Quality Levels in Parts Per Million (PPM)
JESD22-A101	Steady State Temperature Humidity Bias Life Test
JESD22-A102	Accelerated Moisture Resistance - Unbiased Autoclave