IEC PAS 62686-2

Edition 1.0 2016-07

PUBLICLY AVAILABLE SPECIFICATION

PRE-STANDARD

**Process management for avionics – Electronic components for aerospace, defence and high performance (ADHP) applications –
Part 2: General requirements for passive components**

IEC PAS 62686-2:2016-07(en)

IEC Central Office
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

About the IEC
The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications
The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

IEC Catalogue - webstore.iec.ch/catalogue
The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

IEC publications search - www.iec.ch/searchpub
The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,…). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished
Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and also once a month by email.

Electropedia - www.electropedia.org
The world's leading online dictionary of electronic and electrical terms containing 20 000 terms and definitions in English and French, with equivalent terms in 15 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary
65 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

IEC Customer Service Centre - webstore.iec.ch/csc
If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch.

IEC PAS 62686-2

Edition 1.0 2016-07

PUBLICLY AVAILABLE SPECIFICATION

PRE-STANDARD

Process management for avionics – Electronic components for aerospace, defence and high performance (ADHP) applications – Part 2: General requirements for passive components

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ICS 03.100.50; 31.020; 49.060

ISBN 978-2-8322-3532-4

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

PROCESS MANAGEMENT FOR AVIONICS – ELECTRONIC COMPONENTS FOR AEROSPACE, DEFENCE AND HIGH PERFORMANCE (ADHP) APPLICATIONS –

Part 2: General requirements for passive components

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

A PAS is a technical specification not fulfilling the requirements for a standard, but made available to the public.

STACK specification S/0003 has served as a basis for the development of Part 2 of this publicly available specification.

IEC PAS 62686-2 has been processed by IEC technical committee 107: Process management for avionics.

The text of this PAS is based on the following document:	This PAS was approved for publication by the P-members of the committee concerned as indicated in the following document
Draft PAS	**Report on voting**
107/281/PAS	107/284A/RVD

Following publication of this PAS, which is a pre-standard publication, the technical committee or subcommittee concerned may transform it into an International Standard.

This PAS shall remain valid for an initial maximum period of 3 years starting from the publication date. The validity may be extended for a single 3-year period, following which it shall be revised to become another type of normative document, or shall be withdrawn.

A bilingual version of this publication may be issued at a later date.

PROCESS MANAGEMENT FOR AVIONICS – ELECTRONIC COMPONENTS FOR AEROSPACE, DEFENCE AND HIGH PERFORMANCE (ADHP) APPLICATIONS –

Part 2: General requirements for passive components

1 Scope

This PAS defines the minimum requirements for general purpose ‘off the shelf’ COTS passive components for ADHP (Aerospace, Defence and High Performance) applications.

This specification is intended to be used wherever possible for components that typically can be applied to operate in high reliability applications within the manufacturers publicly available datasheet limits. This document can be used in conjunction with IEC TS 62239-1 for avionics applications.

This specification is identical to STACK Specification S/0003 issue 02 which is included in Annex A.

NOTE Adoption of the STACK Specification S/0003 issue 02 will enable all existing STACK Certified manufacturers to be audited by IECQ under the STACK-IECQ joint venture.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

See the referenced documents within Annex A.

3 Terms, definitions and abbreviated terms

For the purposes of this document, the following terms, definitions and abbreviations apply. When the following terms are used in *italics* they have the meaning defined in this clause.

3.1
available
accessible, obtainable

Note 1 to entry: For example technical data, documents, etc. are information that can be requested and made available for consultation or analysis.

3.2
calendar days
continuous days, including weekends and holidays

[SOURCE: IEC 62686-1:2015, 3.1.1]

3.3
component
device
electrical or electronic device that is not subject to disassembly without destruction or impairment of design use

Note 1 to entry: Resistors (for example wire wound resistor) and capacitors (for example ceramic capacitor) are examples of passive components.

[SOURCE: IEC 62239-1:2015, 3.1.19, modified for the purpose of this document]

3.4
customer
user
original equipment manufacturer (OEM) which procures integrated circuits and/or semiconductor devices compliant to this technical specification and uses them to design, produce, and maintain systems

[SOURCE: IEC 62686-1:2015, 3.1.3]

3.5
data sheet
document prepared by the manufacturer that describes the electrical, mechanical, and environmental characteristics of the component

[SOURCE: IEC 62686-1:2015, 3.1.4]

3.6
deviation
user agreement to allow the delivery of a shipping lot which does not fully meet the requirements of a specification

Note 1 to entry: Considered equivalent to concession for the purpose of this document.

[SOURCE: IEC 62686-1:2015, 3.1.5]

3.7
device specification
document written by a user and agreed by the supplier or OCM

[SOURCE: IEC 62686-1:2015, 3.1.6]

3.8
form
shape, arrangement of parts, visible aspect, mode in which a part exists or manifests itself, and the material an item is constructed from

[SOURCE: IEC 62686-1:2015, 3.1.7]

3.9
fit
fitability of an item to physically interface or interconnect with or become an integral part of another item or assembly

Note 1 to entry: Size and scale are examples of considered characteristics.

[SOURCE: IEC 62686-1:2015, 3.1.8]

3.10
function
work to a specification that an item is designed to without degrading reliability

[SOURCE: IEC 62686-1:2015, 3.1.9]

3.11
generic family
group or family of devices with the same basic construction but with differing values, i.e. capacitance, tolerance, voltage rating etc.

3.12
incoming lot
one or more shipments of a device, grouped together for the purpose of incoming inspection

[SOURCE: IEC 62686-1:2015, 3.1.10]

3.13
inner container
box or bag containing *devices,* either in *magazines* or bulk packaged

[SOURCE: IEC 62686-1:2015, 3.1.11]

3.14
limitation
restriction with regard to a requirement or a condition or a constraint

Note 1 to entry: Limitations may be identified during a certification audit when suppliers' products or processes do not meet the requirements of a specification. In that event, the supplier is noted as having limitations which are recorded in the audit report and on the certificate. These limitations are applicable to that individual supplier only.

3.15
magazine
shipping container that feeds into automatic placement machines

Note 1 to entry: Sticks, tubes, matrix trays, tape/reel, etc. are examples of magazine.

[SOURCE: IEC 62686-1:2015, 3.1.12]

3.16
manufacturing lot
definite quantity of devices tracked at each manufacturing operation. It is associated with a travel log and constitutes a group, homogeneously processed through all manufacturing operations under uniform manufacturing conditions

3.17
may
indicates a course of action which is permissible within the limits of this document

3.18
original component manufacturer
OCM
company specifying and manufacturing the electronic component

[SOURCE: IEC 62686-1:2015, 3.1.15]

3.19
outer container
outer shipping container, containing one or more *inner boxes*

3.20
room temperature
temperature identified at 25 °C ± 5 °C in a room

[SOURCE: IEC 62686-1:2015, 3.1.16]

3.21
shall
indicates a requirement

3.22
should
offers a guide or recommendation that might be used or helpful to assure compliance to this document

3.23
shipping lot
single lot of one or more *outer boxes* received by a user

[SOURCE: IEC 62686-1:2015, 3.1.18]

3.24
specification
specification together with all other documents referred to as forming part thereof

3.25
supplier
company which provides to another an electronic component which is identified by the logo or name marked on the device

Note 1 to entry: A supplier can be the OCM, a franchised distributor or agent, a non-franchised distributor, broker, reseller, OEM, CEM and EMS etc.

[SOURCE: IEC 62686-1:2015, 3.1.19]

3.26
termination
element of a component that connects it electrically and mechanically to the next level of assembly

[SOURCE: IEC 62686-1:2015, 3.1.20]

3.27
T_{op}min
minimum operating temperature

3.28
T_{op}max
maximum operating temperature

3.29
waiver
written notice that a requirement of a document or specification no longer applies or is relaxed

Note 1 to entry: Generally if granted, the waiver is documented on the registration certificate and is applicable to an individual supplier only.

4 Abbreviations and acronyms

AOQ average outgoing quality

AQEC aerospace qualified electronic component

BF	board flex
BL	beam load
COTS	commercial off the shelf
DPM	defects per million (may also be referred as PPM (parts per million))
EHS	environmental, health and safety
EMAS	Eco-Management and Audit Scheme
ET	electrical test
ESD	electrostatic discharge
FL	flammability
HE	hermeticity
HTOL	high temperature operating life
HTS	high temperature exposure (storage)
LTPD	lot tolerance percent defective
MSL	moisture sensitivity level
MR	moisture resistance
MS	mechanical shock
OCM	original component manufacturer
OEM	original equipment manufacturer
PCB	printed circuit board
PCN	Product change notice
PD	package dimensions
RoHS	Restriction of the use of certain Hazardous Substances (European Union directive)
RS	resistance to solvents
RSH	resistance to solder heat
SD	solderability
SM	surface mount
SMD	surface mount device
SV	surge voltage
TC	temperature cycling
THB	biased humidity
TH	through hole
THS	thermal shock
TSL	terminal strength (leaded)
TSS	terminal strength (SMD)
TW	tin whisker
V	vibration
VI	visual (external inspection)

5 Technical requirements

The supplier shall provide the user's requirements for quality, reliability and general requirements for 'off the shelf' COTS passive components not otherwise governed by and supplied to defence specifications, as stated in STACK S/0003 issue 02. STACK S/0003 issue 02 specification is included in Annex A.