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Process management for avionics – Counterfeit prevention – Part 1: Avoiding the use of counterfeit, fraudulent and recycled electronic components

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Gestion des processus pour l'avionique – Prévention de la contrefaçon – Partie 1: Prévention de l'utilisation de composants électroniques contrefaits, frauduleux et recyclés

IEC 62668-1:2019-09(en-fr)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

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CONTENTS

FOREWORD 6
1 Scope 8
2 Normative references 8
3 Terms, definitions and abbreviated terms 8
3.1 Terms and definitions 8
3.2 Abbreviated terms 13
4 Technical requirements 15
4.1 General 15
4.2 Minimum avionics OEM requirements 16
4.3 Intellectual property 19
4.3.1 General 19
4.3.2 Definition of intellectual property 20
4.4 Counterfeit consideration 20
4.4.1 General 20
4.4.2 Legal definition of counterfeit 21
4.4.3 Fraudulent components 21
4.4.4 How to establish traceability 21
4.4.5 Reasons for the loss of component traceability 22
4.5 The counterfeit problem 22
4.5.1 General 22
4.5.2 General worldwide activities combating counterfeit issues 23
4.5.3 Cultural differences 23
4.5.4 Counterfeiting activities and avionics equipment 23
4.5.5 Electronic components direct action groups 26
4.6 Recycled components 26
4.6.1 General 26
4.6.2 Why the avionics industry does not use recycled components 27
4.6.3 How recycled components become suspect and potentially fraudulent 27
4.7 Original component manufacturer (OCM) anti-counterfeit guidelines 27
4.7.1 General 27
4.7.2 Chinese Reliable Electronic Component Supplier (RECS) audit scheme 28
4.7.3 Original component manufacturer (OCM) ISO 9001 and AS/EN/JISQ 9100 Third Party Certification 28
4.7.4 Original component manufacturer's (OCM) trademarks 28
4.7.5 Original component manufacturer's (OCM) IP control 28
4.7.6 Original component manufacturer's (OCM) physical part marking and packaging marking 28
4.7.7 The Semiconductor Industries Association Anti Counterfeit Task Force (ACTF) 29
4.7.8 USA Trusted Foundry Program 29
4.7.9 USA Trusted IC Supplier Accreditation Program 30
4.7.10 Physical unclonable function (PUF) 30
4.7.11 Original component manufacturer (OCM) best practice 30
4.8 Distributor minimum accreditations 30
4.9 Distributor AS/EN/JISQ 9120 Third Party Certification 31
4.10 Franchised distributor network 31
4.10.1 General 31

iTeh STANDARD PREVIEW
(standards.iteh.ai)
IEC 62668-1:2019
https://standards.iteh.ai/catalog/standards/sist/2d6f8c46-44f8-8b97-d16fd0e79a0/iec-62668-1-2019

4.10.2 SAE AS6496 32
4.10.3 Control stock through tracking schemes 32
4.10.4 Control of scrap 33
4.10.5 RECS 33
4.11 Non-franchised distributor anti-counterfeit guidelines 33
4.11.1 General 33
4.11.2 CCAP-101 certified program for independent distributor 33
4.11.3 SAE AS6081 33
4.11.4 OEM managed non-franchised distributors 34
4.11.5 Brokers 34
4.12 Avionics OEM anti-counterfeit guidelines when procuring components 34
4.12.1 Anti-counterfeiting general approach 34
4.12.2 Buy from approved sources 34
4.12.3 Traceable components 34
4.12.4 Certificate of conformance and packing slip 35
4.12.5 Plan and buy sufficient quantities 36
4.12.6 Use of non- franchised distributors 36
4.12.7 Brokers 36
4.12.8 Contact the original manufacturer 37
4.12.9 Obsolete components and franchised aftermarket sources 37
4.12.10 IEC 62239-1 approved alternatives 37
4.12.11 Product redesign 37
4.12.12 Non traceable components 38
4.12.13 OEM anti-counterfeit plans including SAE AS5553 and SAE AS6174 38
4.13 OEM anti-counterfeit guidelines for their products 43
4.13.1 IP control 43
4.13.2 Tamper-proofing the OEM design 43
4.13.3 Tamper-proof labels 43
4.13.4 Use of ASICs and FPGAs with IP protection features 43
4.13.5 Control the final OEM product marking 44
4.13.6 Control OEM scrap 44
4.13.7 OEM trademarks and logos 44
4.13.8 Control delivery of OEM products and spares and their useful life 44
4.13.9 MRO activities 45
4.14 Counterfeit, fraud and component recycling reporting 46
4.14.1 General 46
4.14.2 USA FAA suspected unapproved parts (SUP) program 46
4.14.3 EASA 46
4.14.4 UK counterfeit reporting 46
4.14.5 EU counterfeit reporting 46
4.14.6 UKEA anti-counterfeiting forum 46
4.15 Anti-counterfeit awareness training 46
4.16 Information to support the management of the supply chain 47
Annex A (informative) Useful contacts 48
A.1 World Intellectual Property Organization (WIPO) 48
A.1.1 General 48
A.1.2 What is WIPO? 48
A.1.3 WIPO Intellectual Property Services 49
A.1.4 WIPO global network on Intellectual Property (IP) Academies 50

iTeh STANDARD PREVIEW
(standards.iteh.ai)
IEC 62668-1:2019
https://standards.iteh.ai/catalog/standards/sist/1234819-8f46-4418-8b97-d16fde9e79a0/iec-62668-1-2019

A.2 Anti-Counterfeiting Trade Agreement (ACTA) ... 50
A.2.1 ACTA ... 50
A.2.2 Global Anti-Counterfeiting Network (GACG) ... 51
A.3 World Semiconductor Council (WSC) and GAMS ... 51
A.4 SEMI ... 52
A.5 Electronics Authorized Directory ... 53
A.6 UK ... 53
A.6.1 The UK intellectual property office ... 53
A.6.2 Alliance for IP ... 54
A.6.3 UK Chartered Trading Standards Institute ... 54
A.6.4 UK HM Revenue and Customs ... 54
A.6.5 Anti-Counterfeiting Forum ... 54
A.6.6 Electronic Component Supplier Network (ESCN) ... 55
A.6.7 UK Ministry of Defence ... 55
A.7 Europe ... 55
A.7.1 Europa Summaries of EU Legislation ... 55
A.7.2 Europol, the European Law Enforcement Agency ... 55
A.7.3 European Patent Office ... 55
A.7.4 EUIPO ... 55
A.7.5 European Aviation Safety Agency (EASA) ... 56
A.7.6 IECQ audit schemes ... 57
A.7.7 BEAMA ... 57
A.8 USA ... 57
A.8.1 United States Patent and Trademark Office ... 57
A.8.2 The International Trade Administration, US Department of Commerce ... 58
A.8.3 International Intellectual Property Alliance ... 58
A.8.4 The Federal Aviation Administration (FAA) ... 58
A.8.5 Trusted Access Program Office (TAPO) ... 59
A.8.6 Independent Distributors of Electronics Association (IDEA) ... 59
A.8.7 ECIA formerly National Electronic Distributors Association (NEDA) ... 60
A.8.8 Components Technology Institute Inc. (CTI) ... 61
A.8.9 Defense Logistics Agency (DLA) ... 61
A.8.10 DFARS ... 61
A.8.11 IAQG ... 62
A.8.12 USA Homeland Security ... 62
A.9 China ... 62
A.9.1 CNIPA. ... 62
A.9.2 Chinese Patent and Trademark Office ... 62
A.9.3 China Electronics Associations: ... 62
A.9.4 China Quality Certification Centre (CQC) ... 62
A.9.5 Civil Aviation Administration of China (CAAC) ... 62
A.9.6 China lawinfo.Co Ltd., for Law info China ... 62
A.10 Japan – Japanese Patent Office (JPO) ... 63
A.11 Physical unclonable function ... 63
A.12 PUF and tags initiative and solutions ... 64
A.12.1 The Hardware Intrinsic Security (HIS) initiative ... 64
A.12.2 Examples of tag providers ... 64
A.13 Examples of tamper-proof design companies ... 65
A.14 Examples of FPGA die serialization ... 65

iTeh STANDARD PREVIEW
(standards.iteh.ai)
IEC 62668-1:2019
https://standards.iteh.ai/catalog/standards/sist/1f234819-8f46-44f8-8b97-d101de9e79a0/iec-62668-1-2019

A.15 Examples of NVRAM manufacturers 65
A.16 SAE G-19 65
A.17 iNEMI 69
A.18 OECD 69
A.19 ICC 69
A.20 Applied DNA Sciences 70
A.21 Safety Directors' Forum 70
A.22 'Stop fake bearings' video 70
A.23 Industrial company's online anti-counterfeit awareness training 70
A.24 Subscription based anti-counterfeit awareness training 70
A.25 USA Government anti-counterfeit publications and awareness training 70
A.26 IECQ WG6 71
A.27 Anti-counterfeiting videos 71
Annex B (informative) Examples of aftermarket sources 72
B.1 Examples of franchised aftermarket sources 72
B.2 Examples of sources of franchised die which can be packaged 72
B.3 Examples of third party custom packaging houses which provide aftermarket solutions 72
B.4 Examples of emulated aftermarket providers 72
Annex C (informative) Typical example of a RECS certificate 74
Annex D (informative) Flowchart of IEC 62668-1 requirements 75
Annex E (Informative) Typical use of anti-counterfeit standards in supply chains 77
Bibliography 83

iTeh STANDARD PREVIEW
(standards.iteh.ai)
IEC 62668-1:2019
https://standards.iteh.ai/catalog/standards/sist/1f2348f9-8f46-44f8-8b97-d16fde9e79a0/iec-62668-1-2019

Figure 1 – Suspect components perimeter 21
Figure D.1 – Flowchart of IEC 62668-1 requirements and their relationship to external standards 76
Figure E.1 – Available anti-counterfeit standards for supply chains 77
Figure E.2 – Overview of typical relationships for anti-counterfeit standards in an avionics supply chain 79
Figure E.3 – Overview of typical anti-counterfeit standards in an avionics OEM supply chain 80
Figure E.4 – IECQ OD 3702 traceability audit 81
Figure E.5 – Typical IECQ OD 3702 coverage in any supply chain 82

Table 1 – Anti-counterfeit awareness training guidelines 18
Table.2 – IEC 62668-1 requirements satisfied or not if OEM has an approved SAE AS5553A plan 39
Table.3 – IEC 62668-1 requirements satisfied or not if OEM has an approved SAE AS5553B plan 41

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PROCESS MANAGEMENT FOR AVIONICS – COUNTERFEIT PREVENTION –

Part 1: Avoiding the use of counterfeit, fraudulent and recycled electronic components

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International Standard IEC 62668-1 has been prepared by IEC technical committee 107: Process management for avionics.

This first edition cancels and replaces the third edition of IEC TS 62668-1 published in 2016. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) added a reference to AS/EN/JISQ 9100 and AS/EN/JISQ 9110 which contain anti-counterfeit requirements which may be used to satisfy the requirements of 4.2;
b) added reference to USA DFAR rule 252.246.7008 and to UK Defence Standard 05-135;
c) added reference to more GAO, OECD and ICC reports in 4.5.1;

d) updated weblinks and other references;

e) added new Annex E with figures describing how anti-counterfeit documents can be used in supply chains;

f) added a reference to the new IECQ OD 3702 traceability audit;

g) added new definition for re-manufactured components with a warning that these are not recommended.

The text of this International Standard is based on the following documents:

CDV	Report on voting
107/335/CDV	107/346A/RVC

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 62668 series, published under the general title *Process management for avionics – Counterfeit prevention*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
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- amended.

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PROCESS MANAGEMENT FOR AVIONICS – COUNTERFEIT PREVENTION –

Part 1: Avoiding the use of counterfeit, fraudulent and recycled electronic components

1 Scope

This part of IEC 62668 defines requirements for avoiding the use of counterfeit, recycled and fraudulent components used in the aerospace, defence and high performance (ADHP) industries. It also defines requirements for ADHP industries to maintain their intellectual property (IP) for all of their products and services. The risks associated with purchasing components outside of franchised distributor networks are considered in IEC 62668-2. Although developed for the avionics industry, this document can be applied by other high performance and high reliability industries at their discretion.

NOTE IEC 62668 (all parts) does not address the restriction on the re-use of a component in maintenance, repair and overhaul (MRO) operations and only addresses MRO activities when they are under the OEM's responsibility.

2 Normative references

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IEC 62239-1, *Process management for avionics – Management plan – Part 1: Preparation and maintenance of an electronic components management plan*

IEC 62668-2, *Process management for avionics – Counterfeit prevention – Part 2: Managing electronic components from non-franchised sources*

ISO 9001, *Quality management systems – Requirements*

AS/EN/JISQ 9100, *Quality Management Systems – Requirements for Aviation, Space and Defense Organizations*

AS/EN/JISQ 9110, *Quality Maintenance Systems – Aerospace – Requirements for Maintenance Organizations*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1.1
aftermarket source
reseller which may or may not be under contract with the original component manufacturer (OCM), or is sometimes a component “re-manufacturer”, under contract with the OCM

Note 1 to entry: The reseller accumulates inventories of encapsulated or non-encapsulated (wafer) components whose end of life date has been published by the OCM. These components are then resold at a profit to fill a need within the market for components that have become obsolete.

3.1.2
broker
individual or corporate organization that serves as an intermediary between buyer and seller

Note 1 to entry: In the electronic component sector a broker specifically seeks to supply obsolete or hard to find components in order to turn a profit. To do so it may accumulate an inventory of components considered to be of strategic value or may rely on inventories accumulated by others. The broker operates within a worldwide component exchange network.

3.1.3
COTS product
commercial off-the-shelf product
one or more components, assembled and developed for multiple commercial consumers, whose design and/or configuration is controlled by the manufacturer’s specification or industry standard

Note 1 to entry: COTS products can include electronic components, subassemblies or assemblies, or top level assemblies. Electronic COTS subassemblies or assemblies include circuit card assemblies, power supplies, hard drives, and memory modules. Top-level COTS assemblies include a fully integrated rack of equipment such as raid arrays, file servers to individual switches, routers, personal computers, or similar equipment.

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Note 2 to entry: This note applies to the French language only.

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3.1.4
counterfeit, verb
action of simulating, reproducing or modifying a material good or its packaging without authorization

Note 1 to entry: It is the practice of producing products which are imitations or are fake goods or services. This activity infringes the intellectual property rights of the original manufacturer and is an illegal act. Counterfeiting generally relates to wilful trademark infringement.

3.1.5
counterfeited component
material good imitating or copying an authentic material good which may be covered by the protection of one or more registered or confidential intellectual property rights

Note 1 to entry: A counterfeited component is one whose identity or pedigree has been altered or misrepresented by its supplier.

Identity = original manufacturer, part number, date code, lot number, testing, inspection, documentation or warranty, etc.

Pedigree = origin, ownership history, storage, handling, physical condition, previous use, etc.

Note 2 to entry: When a material good has no registered or confidential intellectual property rights, then the material good has no intellectual property protection. Examples include situations where the original component manufacturer (OCM) has ceased to trade and has not sold or passed on the intellectual property rights to another entity.

3.1.6
customer device specification
device specification written by a user and agreed by the supplier

3.1.7
customer
user
original equipment manufacturer (OEM) which purchases electronic components, including integrated circuits and/or semiconductor devices compliant with this document, and uses them to design, produce, and maintain systems

3.1.8
data sheet
document prepared by the manufacturer that describes the electrical, mechanical, and environmental characteristics of the component

3.1.9
franchised distributor or agent
individual or corporate organization that is legally independent from the franchiser (in this case the electronic component manufacturer or OCM) and agrees under contract to distribute products using the franchiser's name and sales network

Note 1 to entry: Distribution activities are carried out in accordance with standards set and controlled by the franchiser. Shipments against orders placed can be despatched either directly from the OCM or the franchised distributor or agent. In other words, the franchised distributor enters into contractual agreements with one or more electronic component manufacturers to distribute and sell the said components. Distribution agreements may be stipulated according to the following criteria: geographical area, type of clientele (avionics for example), maximum manufacturing lot size. Components sourced through this route are protected by the OCM's warranty and supplied with full traceability.

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3.1.10
fraudulent component
electronic component produced or distributed either in violation of regional or local law or regulation, or with the intent to deceive the customer

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Note 1 to entry: This includes but is not limited to the following which are examples of components which are fraudulently sold as new ones to a customer:

1) a stolen component;
2) a component scrapped by the original component manufacturer (OCM) or by any user;
3) a recycled component, that becomes a fraudulent recycled component when it is a disassembled (for example disassembled from a PCB assembly) component resold as a new component (see Figure 1), where typically there is evidence of prior use and rework (e.g. solder, re-plating or lead re-attachment activity) on the component package terminations;
4) a counterfeit component, a copy, an imitation, a full or partial substitute of brands;
5) fraudulent designs, models, patents, software or copyright sold as being new and authentic. For example: a component whose production and distribution are not controlled by the original manufacturer;
6) unlicensed copies of a design;
7) a disguised component (remarking of the original manufacturer's name, reference date/code or other identifiers etc.), which may be a counterfeit component (see Figure 1);
8) a component without an internal silicon die or with a substituted silicon die which is not the original manufacturer's silicon die.

3.1.11
intellectual property
creations of the mind such as inventions, literary and artistic works, and symbols, names, images, and designs used in commerce

Note 1 to entry: This is property created through intellectual or creative activity.

Note 2 to entry: It includes patents, trademarks, copyright and designs. It can be owned, rented out, licensed, sold or given away.

3.1.12
microcircuit
component
device
electrical or electronic device that is not subject to disassembly without destruction or impairment of design use and is a small circuit having a high equivalent circuit element density which is considered as a single part composed of interconnected elements on or within a single substrate to perform an electronic circuit function

Note 1 to entry: This excludes printed wiring boards/printed circuit boards, circuit card assemblies and modules composed exclusively of discrete electronic components.

3.1.13
MRO
maintenance, repair and overhaul
operations, such as tests, measurements, replacements, adjustments, and repairs, intended to retain or restore a functional unit in or to a specified state in which the unit can perform its required functions

Note 1 to entry: This activity includes inspection, rebuilding, alteration and the supply of spare parts, accessories, raw materials, adhesives, sealants, coatings and consumables.

Note 2 to entry: This note applies to the French language only.

3.1.14
non-franchised distributor
company which does not fall under a franchised distributor or OCM

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Note 1 to entry: These distributors may purchase components from component manufacturers, franchised distributors, or through other supply channels (open markets). These distributors cannot always provide the guarantees and support provided by the franchised distributor network; components sourced through this source are usually protected by the source's warranty only.

IEC 62668-1:2019
https://standards.iteh.ai/catalog/standards/sist/1f2348f9-8f46-44f8-8b97-d10fde9c79a0/iec-62668-1-2019

Note 2 to entry: Some non-franchised distributors are able to purchase traceable components from the OCM or their franchised distributors and to provide traceability paperwork and/or are able to return stock for investigation to the OCM. Such non-franchised distributors can satisfy the USA DFARS 252.246.7008 requirements (see A.8.10).

3.1.15
OCM
original component manufacturer
company specifying and manufacturing the electronic component

Note 1 to entry: This note applies to the French language only.

3.1.16
OEM
original equipment manufacturer
manufacturer which defines the electronic subassembly that includes the electronic components or defines the components used in an assembly and/or test specification

Note 1 to entry: This note applies to the French language only.

3.1.17
piracy
willful copyright infringement

3.1.18
re-manufactured component
recycled element
electronic component that includes a recycled silicon die or technology element as documented and disclosed by the electronic component re-manufacturer and that is fully tested before being sold

Note 1 to entry: Examples include a silicon or other die extracted from another electronic component, either new or used, which is externally marked and disclosed using the re-manufacturer's name, logo and different part number.

Note 2 to entry: Re-manufacturing an electronic component can necessitate the original engineering data and schematics of the product. This does not mean that a re-manufactured product is identical to the new product.

Note 3 to entry: Electronic re-manufactured components often come with warranties.

3.1.19
reseller
general supplier which offers a selection of electronic components to order from a catalog

3.1.20
recycled component
electrical component removed from its original product or assembly and available for reuse

Note 1 to entry: The component has authentic logos, trademarks and markings. However, it typically has no output to measure the useful life remaining for its reuse. A recycled component can fail earlier than a new one when re-assembled into another product or assembly. A recycled component may also be physically damaged or damaged through electro static discharge (ESD) during the removal process.

3.1.21
semiconductor
electronic component in which the characteristic distinguishing electronic conduction takes place within a semiconductor

Note 1 to entry: This includes semiconductor diodes which are semiconductor devices having two terminals and exhibiting a nonlinear voltage-current characteristic and transistors which are active semiconductor devices capable of providing power amplification and having three or more terminals.

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3.1.22
subcontractor
manufacturer of electronic subassemblies or supplier manufacturing items in compliance with customer design data pack and drawings, and under the authority of the OEM

IEC 62668-1:2019

Note 1 to entry: This supplier can potentially procure all or part of the electronic components required to produce a subassembly and is often referred to as the contract electronic manufacturer (CEM) or electronics manufacturing services (EMS).

3.1.23
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 an OCM, a franchised distributor or agent, a non-franchised distributor, broker, reseller, OEM, CEM, and EMS, etc.

3.1.24
suspect component
electronic component which has lost supply chain traceability back to the original manufacturer and which may have been misrepresented by the supplier or manufacturer and may meet the definition of fraudulent or counterfeit component

Note 1 to entry: Suspect components may include but are not limited to:

1) counterfeit components;
2) recycled components coming from uncontrolled recycling operations carried outside of the OEM, franchised network and OEM business where typically it has been fraudulently sold to the OEM as being in a new unused condition.

3.1.25
traceability
ability to have, for an electronic component, its full trace back to the original component manufacturer

Note 1 to entry: This traceability means that every supplier in the supply chain is prepared to legally declare in writing that they know and can identify their source of supply, which goes back to the original manufacturer and can confirm that the electronic components are brand new and were handled with appropriate ESD and MSL handling precautions. This authenticates that the electronic components being supplied are unused, brand new components with no ESD, MSL or other damage. This ensures that the electronic components are protected by any manufacturer's warranties, have all of their useful life remaining and function according to the manufacturer's published data sheet, exhibiting the expected component life in the application for the OEM's reliability predictions and product warranty.

3.1.26
untraceable
property of electronic components which have lost their traceability (see 3.1.25)

3.2 Abbreviated terms

AAIPT	Alliance Against IP Theft
ACTA	Anti-Counterfeit Trade Agreement
ACTF	Semiconductor Industries Association Anti Counterfeit Task Force
ADHP	aerospace, defence and high performance
ASIC	application specific integrated circuit
ATP	acceptance test procedure
BEAMA	British Electrotechnical Allied Manufacturers' Association
BoM	bill of materials
CAAC	Civil Aviation Administration of China
CATA	China Anti-counterfeit Technology Association
CB	certifying body (third party)
CNIPA	China National Intellectual Property Administration, PRC
COTS	commercial off-the-shelf
CofC	certificate of conformance
CEC	China Electronics Corporation
CECA	China Electronic Components Association
CEEI	China Electrical Equipment Association
CEM	contract electronic manufacturer
CESI	China Electronics Standardization Institute
CMM	component maintenance manuals
CQAE	China Quality Management Association for Electronics Industry
CMOS	complementary metal oxide semiconductor
DFARS	Defense Federal Acquisition Regulation System
DLF	direct line feed
DOD	Department of Defence (US)
DMEA	Defense MicroElectronics Activity
DMSMS	diminishing manufacturing sources and material shortages
DNA	deoxyribonucleic acid
DSCC	Defence Supply Centre Columbus
DLA	Defense Logistics Agency (former DSCC)
EASA	European Aviation Safety Agency
ECIA	Electronic Components Industry Association
ECMP	electronic component management plan
ECSN	electronic component supplier network

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