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1.0 Purpose/Scope

This document outlines the suppliers' requirements for component shelf life & storage for GE Grid Automation division of GE Grid Solutions. In the event of conflict between the requirements of this document and the referenced Applicable Documents listed in section 2.0, this document will take precedence.

This document provides a set of general requirements for normal day to day shelf life control execution at GE Grid Automation's supplier base. Original component manufacturer's recommendations are to be taken into consideration for final justification where appropriate.

2.0 Applicable Documents and Standards

2.1 GE Documents

- 2.1.1 105X1009 Rev 9 - Electronic Supplier Quality Requirement
- 2.1.2 EC-SRC - 0002 - Supplier Quality Requirements
- 2.1.3 EC-SRC - 0005 - Marking, Packaging, Preservation, and Shipping Requirements
- 2.1.4 EC-SRC-0008-Counterfeit Parts Avoidance for Independent distributors and high risk suppliers
- 2.1.5 GA-SRC-0001 Cosmetic Inspection Guidelines for Uncoated Aluminum Cabinets
- 2.1.6 GA-SRC-0002 Cosmetic Inspection Guidelines for Mechanical Components
- 2.1.7 Storage Requirements (Shelf Life) for Components, Materials and PWB's (Industrial Solutions)



2.2 Industrial Standards

2.2.1 IPC-A-600 Acceptability of Printed Boards

2.2.2 IPC-A-610 Acceptability of Electronic Assemblies

2.2.3 IPC-TM-650 Test Methods Manual

2.2.4 IPC-1601 Printed Board Handling and Storage Guidelines

2.2.5 J-STD-002A Solderability Tests for Component Leads, Terminations, Lugs, Terminals and Wire

2.2.6 J-STD-003b Solderability Tests for Printed Boards

2.2.7 J-STD-020F Moisture/Reflow Sensitivity Classification

2.2.8 J-STD-033 Packaging and Handling of Moisture Sensitive Non-Hermetic Devices

2.2.9 J-STD-033b Handling, Packing, Shipping and Use of Moisture/Reflow Sensitive Devices

2.2.10 JIS C5101 Fixed capacitors for use in electronic equipment



3.0 Component Shelf Life

Note: Times below are referenced from the date of manufacture

3.1 Bare Printed Circuit Board (PCB) shall be based on the finish as shown below:

- i. Tin or Tin-Lead HASL, Immersion Gold = 1 year (also shown in Table 1 below)
- ii. Immersion Silver, Immersion Tin, OSP = 6 months (also shown in Table 1 below)
- iii. PCBs that are out of Shelf Life specified in i & ii above are to be scrapped. This is due to the moisture absorption of the material and the increased susceptibility to delamination during assembly of the PCB.
- iv. Table 1 outlines the recommended shelf life, storage and bake conditions for PCB (for further details, refer to IPC-1601).

PCB Shelf Life						
PCB Finish Type	Ambient Storage Condition		PCB Shelf Life	Baking Required After x Months?	Drying Time	Baking Temperatures
	%RH	°C				
Hot Air Solder Level (HASL) Tin or Tin-Lead	<70	18-30	12 months	Yes, 6 months and if HIC indicates >10% RH exposure	4-6 Hours	105-125C
Electroless Nickel Immersion Gold (ENIG)	<70	18-30	12 months	Yes, 6 months and if HIC indicates >10% RH exposure	4-6 Hours	105-125C
Immersion Silver, Immersion Tin	<70	18-30	6 months	Yes, 3 months and if HIC indicates >10% RH exposure	4-6 Hours	105-125C
Organic Solderability Preservative (OSP)	<70	18-30	6 months	Not recommended as it will deteriorate finish. If necessary, use lowest possible temp and dwell time		

Table 1: Types of PCB for Shelf Life, Storage Conditions and Baking



3.2 Active Components, including semiconductors, oscillators, and diodes, etc.:

- i. Can be accepted, if less than 2 (two) years old
- ii. Must pass Solderability Test (J-STD-002A and J-STD-003b), if between 2 to 5 years' old
- iii. Cannot be used unless it is for LTB or approved via e-SDR, if more than 5 years' old

3.3 Passive Components, including resistors, capacitors (except for Aluminum Electrolytic Capacitors described in 3.4), can be used up to 5 (five) years provided there are no evidence of the corrosion.

3.4 Aluminum Electrolytic Capacitors (Wet Type):

- i. Less than 1 year old from component manufacture date, up to the ship date to GE
- ii. If older than 1 year, Suppliers must seek component manufacturer recommendations and submit E-SDR to GE Supplier Quality function for approval. Voltage Treatment/reforming procedure based on the component manufacturer's documentation or JIS C5101-4 may be required if indicated in the disposition section of E-SDR by GE.

3.5 Mechanical Hardware, including sheet metal, fastener hardware can be used up to 5 (five) years provided there is no evidence of the corrosion.

3.6 Miscellaneous, including connectors, transformers can be used up to 5 (five) years provided there is no evidence of the corrosion.

3.7 Finish PCBA can be used up to 5 (five) years provided there is no evidence of the corrosion.

4.0 Component Floor Life

Moisture sensitive components floor life shall follow J-STD-033b for floor life classification and reflow/bake procedures.



5.0 Storage Conditions

Unless otherwise noted, acceptable environmental conditions are 18-30°C temperature at less than 70% relative humidity.

- a. Bare PCB in original vacuum-sealed package
- b. All other materials, excluding finished PCBAs, in original factory sealed packaging or in resealed bags conforming to applicable ESD and moisture sensitive parts handling procedures
- c. PCBA (WIP/Finished Goods) must be stored under an ESD safe and temperature/humidity controlled environment

