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Classifications of ESD Susceptible Items

Per ESD Handbook ESD TR20.20 section 4.1.1 Determining Part ESD Sensitivity "The first step in developing an ESD Control Program plan is to determine the part, assembly or equipment sensitivity level under which the plan is to be developed.

The organization can use one of several methods to determine the ESD sensitivity of the products that are to be handled. Some of the various methods are:

- 1) Assumption that all ESD products have an HBM sensitivity of 100 volts.
- 2) Actual testing of products using accepted test methods

ANSI/ESD S20.20, for the Development of an Electrostatic Discharge Control Program for – Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices) Foreword "This standard covers the requirements necessary to design, establish, implement, and maintain an Electrostatic Discharge (ESD) Control Program for activities that: manufacture, process, assemble, install, package, label, service, test, inspect or otherwise handle electrical or electronic parts, assemblies and equipment susceptible to damage by electrostatic discharges greater than or equal to 100 volts Human Body Model (HBM). When handling devices susceptible to less than 100 volts HBM, more stringent ESD Control Program Technical Requirements may be required, including adjustment of program Technical Element Recommended Ranges."

HUMAN BODY MODEL

The updated standard ANSI/ESDA/JEDEC JS-001-2011, For Electrostatic Discharge Sensitivity Testing Human Body Model (HBM) - Component Level Table 3 has divided the Class 0 classification into two withstand voltage levels with class 0A being less than 125 volt sensitivity, and class 0B being 125 to less than 250 volts.

If handling class 0A items, or less than 125 volts, program improvements are called for. Basically, to control the environment to decrease the probability of ESD damage in class 0A situations, involves increasing ESD protective redundancies by adding EPA ESD control items and ensuring that they are working properly by increasing the frequency of compliance verifications of those ESD control items.



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ANSI/ESDA/JEDEC JS-001-2011 Table 3. HBM ESD Component Classification Levels

Classification Voltage Range (V)

0A	< 125
0B	125 to < 250
1A	250 to < 500
1B	500 to < 1000
1C	1000 to < 2000
2	2000 to < 4000
3A	4000 to < 8000
3B	≥ 8000

CHARGED DEVICE MODEL

JESD22-C101C Field-Induced Charged-Device Model Test Method for Electrostatic-Discharge-Withstand Thresholds of Microelectronic Components Table 3

Devices shall be classified as follows:

CLASS I	<200 volts
CLASS II	200 to <500 volts
CLASS III	500 to 1000 volts
CLASS IV	>1000 volts

The importance of CDM is primarily because of the increased use of automated component handling systems. The Foreword of ANSI/ESD STM5.3.1 states “In the CDM a component itself becomes charged (e.g., by sliding on a surface (tribocharging) or by electric field induction) and is rapidly discharged (by an ESD event) as it closely approaches a conductive object.”

About Desco: Desco manufactures ESD control products used in the electronics production industry. Desco has six manufacturing locations in the USA. Products made by Desco include wrist straps, foot grounders, worksurface mats, shielding bags, floor finish, floor mats, ionization, smocks, continuous monitors and ESD audit equipment. A network of manufacturer's reps offer sales and technical support in most US states, Mexico, and Canada.

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