ESD association advisory

for Electrostatic Discharge Terminology

Glossary

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Electrostatic Discharge Association
7900 Turin Road, Bldg. 3
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ESDAssociation

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1. PURPOSE

The purpose of this Glossary is to promote technically correct terminology in the Electrical Overstress/Electrostatic Discharge (EOS/ESD) community.

2. SCOPE

This document contains unified definitions and explanations of terminology used in the Standards, TR20.20 Handbook, and other documents of the ESD Association. The Glossary compares EOS/ESD industry terminology with the more familiar usages of electrical and electronic terms. Although the Glossary is not intended to be an encyclopedia, it includes historical information (including explanations of obsolete terminology) and clarifies terminology in other EOS/ESD-related documents.

The Glossary is revised as needed so that it evolves continually along with the evolving knowledge of EOS/ESD phenomena and protective methods.

New revisions of the Glossary cover all issued standards, standard practices, standard test methods in effect at the time the revision, but not necessarily draft documents. At the time of each edition's publication, the Glossary includes the most recent updates of the definitions from all issued Association standards.

3. DEFINITIONS

Acceptance testing
Incoming tests to confirm proper marking and electrical functionality. Data are the form of visual inspection records, and values or pass/fail notation.

Air conductivity
The ability of air to conduct (pass) an electric current under the influence of an electric field.

Air ion
Molecular clusters of about 10 molecules (water, impurities, etc.) bound by polarization forces to a singly charged oxygen or nitrogen molecule.

Air Ionizer
A source of charged air molecules (ions).

Ankle strap
See Ground Strap.

Antistat, agent
A substance that is part of or topically applied to a material to render the material surface static dissipative or less susceptible to triboelectric charging.

Antistatic
Usually refers to the property of a material that inhibits triboelectric charging. Note: A material's antistatic characteristic is not necessarily co-relatable with its resistively or resistance.

Auxiliary ground
A separate supplemental grounding conductor for use other than general equipment grounding.

Barrier strip
A device or apparatus that consists of a metal strip and connectors or screws that allow termination and connection of wires or conductors from various components of an electrostatic discharge protected workstation.

Bipolar ionizer
A device that generates both positively and negatively charged ions.

Body Contacting Mechanism (BCM)
The part of the foot grounder that makes electrical contact with the body.

Bond or Bonding
The permanent joining of metallic parts to form an electrically conductive path that will assure electrical continuity and the capacity to safely conduct any current likely to be imposed.

Breakaway force
The force required to disconnect the ground cord from the cuff.

Bus bar
A metal strip or bar to which several conductors may be bonded.

CDM ESD Tester
Equipment (referred to as "tester" in this standard) that simulates the component level Charged Device Model ESD event using the non-socketed test method.

Charge decay
The decrease and/or neutralization of a net electrostatic charge.

Charge induction
The displacement of charge in an isolated conductor when placed in an electric field (for example, from a charged body). Note: Momentary grounding of such a conductor would result in its gaining a net charge.

Charged device model
A specified circuit characterizing an electrostatic discharge, which results when a device isolated from ground is first charged and then subsequently grounded.

Charged plate monitor (CPM)
An instrument used to measure the charge neutralization properties of ionization equipment.

Cold healing
The spontaneous recovery, at room temperature, of an item from a parametric change caused by electrostatic discharge.

Cold workstation
A work area that has items, assemblies, black boxes, or systems which no power is applied.

Common point ground
(1) A grounded device where two or more conductors are bonded. (2) A system or method for connecting two or more grounding conductors to the same electrical potential.

Component
An item such as a resistor, diode, transistor, integrated circuit and hybrid.

Component failure
A condition in which a tested component does not meet one or more specified static or dynamic data sheet parameters.

Static parameters are those measured with the component in a non-functioning (standby) condition. These parameters may include, but are not limited to: input leakage current, input breakdown voltage, output high and low voltages, output drive current, and supply current.

Dynamic parameters are those measured with the component in a functioning (operating) condition. These parameters may include, but are not limited to: full functionality, output rise and fall times under a specified load condition, and dynamic current draw.

Compressed gas ionizer
Ionization devices used to simultaneously neutralize charged surfaces and remove surface particles with high-pressure gas. This type of ionizer may be used to ionize the gas within production equipment.

Conductive material
A material that has a surface resistivity less than 1 x 10E5 ohms/square or a volume resistivity less than 1 x 10E4 ohm-cm.

Conductivity
(1) The ratio of the current per unit area (current density) to the electric field in a material. Conductivity is expressed in units of siemens/meter. (2) In non-technical usage, the ability to conduct current.

Contact-mode Discharge
An ESD event initiated within a relay. The relay is connected to the component pin via a probe, and the component is not in a socket.

Contact-mode, non-socketed discharge
An ESD event that is initiated within a relay. The relay is connected to the component via a probe, and the component is not in a socket.

Corona
The production of positive and negative ions by a very localized high electric field. The field is normally established by applying a high voltage to a conductor in the shape of a sharp point or wire.

Cuff
The portion of the wrist strap worn on the wrist. The cuff maintains electrical contact with a person's skin.

Current Limiting Resistance
A resistance value incorporated in series with the wrist strap's electrical path to ground. This resistance limits electrical current that could pass through the ground cord in the event of inadvertent user contact with electrical potential.

Data sheet parameters
Static and/or dynamic component performance data supplied by the component manufacturer or user, consisting of static and/or dynamic characteristics.

Decay rate
The decrease of charge or voltage per unit time.

Decay time
The time required for an electrostatic potential to be reduced to a given percentage (usually 10%) of its initial value. (See Static Decay Test.)

Dielectric
An insulating material that can sustain an electric field with little current flow.

Dielectric breakdown voltage
The electric potential across an insulating material that causes a sudden increase in current through the material of the insulator.

Dielectric strength
The maximum electric field that a dielectric can sustain.

Discharge time
The time necessary for a voltage (due to an electrostatic charge) to decay from an initial value to some arbitrarily chosen final value.

DUT
Device Under Test. The device to which the Transient Stimulus will be applied.

Dynamic parameters
Dynamic parameters are those measured with the component in an operating condition. These may include, but are not limited to: full functionality, output rise and fall times under a specified load condition, and dynamic current consumption.

Dynamic state
Any operational state where the device is functioning according to its design is in a Dynamic State. Typically, inputs, I/O, and output pins are changing as a required to operate the device. In the dynamic state, the supply current should be changing throughout the range of IDDNOM.

Electric charge
An absence or excess of electrons.

Electrical ionizer
A device that creates ions in gases by use of high voltage electrodes.

Electrical Overstress (EOS)
The exposure of an item to a current or voltage beyond its maximum ratings. This exposure may or may not result in a catastrophic failure.

Electrification period
The average of five (5) electrification times, plus five (5) seconds.

Electrification time
The time for the resistance measuring instrument to stabilize at the value of the upper resistance range verification fixture.

Electrostatic charge
Electric charge at rest.

Electrostatic damage
Change to an item caused by an electrostatic discharge that makes it fail to meet one or more specified parameters.

Electrostatic discharge (ESD)
The rapid, spontaneous transfer of electrostatic charge induced by a high electrostatic field. Note: Usually, the charge flows through a spark between two bodies at different electrostatic potentials as they approach one another. Details of such processes, such as the rate of the charge transfer, are described in specific electrostatic discharge models.

Electrostatic discharge control
See Static Control

Electrostatic discharge ground
The point, electrodes, bus bar, metal strips, or other system of conductors that form a path from a statically charged person or object to ground.

Electrostatic discharge protected area (EPA)
A designated environment provided with materials and equipment to limit electrostatic potentials.

Electrostatic discharge protective
A property of materials capable of one or more of the following: reducing the generation of static electricity, dissipating an electrostatic charge, or providing shielding from electrostatic discharge or electrostatic fields.

Electrostatic discharge protective station
An area that is constructed and equipped with the necessary protective materials and equipment to limit damage to electrostatic discharge susceptible items handled therein.

Electrostatic discharge protective symbol
The graphics used to identify items that are specifically designed to provide electrostatic discharge protection.

Electrostatic discharge protective workstation
An area that is constructed and equipped with the necessary protective materials and equipment to limit damage to electrostatic discharge susceptible items handled therein.

Electrostatic discharge protective worksurface
A worksurface that dissipates electrostatic charge from materials placed on the surface or from the surface itself.

Electrostatic discharge sensitivity (ESDS)
The ESD level that causes component failure. (Note: See also electrostatic discharge susceptibility.)

Electrostatic discharge shield
A barrier or enclosure that limits the passage of current and attenuates an electromagnetic field resulting from an electrostatic discharge.

Electrostatic discharge spark testing
Testing performed with operating equipment or parts to determine their susceptibility to the transient electromagnetic fields produced by an air discharge event.

Electrostatic discharge susceptibility
The propensity to be damaged by electrostatic discharge. (See also electrostatic discharge sensitivity).

Electrostatic discharge susceptibility classification
The classification of items according to electrostatic discharge susceptibility voltage ranges. Note: There are various classification methods.

Electrostatic discharge susceptibility symbol
The graphics placed on hardware, assemblies, and documentation for identification of electrostatic discharge susceptible items.

Electrostatic discharge susceptible item
Electrical or electronic piece part, device, component, assembly, or equipment item that has some level of electrostatic discharge susceptibility.

Electrostatic discharge withstand voltage
The maximum electrostatic discharge level that does not cause component failure.

Electrostatic field
An attractive or repulsive force in space due to the presence of electric charge.

Electrostatic potential
The voltage difference between a point and an agreed upon reference.

Electrostatic shield
A barrier or enclosure that limits the penetration of an electrostatic field.

Electrostatics
The study of electrostatic charge and its effects.

Emitter
A conducting sharp object, usually a needle or wire, which will cause a corona discharge when kept at a high potential.

EOS
See Electrical Overstress.

Equipment ground
(1) The ground point at which the equipment grounding conductor is bonded to any piece of equipment, at the equipment end of the conductor.
(2) The 3rd wire (green) terminal of a receptacle.
(3) The entire low impedance path from a piece of electrical equipment to a hard ground electrode.

ESD
Electrostatic Discharge. (See Electrostatic Discharge.)

ESD ground
The point, electrodes, bus bar, metal strips, or other system of conductors that form a path from a statically charged person or object to ground.

ESD protective
A property of materials capable of one or more of the following: preventing the generation of static electricity, dissipating electrostatic charges over its surface or volume, or providing shielding from ESD or electrostatic fields.

ESD protective station
An area that is constructed and equipped with the necessary protective materials and equipment to limit damage to ESD susceptible items handled therein.

ESD sensitivity
See electrostatic discharge sensitivity and electrostatic discharge susceptibility.

ESD withstand voltage
The maximum level that does not cause component failure.

ESDS
Electrostatic Discharge Susceptible. (See Electrostatic Discharge Susceptible and Electrostatic Discharge Sensitivity.)

Evaluation testing
Stringent testing of a wrist strap to determine its electrical and mechanical performance abilities. Data are in the form of values from laboratory testing.

Failure Threshold
The supply current value that when exceeded, is considered to have failed the device is called the failure Threshold Current.

Faraday cage
A conductive enclosure that attenuates a stationary electrostatic field.

Field induced charging
A charging method using electrostatic induction.

Final Test Voltage
The voltage on the test plate of the periodic verification instrument at which the discharge time test ends.

Floor Contacting Surface (FCS)
That part of the foot grounder that makes electrical contact to the grounding surface.

Flooring/Foot Grounder System Resistance
The total resistance of the foot grounder, when worn by the person, while standing on a static control floor.

Foot Grounder
Personnel grounding device worn on the shoe.

Foot Grounder System
A foot grounder properly worn by a person where the electrical path includes the person and the foot grounder.

Foot Grounder System Resistance
The measure of the total resistance of the foot grounder when worn by the person standing on a stainless steel plate.

Functional State
The Functional State of the device defines the mode in which it is operating.

Functional testing
End use testing to confirm electrical functionality. Data is in the form of pass/fail notation or values.

Garment system
Any electrically interconnected components of static control apparel.

Ground
(1) A conducting connection, whether intentional or accidental between an electrical circuit or equipment and the earth, or to some conducting body that serves in place of earth.

(2) The position or portion of an electrical current at zero potential with respect to the earth.

(3) A conducting body, such as the earth of the hull of a steel ship used as a return path for electric currents and as an arbitrary zero reference point.

Ground cord
The portion of the wrist strap that provides flexibility of movement while completing the electrical circuit between the cuff and ground.

Ground Current
The current flowing out of the ground pin.

Ground fault circuit interrupter
A device intended for the protection of personnel that functions to de-energize a circuit or portion thereof within an established period of time. It is activated when a current difference between the neutral and hot conductors exceeds some predetermined value that is less than that required to operate the overcurrent protective device of the supply circuit. The current difference is usually caused by a current to ground.

Ground lead
The portion of the wrist strap, which provides flexibility of movement while completing the electrical circuit between the cuff at one end and a ground system at the other.

Ground Pin
The pin or set of pins that return current to the supply voltage source is called the Ground Pin.

Ground reference point
The ground reference point is the prong of the equipment's ground wire from hand soldering equipment to a workstation ground point.

Examples are: (a) The ground plug of an AC power cord; (b) the banana plug of a grounding patch cord; (c) the ring or spade lug of a ground jumper wire.

Ground strap
(1) A conductor intended to provide an electrical path to ground. (2) An item used by personnel with a specified resistance, intended to provide a path to ground.

Groundable point
A designated connection location or assembly used on an electrostatic discharge protective material or device that is intended to accommodate electrical connection from the device to an appropriate electrical ground.

Groundable point ESD protective floor material
A point on the floor material that is intended to accommodate an electrical connection from the floor material to an appropriate electrical ground.

Groundable point, seating
Conductive caster or drag chain used to provide an electrical path from seating to a static control floor or mat.

Grounded
Connected to earth or some other conducting body that serves in place of the earth.

Grounded conductor
A system or circuit conductor that is intentionally grounded.

Grounding conductor
A conductor used to connect equipment or the ground circuit of a wiring system to a ground electrode or electrodes.

Grounding resistance
The total resistance from any given point in an electrically conductive path to the grounding electrode.

Hard ground
A connection to ground through a wire or other conductor that has very little or nearly no resistance (impedance) to ground.

Hardboard (Standard or Tempered)
Heavy sheet material of fibers matted and pressed or rolled to form a strong board. (Masonite, of the Massonite Corp. is one of several commonly available board products that will serve the purpose.)

HBM ESD Tester
The human body model electrostatic discharge tester.

Horizontal laminar flow
Non-turbulent air flow in a horizontal direction.

Hot work station
A work area that has items, assemblies, black boxes, or systems which have power applied for testing or repair.

Human body model
An electrostatic discharge circuit that meets the set model values vy conforming to waveform criteria specified ESD-S5.1, characterizing the discharge from the fingertip of a typical human being.

Human body model ESD
An ESD event meeting the waveform criteria specified in this standard, approximating the discharge form the fingertip of a typical human being.

Human body model electrostatic discharge
An electrostatic discharge event meeting the waveform criteria specified in ESD S5.1, approximating the discharge from the fingertip of a typical human being.

Human body model electrostatic discharge tester
Equipment that applies Human Body Model electrostatic discharges to a component.

Impedance
The total opposition (i.e., resistance or reactance) a circuit offers to the flow of alternating current. It is measured in ohms and the lower the ohmic value, the better the quality of the conductor.

Impedance n. Symbol z
A measure of the total opposition to current flow in an alternating current circuit, made up of two components, ohmic resistance and reactance, and usually represented in complex notation as $Z = R + iX$, where R is the ohmic resistance and X is the reactance. Impedance is measured in ohms.

Inductive charging
The transfer of an electric charge to an object when it is momentarily contacted to ground in the presence of an electric field.

Initial Test Voltage
The voltage on the test plate of the periodic verification instrument at which the discharge time test begins.

Input protection
Structures, devices or networks connected at the input terminals of an item to prevent electrostatic discharge damage.

Insulated conductor
A conductor encased within material of composition and thickness that is recognized as electrical insulation.

Insulative material
A material having a surface resistivity of at least 1 x 10E12 ohms/square or 1 x 10E11 ohm- cm volume resistivity.

Interface Board
The interface board connects the top and bottom 256 pin decks of the tester together to create a single 512 pin test simulator.

Ionization
The process by which a neutral atom or molecule acquires a positive or negative charge.

Ionizer
A device which is designed to generate positive and/or negative air ions.

Isolated conductor
A non-grounded conductor.

Isolated ground receptacle
A grounding type receptacle in which the equipment grounding conductor contact and terminal are electrically isolated from the receptacle mounting means.

Junction damage
Electrical overstress damage to a semiconductor junction.

Laminar flow hood ionization
These devices or systems provide local area ionization coverage in vertical or horizontal laminar flow hoods or benches.

Latch-Up
Latch-up refers to the activation of parasitic bipolar transistors (junctions) inherent to the CMOS process. These Transistors form a latch, which when activated, results in a large and sustained increase in the supply current. This state remains active until power is removed or the device self-destructs. The device is generally non-functional when in their state. Latch-up is typically triggered by an over stress voltage or current on one or more pins.

Latent failure
A malfunction that occurs following a period of normal operation.

Note: The failure may be attributable to an earlier electrostatic discharge event. The concept of latent failure is controversial and not totally accepted by all in the technical community.

Machine model
An electrostatic discharge simulation test based on a discharge network consisting of a charged 200 picofarad capacitor and (nominally) zero ohms of series resistance. Actual series resistance and inductance are specified in terms of the current waveform through a shorting wire. The simulation test approximates the electrostatic discharge from a machine.

Machine model (MM) electrostatic discharge
An ESD event meeting the criteria as specified in a standard.

Main bonding jumper
The connection between the grounded circuit conductor and the equipment grounding conductor at the service.

Minority Carrier Flood
Transient stimuli with negative-going voltage components superimposed on the VDD supply.

MM ESD tester
Equipment that applies. Machine model electrostatic discharge to a component.

Monitor, charge(d) plate
An instrument used to measure the charge neutralization properties of ionization equipment.

Neutralize
To eliminate an electrostatic field by recombining positive and negative charges, either by conducting the charge to ground or by introducing an equal opposite charge.

Nominal Supply Current
The nominal supply current is the range of supply currents possible under all normal operating states.

Non-contact mode, non-socketed discharge
An ESD event that is initiated by a probe tip approaching a component pin, and the component is not placed in a socket.

Nuclear ionizer
A device that creates ions usually by alpha emissions which strip electrons from gas molecules to form equal numbers of positive and negative ions in gases.

Offset voltage
The observed voltage on the isolated conductive plate of a charged plate monitor that has been placed in an ionized environment.

Outlet
(1) A receptacle that is connected to a power supply and equipped with a socket for a plug.
(2) A point on a wiring system at which current is taken to supply utilization equipment.

Output protection
Structures, devices or networks connected at the output terminals of an item to prevent electrostatic discharge damage.

Oxide punch-through
Dielectric breakdown of an oxide layer, as in a semiconductor device.

Passive ionizer
A device, usually a sharp grounded needle point, that discharges surfaces in the immediate vicinity by creating a conductive path of air ions.

Peak offset voltage
For pulsed ionizers, the maximum value of the offset voltage for each polarity, as the ionizer cycles between positive and negative ion outputs.

Periodic verification
Testing done to indicate that the performance of an air ionizer has not changed from initial baseline values to exceed selected limits.

Personnel grounding device
An electrostatic discharge protective device designed to ground any electrostatic charge accumulated on a person.

NOTE: The resistance to ground of a personnel-grounding device must be high enough to avoid causing an electrical

Planar material
An item with a surface sufficiently large and flat to conform to the surface of the electrode(s) used to measure the electrical properties of the material.

Point-to-point resistance
The resistance in ohms measured between two electrodes placed on any surface.

Point-to-point resistance (Garments)
The resistance in ohms measured from one point to another on the surface of the same panel or two different panels of a garment.

Positive Clamp Socket
A positive clamp test socket is a zero insertion force (ZIF) socket with a clamping mechanism.

Preconditioning
The process of changing the input states of a device and applying appropriate electrical signals until a particular desired functional state is achieved.

Receptacle
A contact device installed at the outlet for the connection of an attachment plug.

Resistance range
User-specified upper and lower resistance values which define the user-acceptable resistance values of a wrist strap or wrist strap system.

Resistance to ground
The resistance in ohms measured between a single electrode placed on a surface and ground.

Resistance to groundable point
The resistance in ohms measured between a single electrode placed on a surface and a groundable point.

Ringing
High frequency oscillation superimposed on the waveform.

Room ionization
ionization systems which provide large area coverage with air ions.

Service equipment
The necessary equipment, usually consisting of a circuit breaker or switch and fuses, and their accessories, located near the point of entrance of supply conductors to a building or other structure, or an otherwise defined area, and intended to constitute the main control and means of cutoff of the supply.

Short Module
A 14-pin plastic package with all pins internally shorted together, except for pins 1 or 14, depending on the module.

Shunting bar
A device that shorts together the terminals of an electrostatic discharge susceptible item forming an equipotential surface.

Sleeve-to-Sleeve Resistance
The resistance in ohms measured from the sleeve opening of the garment to the other sleeve opening of the same garment.

Slew Rate
The maximum rate of change of a voltage signal. It is expressed in units of voltage per unit time.

Socketed Device Model (SDM)
A model that approximates the discharge event that occurs as the total charge stored in the test system, consisting of the IC component, socket and test simulator's RLC parasitic elements, discharges to another object at a lower electrostatic potential (ground), through the test system relay matrix.

Socketed Device Model (SDM Tester
Equipment that simulates the component level SDM ESD event in a socket.

Socketed Discharge
A moveable island of material placed over existing flooring that dissipates static charges by grounding personnel, equipment, or other objects contacting h floor material or that controls the generation and accumulation of static charges associated with the material.

Spark
An electrical discharge of very short duration, normally between two conductors separated by a gas.

Standard Static Latch-up
Pulsed Injection on Signal Pins (I-Test) and OverVoltage on supply pins.

Static control (or, electrostatic discharge control)
1.adj. - electrostatic discharge protective.
2.n. - Generic term for measures taken to diminish the effects of electrostatic discharge.

Static control floor
A permanently installed floor material such as tile, carpet, polymer, epoxy, or sheet flooring that dissipates static charges by grounding personnel, equipment, or other objects contacting the floor material or that controls the generation and accumulation of static charges associated with floor materials.

Static control floor finish
A non-permanent coating periodically applied to existing floor surfaces that dissipates static charges by grounding personnel, equipment, or other objects contacting the floor finish or that controls the generation and accumulation of static charges associated with floor materials.

Static control floor mat
A movable island of material placed over existing flooring that dissipates static charges by grounding personnel, equipment, or other objects contacting the floor material or that controls the generation and accumulation of static charges associated with the material

Static control floor material
A permanently installed floor material such as tile, carpet,, polymer, epoxy or sheet flooring that dissipates static charges by grounding personnel, equipment, or other objects contacting the floor material or that controls the generation and accumulation of static charges associated with floor materials.

Static control footwear (footwear)
Coverings for the human foot that have properties to dissipate static charge when used in conjunction with a static control floor or floor surface as defined in a standard.

Static control footwear (other devices)
Devices (excluding shoes) connected to human feet such as a foot straps, toe grounders, booties, or other electro-mechanical connectors, that are intended to control the accumulation of static charge when used in conjunction with a static control floor or floor finish, or floor mat.

Static control footwear (shoes)
Covering for the human foot that have properties to control the accumulation of static charge when used in conjunction with a static control floor or floor finish, or floor mat.

Static control garments
Personnel garments that are designed for electrostatic charge control.

Static control seating
Chairs used in conjunction with a static control floor or static control floor mat that are intended to control the generation, accumulation and dissipation of electrostatic charge associated with the seating.

Static decay test
A procedure in which an item is first charged to a specified voltage, then allowed to dissipate to a specified voltage while measuring the duration of the discharge.

Static dissipative
A property of a material having a surface resistivity of at least 1 x 10E5 ohms/square or 1 x 10E4 ohm-cm volume resistivity but less than 1 x 10E12 ohms/square surface resistivity or 1 x 10E11 ohm-cm volume resistivity.

Static electricity
See Electrostatic Charge.

Static parameters
Static parameters are those measured with the component in a non-operating condition. These may include, but are not limited to: input leakage current, input breakdown voltage, output high and low voltages, output drive current, and supply current.

Static State
The operational state of the device where no changes are taking place.

Static State – Clocked
A Clocked-Static State allows some clocks or other internal circuits (like PLL) to operate without outside influence but inputs, I/O and outputs are generally unchanging.

Step stress test hardening
A process whereby a component subjected to increasing electrostatic discharge voltage stress is able to withstand higher stress levels than a similar component stressed at a single lower voltage level. As an example, a component may fail at one thousand volts if subjected to a single stress, but fail at three thousand volts if stressed at progressively higher voltages, starting at a low level, for example 250 volts.

Step stress testing
A test consisting of increasing stress levels applied sequentially to a sample for periods of equal duration.

Strain relief
A construction feature designed to protect the connections and the wire from premature failure.

Stress Level
The measured quantity of the transient stimulus that is being varied during testing.

Supply Current
The current flowing into the Supply Pin(s).

Supply Pin (Set)
A pin or set of pins on the device, which power just one section of the device.

Supply Voltage
The signal present at the Supply Pin to which the transient is superimposed.

Supply Voltage Source
The DC source that powers the Supply Pins.

Surface resistance
The ratio of DC voltage to the current flowing between two electrodes of specified configuration that contact the same side of a material. This measurement is expressed in ohms.

Surface resistivity
For electric current flowing across a surface, the ratio of DC voltage drop per unit length to the surface current per unit width. In effect, the surface resistivity is the resistance between two opposite sides of a square and is independent of the size of the square or its dimensional units. Surface resistivity is expressed in ohms/square.

Test Fixture Board (TFB)
The board with a socket mounted on it that electrically connects the socket to the SDM tester.

Topical antistat
An antistat that is applied to the surface of a material for the purpose of making the surface static dissipative or to reduce triboelectric charging.

Transient Pulse Width
The time duration that the transient stimulus is present.

Transient Pulse Amplitude
The amplitude of the transient stimulus measured in volts (V).

Transient Stimulus
A temporary AC signal superimposed upon the normal DC signal of the Supply Voltage Source.

Triboelectric charging
The generation of electrostatic charges when two materials make contact or are rubbed together, then separated. (See also Triboelectric series

Triboelectric series
A list of materials arranged so that one can become positively charged when separated from one farther down the list, or negatively charged when separated from one farther up the list. Note: The series' main utility is to indicate likely resultant charge polarities after triboelectric generation. However, this series is derived from specially prepared and cleaned materials tested in very controlled conditions. In everyday circumstances, materials reasonably close to one another in the series can produce charge polarities opposite to that expected. This series is only a guide.

Trigger
A transient stimulus used to initiate latch up in a device.

Trigger voltage
The minimum amplitude of the transient pulse.

Tri-State
A pin is in a high impedance state such that it is neither logical low or high.

Vdd max
This value listed in the device data sheets as the maximum, operating voltage for which the device will still meet all specifications.

Vdd nominal
The typical voltage supplied to the devices.

Vector
The digital pattern applied to a group of input pins at one time.

Vector File
A program, or an input file to a program that contains a list of many vectors used to determine the sequence of the changes required on the input pins to achieve the desired functional state.

Vertical laminar flow
Non-turbulent airflow in a vertical direction.

Vih
The voltage that is used to bias a digital input pin to logical High “I”.

Vil
The voltage that is used to bias a digital input pin to logical Low “O”.

Voltage suppression
Reduction of the voltage (V) of a charged object by increasing its capacitance (C) rather than by decreasing its charge (Q), in accordance with the formula V = Q/C. Note: Voltage suppression typically occurs when a charged object is brought closer to ground.

Volume resistance of static dissipative materials
The ration of the DC voltage to current passing between tow electrodes, or a specified configuration, that contact opposite sides of the material or object under test. Volume resistance of static dissipative material is reported in ohms.

Volume resistivity
The ratio of the DC voltage per unit thickness to the amount of current per unit area passing through a material. Volume resistivity is given in ohm-centimeters.

Worksurfaces groundable point
A point on the Worksurface that is intended to accommodate an electrical connection from the worksurface to an appropriate electrical ground.

Worksurface ionization (formerly tabletop ionization)
Ionization devices or systems used to control static charges at a workstation. Note: This type includes bench top Ionizers, overhead worksurface Ionizers, and laminar flow hood ionizers.

Wrist strap
An assembled device consisting of a wrist cuff and ground cord that provides electrical connection of a person’s skin to ground.

Wrist strap system
A wrist strap when properly worn by a person, where the electrical path includes the person, the cuff, and the ground cord.

Wunsch-bell model
A model for the thermal failure of semiconductor junctions in which the thickness of the junction is assumed to be negligible and the temperature rise is limited by diffusion of heat away from the junction.

Zap (colloquial term)
See electrostatic discharge.

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