JEDEC MANUAL

JEDEC COMMITTEE SCOPE MANUAL

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JEDEC SOLID STATE TECHNOLOGY ASSOCIATION

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1 Introduction

The JEDEC* Solid State Technology Association, with its associated committees, is the leading developer of standards for the solid-state industry in the United States. A principal function of JEDEC is to promote the development and standardization of terms, definitions, product characterization and operation, test methods, manufacturing support functions, product quality and reliability, mechanical outlines, solid state memories, and Radio Frequency Identification Tags (RFIDs). JEDEC also provides and administers a service whereby companies who manufacture discrete solid state products may register their products according to a type designation system.

The governing body of JEDEC is its Board of Directors that comprises individual members (or their alternates) representing JEDEC member companies. Any maximum dues paying company of JEDEC, having held membership in JEDEC for at least the past two consecutive years, may be considered for Board of Directors membership. In all cases, technical competence is a prerequisite for membership in JEDEC.

The JEDEC Board of Directors is responsible for establishing appropriate committees to conduct its standardization activities. These committees are assigned either service or product responsibilities. Technical and informational exchanges may take place directly between committees and their correspondents. It is a primary function of each committee to propose JEDEC Standards and to formulate policies, procedures, formats, and other documents that are then submitted to the Board of Directors for action or approval. This publication identifies the service and product committees established by the Board of Directors and defines their scopes.

Service committees are concerned with questions affecting the industry, regardless of the particular solid state product line. Activities include package outlines, terms and definitions, government standards, and international standards. Service committees establish liaison with other JEDEC committees and with agencies outside JEDEC. The following designations have been reserved for service committees: JC-10 through JC-19.

* In the past, the term JEDEC was an acronym for the title "Joint Electron Device Engineering Council." It currently describes an organization comprised of the JEDEC Solid State Technology Association Board of Directors and the associated committees of JEDEC.

1 Introduction (cont'd)

Product committees are concerned with technical areas related to their assigned product scope. Examples include test methods, device specification format and minimum content, pinouts, interface requirements, and applications. The following product committee designations have been reserved: JC-20 through JC-24 for diodes; JC-25 through JC-29 for transistors; JC-30 through JC-39 for hybrid circuits; JC-40 through JC-49 for silicon and germanium integrated circuits; and JC-50 and above for other devices, such as intermetallic semiconductors.

It shall be the responsibility of each JEDEC product and service committee to maintain liaison with the appropriate IEC technical committee, primarily TC-47 and its subcommittees and working groups, in its areas of concern; this can be accomplished through interfacing with the US National Committee and ANSI.

Members of JEDEC committees must be qualified technical or engineering representatives of companies producing and/or using the products covered by the scope of their committee, or of universities, government agencies or technical societies with expertise in the service or product areas concerned. Determination of the technical qualifications of proposed committee members is the responsibility of the committee chairperson, who may make use of a technical qualification form for this purpose.

Inquiries concerning membership should be directed to the respective committee chairperson, http://www.jedec.org/service_members/Rosters/committee_roster.cfm or contact the JEDEC Office.

2 Service committees

JC-10 Committee: Terms, Definitions, and Symbols

Activities within JC-10's scope include the generation, coordination, and review of terms, definitions, and symbols relating to discrete solid state devices, integrated circuits, modules, and various semiconductor manufacturing support functions. The committee also assists in the formulation and standardization of type designation systems. To accomplish these functions, the committee maintains liaison with and uses technical information from other groups. These groups include other JEDEC committees and national and international standards and professional organizations.

JC-11 Committee: Mechanical (Package Outlines) Standardization

Activities within JC-11's scope include generating design guidelines, standardized measuring methods for mechanical features, and standard- or registration-type mechanical outlines for microelectronic packages and assemblies, corresponding socket outlines, mechanical, environmental and ergonomic performance specifications, footprints and land patterns, and development of designators for semiconductor device packages. To accomplish these functions, the committee provides technical support and design recommendations to establish and define parameters that ensure mechanical interchangeability of parts. Other items, such as the materials, surface finish, and temper, that may affect the form, fit, function, and/or reliability of the interfaces of the product are also included. These parts are limited to the following: discrete, monolithic, multichip, and hybrid circuits; microcircuit modules; intermediate package carriers and containers; uncased devices; and certain package-related assembly or fabrication items. The committee maintains liaison with other JEDEC committees and outside organizations engaged in activities related to similar mechanical standardization work.

- **JC-11.1 Subcommittee: Editorial Practices and Procedures**

  Reviews, corrects, and gives editorial approval for distribution and publication of ballots and outlines.

- **JC-11.2 Subcommittee: Design Requirements**

  Establishes guidelines and methods for obtaining the desired dimensions and tolerancing for various classes of packages and related items, (JEDEC Standard No. 95-1, *Design Handbook*.), and develops designators for semiconductor-device packages, (JEDEC Standard No. 30, Descriptive Designation System for Semiconductor-Device Packages.)

- **JC-11.4 Subcommittee: Uncased Devices**

  Prepares mechanical outlines for uncased devices including, but not limited to, the following configurations: uncased discrete or integrated circuits, flip chip, beam lead, and tape mounted, and chip scale in general.

2 Service committees (cont'd)

JC-11 Committee: Mechanical (Package Outlines) Standardization (cont'd)

- **JC-11.5 Subcommittee: Package Interface (Inactive)**

  Prepares mechanical outlines for device test and transport mediums such as test carriers, matrix trays and shipping tubes, test sockets, and contactors.

- **JC-11.7 Subcommittee: IEC Interface**

  Coordinates with the International Electrotechnical Commission (IEC) Subcommittee 47D on work affecting mechanical outlines.

  Reference information only:

  IEC SC47D: Mechanical standardization of semiconductor devices

  - ***WG-1 — Package outlines***
    Tasks include the generation of outline drawings to ensure mechanical interchangeability, automatic handling, and mounting.

  - ***WG-2 — Terms, definitions, practices, and procedures***
    Tasks include the generation, coordination, and review of terms, definitions, and symbols. In addition, the working group establishes drawing formats and methods of dimensioning and tolerancing.

- **JC-11.10 Subcommittee: Microelectronic Ceramic Packages**

  Prepares mechanical outlines for ceramic packages.

- **JC-11.11 Subcommittee: Microelectronic Plastic Packages**

  Prepares mechanical outlines for plastic packages.

- **JC-11.13 Subcommittee: Gauges and Tools for Semiconductor Packages and Related Parts (Inactive)**

  Specifies mechanical measuring methods, mechanical gauges, fixtures, and overlays that are recommended for use in verifying the dimensions of uncased devices, semiconductor packages, and package interface media.

- **JC-11.14 Subcommittee: Microelectronic Assemblies**

  Prepares mechanical outlines for assemblies of microelectronic packages.

2 Service committees (cont'd)

JC-13 Committee: Government Liaison

JC-13 Committee is responsible for standardizing quality and reliability methodologies for solid state products used in military, space, and other environments requiring special-use condition capabilities beyond standard commercial practices. This includes long-term reliability and/or special screening requirements.

Implementation:

The purpose of the JC-13 Committee is to provide the member companies and their customers with uniform, cost-effective, proven, customer-accepted methodologies for specifying and evaluating special-use products, with the end goal of enhancing the performance and reliability of those products. Activities within the JC-13 Committee include the development, coordination, and maintenance of standards documents regarding product quality and reliability, validation systems, and process management. The committee also contributes to similar and related documents that are generated and maintained by other organizations. To accomplish this charter, the committee maintains liaisons with customers, other JEDEC committees, government agencies, and interested parties that have special application needs.

- **JC-13.1 Subcommittee: Discrete Devices**

  Provides technical support and recommendations to the Department of Defense (DoD) concerning environmental and electrical test methods and procedures for discrete solid state electronic components. This subcommittee also develops quality assurance programs and methods.

- **JC-13.2 Subcommittee: Microelectronic Devices**

  Provides technical support and recommendations to the U.S. Government and Space agencies concerning electrical, environmental, and quality and reliability assurance test methods for microelectronic devices. Members of the subcommittee contribute technical expertise in quality control and reliability engineering, environmental and simulated lifetesting, and electronic design and wafer fabrication, assembly, testing techniques.

- **JC-13.4 Subcommittee: Radiation Hardness: Assurance and Characterization**

  Maintains liaison between component manufacturers, users, and government agencies on all issues related to the radiation hardness assurance and characterization of solid state devices. All considerations of specifications, standards, methods of testing, and other technical issues related to the behavior of solid state devices in a radiation environment are within the scope of this subcommittee. The subcommittee promotes uniform standards, methods, and specifications acceptable to manufacturers, users, and government agencies through the solicitation of technical help and advice from appropriate experts. The subcommittee provides a forum where manufacturers' capabilities can be discussed.

2 Service committees (cont'd)

JC-13 Committee: Government Liaison (cont'd)

- **JC-13.5 Subcommittee: Hybrid, RF/Microwave, and MCM Technology**

  Provides technical support and develops standards concerning hybrid microcircuits, rf/microwave, and multi-chip module (MCM) technologies for commercial, industrial, military, and space applications. Activities also include the generation of terms and definitions, review of specifications, establishment of new specification criteria, and maintenance of existing criteria relating to hybrid, rf/microwave, and MCM technologies. To accomplish these functions, the subcommittee maintains liaison with and utilizes technical information from other JEDEC committees, government agencies, industry, various professional organizations, participating members, and guests.

JC-14 Committee: Quality and Reliability of Solid State Products

The JC-14 Committee is responsible for standardizing quality and reliability methodologies for solid state products used in commercial applications such as computers, automobiles, telecommunications equipment, etc. It also includes developing standards for board-level reliability of solid state products used in commercial equipment.

Implementation:

The purpose of the JC-14 Committee is to utilize relevant information and expertise from available sources, develop objectives and goals for measuring and improving quality and reliability, and to promote better communications between and within supplier/user communities. The committee is comprised of both suppliers and users and furnishes a forum where concerns of the industry for solid state device quality and reliability issues can be resolved. The committee maintains liaisons with other JEDEC committees whose tasks are related to quality and reliability issues. In addition, the committee coordinates activities with other standards organizations such as IPC, IEC, and JEITA to help develop industry and worldwide standardization.

- **JC-14.1 Subcommittee: Reliability Test Methods for Packaged Devices**

  Establishes uniform methods and procedures for evaluating the reliability of packaged solid state devices. The subcommittee develops and publishes test methods for determining the reliability of packaged devices and for establishing the physical, electrical, mechanical, and environmental conditions under which these packaged devices are to be tested. The subcommittee is comprised of both suppliers and users and furnishes a forum where concerns of the industry for solid state device test conventions can be resolved. It fulfills this role in cooperation with other JEDEC committees that specify electrical and/or mechanical conditions.

2 Service committees (cont'd)

JC-14 Committee: Quality and Reliability of Solid State Products (cont'd)

- **JC-14.2 Subcommittee: Wafer-Level Reliability**

  Generates, reviews and establishes specifications and standards relating to the wafer-level reliability or wear-out assessment of semiconductor devices. All considerations of terms, definitions, specifications, standards, methods of testing, and other technical issues relating to wafer level reliability and wear-out assessment lie within the scope of the subcommittee. To accomplish these functions the subcommittee maintains liaisons with and utilizes information and help from other groups and technical experts. The subcommittee also provides a forum for the discussion of wafer-level and wear-out reliability assessment.

- **JC-14.3 Subcommittee: Silicon Devices Reliability Qualification and Monitoring**

  Responsible for establishing standards and procedures for evaluating and reporting the reliability of solid state devices and sub assemblies used in commercial applications. This includes, but is not limited to, qualification, monitoring, and field reliability.

- **JC-14.4 Subcommittee: Quality Processes and Methods**

  Develops, publishes, and maintains standards and publications relating to quality processes and methods associated with the solid state industry. The subcommittee is comprised of supplier and customer representatives, and coordinates efforts with other organizations to minimize redundant standard development.

- **JC-14.6 Subcommittee: Failure Analysis (Inactive)**

  Establishes failure analysis standards and procedures that will improve understanding between customers and manufacturers and will benefit the industry through reducing analysis time and improving success rate. The subcommittee maintains close liaisons with the other JC-14 quality and reliability committees, as well as with outside organizations engaged in activities related to standardization work that may affect decisions or actions. It works to assure that its actions are widely acceptable, through the use of fair and equitable procedures. It manages its affairs so that its efforts remain productive and current with industry needs.

2 Service committees (cont'd)

JC-14 Committee: Quality and Reliability of Solid State Products (cont'd)

- **JC-14.7 Subcommittee: Gallium Arsenide Reliability and Quality Standards**

  Provides a forum for gathering and disseminating information regarding compound solid state devices, and the quality and reliability of integrated circuits. The subcommittee works to promote the standardization of terms, definitions, product characterization, and test methods. Subcommittee output may include, but is not limited to, standards and/or publications on the evaluation and assessment of the following areas:

  - Device physics and failure mechanisms
  - Screening procedures and quality assurance
  - Test procedures and techniques
  - Statistical analysis techniques
  - Environmental stress effects on devices
  - Reliability growth and lifetimes

  In addition to standardization development, the subcommittee may sponsor workshops and develop databases. The subcommittee operates in accordance with applicable JEDEC by-laws and rules and will function in a role complementary to that of the JC-14 Committee and its subcommittees.

JC-15 Committee: Thermal Characterization Techniques for Semiconductor Packages

Activities within this committee's scope include the standardization of thermal characterization techniques, both testing and modeling, for electronic packages, components, and materials for semiconductor devices.

These standards will satisfy the following criteria:
- These standards shall be meaningful, consistent, and shall be proven to be scientifically sound.
- These standards will provide a common means of comparison of thermal phenomena for users of microelectronic packaging.

The committee develops testing standards for semiconductor packages that include:
- Related terms and definitions,
- Test methods,
- Test conditions,
- Test environmental conditions,
- Test parameters for modeling and modeling tools, and
- Specific test methodology (including calibration of measurement tools).

The committee also develops modeling standards for semiconductor packages that include:
- Related terms and definitions,
- Neutral file formats for the exchange of thermal modeling parameters,
- Modeling processes,
- Modeling validation processes and reporting requirements, and
- Experimental validation methods.

The JC-15 Committee maintains close liaisons with other JEDEC committees as well as other industry-wide activities and assures that the Committee's work remains productive and current to meet industry needs.

2 Service committees (cont'd)

JC-16 Committee: Interface Technology

The activities within JC-16's scope include the specification of power supply voltage levels for digital integrated circuits and the definition of electrical interfaces between the components of a system. The committee scope further encompasses interface protocols, modeling, simulation, testing environments, and verification. JC-16 also hosts efforts on operating environment specifications that are common to JC-40, JC-42, and JC-45. The committee maintains a liaison with other JEDEC committees and appropriate outside organizations, both in formulating standards and in promoting wide acceptance of the committee's activities.

NOTE No standards work requiring an electrical interface can move forward without first having an endorsement from JC-16, and not without having a JC-11 outline number assigned. (JEDEC BoD decision 08/07)

3 Product committees

JC-22 Committee: Diodes and Thyristors

The products within JC-22's scope include all semiconductor rectifier diodes and thyristors, as well as small-signal, regulator, reference, p-i-n, varactor tuning diodes, avalanche breakdown diodes (ABD) or transient voltage suppressors (TVS), polymer ESD suppressors (PES), avalanche rectifiers, metal oxide varistors (MOV), all selenium rectifiers, all nonthyristor trigger diodes, and assemblies including modules using all such devices regardless of mounting, power level, or packaging. Activities include registration formats, standardization of test methods and procedures, and industry coordination for rectifiers and regulating diodes, thyristors, and transient voltage suppressors. The committee maintains liaisons with other professional, national, or international organizations for the exchange of technical informational or data as may be necessary. This committee also provides assistance in the formulation of terms, symbols, and definitions.

This committee is organized into the following subcommittees to deal with all the various products that fall within its scope:

- **JC-22.1 Subcommittee: Thyristors**
- **JC-22.2 Subcommittee: Rectifier Diodes**
- **JC-22.4 Subcommittee: Signal and Regulator Diodes (combined with JC-22.2)**
- **JC-22.5 Subcommittee: Transient Voltage Suppressors**

JC-25 Committee: Transistors

The products within JC-25's scope include all silicon transistors, such as bipolar transistors, field-effect transistors and insulated gate bipolar transistors, and all intelligent power devices. Intelligent power devices are defined as semiconductor devices of hybrid or single-chip construction that are capable of performing signal conditioning and a power-control function including fault management or diagnostics. They are capable of a peak output current rating of at least one ampere (sum for multiple outputs) and have both a supply voltage and an output load voltage rating of at least 30 V.

Activities include the generation of registration formats, the standardization of test methods and procedures, and industry coordination for the products mentioned above. The committee maintains communications with other professional, national, or international organizations for the exchange of technical informational or data as may be necessary. The committee also provides assistance in the formulation of terms, definitions, and symbols.

3 Product committees (cont'd)

JC-40 Committee: Digital Logic

The products within JC-40's scope include digital integrated circuits without regard to their fabrication technology. The committee develops the definition of test parameters and their methods of measurement, and registration formats to promote standardization of type designations. To accomplish these functions, the committee cooperates with other JEDEC committees and organizations on matters of terms and definitions, mechanical standardization, international standardization, and government liaison. The committee also maintains liaisons with user organizations to promote wide acceptance of the committee's output.

- **JC-40.1 Subcommittee: Digital Logic Families and Applications**

  The products within the scope of JC-40.1 include all standard family logic devices, with the exception of products that are primarily intended for clock distribution. Subcommittee activities include the standardization of data sheets, applications, test procedures, emulation environments, and package pin-outs for family logic products.

- **JC-40.3 Subcommittee: RDIMM Support Components**

  The products within JC-40.3 include logic, clock and generic PLL devices, defined for use on registered DIMM or other universal applications.

- **JC-40.4 Subcommittee: FBDIMM Support Components**

  The products within JC-40.4 include buffering devices, defined for use on Fully Buffered DIMM or other universal applications.

- **JC-40.5 Subcommittee: Logic Validation and Verification**

  JC-40.5 is responsible for test requirements and methodologies for logic components, including test boards/fixtures to verify conformance to specification requirements.

3 Product committees (cont'd)

JC-42 Committee: Solid State Memories

The products within JC-42's scope include all memory integrated circuits and programmable logic devices, whether static or dynamic, without regard to their fabrication technology or application. Examples include large static and dynamic RAMs, ROMs, EEPROMs, and PLDs. Activities include the development of technical information and standards pertaining to pinouts, operational characteristics including reading and writing algorithms, test parameters, characterization, and registration formats. The committee maintains liaisons with other JEDEC committees and outside organizations to promote wide acceptance of the committee's actions. The JC-42 Committee is comprised of the following four subcommittees:

- **JC-42.2 Subcommittee: SRAM Memories**

  Subcommittee has the responsibility for developing standards for all aspects of discrete Static RAM memories and memories that behave like Static RAM. Examples include SRAM and Pseudo SRAM products.

- **JC-42.3 Subcommittee: DRAM Memories**

  Subcommittee has responsibility for developing standards for all Dynamic RAM products where maximizing performance is the primary objective. Examples include DRAMs, and Graphic RAMs for high performance, powered applications including servers, workstations, desktops, and laptops.

  - **JC-42.3B Letter Committee on DRAM Functions and Features**

    Responsible for developing function and feature standards for all JC-42.3 products.

  - **JC-42.3C Letter Committee on DRAM Timing**

    Responsible for developing timing and parametric standards for all JC-42.3 products.

  - **JC-42.3D Letter Committee on DRAM Pinouts**

    Responsible for developing pinout standards for all JC-42.3 products.

- **JC-42.4 Subcommittee: Nonvolatile Memory Devices**

  Subcommittee has the responsibility for developing standards for all aspects of Nonvolatile Memory Devices except those covered by JC-42.6. Examples include Flash memory devices.

3 Product committees (cont'd)

JC-42 Committee: Solid State Memories

- **JC-42.6 Subcommittee: Low Power Memories**

  Subcommittee has the responsibility for developing standards for RAM and NVM products where minimizing power is the primary objective. Examples include compatible execute-inplace style bus LPDRAM, and Nonvolatile devices primarily for hand held battery powered applications including cell phones, PDAs, etc.

JC-45 Committee: DRAM Modules

The scope of JC-45 is to develop standards for DRAM modules, cards, and socket interfaces. These standards are to address architectural, electrical, test, and SPD issues relating to memory design and manufacturing for commercial applications.

NOTE Memory module is defined as a single or multiple PCBs that predominantly include multiple memory, logic, and passive devices in a planar or 3D layout for use with sockets.

- **JC-45.1 Subcommittee: Registered DRAM Modules**

  The scope of JC-45.1 is to develop standards for Registered socketed DRAM modules. These standards are to address architectural, electrical, and test issues relating to memory design and manufacturing for commercial applications. Reference design board files are designed and registered.

- **JC-45.2 Subcommittee: Unbuffered DRAM Modules**

  The scope of JC-45.2 is to develop standards for Unbuffered socketed DRAM modules. These standards are to address architectural, electrical, and test issues relating to memory design and manufacturing for commercial applications. Reference design board files are designed and registered.

- **JC-45.3 Subcommittee: Small DRAM Modules**

  The scope of JC-45.3 is to develop standards for small form factor socketed DRAM modules. These standards are to address architectural, electrical, and test issues relating to memory design and manufacturing for commercial applications. Reference design board files are designed and registered.

- **JC-45.4 Subcommittee: Fully Buffered DRAM Modules**

  The scope of JC-45.4 is to develop standards for Fully Buffered socketed DRAM modules. These standards are to address architectural, electrical, and test issues relating to memory design and manufacturing for commercial applications. Reference design board files are designed and registered.

3 Product committees (cont'd)

JC-45 Committee: DRAM Modules (cont'd)

JC-45.5 Subcommittee: Module Interconnect

The scope of JC-45.5 is to develop standards for module interconnect specifications including sockets. These standards are developed and published for AC electrical performance requirements with test methodology including test boards to verify conformance to the specification requirements.

JC-63 Committee: Multiple Chip Packages

Define/propose standards for mixed-technology MCP that address unique electrical, mechanical, test, and architecture issues relating to die-to-die design and manufacturing for commercial applications.

NOTE MCP is defined as multichip package, a single package that contains multiple dice, including memory-memory, logic-memory, logic-logic, and/or passive components.

JC-64 Committee: Embedded Memory Storage and Removable Memory Cards

Define/propose standards for embedded memory storage and removable memory cards that utilize an electrical and protocol abstraction layer independent of memory technology, primarily concentrating on, but not limited to, solid state flash technology. Standardize the electrical interface specification, the command protocols, the mechanical outlines, and the host controller specification. The responsibilities of this committee also include quality, reliability, and durability methodologies and procedures. The proposed documents (outlines, test methods, procedures, etc.) will be developed with the expertise and approval of related JEDEC committees such as JC-11, JC-14, and JC-16, as well as with external standards organizations when needed.

- **JC-64.1 Subcommittee: Electrical Specifications and Command Protocols**

  Define/propose standards for embedded memory storage and removable memory cards. Standardize the electrical interface specification and the command protocols. The responsibilities of this subcommittee also include quality, reliability, and durability methodologies and procedures. Applicable portions will be done in cooperation with other JC-64 subcommittees. The proposed documents (outlines, test methods, procedures, etc.) will be developed with the expertise and approval of related JEDEC committees such as JC-11, JC-14, and JC-16, as well as with external standards organizations when needed.

- **JC-64.2 Subcommittee: Form, Fit and Climatic/Environmental Methodologies**

  Define/propose standards for form, fit (mechanical outlines), and climatic/environmental (quality, reliability, and durability) methodologies for embedded memory storage and removable memory cards. The development includes, but is not limited to, mechanical outlines, test methods, and quality and reliability procedures. Applicable portions will be done in cooperation with other JC-64 subcommittees. The proposed documents (outlines, test methods, procedures, etc.) will be developed with the expertise and approval of related JEDEC committees such as JC-11, JC-14, and JC-16, as well as with external standards organizations when needed.

3 Product committees (cont'd)

JC-64 Committee: Embedded Memory Storage and Removable Memory Cards (cont'd)

- **JC-64.3 Subcommittee: Host Controllers**

  Define/propose standards for host controllers of devices in JC-64. Standardize the register sets (access, control), related DMA (Direct Memory Access) functionality, interrupts, buffering/FIFO (first-in, first-out memory), and other relevant details to enable common software driver implementation. Applicable portions will be done in cooperation with other JC-64 subcommittees. The proposed documents (outlines, test methods, procedures, etc.) will be developed with the expertise and approval of related JEDEC committees such as JC-11, JC-14, and JC-16, as well as with external standards organizations when needed.

- **JC-64.8 Subcommittee: Solid State Drives**

  Define/propose standards for solid state drives used for embedded or removable memory storage leveraging the existing storage infrastructure. The responsibilities of this subcommittee include defining new form factors leveraging existing interface standards (command protocols and electrical interfaces), mechanical interconnects, environmental aspects, and electrical quality, reliability, and durability methods and procedures that are not included in the interface standards. Applicable portions will be done in cooperation with other JC-64 subcommittees. The proposed documents (outlines, test methods, unique interface requirements, procedures, etc.) will be developed with the expertise and approval of related JEDEC committees such as JC-11, JC-14 and JC-16, as well as with external standards organizations, such as T-10, T-13, SATA-IO, USB 3.0, etc.

NOTE No standards work requiring an electrical interface can move forward without first having an endorsement from JC-16, and not without having a JC-11 outline number assigned. (JEDEC BoD decision 08/07)

JC-65 Committee: Radio Frequency Identification Tags (RFIDs)

The products within JC-65's scope include all radio frequency identification (RFID) tags, without regard to the IC, fabrication technology, strap configuration, inlay/antennae assembly technology, or application. All frequency ranges and passive, active, sensor, and battery assisted types are included. Activities include the development of technical information and standards pertaining to pinouts, test parameters, characterization, registration formats, form, fit (mechanical outlines of straps/carriers), and climatic/environmental (quality/reliability/durability) methodologies. The proposed documents (outlines, test methods, procedures, etc.) are developed with the expertise and approval of related JEDEC committees such as the JC-11 and JC-14 committees. It also maintains liaisons with other JEDEC committees and outside organizations to promote wide acceptance of the committee's actions.

4 Inactive committees and subcommittees

4.1 Inactive committees

The following committees, that are inactive as of this writing, are listed here for historical reasons.

NOTE If a committee remains inactive for a period of five (5) years the committee number will be recycled into the available numbers to be reassigned to a new committee:

JC-12 Committee: International Standardization

Activities within JC-12's scope include representing JEDEC in international standardization programs, primarily those of the International Electrotechnical Commission (IEC). To accomplish this function, the committee will draw membership from other JEDEC committees and organizations as necessary. It will act through the US National Committee of the IEC and the American National Standards Institute (ANSI) in maintaining liaison with the appropriate IEC Technical committees, primarily TC-47 and its subcommittees.

NOTE IEC activities are being handled at the present time in the applicable JEDEC Service Committees.

JC-17 Committee: Microelectromechanical Systems (MEMS)

Activities within JC-17's scope include the generation of standards applicable to micro-engineered semiconductor devices and the development of fabrication techniques for their manufacture. The committee will publish standards and guidelines for the benefit of both manufacturers and users of such devices: these should reflect the minimum requirement, taking the form of preferred options rather than absolute requirements. To accomplish these functions, the committee maintains liaison with, and uses technical information from, other JEDEC committees and outside organizations engaged in similar activities related to standardization.

JC-23 Committee: Optoelectronic Devices

The products within JC-23's scope include (1) semiconductor devices that detect, or are responsive to, optical radiation, including visible, infrared or ultraviolet spectral regions, or both, and (2) electronic devices that emit or modify noncoherent or coherent optical radiation under input conditions such as electrical excitation or injection, optical stimulation, and electron beam excitation. Category (1) includes photovoltaic cells, photoconductive cells, photodiodes, infrared detectors, solar cells, phototransistors, optocouplers, and similar types of devices, except those specifically assigned to any other product committee. Category (2) includes diodes that emit optical radiation, semiconductor injection lasers, and other types of solid state lasers, liquid crystal devices, modulators, and detectors, except those specifically assigned to any other product committee. Devices incorporating more than one of the above mentioned units within the same package are also included. Inactiviation of this committee includes its' subcommittees:

JC-23.1 Subcommittee: Liquid Crystal Devices
JC-23.2 Subcommittee: Photovoltaic Devices

4.1 Inactive committees (cont'd)

JC-30 Committee: Hybrid Microcircuits

The products within JC-30's scope include all commercial hybrid microcircuits. The committee will utilize technical information from other JEDEC committees and from organizations such as ISHM and cooperate with them on matters of terms and definitions, mechanical standardization, international standardization, and government liaison.

JC-41 Committee: Linear Integrated Circuits

The products within JC-41's scope include linear integrated circuits, without regard to their fabrication technology. The committee will develop the definition of test parameters and their methods of measurement, and registration formats to promote standardization of type designations. To accomplish these functions, the committee will cooperate with other JEDEC committees and organizations on matters of terms and definitions, mechanical standardization, international standardization, and government liaison. The committee will also maintain liaison with user organizations to promote wide acceptance of the committee's output.

JC-43 Committee: Microprocessors and Microcomputers

The products within JC-43's scope include all microprocessors and microcomputers, without regard to their fabrication technology. Activities include technical considerations and definition of electromechanical interface, user interface, I/O interface, protocol, interrupt structuring, memories, direct memory access, development hardware, software, classes of machines, bus structures, tests, RFI, user education, and similar types of activity.

JC-44 Committee: Semicustom Integrated Circuits

The products within JC-44's scope include all semicustom (application-specific) integrated circuits, such as gate arrays and standard cell circuits, without regard to their fabrication technology or application.

Activities include the development of technical information and standards pertaining to:

- Macro and cell libraries
- Programming
- Operational characteristics
- Test parameters and their methods of measurement
- Pinouts and registration formats
- Interfaces for the CAD tools used in designing

To accomplish these functions, the committee will cooperate with other JEDEC committees and organizations on matters of terms and definitions, mechanical standardization, international standardization, and government liaison. The committee will also maintain liaison with industry service and user organizations to ensure that the committee recommendations are appropriate and widely accepted.

4.1 Inactive committees (cont'd)

JC-50 Committee: Gallium Arsenide Compound Semiconductors

The products within JC-50's scope include all solid state devices that use gallium arsenide or gallium arsenide/compound semiconductor composites as the base semiconductor material. This includes discrete devices such as FETs and IMPATT diodes, as well as analog and digital integrated circuits, both microwave and high speed. It will also include devices whose principal function is light emission or optical signal processing such as LEDs, lasers, or optical sensing circuits. The committee will be responsible for the development and establishment of engineering standards concerned with testing and measurement techniques, device specification formats, unique packaging considerations, reliability verification procedures, and other related engineering issues. The committee will cooperate with and utilize relevant technical information from other JEDEC committees or organizations on matters of terms and definitions, mechanical standardization, international standardization, and government liaison. The committee will also maintain liaison with user organizations to promote acceptance of the committee's output. Inactiviation of this committee includes its' subcommittees:

JC-50.2 Subcommittee: Gallium Arsenide and Compound Semiconductor Products

JC-60 Committee: Universal Docking

Define a universal expansion architecture by consolidating multiple industry standards into a unified interconnect between a computer and its peripherals. The architecture will support interchangeable docking and expansion solutions for server, desktop, portable, ultraportable, tablet and handheld categories.

JC-61 Committee: Wireless Interface Network Group

To define/propose interface standards between radio-baseband and Media Access Controller (MAC)-baseband including Upper-Lower MAC partitioning for wireless networking systems.

4.2 Inactive subcommittees

The following subcommittees (point committees) have become inactive**:**

JC-11.5 Subcommittee: Package Interface
JC-11.9 Subcommittee: Government Coordination
JC-11.12 Subcommittee: Hybrid Packages
JC-11.13 Subcommittee: Gauges and Tools for Semiconductor Packages and Related Parts
JC-13.3 Subcommittee: Advanced Solid State Products *(merged into JC-13.2)*
JC-14.5 Subcommittee: NEQPS for Solid State Products *(merged into JC-14.4)*
JC-14.6 Subcommittee: Failure Analysis
JC-15.1 Subcommittee: Thermal Characterization *(merged in JC-15)*
JC-15.2 Subcommittee: Electrical Characterization *(merged in JC-15)*
JC-16.1 Subcommittee: Interfaces and Power Supply Voltages
JC-16.2 Subcommittee: Modeling and Test
JC-40.2 Subcommittee: Bus Switch Logic Products
JC-42.1 Subcommittee: Program Logic Devices (PLD)
JC-42.5 Subcommittee: Memory Modules *(Now JC-45 as of January 2004)*

Annex A (Informative) The JEDEC Solid State Technology Association

The JEDEC Solid State Technology Association serves the engineering and technical needs of the solid state industry in the United States through its wide base of industrial and association membership. JEDEC (originally the acronym for Joint Electron Device Engineering Council) was established in 1941 as a joint activity between the Electronic Industries Association (EIA) and the National Electrical Manufacturing Association (NEMA), which lent its support during the early decades when JEDEC's principal activities centered primarily on the standardization of electron tubes. JEDEC's activities have now evolved to address solid state products and related parts.

In brief, JEDEC develops industry standards and publications, formulates and presents technical positions and recommendations to the U.S. government, and participates in the development of international standards.

A.1 JEDEC goals

The fundamental goal of JEDEC is to generate and provide informed and accurate state-of-the-art information in the areas of expertise represented by its members. Briefly, JEDEC attempts to:

- Provide a forum, within the framework of our national laws and policies, for solid state products industry representatives to meet and discuss engineering matters affecting the legitimate interests of the industry.

- Advance the growth and technological progress of the industry by providing facilities and staff assistance in the development and dissemination of technical standards and related information, the registration of certain new products, and participation in national and international standardization activities.

- Assist the Department of Defense and the Armed Services in obtaining the most advanced and reliable products and scientific development from industry through an interchange of information and ideas, and in promulgating realistic and viable specifications and standards.

- Coordinate and convey the views of the Association to appropriate bodies and allied industry organizations on legislative and regulatory matters affecting the ability of the solid state electronics industry to adequately perform its engineering functions.

Annex A (Informative) The JEDEC Solid State Technology Association (cont'd)

A.2 Membership

Any company, organization, or individual conducting business in the USA that itself or through a related entity manufactures electronic equipment or electronics-related products, or provides electronics or electronics-related services, shall be eligible for membership in JEDEC. Membership may be acquired by joining JEDEC, at a fee determined by the JEDEC Board of Directors.

Each member company, organization, or individual shall be entitled to appoint one member and an unlimited number of alternates for each committee it joins. The member and alternates must be capable of making a technical contribution to the standards-setting process of the committee, and the member company must remain active in the work of the committee.

A.3 JEDEC type administration

JEDEC also operates a solid state registration program, established in 1958 by the JEDEC Council. The electrical, mechanical, and thermal characteristics of semiconductor devices may be registered through the JEDEC Office, who maintains a file on over 15,000 registered devices. This system enables manufacturers to uniquely characterize the devices they produce and assures that devices labeled with the same designation number meet a recognized minimum specification without regard to the source of manufacture.

A.4 JEDEC publications

As a result of its activities, JEDEC publishes a broad range of documents, including the following:

- Standards,
- Publications,
- Guidelines,
- Registration Data Formats (RDF),
- Registered Outlines,
- Standard Outlines,
- Specifications, and
- ANSI documents.

In addition, JEDEC issues registration release mailings and periodic updates of various services available by subscription.

Annex B (Informative) Differences between JM18M.01 and JM18M (March 2009)

This following briefly describes most of the changes made to entries that appear in this manual, JM18M.01, compared to its predecessor, JM18M (March 2009). If the change to a concept involves any words added or deleted (excluding deletion of accidentally repeated words), it is included. Some punctuation changes are not included.

Clause	Description of change
2	Under the JC-16 Scope, per the original ballot, JCB-07-55, it was voted and approved to remove JC-16.1 and JC-16.2. This was overlooked at time of revision.

B.1 Differences between JM18M and JM18L (October 2006)

In 2008 JEDEC requested that each committee review its scope and either reaffirm it or revise it based on current activities. This revision reflects the results of this review process.

Committee	Action	Comments
JC-10	Reaffirmed	
JC-11	Reaffirmed	
JC-11.1	Reaffirmed	This activity has been handed over to point committee chairs
JC-11.2	Reaffirmed	
JC-11.4	Reaffirmed	
JC-11.5	Reaffirmed	At time of publication there is no activity in this subcommittee
JC-11.7	Reaffirmed	
JC-11.10	Reaffirmed	
JC-11.11	Reaffirmed	
JC-11.13	Reaffirmed	At time of publication there is no activity in this subcommittee
JC-11.14	Reaffirmed	
JC-13	Reaffirmed	Editorial: term “products” changed to “practices”, removed “reducing the cost while”
JC-13.1	Reaffirmed	
JC-13.2	Reaffirmed	Editorial: added “, assembly, testing”
JC-13.4	Reaffirmed	
JC-13.5	Reaffirmed	Editorial: changed “and military applications” to “, military, and space applications”
JC-14	Reaffirmed	
JC-14.1	Reaffirmed	Minor editorial edits
JC-14.2	Revised	Scope changed, JCB-08-64
JC-14.3	Reaffirmed	Minor editorial edits
JC-14.4	Reaffirmed	Editorial: term “semiconductor” changed to “Solid State”
JC-14.6	Inactive	
JC-14.7	Reaffirmed	Editorial: term “GaAs” changed to “compound semiconductors”
JC-15	Revised	Scope and Title changed, JCB-08-90
JC-15.1	Inactive	Removed, JCB-08-90
JC-15.2	Inactive	Removed, JCB-08-90
JC-16	Revised	Scope changed, JCB-07-55

B.1 Differences between JM18M and JM18L (October 2006) (cont'd)

JC-22	Revised	Scope changed, JCB-08-06
JC-22.1		In JC-22
JC-22.2		In JC-22
JC-22.4	Inactive	Removed, JCB-08-06
JC-22.5		In JC-22
JC-25	Reaffirmed	
JC-40	Reaffirmed	March 2007
JC-40.1	Reaffirmed	March 2007
JC-40.3	Revised	Scope and Title changed, JCB-07-71
JC-40.4	Revised	Scope and Title changed, JCB-07-75
JC-40.5	New	Scope added, JCB-07-63
JC-42	Revised	Scope changed, JCB-08-89
JC-42.2	New	Scope added, JCB-07-54
JC-42.3	Revised	Scope and Title changed, JCB-08-89
JC-42.3B	New	Scope added, Title changed, JCB-08-89
JC-42.3C	New	Scope added, Title changed, JCB-08-89
JC-42.3D	Revised	Scope added, Title changed, JCB-08-89
JC-42.4	New	Scope added, Title changed, JCB-08-89
JC-42.6	New	Scope added, JCB-08-89
JC-45	Revised	Scope changed, JCB-08-08
JC-45.1	New	Scope added, JCB-08-08
JC-45.2	New	Scope added, JCB-08-08
JC-45.3	New	Scope added, JCB-08-08
JC-45.4	New	Scope added, JCB-08-08
JC-45.5	New	Scope added, JCB-08-08
JC-61	Inactive	
JC-63	Revised	Scope changed, JCB-08-15
JC-64	New	Scope added, JCB-08-31
JC-64.1	Revised	Scope changed, JCB-08-31
JC-64.2	Revised	Scope changed, JCB-08-31
JC-64.3	New	Scope added, JCB-08-31
JC-64.8	New	Scope added, JCB-08-38
JC-65	Reaffirmed	


JEDEC