



Sanmina Corporation
13000 South Memorial Pkwy.
P.O. Box 1000
Huntsville, Alabama 35803
Tel 256-882-4800

QUALITY & RELIABILITY TERMS FOR PURCHASE ORDERS

The following terms apply as indicated on the face of the Purchase Order. If Supplier cannot meet any applicable term, notify the responsible Sanmina Corporation Buyer immediately.

SOURCE INSPECTION

1. The Government reserves the right to inspect any or all of the materials included in this order at Supplier's plant.
 2. Supplier shall permit Sanmina and/or its representatives, consultants, customers, or regulatory authorities to enter Supplier's facilities upon 24 hours notice, except for emergencies where there shall be no notice period at reasonable times to inspect and/or audit such facilities and QMS including records, and any goods, inventories, machinery and equipment, or other items or processes used to manufacture Sanmina Product as it relates to Supplier's performance to this document.
 3. **Government Source Inspection:** Government inspection is required prior to shipment from Supplier's plant. Upon receipt of this order, promptly notify the Government Representative who normally services the plant so that appropriate planning for Government inspection can be accomplished. The Government Representative shall be notified forty-eight (48) hours in advance of the time articles or material are ready for inspection or test. Supplier shall furnish the Government Representative with blueprint drawings and specifications necessary for inspection.
 4. Sanmina Corporation **Source Inspection:** All work performed under this order shall be inspected or tested by Sanmina Corporation at Supplier's facility. Prior to shipment, Supplier shall provide seventy-two (72) hours advance notice to the Sanmina Corporation's Buyer that source inspection is required.
 - 4a. Inactivated:
 - 4b. **Customer Source Inspection:** Sanmina Corporation's Customer reserves the right to inspect any or all of the materials included in this order at Supplier's plant.
 - 4c. **FAA Quality System:** Quality Control or Inspection System and Manufacturing processes are subject to review, analysis and verification by the Federal Aviation Administration (FAA) Inspectors or designees.
 5. Inactivated:
- ### CERTIFICATIONS
6. Inactivated:
 - 6a. Inactivated:
 7. **Perishable Raw Materials:** Supplier shall include the material type, condition, lot or batch number, specification, manufacturer, date of manufacture and shelf life expiration date on all perishable raw material certifications. Supplier shall supply the Hazardous Material Identification System (HMIS) and the Material Safety Data Sheet (MSDS) with the material as required. Supplier shall insure that there is a minimum of 75% shelf life remaining on the material prior to delivery to Sanmina Corporation. Supplier shall notify the Sanmina Corporation's Buyer in writing where less than 75% of the shelf life remains and obtain written authorization to vary from this requirement.
 8. **Specific Compliance:** Supplier shall furnish a certificate of compliance signed by Supplier's designated cognizant Product Assurance representative. Materials, processes, services, and furnished items supplied in accordance with the instructions, drawings, or specifications furnished with the purchase order shall be accompanied by a formal Certificate of Compliance (C of C) and a packing slip. Each C of C shall identify the purchase order number, part number, serial number, drawing, specification, lot / item number and / test report as applicable to the content of the purchase order. Inspection and Test Data shall be maintained for seven (7) years unless otherwise contractually denoted on the purchase order and are subject to Sanmina Corporation examination. The C of C must state the name of the manufacturer when ordered from a distributor and shall accompany each shipment. Photocopy, email, or facsimile signatures; or inclusion of an unexecuted certificate with the material or invoice, shall be treated by the parties as an original signature certificate.
- 8a. **Certification of Origin:** Supplier shall furnish certification of Country of Origin with each shipment.
 - 8b. **Specific Compliance (REACH):** When REACH (Regulation 1907/2006) is required; Supplier shall provide a Certificate of Compliance stating REACH Compliance.
 - 8c. **Specific Compliance (REACH):** When REACH (Regulation 1907/2006) is required; Supplier shall provide a Certificate of Compliance stating REACH Compliance along with a Full Material Declaration.
 - 8d. **Calibration Certification of Traceability:** When providing calibration services to Sanmina Corporation, Supplier shall furnish certification stating the traceability to NIST for each item calibrated.
 - 8e. **Specific Compliance (DFARS):** Supplier shall furnish a Certificate of Compliance signed by Supplier's designated cognizant Product Assurance representative. Materials, processes, services and furnished items supplied in accordance with the instructions, drawings, or specifications furnished with the purchase order shall be accompanied by a formal Certificate of Compliance (C of C) and a packing slip. Each C of C shall identify the purchase order number, part number, serial number, drawing, specification, lot / item number and / or test report as applicable to the content of the Purchase Order. Inspection and Test Data shall be maintained for seven (7) years unless otherwise contractually denoted on the purchase order. All records are subject to Sanmina Corporation examination. The C of C must state the name of the manufacturer when ordered from a distributor and shall accompany each shipment. By acceptance of this purchase order, Supplier agrees that materials and / or finished parts conform and meet DFARS 252.225-7008 Restriction on Acquisition of Specialty Metals, DFARS 252.225-7009 Restriction on Acquisition of Certain Articles Containing Specialty Metals, and/or 252.225-7010 Commercial Derivative Military Article-Specialty Metals Compliance Certificate, 252.225-7016 Restriction on acquisition of Ball Roller Bearings. As prescribed in DFARS [225.7009-5](#)
 - 8f. **Specific Compliance (RoHS2 and WEEE):** By acceptance of this purchase order, Supplier agrees that materials and / or finished parts conform and meet the requirements set forth in European RoHS2 (Directive 2011/65/EU) and WEEE (Directive 2012/19/EU) legislation. Supplier shall indicate conformance to the specific requirement (RoHS2, WEEE, or both) met by material required under this purchase order via separate statement included on the Certificate of Compliance indicated in Q&R Term 8.



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- 8g. **Lead Finish:** Component lead finishes, which contain Sn (tin) as the majority component, shall require a minimum of 3% Pb (lead).
- 8h. **Lead-Free Component Finishes:** Lead-Free component lead finishes, which contain Sn (tin) as the majority component, shall have a maximum of 0.1% Pb (lead) by weight.
- 9. **Material Test Reports:** Supplier shall submit a chemical and physical test report with actual test data for the materials shipped under this order. Test reports shall list the actual parameters tested, the acceptable limits for each parameter, and shall contain the actual readings taken during test.
- 9a. **Electrical Test Data:** Supplier shall submit a test report with actual test data for the materials shipped under this order. Test reports shall list the actual parameters tested, the acceptable limits for each parameter, and shall contain the actual readings taken during test.
- 9b. **First Article Inspection Report:** Supplier shall provide complete First Article Inspection (FAI) test reports and /or inspection data to all measurements, test reading, material cert., finish cert., procured item cert., etc. as identified on the drawing. The data furnished must be tied to the drawing for readability. This FAI report will be delivered with the first lot of material delivered and will not be required on subsequent purchase orders or deliveries unless otherwise stated. Subsequent FAI report may be required for a change in Supplier manufacturing process or material sources for current, new or additional parts. For revision level change or change to process, Supplier must contact Sanmina Corporation's Buyer and Quality Assurance for direction.
- 9c. **AS9102 (latest revision) First Article Inspection Report:** The same as 9b, but Supplier must meet the requirements of AS9102 (latest rev.). If the purchased material is an assembly, Supplier shall also include a separate FAI for each build-to-print component of the assembly.
- 10. **Dimensional Data:** Recorded findings on all critical dimensions shall be submitted. Critical dimensions are defined as all dimensions shown on the drawing which are not categorized as reference dimensions.
- 11. **Functional Test Reports:** When functional tests are specified by this order or by the design documentation, the actual test results shall be submitted. A copy of the test procedure shall be submitted with the first report on each type of item (s) purchased under this order, unless specified otherwise in design documentation.
- 12. Inactivated:
- 13. Inactivated:
- 14. Inactivated:
- 14a. Inactivated:
- 15. **Reliability Plan:** Supplier's Reliability manual or equivalent shall be submitted for review. The review will be for indication of adequate planning to assure general product reliability and for conformance to applicable product drawings and specifications.

PROGRAMS

- 16. **Inspection Program:** Supplier shall establish, document and maintain a Quality system as a means of ensuring product conforms to specified requirements. This documented system may be used by Sanmina Corporation to audit / assess Supplier's claimed capability and system. The range and detail of the system shall be dependent upon the complexity of the product, the methods used and the skills and training needed by personnel involved in performing the work. Where

- appropriate, supplier shall notify Sanmina Corporation Buyer and Quality Assurance of the existence of nonconforming product and obtain Sanmina Corporation's approval for nonconforming product disposition.
- 16a. **Supply Chain Visibility:** Supplier shall periodically measure and review the performance of all their suppliers involved in the fulfillment of this purchase order. Supplier shall maintain and make available to Sanmina Corporation upon their request the results of all sub-tier supplier performance metrics in order to maintain visibility into the supply chain for this purchase order. The results of these reviews will form the basis of controls to be placed by Sanmina Corporation on any supplier in the fulfillment of this purchase order.
- 16b. **Counterfeit Component Mitigation Program:** Supplier shall establish, document, and maintain a counterfeit component mitigation program using AS6174 and AS5553 (as applicable) as guides to ensure that counterfeit material is not supplied to Sanmina Corporation. Supplier shall flow this requirement down to all levels of the supply chain for the fulfillment of this purchase order. Supplier shall be required to disclose their source of supply should the parts become the subject of a legal or counterfeit issue.
- 17. Inactivated:
- 18. Inactivated:
- 19. Inactivated:
- 20. **Dealer and Distributor Quality Program Requirements:** Quality Program provisions stated herein shall govern operating systems of dealers and distributors to assure materials and parts meet Sanmina Corporation's Design, Quality and related contract requirements.
 - 1. Supplier shall ensure materials are manufactured, inspected and tested in accordance with Sanmina Corporation's requirements.
 - 2. Military or Federal standard materials such as AN, JAN, NAS, etc., shall be obtained from Military and Federal Qualified Products List (QPL), Qualified Manufacturers List (QML) or other referenced sources.
 - 3. Supplier Stock control shall assure material quality is verified and maintained. Items shall be from current production and traceable from origin to the date received, through Sanmina Corporation's product acceptance. Manufacturing and product identity markings shall be as required by drawings and specification.
 - 4. Corrective action by the Manufacturer shall be available through Supplier upon request.
 - 5. Documentation such as receiving and inspection records and FAI and/or test reports shall be furnished upon request by Sanmina Corporation.
 - 6. Product Protection shall comply with all specified handling, preservation, packaging and shipping requirements. Product protection practices shall ensure original quality is maintained. Commercial practices shall not be considered to relieve Supplier of the responsibility to assure delivery of material in acceptable condition.
 - 7. Manufacturer's name and manufacturer's part number shall be included on the packing slip.
 - 8. Distribution suppliers certify by acceptance of this order that they are currently franchised for the material being supplied on this purchase order, and that no material supplied to fulfill this order shall be obtained from any broker, independent distributor, or other non-franchised source.
 - 9. Distributors shall maintain clear traceability to the original manufacturer for each lot in a shipment.
 - 10. All Distribution and Aftermarket suppliers shall provide acquisition traceability documentation (in the form of a Certificate of Compliance or packing slip listing the lot number) from the OEM or OCM with each material shipment to Sanmina Corporation in the fulfillment of this PO.



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CONTROLS

- 21. **Workmanship:** All items on this order shall be fabricated, processed and finished in such a manner as to be uniform in quality and appearance and free of defects. Supplier shall establish, document, and maintain a Foreign Object Debris/Damage (FOD) prevention program with the objective of providing FOD free material in the fulfillment of all Sanmina Corporation Purchase Orders
- 21a. **FOD Program:** Supplier's FOD program shall be written and established using National Aerospace Standard (NAS412), as a guideline.
- 22. Inactivated:
- 23. **Casting Identification:** All castings shall be identified by a permanent part number and configuration or by a method that will provide complete traceability of chemical, physical analysis and heat treat. The identification shall remain legible after machining or surface finish.
- 23a. **Castings:** Physical and chemical test data of raw materials used in the fabrication of articles furnished under this purchase order, denoting the applicable heat treat number, batch number or date of manufacture of materials, must be supplied with each shipment.
- 24. **Process Control:** Supplier shall maintain control and approval of all manufacturing and inspection processes used in the performance of this order. Supplier shall maintain objective evidence of process qualification in accordance with applicable specifications.
- 25. **Configuration or Change Control:** The Vendor agrees not to make any changes in product at any time which would affect physical, functional interchangeability, reliability, repair, and maintenance operations unless part number identification and/or revision is changed. The Vendor shall notify the Sanmina Corporation Buyer when Class 1 or Class 2 changes are scheduled to occur or have occurred to products supplied on this purchase order. Supplier shall notify the Sanmina Corporation Buyer when a change in location of the production line or manufacturing facility is scheduled. Supplier shall notify the Sanmina Corporation Buyer when other changes are scheduled to occur or have occurred that may affect product performance at margins (e.g. die-shrink, lead-frame change, dielectric formulation change, device body material change, etc) to products supplied on this purchase order. The Vendor may contact Sanmina Corporation Buyer and Quality Assurance to ensure clarification of requirements.
- 25a. **MRB Authority:** Supplier is not granted MRB authority. Supplier shall request in writing for an authorization from the Sanmina Corporation Buyer prior to performing repair operations. Supplier may disposition material as scrap, return to vendor, or rework to product requirements without authorization from the Sanmina Corporation Buyer.
- 26. **Calibration Control:** Supplier shall control the calibration of all measuring and testing devices as required by certified standards Sanmina Corporation Sanmina Corporation Technology, Inc. will specify 26a, 26b or 26c below when one method is specifically required. When not specified, 26b is the default. Supplier shall furnish "Before calibration data" if an instrument is found to be out of tolerance (calibration).

- 26a. Mil-STD-45662A or Latest Revision
- 26b. ANSI / NCSLZ540-1 1994 or Latest Revision
- 26c. ISO 10012-1: 1992 or Latest Revision

- 27. Inactivated:
- 28. Inactivated:
- 29. **Packaging:** Preservation, packaging, packing unitization and marking for supplies and equipment shall be in accordance with the revision of ASTM D3951 in effect at the time of shipment. In addition to the marking requirements of ASTM D3951, unit, intermediate and shipping container markings shall include Supplier's part number and any other standard part number ("AN", "MS", etc.) assigned to the item(s).

Materials are to be shipped in containers in keeping with best commercial practices to preclude any damage being incurred during shipping and storage at Buyer's plant. Shipping containers shall bear the Sanmina Corporation purchase order number as part of the required markings. Packaging materials shall not have a deleterious effect on the item coatings or finishes. Solderability of solderable contacts, leads and terminations must be preserved. If Supplier considers the supplied product to be moisture sensitive, then the appropriately labeled barrier bags shall be heat sealed with sufficient space remaining to allow opening and resealing one (1) additional time. The Moisture Barrier Bag (MBB) shall meet or exceed the electrical and physical requirements of IPC/JEDEC J-STD-033 and MIL-PRF-81705, Type I standards. The Moisture Barrier Bag (MBB) shall meet or exceed the electrical and physical requirements of IPC/JEDEC J-STD-033 and MIL-PRF-81705, Type I standards. The Humidity Indicator Card (HIC) and the Desiccant shall meet or exceed the requirements of J-STD-033.

- 29a. Inactivated:
- 29b. **Electrostatic Protection Required:** For MIL-PRF-55342 resistors, package parts per manufacturer's standards with the following qualifiers:
 - 1. Unit container:
 - a. If specified resistance tolerance is 1% or greater, MIL-PRF-81705 Type III or equivalent barrier material that is electrostatic protective will be used, but Type I may be substituted.
 - b. If specified resistance tolerance is tighter than 1%, MIL-PRF-81705 Type I or equivalent barrier material that is electrostatic and electro-magnetic protective will be used.
 - 2. Commercial Packaging per ASTM D3951. Mark per paragraph 3.1.5.2 of MIL R-39032. Manufacturer's special containers may be used for specific components. The first material / container that comes in contact with the piece parts must meet the ESD packaging requirements as specified above.
- 29c. **Specific Packaging:** Supplier shall package components per Electrostatic Discharge (ESD) S541. Packaging materials in intimate contact with devices shall be dissipative.
 - DIPS:** Components shall be packaged in DIP tubes (carrier sticks), clear colored, polarity oriented in one direction.
 - Axial:** All axial-leaded components shall be packaged on reels with an inside tape spacing of 52.4mm (2.063") and a standard component pitch of 5mm (0.197"), with an optional component pitch of 10mm (0.394").
 - Radial:** All radial components shall be packaged on reels. The hold-down tape width shall be configured as either one 5/8" wide tape or two 1/4" wide tapes. Tape should touch leads on both sides of sprocket holes. **SMT Components:** All components shall be packaged on reels, in JEDEC compliant trays, or in waffle packs, and shall be configured with pickup tabs as applicable*.

NOTE – 1 BGA: 10mm or less must be on tape and reel.
2. QFP: 48 pins or less must be on tape and reel.

* Pickup tabs are applicable in the case of connectors or other parts where a nozzle is not adequate for pick and place.



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- 29d. **Carrier Stick Packaging:** All components shall be packaged in carrier sticks with polarity oriented in one direction.
- 30. **Traceability:** All items furnished on this order shall have documentation on file for at least seven (7) years after delivery unless otherwise contractually denoted on the purchase order in order to permit traceability from the delivered product back through its manufacture and inspection to the procurement/source records on its constituent parts and materials. All records are subject to examination and available upon request. These records shall be sufficient to prove conformance to all applicable drawings and specifications and shall provide means for identifying all products related to the associated purchase order. Certifications of Compliance (C of C) must state lot number(s) and / or date code(s) or other methods of traceability as previously approved by Sanmina Corporation Quality & Reliability. The C of C must, in all cases, state the manufacturer's name. Supplier shall separate and label parts by manufacturer part number, lot / date code and quantity of each lot / date code, when more than one lot / date code is shipped under this purchase order. When parts are supplied on reels only one lot / date code is acceptable per reel.
- 30a. **Specific Traceability:** Seller shall supply one lot / date code per part number for each delivery schedule under this order. Supplier shall include and clearly indicate the single lot / date code of manufacture for all material shipped to fulfill this purchase order on the packing list or other document included in each shipment.
- 30b. **Date Control:** The manufacturing date code for solderable parts or components coming in original OEM packaging shall be within sixty (60) months of date of delivery unless specified differently by the customer. Those components having date codes more than sixty (60) months prior to date of delivery must be accompanied by evidence indicating completion of acceptable solderability tests. The manufacturing date codes for solderable parts or components coming from Independent Distributors or Brokers are as follows unless specified differently by the customer:
Solderable parts or components having date codes within thirty-six (36) months of date of delivery and are not packaged in original OEM packaging shall be accompanied by evidence indicating completion of acceptable solderability tests.
Solderable parts or components having date codes seventy-two (72) months or greater prior to date of delivery shall also be accompanied by evidence indicating completion of acceptable electrical tests.
- 30c. **Device Traceability:** Supplier shall supply devices from only one diffusion run per part number for each delivery schedule under this order. Supplier shall furnish a Certificate of Compliance stating the diffusion run number.
- 30d. **UID (Unique Identification):** UID marking required per DFARS 252.211-7003 Item Identification and Valuation and MIL Standard 130L or subsequent.
- 30e. **No substitute parts:** Part substitutions outside of those specifically indicated as alternate parts by Sanmina Corporation are not permitted on this purchase order without the express written permission of the Sanmina Corporation Buyer.
- 30f. **Specific identification:** Seller shall include and clearly indicate on the packing list or other document included in each shipment the manufacturer's name and the date codes of manufacture for all material shipped to fulfill this purchase order. Four character date codes indicating yyww (year/week) are preferred. Where lot codes are utilized in place of date codes, clearly indicate the lot codes in place of the date codes. Where multiple codes exist, each code shall be indicated.
- 30g. **Supplier's procurement order of precedence:** This requirement is applicable to all suppliers at all levels of order fulfillment. Supplier shall procure all electrical, electronic and electromechanical ("EEE") components from (listed in order of precedence) (1) the Original Equipment Manufacturer ("OEM")/ Original Component Manufacturer ("OCM") or their Authorized (licensed) Distributors, (2) Authorized Aftermarket Manufacturers, or (3) with the specific authorization in writing from the Sanmina Corporation Buyer, an Independent Distributor or Broker. The following requirements apply to orders fulfilled at any level of supply under section 3 of this Term.

Supplier shall provide the following to the Sanmina Corporation Buyer **in advance of shipment and shall provide a hard copy of the same with the shipment to Sanmina Corporation:**
 - an authentication test report in accordance with SAE AS 6081
 - where available, a record of unbroken traceability showing all of the supply chain intermediaries from the original component manufacturer to the direct seller to Sanmina Corporation. These records may be in the form of copies of purchase orders, receipts, invoices, or shippers.

Where the material is older than 5 years, solderability test shall be completed and the results included in the test report.
- 31. **Raw Material Identification:** All raw material supplied on this order must be identified with the applicable specification, type, condition, and manufacturer of materials.
- 31a. **Supplied Data:** Physical and chemical test data of raw materials used in the fabrication of articles on this purchase order, denoting the manufacturer of materials and order number are to be supplied with each shipment.
- 31b. **Retained Data:** Physical and chemical test data of raw materials used in the fabrication of articles on this purchase order, denoting the manufacturer of materials and order number shall be retained on file by Supplier for a period of seven (7) years unless otherwise contractually denoted on the purchase order. All records are subject to examination and available upon request.
- 32. **X-Ray Inspection:** All material shall be subjected to X-Ray inspection. The X-Ray number shall be marked on the material when so required by specifications. X-Ray photographs identifying part and position shall be submitted to Sanmina Corporation.
- 33. **Lot Control:** Lot identification number shall be supplied with material. Inspection records / data traceable to the lot identification shall be maintained for a period of seven (7) years unless otherwise contractually denoted on the purchase order. All records are subject to examination and available upon request.
- 34. Inactivated:
- 35. **ESD:** Supplier shall maintain a control program for Electrostatic Discharge Sensitive (ESDS) devices. The establishment and implementation of the ESD program shall meet the requirements of MIL-STD-1686 / ESD S20.20. Electrostatic Discharge Sensitive (ESDS) devices shall be packaged and marked per the requirements of MIL-STD-1686 (existing contracts) / ESD S20.20.
- 36. Inactivated:



37. **Solderability:** The military specification materials supplied under this order shall meet the solderability requirements of MIL-STD-883, method 2003 for microelectronics, MIL-STD-750, method 2026 for semiconductors or MIL-STD-202, method 208 for all other solderable parts and components. The commercial specification components and wire supplied under this order shall meet the requirements of ANSI / J-STD-002 or equivalent and the printed wiring boards shall meet the requirements of ANSI / J-STD-003 or equivalent.
- 37a. Material supplied under this order shall be accompanied by evidence indicating completion of acceptable solderability tests. Unless otherwise specified, component tinning shall meet the requirements of J-STD-001 and shall be accompanied at shipment by the supplier's certificate of compliance clearly indicating the standard to which the material was tested.
38. **Radiation Hardness:** Supplier agrees not to make any configuration changes or process changes and agrees not to initiate production of devices purchased under this purchase order prior to receipt of Sanmina Corporation approval for devices procured as radiation hardened. Supplier agrees to provide all information concerning configuration and process changes required for Sanmina Corporation approval. In the event testing is deemed a prerequisite by Sanmina Corporation for approval, Supplier agrees to provide results of qualification tests and certification, in accordance with MIL-STD-883, or MIL-STD-750, as applicable to the level(s) required.
39. Inactivated:
- 39a. Inactivated:
- 39b. Inactivated:
- 39c. **Printed Wiring Boards:** Unless otherwise specified on the master drawing, rigid printed circuit boards shall be fabricated in accordance with the latest revision of IPC-6012 and flexible printed circuits shall be fabricated in accordance with the latest revision of IPC-6013. In cases where customer requirements exceed the requirements of this document, the customer requirements shall take precedence.
- 39d. **Printed Wiring Boards:** Supplier shall perform 100% electrical test per the latest revision of IPC-9252 as referenced in IPC-6012 for rigid boards and IPC-6013 for flexible circuits respectively. A minimum of two (2) test coupons are required per panel. One (1) coupon is to be shipped with product and one (1) coupon is to be retained at the supplier. Traceability to panel is required.
- 39e. **Printed Wiring Boards:** Printed Wiring Boards shall be stacked horizontally with a maximum of ten (10) boards or panels to a pack, interleaved with sulfur-free paper. Silver (Ag), Tin (Sn) or OSP finishes shall be interleaved with "Silver-Saver" or equivalent papers. This stack shall be placed in a polyethylene or Pink Poly bag. The outer bag shall be vacuum, heat sealed with sufficient space remaining to allow opening and resealing one additional time. Each bag shall be identified on the outside with part number, serial numbers, revision level, and date code. The Moisture Barrier Bag (MBB) shall meet or exceed the electrical and physical requirements of IPC/JEDEC J-STD-033 and MIL-PRF-81705, Type I standards. The Humidity Indicator Card (HIC) and the Desiccant shall meet or exceed the requirements of J-STD-033.
- 39f. **Printed Wiring Boards:** Microsections for rigid PWBs are required in accordance with IPC 6012, sample size based on Table 4-2. For flexible PWBs IPC-6013, Table 4-1 and 4-3 apply. All via structures shall be represented in the thermally stressed condition. All internal layer connections to the PTH shall be represented. Completed microsections shall be shipped with the Certificate of Compliance.
- 39g. **Printed Wiring Boards:** Microsections for rigid PWB's shall be evaluated based on the latest revision of IPC 6012, Table 4-3 with emphasis to Note 5, noting the direction of the microsectioned holes being evaluated. Other sections of IPC 6012 shall apply where applicable. For flexible PWBs, IPC-6013, Table 4-1 and 4-3 shall apply. Other sections of IPC 6013 shall apply where applicable.
- 39h. **Printed Wiring Board Deliverables:** When a First Article Inspection Report (9c) is required, the AS9102 FAI or a supplier specific facsimile will be used as long as the readability of the document is not compromised. The FAI shall have an associated part drawing and shall be "bubbled" to correspond to the Characteristic Number on the Form. All relevant notes and dimensions shall be measured and recorded. In the event that a change is made to a drawing dimension, hole size or other item that does not require a new FAI, a Delta FAI will be used depicting only the dimensions or notes that changed. Other deliverables may be required along with the Delta FAI. A new FAI will be required from the supplier, when a new manufacturing Lot is processed, and when manufacturing process, location or equipment changes. The 'deliverables' package will be on the suppliers' letterhead and will include:
- General Certificate of Conformance.
 - Dimensional Inspection Report.
 - Certificate of Electrical Test. When required by the purchase order or part drawing, actual test readings shall be included.
 - Impedance Report, including TDR Coupon, as required.
 - RoHS Certificate of Compliance, as required.
 - Ionic Contamination (Cleanliness) Test Results Report. The readout strip is optional.
 - Microsection(s) per Q&R Term 39f / 39g. One each microsection showing an "X" direction and a "Y" direction is required and shall be identified as such.
 - Microsection Report that includes all relevant thickness measurements and characteristics per IPC-A-600, IPC 6012, IPC 6013 and any referenced document specified on the part drawing or Purchase Order.
 - Microsection Photographs, as required.
 - Additional PCB coupons shall be delivered, as required.
 - Hole Size Verification Report. This may be included in the 9B, 9C or Dimensional Inspection Report.
 - PCB Surface Finish measurement data and Certificate
 - Solder Sample.
 - Serialization Data.
 - Deliverables Checklist or Out-Of-Box-Audit document.
 - Material Certs that include all laminates, prepregs, foils, soldermask, legend inks, special chemicals or materials, etc.
 - Any outside lab reports, as required by customer or governing authority.
40. **Group I Purchases:** This purchase order flows-down to Supplier the requirements for Group I purchases in accordance with MIL-STD-1535.
- 40a. Inactivated
41. **Performance Temperature Range:** All components furnished under this purchase order shall operate over the temperature range of -55 degrees C to +105 degrees C.
42. **UL Certification:** Supplier shall furnish a Certificate of Compliance (C of C) stating the name of the UL approved manufacturer of the product.
43. **International Standards:** Supplier shall be certified to one of the following International Standards (these standards represent distinct forms of quality system requirements suitable for the purpose of a supplier demonstrating its capability and for the assessment of that claimed capability by external parties). Sanmina Corporation will specify 43a, 43d, or 43e below as required or as appropriate.



- 43a. **ISO 9001, Quality System:** Model for quality assurance in design, development, and production.
- 43b. Inactivated:
- 43c. Inactivated:
- 43d. **AS9100, Quality Systems:** Model for quality assurance in design, development, and production.
- 43e. **NADCAP:** Supplier and /or sub-tier supplier shall ensure with evidence (i.e., copy of current NADCAP certificate) that the following special processes or those specifically mentioned on this purchase agreement are carried out internally or externally under the scope of NADCAP accreditation and are carried out by NADCAP accredited processors unless otherwise agreed by Sanmina Corporation.
 - Cable and Harness
 - Chemical processing (Inc. anodizing, plating, painting, passivation etc.)
 - Coating
 - Composites
 - Heat treating
 - Material testing laboratory
 - Non-conventional Machining
 - Non-destructive testing
 - Printed circuit assemblies
 - Printed circuit boards
 - Shot peening
 - Welding
- 44. **ESD Protective Packaging Materials:** Material furnished shall be physically marked with the following:
 1. The appropriate ESD S8.1 ESD protective symbol per paragraph 8.2.1, ESD S541-2003 or subsequent.
 2. The appropriate material classification per paragraph 8.2.2, ESD S541-2003 or subsequent.
 3. The date / lot code providing traceability for each lot of material supplied per paragraph 8.2.3, ESD S541-2003 or subsequent.
- 44a. **ESD Protective Packaging Materials:** All materials shall be tested and certified as meeting one or more of the following requirements as applicable to the protective property of the material being supplied:
 1. Conductive planar materials shall be tested in accordance with ESD STM11.11-2001 or subsequent. Quality control data shall include test data recorded for each lot of material tested as required by ESD STM 11.11-2001, paragraph 11.0.
 2. Static shielding bags shall be tested in accordance with ESD STM11.31-2001. Quality control data shall include test data recorded for each lot of material tested as required by ESD STM11.31-2001, paragraph 8.
 3. Static dissipative planar materials shall be tested in accordance with ESD STM11.11-2001. Quality control data shall included test data recorded for each lot of material tested as required by ESD STM11.11-2001, paragraph 11.0.
 4. Low charging materials shall be tested for triboelectric charge accumulation per Appendix D, ESD ADV11.2-1995 or subsequent, using typical static sensitive components and circuit card assemblies for all simulated handling conditions. Maximum acceptable accumulated charge shall be an absolute value of 100 volts or less. Low charging wrapping materials shall be tested in the same manner as bags and pouches and may be formed into bags or pouches to facilitate testing, as required. Quality control data shall include test data recorded for each lot of material tested as required by paragraph 7.5, ESD ADV11.2-1995 or subsequent.
- 45. **Cadmium warning label:** Supplier shall label shipping and storage containers that contain cadmium, cadmium compounds, or cadmium

- containing materials or articles as required by 29CFR1910.1027. At a minimum, the warning label shall include the following information:
 - Danger
 - Contains cadmium
 - Cancer hazard
 - Avoid creating dust
 - Can cause lung and kidney disease
- 46. **Supplier Corrective Action:** Supplier shall furnish appropriate corrective action upon request. If adequate response is not received within thirty (30) days, Supplier will be placed in the Restricted category.
- 47. **Broker Purchase Requirements:** Brokers, Independent Distributors, or Non-Franchised Distributors shall provide the following documentation with each Sanmina Corporation Purchase order:
 - Where available, supplier shall provide a record of unbroken traceability showing all of the supply chain intermediaries from the original component manufacturer to the direct seller to Sanmina Corporation. These records may be in the form of copies of purchase orders, receipts, invoices, or shippers.
 - Where traceability is not verifiable, supplier shall notify the Sanmina Corporation Buyer and obtain written approval to proceed with the order fulfillment prior to order confirmation.
 - Unless specifically indicated that it is not required by the purchase order, supplier shall provide a certificate, report, or statement from a certified test facility indicating
 - a. that the material shipped meets all DC and AC electrical characteristics as stated on the manufacturer's data sheet or alternately to the test plan provided to the seller by Sanmina Corporation that the material shipped has been examined and passes scratch, solvent resistance, and all other tests as necessary to ensure product has not been sanded, top-coated, re-marked or altered in any way or by any means
 - b. that the material shipped passed standard solderability tests. These records shall accompany the material at the time of shipment.
 - A. Supplier shall test and provide a test report in accordance with SAE AS 6081 to the Sanmina Corporation Buyer in advance of shipment. Where the material is older than 5 years, solderability test shall be completed and the results included in the test report.
- 48. **Broker Purchases allowed with prior customer approval:** Purchases from Brokers or Independent Distributors during any stage of order fulfillment may only be placed with prior written approval from Sanmina Corporation, and must be documented by purchase order, statement of work, or contract.
- 49. **Broker Purchases are not allowed:** Purchases from Brokers or Independent Distributors are not allowed under this purchase order.
- 50. **Specific Flow Down Requirements Apply:** Supplier shall ensure that all applicable customer requirements are flowed down to sub-tier suppliers i.e., those providing machining, plating, or painting operations.
- 51. **Validation of Raw Material Test Reports:** When the Supplier utilizes test reports to accept Supplier or sub-tier supplier purchased raw material, the following requirements apply:
 - 1) Test reports shall be checked 100% against Supplier's requirements and applicable specifications.
 - 2) Supplier shall periodically validate test reports for raw material accepted on the basis of test reports. That validation shall be accomplished by the Supplier or other independent party through periodic, scheduled tests of raw material samples. Schedule for the frequency of tests will be established by Supplier based on the historical performance of the raw material supplier.



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- 3) Supplier shall retain test reports provided by the raw material supplier or sub-tier supplier, as well as Supplier's validation test results as quality records traceable to the Supplier's requirements and applicable specifications.
- 4) Sanmina Corporation and customer furnished raw material is not subject to the validation test requirement.
- 5) Supplier shall implement processes and procedures in support of this term and condition.

52. **Production Part Approval Process:** Supplier shall provide complete Production Part Approval Process (PPAP) Packet per AIAG Standards. This PPAP Packet will be delivered with the first lot of material delivered and will not be required on subsequent purchase orders or deliveries unless otherwise stated. Subsequent PPAP Packets may be required for a change in Supplier manufacturing process or material sources for current, new or additional parts. For revision level change or change to process, Supplier must contact Sanmina Corporation Buyer and Quality Assurance for direction.

PPAP Level I requirements:

- A. Supplier shall provide Certificates of Conformance for all COTS items.
- B. Supplier shall submit all PPAP Level I documentation using AIAG accepted PPAP forms for first submission of all build-to-print parts.
- C. Supplier shall provide Certificates of Conformance for all subsequent shipments of build to print parts unless a new submission of Level I documentation is required for that shipment.

PPAP Level II requirements:

- A. Supplier shall provide Certificates of Conformance for all COTS items.

- B. Supplier shall submit all PPAP Level II documentation using AIAG accepted PPAP forms for first submission of all build-to-print parts.
- C. Supplier shall provide Certificates of Conformance for all subsequent shipments of build to print parts unless a new submission of Level II documentation is required for that shipment.

PPAP Level III requirements:

- A. Supplier shall provide Certificates of Conformance for all COTS items.
- B. Supplier shall submit all PPAP Level III documentation using AIAG accepted PPAP forms for first submission of all build-to-print parts.
- C. Supplier shall provide Certificates of Conformance for all subsequent shipments of build to print parts unless a new submission of Level III documentation is required for that shipment.

53. **Cable and Wire Harness Requirements:** Unless specifically stated, all Cable and Wire Harness assemblies manufactured or otherwise supplied to fulfill this Purchase Order shall meet the requirements of IPC-620 Class II current as of the purchase order date. Supplier shall notify the Sanmina Corporation Buyer prior to accepting the purchase order where conflicts to this requirement arise.

Note: Sanmina Corporation Receiving Inspection shall verify the following Q&R terms, if applicable: 7, 8, 8a-h, 9, 9a-c, 10, 11, 15, 20.10, 20.7, 23, 23a, 29, 29c, 29d, 30, 30a-c, 30f, 30g, 31, 31a, 32, 33, 37a, 39d-f, 39h, 42, 43e, 44, 45, 47, 47a, 52, 53.



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REVISION LOG

ECO	Sec.	Rev.	Date	Description Of Change	Originator:
E29P031903	All	A01	10/28/2024	Initial release after separation of SOP-3-0731-438 into a separate operators procure and this procedure for administration Took out DAS Revs	Ray Wilborn