



SSI Technologies, Inc.

SUPPLIER QUALITY REQUIREMENTS

Requirements for Suppliers to SSI Technologies Controls
and Sintered Divisions

Revision 1
Effective July 2016

PURPOSE

- Establish minimum quality assurance requirements for all suppliers/subcontractors that affect SSI Technologies, Inc. manufactured products.
- To ensure all suppliers and subcontractors to SSI Technologies comply with or follow the established Quality standards of ISO 9001 and/or TS16949.
- Assure that the products and services furnished by the supplier/subcontractor conform fully to the requirements contained in part drawings, engineering specifications, purchase documents and all other relevant part specific requirements.
- The requirements covered by this specification do not replace other terms and conditions covered by the purchase documents.
- This specification is subject to change at any time by SSI Technologies, Inc.

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1. SSI TECHNOLOGIES SUPPLIER CODE OF CONDUCT

SSI Technologies requires all suppliers to follow the Ten Principles of the United Nations Global Compact regarding human rights, labour, environment, and anti-corruption. Link to United Nations Global Compact: <https://www.unglobalcompact.org/what-is-gc/mission/principles>

The following US Affirmative Action Laws applies to all US suppliers.

Contract, Lease, and Purchase Order Language

All US suppliers shall abide by the requirements of 41 CFR sections 60-1.4(a), 60-300.5(a) and 60-741.5(a). These regulations prohibit discrimination against qualified individuals based on their status as protected veterans or individuals with disabilities, and prohibit discrimination against all individuals based on their race, color, religion, sex, sexual orientation, gender identity or national origin. Moreover, these regulations require that covered prime contractors and subcontractors take affirmative action to employ and advance in employment individuals without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, protected veteran status or disability.

All US suppliers shall abide by all provisions of Executive Order 13496 and all relevant rules, regulations, and orders in regard to Executive Order 13496.

2. QUALITY CONTROL SYSTEM REQUIREMENTS

2.1 DRAWINGS AND SPECIFICATIONS

- 2.1.1 The supplier is responsible for ensuring parts are manufactured to the current released drawing and purchase order revision level including any specifications listed on the drawing.
- 2.1.2 When clarification and interpretation is required, it is the supplier's responsibility to obtain the necessary information from the appropriate SSI Technologies personnel.

2.2 DESIGN CONTROL

- 2.2.1 *SSI Technologies Design Control* – the component is designed, developed and specified by SSI Technologies. Suppliers are encouraged to participate in the design to contribute their expertise and knowledge.
- 2.2.2 *Supplier Design Control* – the component is designed and developed to meet SSI Technologies specifications and performance requirements. It is the supplier's responsibility to address quality, reliability and durability

issues with the product. The supplier is responsible for completing design failure mode effects analysis, design reviews and specific product testing to be compliant to the expected reliability and durability.

NOTE: Design control does not apply to SSI Technologies Sintered Division or their suppliers.

2.3 DESIGN AND PROCESS CHANGE CONTROL

- 2.3.1 The supplier must have written authorization from SSI Technologies prior to incorporating any changes to process, materials, supplier changes and production location as specified in the AIAG PPAP Manual.
- 2.3.2 Shipments incorporating such changes shall not be made until authorized through SSI Technologies PPAP approval or SSI Technologies approved deviation.
- 2.3.3 The supplier is expected to maintain control records with effective dates and lot identification of all engineering and process changes.
- 2.3.4 The control system must ensure removal of obsolete information from all points of use and provide for proper identification and disposition of the affected product. The supplier's change control records are to be available for review by SSI Technologies personnel.

2.4 PRODUCT IDENTIFICATION AND TRACEABILITY

- 2.4.1 All suppliers must establish a system for positive identification and record keeping for each production lot throughout manufacturing, inspection and testing. The method of lot control and identification must be developed by the supplier consistent with the supplier's manufacturing facilities and operations, but must include the following elements:

2.4.2 LOT IDENTIFICATION

- A. Each lot (job/batch/work order/heat, etc.) must be identified through a unique identification/traceability number.
- B. Each shipping container must be identified with the lot identifier or serial number referencing the lot identifier. Parts with different lot numbers may not be mixed within a shipping container.

2.4.3 LOT TRACEABILITY CONTROL

- A. The supplier must establish a system for identifying production lots so that:
 - A. The records of inspection or test results contain the main and subordinate lot codes.
 - B. The final inspection records are cross-referenced to supporting inspection and test documents and the raw material code (e.g. material heat numbers or lot numbers) are cross referenced to the lot numbers of the items shipped to SSI Technologies.

2.5 MEASUREMENT AND TEST EQUIPMENT

- 2.5.1 The supplier shall maintain a calibration system for all gages and measuring equipment used to inspect product.
- 2.5.2 In instances where SSI supplies gages to the supplier, gages shall be handled in accordance with the supplier's documented calibration system and identified as being owned by SSI Technologies.
- 2.5.3 Measurement System Analysis (MSA) is required for any measuring equipment in the control plan or as defined by special characteristics. MSA acceptance criteria shall be as listed below.
 - A. R&R (Repeatability and Reproducibility)
 - a. R&R less than 10% is acceptable
 - b. R&R between 10% and 30% is marginally acceptable
 - c. R&R greater than 30% is unacceptable

2.6 INSPECTION AND TEST CONTROL PROCEDURES

- 2.6.1 During the course of procurement and production, the supplier's inspection and testing, including periodic layout and laboratory testing must be documented in the control plan or equivalent document. The frequency must be adequate to assure control of product that conforms to specifications.
- 2.6.2 The supplier and the supplier's subcontractors shall maintain records of their inspection and test results. These records are to be available for review by SSI Technologies personnel upon request.

2.7 PRODUCT PROTECTION AND PRESERVATION

- 2.7.1 The supplier's system is expected to provide controls that will assure SSI Technologies products are satisfactorily protected against damage, contamination, and corrosion during manufacturing, subsequent storage, and shipment. When applicable, the system shall also include storage control provisions for products subject to limited shelf life.

2.8 HAZARDOUS MATERIALS/RESTRICTED SUBSTANCES

- 2.8.1 SSI Technologies has proactive environmental policies that prohibit certain materials from being used in our manufacturing process. If a Safety Data Sheet (SDS) exists for the product or any portion thereof or is required by law the supplier shall include the same with each shipment. SSI Technologies may request specific hazardous material reporting as required by end customers. This may apply to but not be limited to: IMDS, RoHS, REACH, Conflict Minerals, etc. SDS shall be submitted in the language country of final user.

2.9 CONFLICT MINERALS

- 2.9.1 SSI Technologies is committed to maintaining a safe and healthy working environment for our employees and the community and, at the same time, complying with all applicable government regulations. As required by the Conflict Minerals provisions of HR 4173, Section 1502 of the Dodd-Frank Wall Street Reform and Consumer Protection Act, SSI Technologies is working with all of our raw material suppliers to confirm that their supply of materials does not include conflict minerals as outlined in the aforementioned bill.
- 2.9.2 The four minerals listed as conflict minerals are Tin, Tungsten, Tantalum and Gold from the countries listed on the aforementioned bill.
- 2.9.3 Suppliers must declare whether or not if any of these conflict minerals are in their products.

2.10 RECORD RETENTION

- 2.10.1 Unless otherwise specified, the supplier and supplier's subcontractors shall retain records of their inspection and test results including control records and any and all certifications for material and subcontracted processes or services for the life of the program plus service contract.

2.10.2 These records shall be available for review by SSI Technologies personnel upon request.

2.11 FIFO SHIPMENT REQUIREMENT

2.11.1 SSI Technologies requires all products and services to be handled on a first-in-first-out basis.

2.12 LOT SHIPMENT LABELING REQUIREMENTS

2.12.1 To facilitate quality control, lot control, and containment of nonconforming material, the supplier shall affix labels to all containers shipped to SSI Technologies. Additional labeling requirements may apply.

2.13 GENERAL SUPPLIER CAPABILITIES

2.13.1 Qualified Personnel – Suppliers are expected to have qualified, trained employees in place to perform activities related to product quality and delivery.

2.13.2 Electronic Data –Suppliers are required to have electronic data systems in place to receive releases electronically and exchange key data with SSI electronically.

2.13.3 Supplier Sustainability – Suppliers are expected comply with SSI requests regarding supplier sustainability to the extent the Supplier’s business is able to help the environment and create profit opportunities by taking action to help the environment.

2.14 QUALITY SYSTEMS REQUIREMENTS

2.14.1 Preferred suppliers must be ISO 9001, TS 16949 and ISO 14001 3rd party registered. Suppliers who are not registered to the above must have systems in place to ensure they meet SSI Technologies requirements.

2.14.2 The minimum acceptable quality registration for a new supplier is ISO 9001 unless written approval is given by SSI customer.

2.14.3 The supplier shall maintain their quality system registration through their registrar’s surveillance program and notify SSI of any change in their registration status such as new certificate number, suspension, revocation or switch to a new registrar.

2.14.4 The supplier must submit a copy of their certificate to SSI Technologies.

- A. For SSI Technologies Controls Division the certificate can be emailed to SSISupplierQuality@ssitech.com.
- B. For SSI Technologies Sintered Division the certificate can be emailed to SSDQuality@ssitech.com.

2.14.5 SSI expects their suppliers to manage the quality of their supply base.

2.14.6 SSI requires that tier 1 suppliers allow and facilitate SSI visits and audits of tier 2 suppliers if requested.

2.15 CONTINUAL IMPROVEMENT

2.15.1 SSI expects suppliers to monitor the outputs of their quality system and continually improve in quality, service and cost throughout the supplier's organization.

2.15.2 Suppliers are expected to apply continual improvement techniques to all areas within the organization. These areas shall include product and non-product characteristics that impact quality, service and cost.

2.15.3 Suppliers shall use statistical tools for monitoring continuous improvement.

2.15.4 Suppliers shall conduct an internal quality management system audit annually at a minimum.

3 QUALITY PLANNING

3.1 ADVANCED QUALITY PLANNING

3.1.1 The supplier shall have a process to meet the requirements of the AIAG APQP process and is required to participate in APQP with SSI Technologies upon request. Each supplier shall have a Process Flow, Process FMEA and Control Plan per the appropriate AIAG manual.

3.2 CLASSIFICATION OF CHARACTERISTICS

3.2.1 During the advanced quality planning stage SSI Technologies will communicate special characteristics which must be controlled or monitored by the supplier.

- 3.2.2 Any designated special characteristics should be reviewed with your SSI contact during the APQP process.
- 3.2.3 Unless otherwise specified by the customer all KPC's and Special Characteristics must have capability indexes (both C_{pk} and P_{pk}) greater than 1.67 for initial studies. If the values are below this, action items must be assigned to correct the low values.
- 3.2.4 The default symbol for special characteristics will be the end-customer's symbol (Inverted Delta, Diamond, KPC, KCC, etc.). Where end-customer symbols are not in use, the SSI nomenclature below will be used to identify special characteristics. These symbols must appear alongside those characteristics on drawings, PFMEA and Control Plan.

SSI Special Characteristic Classification

Characteristics Classification	Description
KPC	Key Product Characteristics KPC - Is a characteristic that is Customer Driven and requires full Statistical Process Control or 100% Inspection and Measurement Systems Analysis. They will be identified using the customers designated symbol or KPC on the drawing, FMEA, and Control Plan. These are product characteristics for which reasonably anticipated variation could significantly affect a product's safety or compliance with governmental standards or regulations, or is likely to significantly affect customer satisfaction with a product.
CT1	Critical Characteristic CT1 - Is a characteristic that requires Statistical Process Control techniques for in-process monitoring and requires supporting Measurement System Analysis. A Critical Characteristic is a product characteristic that is a flowed down from a customer driven KPC or for which variation must be controlled to a target value to ensure that reasonably anticipated variation in a product or process characteristic is maintained during manufacturing due to design constraints that will result in loss of fit and/or function.
CT2	Major Characteristic CT2 – Is a characteristic having an established acceptable capability but requires ongoing sampling for audit purposes be implemented and where multiple verification throughout a production run are mandated to ensure acceptance to established tolerances. Major Characteristics require the results be recorded for ongoing historical analysis of process capability in meeting the stated requirements.
CT3	Minor Characteristic CT3 – Is a characteristic having an established acceptable capability but requires ongoing sampling for audit purposes be implemented that requires First and Last piece verification of a production; run, shift, lot, to ensure acceptance to established tolerances and where only a record of having performed the verification is required.
CTX	Unique Characteristic CTX – Is a particular type of special characteristic whose documented verification is mandatory, but whose ongoing process control is not mandated. These characteristics will be documented in the form of Dimensional Verification Report, Inspection Verification Layout, or Equipment Qualification records. These characteristics require initial studies to establish acceptable capability but based on those capability indexes and associated risks ongoing Statistical Process Control and/or sampling is not warranted. Their frequency of measurement and method of control will be defined in the associated Control Plan.

4 PRODUCTION PART APPROVAL PROCESS (PPAP)

4.1 PPAP REQUIREMENTS

- 4.1.1 All new product/process launches and changes to existing products/processes will require production part approval by SSI.
- 4.1.2 PPAP Requirements for new product/process launches will be defined for supplier during APQP process.
- 4.1.3 SSI Technologies requires suppliers to follow the latest version of the AIAG PPAP manual.
- 4.1.4 PPAP Annual Re-Validations are required.
- 4.1.5 PPAP Annual Re-Validation submission shall include:
 - A. Level 4 Submission
 - B. Part Submission Warrant stating “Annual Re-Validation”
 - C. Three piece layout
 - D. Current revision drawing
 - E. Material certification
 - F. Capability data on special characteristics
- 4.1.6 All PPAP documentation should be submitted to the following email address.
 - A. SSI Controls Division: SSISupplierQuality@ssitech.com.
 - B. SSI Sintered Division: SSIQuality@ssitech.com.

4.2 SUPPLIER REQUEST FOR CHANGE APPROVAL (SRFCA)

- 4.2.1 The supplier/subcontractor is required to contact SSI Technologies prior to making any product or process changes as outlined in the AIAG PPAP manual.
- 4.2.2 Advanced approval must be received prior to supplier making any production shipment of parts from a changed product/process.
- 4.2.3 Changes to the suppliers direct material supply base requires the supplier to submit a Supplier Request for Change Approval.

- 4.2.4 The Supplier Request for Change Approval (SRFCA) form can be provided by SSI Technologies upon request and is also available on the SSI Technologies Website.

4.3 RELEASE OF PRODUCTION SHIPMENTS

- 4.3.1 A signed Part Submission Warrant (PSW) or other written approval from SSI Technologies is required prior to shipment of production product.
- 4.3.2 ***In the absence of SSI Technologies written approval in the manner specified above the supplier assumes all risk, expense, and responsibility with respect to continued production and shipment of the non-approved material.***

4.4 DEVIATIONS

- 4.4.1 The SSI Request for Deviation Form is the sole means of communicating Deviation Requests to SSI Technologies. This form must be completed if the Supplier wants to request the shipment of product that does not meet normal requirements. The Deviation request must include all information as outlined on the Deviation form.
- 4.4.2 The deviated material must be retained by the supplier pending receipt of an approved Deviation Form from SSI Technologies.

5 NONCONFORMING MATERIAL NOTIFICATION AND RESPONSE

5.1 NONCONFORMING MATERIAL GENERAL REQUIREMENTS

- 5.1.1 When a nonconformance is detected at SSI Technologies that requires corrective action the supplier will be notified via a SCAR (Supplier Corrective Action Request).
- 5.1.2 The supplier is responsible for providing immediate containment activities, which may include, in-house sorting, 3rd party sorting, and/or the immediate shipment of replacement stock to keep SSI Technologies production lines running.
- 5.1.3 A documented Initial Response using the SSI Technologies or equivalent problem solving format is required to be submitted to SSI Technologies within one business day.

- 5.1.4 Due dates for root cause analysis and corrective action will be agreed upon by SSI Technologies and the supplier. This timing may be based on SSI Technologies Customer requirements.
- 5.1.5 In the event that product must be returned from SSI Technologies to the supplier, the supplier will be required to issue a Returned Material Authorization (RMA) number to SSI Technologies. Upon issue of the RMA, product will be returned to Supplier via agreed upon method.
- 5.1.6 Costs associated with nonconforming material may be passed onto the supplier in the form of a debit memorandum. Additional charges may apply due to administrative or SSI Technologies customer issues.

6 EVALUATION OF SUPPLIERS

6.1 SUPPLIER SELECTION

- 6.1.1 Suppliers are selected by SSI Technologies based on business needs, supplier capabilities and various other cost and logistical considerations.
- 6.1.2 Suppliers are required to complete a New Supplier Data Sheet and other supporting information to begin the process of being considered for new business. This request along with the associated documentation will be provided by SSI Technologies during the Supplier RFQ process.
- 6.1.3 Suppliers may be asked to complete a “Non-Disclosure Agreement” during the Supplier Selection process or at any other time during the business relationship. Suppliers are expected to abide by the language contained in those agreements for as long as the document is valid. SSI Technologies will supply this form to the appropriate supplier personnel as required.

6.2 SUPPLIER PERFORMANCE MONITORING

- 6.2.1 Supplier performance can be monitored through Supplier Rating, Supplier Scorecards, Product/Process Certifications, Supplier Self Assessments, On-Site Assessments and 3rd Party Certifications.

6.2.2 SUPPLIER RATING

- A. All Raw Material Suppliers and Subcontractors have a rating in the SSI PLEX ERP system which determines supplier status. Supplier status ratings are as follows:
- a. Acceptable: ISO 9001/ TS 16949 Registered with acceptable performance. Can be used unconditionally to supply approved product to SSI Technologies.
 - b. Probationary: Suppliers with poor quality and delivery performance or suppliers not registered to ISO 9001. Probationary suppliers can be used under the following conditions:
 - i. 3rd Party Registered suppliers with poor performance require an Action Plan to correct the poor delivery or quality issues approved by SSI Technologies Quality.
 - ii. Audited annually by SSI Technologies and have an action plan for ISO 9001 compliance and/or certification.
 - iii. Customer waivers obtained for the use of those suppliers. Note that the customer waiver will be placed in the PLEX supplier certification monitoring system so that it can be reviewed annually.
 - iv. If either of the above two conditions are not met in a reasonable timeframe, the Supplier may be re-sourced.
 - c. On Hold: Supplier not approved for use or new business.

6.2.3 SUPPLIER SCORECARDS (QUALITY AND DELIVERY PERFORMANCE)

- A. Suppliers will be rated on a scorecard driven by performance to SSI Technologies requirements. Specific breakdown of metric categories will be provided on the scorecards. Scorecards will be published to suppliers or available for look-up through SSI Technologies supplier portal.

- B. Poor performing suppliers will be notified when corrective actions are required. SSI Technologies will monitor scorecards with scores of 70 points or less and will determine where corrective action plans are warranted. Continued poor performance can result in change of Supplier Rating to Probationary or On Hold.

6.2.4 PRODUCT/PROCESS CERTIFICATIONS

- A. Product or Process Certifications from Suppliers may be required for shipments of parts. The requirements for these certifications will be outlined during the APQP process.

6.2.5 SELF-ASSESSMENTS

- A. Suppliers may be asked to perform a self-assessment and provide objective evidence as requested by SSI Technologies. Areas scoring poorly on the assessment may require corrective action plans.

6.2.6 ONSITE ASSESSMENTS

- A. SSI Technologies may determine that an onsite assessment is required at a Supplier Location. In this instance a SSI Technologies representative will contact the supplier in advance with an agenda. Areas scoring poorly on the assessment may require corrective action plans.

6.2.7 3RD PARTY REGISTRAR CERTIFICATIONS

- A. Accredited registration bodies must be used when obtaining certifications to internationally recognized standards (ISO 9001/ TS 16949, etc.).

7 RISK READINESS

7.1 Suppliers shall have a documented contingency plan in place to manage their environmental, geographical, and political risk. (This includes natural disasters, political unrest, power outages, etc.).

7.2 Suppliers shall manage their suppliers order fulfillment risk. (This includes geographic risk, political unrest, etc.).

NOTE: Risk readiness also includes an emergency recovery plan and capacity confirmation.

8 REFERENCES/FORMS

8.1 AIAG Manuals (APQP, FMEA, MSA, PPAP and SPC)

8.2 Supplier Request for Change Approval (SRFCA)

8.3 SSI Technologies Request for Deviation

8.4 Supplier Information Form