

# Texas Instruments General Quality Guidelines

Texas Instruments (TI) is dedicated to designing, manufacturing and marketing high quality integrated circuit products that serve our customers' needs. TI's dedicated Quality organization includes customer Quality representatives in each TI business segment, who work closely with our customers to quickly resolve quality related issues by coordinating efforts and communicating with TI business segments, sales and manufacturing teams. Customer quality representatives also support communication regarding, product containment, corrective action, and quality improvement programs.

In an effort to meet our customers' quality data requirements, TI recently updated its Quality and Reliability website at [ti.com/quality](http://ti.com/quality). The new site contains useful information, including:

- TI's Quality Policies and Procedures;
- Environmental Policies and Statements;
- Product Shelf Life;
- Reliability; and
- Certifications and Industry Standards.

TI's commitment to customer satisfaction is communicated through the TI Quality Policy:

## **Our quality policy**

Quality is foundational to achieving our business objectives. We are committed to satisfying applicable requirements and providing quality products to customers around the world by:

- Encouraging and expecting the creative involvement of every TI'er
- Listening to our customers
- Continuously improving and innovating our products, processes and services

TI acknowledges the stringent quality requirements required to successfully and consistently supply products into the automotive market and, therefore, maintains an active continual improvement program focused on the pursuit of 100% On Time Delivery with zero defects.

Texas Instruments sites first achieved the International Organization for Standardization's (ISO) Quality Management System (ISO 9001) and Environmental Management System (ISO 14001) Certifications in 1996 and have maintained compliance with the ISO requirements since that time. Texas Instruments is also certified to the following standards:

- IATF 16949 certified in 2018 (Global automotive industry).
- ISO 45001:2018 certified in 2019 (Occupational health and safety management systems — Requirements with guidance for use)



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Heather Hendershot  
Worldwide SC Quality

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## **1 SCOPE**

Texas Instruments General Quality Guidelines (GQG) apply to the provision of quality assurance with respect to materials, products, services, manufacturing processes, tests, controls, handling, storage and transport measures as well as the management processes used and/or applied by TI so that Products will comply with the published and/or specifically agreed specifications. "TI Products" are packaged integrated circuit products that TI has qualified as released to market. "Automotive Products" are a subset of TI Products that TI has qualified and released for automotive applications, as indicated in the TI datasheet.

TI will endeavor to comply fully with these guidelines; however, nothing in this document shall be construed to create, expand or in any way alter any warranties or remedies, if any, as set forth in [TI's applicable terms of sale](#).

TI works hard to follow these quality practices and seeks to provide customers with the most accurate and up to date information available about its general quality practices. Although the information provided herein is true and accurate as of the latest revision of this document, TI may occasionally make changes or updates.

## **2 QUALITY MANAGEMENT SYSTEM**

TI's Quality Policy Manual has been written to meet the requirements of our customers as well as applicable International and National Standards such as International Standardization Organization (ISO) 9001 and International Automotive Task Force (IATF) 16949. It is supported by documented procedures, work instructions, and process flows that define specific activities needed to implement the quality management system and the quality policy. This documentation describes the interaction between the processes of TI's quality management system.

## **3 MANAGEMENT RESPONSIBILITY**

Top management is committed to the implementation and continual improvement of TI quality systems as a critical method for product realization and customer support. Top management and other management as appropriate regularly review the effectiveness and efficiency of the quality system, and make the necessary adjustments to meet planned objectives and customer expectations.

## **4 INTERESTED PARTIES**

Interested parties are entities with applicable requirements or expectations that, if not addressed, could raise the risk level on the organization and negatively impact its ability to achieve its intended results. Interested parties include external and internal customers, suppliers, and governmental organizations that publish statutory and regulatory requirements. TI monitors and reviews information of interested parties and their relevant requirements.

To determine risks and opportunities TI considers:

- The relevant external and internal issues that can affect the ability to achieve the intended results; and
- The interested parties and their requirements which are relevant to TI's Quality Management System and to its products and services.

## **5 AUDITS**

Periodic internal audits are performed to ensure compliance to stated requirements, the effective implementation and operation of the quality management system, and the identification of opportunities for continual improvement. Audits are conducted at planned intervals and are performed by qualified internal auditors independent of the area being assessed. A process is in place to ensure qualified internal assessors are used. Results of audits are documented and corrective actions are implemented and evaluated for effectiveness. Audit results form part of the management review process.

TI's supplier quality system assessment is addressed in the Purchasing and Supplier Management section.

Occasionally, customers may ask to verify Product at one of TI's supplier sites. TI manages these requests on a case-by-case basis and coordinates with the supplier, as appropriate.

Due to the significant impact of customer audits on TI operations and the global scale of our customer base, accommodating every customer audit request is not possible. TI maintains rigorous audit procedures to ensure compliance, effective quality management system implementation, and ongoing continuous improvement. All our manufacturing sites are certified to ISO 9001 and IATF 16949 standards, with our quality certifications accessible to customers via our [Certifications site](#).

## 6 PURCHASING AND SUPPLIER MANAGEMENT

The quality of TI Products is dependent on the quality of purchased materials and services. TI requires suppliers of critical materials and services to develop, implement, and improve a quality management system certified to ISO 9001, IATF 16949 and other applicable quality management system standards.

The purchase process is documented and structured to meet the following requirements:

- Ensure that purchasing documents clearly describe the Product and services ordered
- Ensure that purchased products and services conform to purchase requirements
- Communicate to suppliers the appropriate product, quality, and delivery requirements
- Ensure that purchased materials and services meet government, safety, and environmental regulations
- Ensure that finished product, direct materials, and packing materials meet the provisions of regulatory and agreed upon customer requirements

All TI groups/organizations utilizing purchased materials and services will work with the established supplier management organizations, as applicable; to ensure that the supplier management process in place is structured to cover the following:

- Identify and select suppliers with the capability to meet TI needs
- Establish criteria for selection, evaluation, qualification, and certification of suppliers
- Perform supplier quality management system development
- Ensure continuity of supply
- Ensure that critical materials and services are purchased only from approved sources
- Monitor and provide feedback on supplier performance
- Monitor product quality and delivery performance (including use of premium freight, as applicable)

## 7 INFORMATION TECHNOLOGY CYBERSECURITY

Texas Instruments employs a global, dedicated IT Security team to deploy policies, processes, and technologies to protect TI's intellectual property and other interests. TI's information security policies combine elements from security policies and standards published by groups such as ISO, NIST, and other authoritative sources and apply them to TI's business environment.

To protect the value of our security investments, TI does not generally disclose specific details on people, processes, or technologies relating to information security practices.

## 8 ANTI-COUNTERFEITING

Texas Instruments is committed to practices intended to combat counterfeit semiconductors, complies with JESD243, and supports law enforcement agencies in their efforts to address this challenge. To help mitigate the risks posed by counterfeit TI products, TI strongly recommends our customers purchase directly from TI or an [authorized distributor](#). Semiconductor products purchased outside of TI's authorized supply network, sometimes referred to as "gray market devices," may be [counterfeit](#) or unreliable. TI does not provide full warranty coverage or customer support for semiconductor products purchased outside of authorized sources. As a member of the Semiconductor Industry Association, TI continues to work to advance industry anti-counterfeiting standards. For additional information regarding TI's anti-counterfeiting efforts please refer to

[Ti.com](http://Ti.com).

## **9 EXTERNAL CALIBRATION LABORATORIES**

The external calibration laboratories that Texas Instruments chooses to use must be approved based on their accreditation or their status as an Original Equipment Manufacturer. When supporting IATF 16949 certified sites external calibration laboratories will be certified to ISO 17025 or national equivalent.

## **10 PRODUCT DEVELOPMENT**

All new Product development at TI follows a structured new product development process such as Product Quality Planning, Advanced Product Quality Planning (APQP), and/or Product Realization as applicable. A phase review system for each group is defined in controlled documented procedures. A formal project review and approval, by responsible management, is completed and documented at critical points in the development process. The process is designed to manage organizational interfaces, project risks, schedule (including sample delivery, qualification, and PPAP documentation) and communication between groups involved in the development process.

## **11 RISK MANAGEMENT**

Risk evaluation and mitigation is a fundamental part of TI's Quality Management System. TI uses risk management as part of new Product development and manufacturing. Examples of these strategies and methodologies include: phased-gate New Product Development (NPD), project risk assessments, Business Continuity Planning (BCP), Product qualification and characterization methodologies and change management risk strategies. For IATF 16949 requirements, TI uses FMEA as the risk management methodology. TI maintains applicable manufacturing risk management summaries on file at TI facilities. Other risk management considerations may be utilized and will depend upon the specific TI component requirements, including:

- Functional Safety
- Safety Critical Application
- Product Cybersecurity

## **12 QUALIFICATION / RELIABILITY**

Quality and reliability are built into TI's culture, with the goal of providing customers high quality Products. TI's semiconductor technologies are developed with a minimum goal of fewer than 50 Failures in Time (FIT) at 100,000 Power-On-Hours at 105°C junction temperature. TI builds simulations, accelerated testing, and robustness evaluations into the Product development process. During the Product development process, TI carefully assesses silicon process reliability, package reliability, and silicon/package interaction. TI also evaluates manufacturability of the Product to verify a robust silicon and assembly flow to enable continuity of supply to customers.

Non-Automotive Products are qualified with industry standard test methodologies performed to the intent of Joint Electron Devices Engineering Council (JEDEC). Other standards (e.g. IPC/MIL/ANSI) may be used when appropriate. Automotive Products are qualified to meet the Automotive Electronics Council (AEC)-Q100 standards. Qualification test results for Automotive and Aerospace and Defense (A&D) Products are made available to customers upon request.

## **13 PROCESS MONITORING / PRODUCT ASSURANCE**

TI uses process measurement and monitoring for manufacturing process control and to minimize process and Product variation with a goal to achieve zero defects. Important characteristics are identified, data is analyzed, and statistical process control (SPC) is used in all phases of manufacturing with an emphasis on defect prevention versus detection.

Automated systems are applied for Product statistical yield outlier (SYL) and standard statistical bin outlier (SBL) with quarterly limit recalculation, where applicable. Additional statistical based controls may be available for specific design and process technology that is based on business product engineering.

TI manufacturing uses process capability measurements as a key component of process monitoring and control with a goal to achieve values of  $C_p > 2.00$  and  $C_{pk} > 1.67$ . For critical charts on Automotive Products, characteristics with  $C_{pk}$  between 1.67 and 1.33, continual improvement activities will be documented to ensure process improvement and  $C_{pk}$  values remain above 1.33. For Automotive Products any characteristics with a  $C_{pk} < 1.33$  will have an identified action plan to improve the process capability and an identified containment plan to screen out product not meeting specifications. Measurement systems used for process monitoring are controlled by using established qualification, verification and calibration procedures. TI manufacturing personnel are trained to use and employ statistical control processes and procedures as an additional component of process monitoring and control.

A test of outgoing Product is included as part of process and product monitoring. This monitoring may include inline parametric, functional, and visual verification utilizing statistical and product outlier control methods. Samples (such as "golden" samples) may also be used as references for the manufacturing process and final Product.

#### **14 MEASUREMENT SYSTEM ANALYSIS (MSA)**

Accurate and precise measurement systems are used to ensure that Products are compliant to specification and agreed upon customer requirements. Measurement system gage repeatability and reproducibility (GRR) verification is performed to ensure measurement system performance meets expectations. All manufacturing sites certified in IATF 16949 have implemented a more comprehensive approach for measurement system analysis that includes bias, linearity, stability, and %GRR measurements.

#### **15 PRODUCTION PART APPROVAL PROCESS (PPAP)**

Upon request, TI supplies PPAP documents for Automotive Products, which are designed in to a customer's applications per the Automotive Industry Action Group (AIAG) Manual.

#### **16 ELECTROSTATIC DISCHARGE (ESD)**

All TI operations worldwide that handle, test, or ship ESD sensitive devices or assemblies containing such devices employ electrostatic discharge prevention methods or procedures. TI adheres to an industry standard ESD control program, per JEDEC JESD625.

#### **17 SOFTWARE QUALITY ASSURANCE**

All TI operations responsible for the development of software products or related services will document their activity requirements which include: the integrity of the development process, continual compliance to customer requirements, base- lining software products and maintaining their revision status, and quality control activities.

#### **18 CONTINUAL IMPROVEMENT**

TI conducts periodic reviews of the effectiveness of the entire quality management system and changes that could affect the quality management system. These reviews include monitoring trends in operational, business, customer feedback and quality performance of the Product realization processes and the associated support processes.

Metrics are defined for key performance areas and are used to monitor ongoing progress to quality objectives, to identify critical issues, to track improvement activities, to identify and prioritize opportunities for quality and productivity improvements and to measure cost of poor quality, as applicable. Organizational resources are analyzed against quality objectives for suitability. Data and information from all sources of Product and process issues, including analysis of field failures and other customer feedback as applicable, are also reviewed to identify areas where action may need to be taken to reduce or eliminate nonconforming product and to prevent potential issues from occurring.

TI's dedication to continual improvement includes a zero defect program for automotive products. TI's

continual improvement processes includes:

- 5S Activities
- Defect Reduction
- Automotive flow
- Additional testing and inspection
- Problem solving programs
- Lessons learned and fan out

## **19 NONCONFORMING PRODUCTS**

In the event that TI discovers that nonconforming goods were delivered to a customer, TI will inform the customer or distributor in writing within a reasonable time, and will take reasonable measures in order to avoid and/or minimize damages.

If it becomes necessary to deliver Products to a customer and the Products do not comply with TI's datasheet or mutually agreed customer device specifications, TI will provide in advance, a waiver which documents this event and which requires customer approval. This can be done in system-generated form without a signature.

## **20 NONCONFORMITY AND CORRECTIVE ACTION**

When nonconformities occur in the process, Product, quality management system, or when customer complaints or returns are received, personnel will take immediate and appropriate correction and corrective action according to their documented procedures. Managers with responsibility and authority for corrective action will be promptly informed when Products or processes become noncompliant with specified requirements. Documented corrective action will include:

- Reviewing and documenting the problem
- Where Product is involved, preventing any additional defective product from being produced, and preventing any defective Product from being shipped to a customer
- Prompt customer notification when nonconforming Product has been shipped
- Investigating the root cause of the problem and recording the results of the investigation
- Utilizing problem solving and error proofing methods, as applicable, to determine appropriate corrective actions based on the root cause analysis
- Documenting and implementing the appropriate corrective actions
- Verifying that the corrective action is effective in eliminating the problem and preventing its recurrence
- Applying the corrective action to similar processes and products as appropriate

Additionally, data and information from quality management sources including Product and process problems are periodically analyzed to identify areas where action may be needed to prevent potential problems from occurring. According to documented procedures, appropriate actions are taken to initiate preventive actions and to ensure they are effective.

The documented preventive action will include:

- Determining potential nonconformities and their causes
- Evaluating if action is required to prevent the occurrence of potential nonconformities
- Documenting and implementing the appropriate preventive actions
- Documenting the results of the preventive action
- Reviewing the effectiveness of the preventive action
- Updating risk management methodologies

## **21 CUSTOMER RETURNS**

Texas Instruments is dedicated to providing quality Products and committed to delivering year over year quality improvements (measured as return parts per billion (rPPB) and resolution cycletime) by continually learning from non-conformance issues. TI's total quality approach includes reduction of non-conformance

issues at all levels of development & manufacturing. TI supports system related issues with teams and procedures in place to help resolve systematic EIPD and TNI associated customer returns. This often requires close collaboration with our customer's design and application teams and a long-term commitment to reviewing all root cause possibilities, including design, test, process, defectivity and application issues.

In the event that a customer experiences issues with a TI Product including embedded software, TI has an established customer return process to address non-conformance requests through the Customer Return Portal (CRP) on [Ti.com](https://www.ti.com). Once a request has been accepted, a thorough and timely analysis of the reported problem will be undertaken, including execution of appropriate corrective action. In an effort to drive continual improvement, individual returns are aggregated to identify systemic process improvements opportunities. Appropriate communication with customers and within TI will occur during testing and analysis.

For Automotive Products TI's target response times are as follows:

- Receipt acknowledgment and initial containment plan, if applicable, within twenty-four (24) hours of receipt of non-conforming product;
- Written verification results of the suspect nonconforming material with next action plan within forty-eight (48) hours of receipt;
- Final 8D report with analysis results, root cause findings and corrective action plan on verified failures within ten (10) working days of receipt. Implementation timing of corrective action plan may vary based on nonconformance type and may exceed 10 working days.

Complex analysis may exceed 10 working days. If 10 working days cycle time is exceeded, TI is committed to provide regular updates on progress and next steps for automotive products.

## **22 CHANGE MANAGEMENT**

After formal Product/process release, continual improvement strategies are emphasized, and as a result, there may be a need to modify, update, or discontinue the Product/process. When this occurs, the change management system is used to plan, qualify, and implement the change. Where practical, analysis is performed on potential impact to the systems in which the Product/process is used and the effect of changes on Product already delivered.

A formal documented change process is used to ensure that the appropriate validations are completed and modifications documented prior to implementing the change. When a Product/process change requires customer notification, a formal Product change notification process is used. Records are kept indicating the initiation of any change to production processes and to demonstrate conformance to these requirements. TI complies with the requirement in J-STD-046, latest issue. Consistent with this industry standard, customers will be notified of major changes which affect the form, fit, function, or adversely affect quality or reliability of the Product.

For notification of Product changes on automotive devices, Texas Instruments complies with AEC-Q100 Revision H and is developing processes which align with provisions of ZVEI.

## **23 PRODUCT WITHDRAWAL/DISCONTINUANCE**

TI's Product withdrawal/discontinuance process complies with J-STD-048, latest issue. TI makes an effort to not obsolete Products out of convenience. Convenience means: low running device, poor yields, limited customer adoption or similar items. TI's obsolescence withdrawal schedule provides a longer lead time than the industry standard. TI allows 12 months for the last order and an additional 6 months to take final delivery of obsolete items. In rare circumstances, an accelerated withdrawal schedule may be necessary. In such cases, TI will communicate the last buy and final delivery dates in the End-of-life (EOL) notice, along with an explanation of the circumstances necessitating the early withdrawal. TI does not provide notice with respect to the modification or discontinuation of Evaluation Kits and/or pre-production products.

## **24 BUSINESS CONTINUITY PROGRAM**

TI has a Business Continuity Program that covers contingency planning, incident management, crisis management, customer response, and business recovery. The TI Business Continuity Program protects TI's corporate interests by doing the following:

- Minimize the impact and potential disruption to TI customers and stakeholders
- Support a timely and effective response, recovery and contingency for interrupted TI business operations, such as design planning, supply chain, manufacturing, sales and shipping
- Minimizing TI financial and operational impacts that could seriously jeopardize the corporation and brand
- Satisfy TI's business obligations throughout the crisis event
- Communicate effectively in order to provide accurate and consistent information to internal and external stakeholders
- Address TI employee, humanitarian and community concerns where TI operates
- Ensure TI leadership support and expectations for program elements

## **25 IDENTIFICATION AND TRACEABILITY**

TI Products are identified from raw materials through all stages of production and shipment to the customer. The tracking procedure includes:

- Assignment of a unique identifier to each lot or batch of material
- Recording the completion of each process step and the inspection and test status recording of pass/fail quantities
- Identification of key process information as defined in work instructions
- Recording of key process parametric data as defined in work instructions
- Traceability to key raw materials and the production process as needed
- Assignment of a unique tracking STC (Ship Track Code) for every intermediate container (bag, box, reel) is located in TI's standard 2D label.
- Custom marking for Products will need to mutually agreed between the customer and TI

## **26 PACKING**

The packing design for components shipped to customers will be TI's responsibility and conforms to J-STD-033 for moisture sensitive devices. The packing material has been designed to guard against damage during shipping, stacking, and handling. If there are major changes in the packing design TI will communicate appropriately to the customer or distributor through the previously mentioned change management process.

## **27 MANUFACTURING DATE CODE**

TI's internal manufacturing processes are carefully controlled to ensure delivery of quality TI Products. Manufacturing Date code information found on the TI label or shipping documentation is strictly for inventory management and is not an indicator of product quality. TI stores products in controlled environments according to relevant industry standards such as JEDEC J-STD-020 and JEDEC J-STD-033 to maintain the quality and reliability of our products. Inventory is managed to help ensure continuity and immediate availability of products to customers and to minimize burdens caused by end-of-life complications on mature products. Additional information on long term storage and manufacturing date code can be found on [TI.com](http://TI.com).

## **28 LOT COMBINATION**

Assembly date codes will not be combined prior to final pack. For Products, four (4) date codes maximum, not more than 52 weeks apart may be combined into one intermediate manufacturing pack (bag/box/reel). 52 weeks is calculated from the maximum age Lot Trace Code minus minimum age Lot Trace Code.

## **29 CUSTOMER LABELING**

Consistent with industry standards TI provides a human readable and 2D data label attached to every intermediate manufacturing container (bag, box and/or reel) used in the Product identification/tracking and receiving process. Each label will include, as applicable, lot traceability information MSL level and appropriate

regulatory compliance markings. TI will continue to meet customer specific label per mutually agreed data fields captured in the customer label request.

### **30 RECORD RETENTION**

TI has a comprehensive record retention strategy which must account for more than fifty different categories of record types, with retention periods matrixed against market segments. For certain critical record types the retention periods for Automotive Products are longer than for other Products. Examples of these record types include lot history records, reliability monitor results, design review documents, and new product approval data. These records are currently retained for 15 years.

Storage locations and archival processes also vary by record type and are managed as part of this comprehensive strategy which is in-line with industry standards. All TI record retention periods are subject to change without notification.

### **31 RESTRICTED CHEMICALS AND MATERIALS (RCM)**

TI manages product compliance status through its RCM management program. Materials used in TI finished products must go through an approval process that includes: complete substance declarations, supplier compliance statements and applicable 3rd party test reports.

TI requires its suppliers to comply with TI's "[Customer Material Specification](#) (Controlled Chemicals and Materials)," which incorporates TI's "[Restricted Chemicals and Materials List](#)." Suppliers must certify the presence and concentration above threshold of any substances on TI's RCM list and update their certificates every year. TI's RCM program requires the suppliers use accredited labs to perform testing for 10 European Union Restriction of Hazardous Substances (RoHS) substances and for materials that may possibly contain chlorine or bromine based flame retardants. All other restricted chemicals are verified through material declarations and/or compliance statements from these suppliers.

TI's RCM management program provides data that feeds into the environmental and product stewardship information on [ti.com](#). Customers can access the latest TI statements regarding material content of Products ([Environment Information](#) and [Material Content Search](#)) database which allows customers to search by part number to view specific material content information. This data is used for entry into systems like the automotive International Material Data System (IMDS). Proprietary substances or materials will not be disclosed in the material content reports. Any additional questions related to the material content of our Products should be directed to the TI Customer Support Center on [ti.com](#).

### **32 CONFLICT MINERALS**

TI uses tungsten, tantalum, tin, and gold in most of its Products. Such minerals are identified as "conflict minerals" in Section 1502 of the Dodd-Frank Wall Street Reform and Consumer Protection Act. TI does not purchase these metals directly from smelters or mines and TI is working with our direct suppliers of these metals to understand their supply chain and determine the origin of these metals. In 2016, TI determined that all semiconductor integrated circuit Products were conflict-free. In the absence of federal regulations, TI, as a member of the Responsible Business Alliance (RBA), has been working with the Responsible Minerals Initiative (RMI) to ensure due diligence is applied to controlling of the sources of these metals Please see TI's statement regarding conflict minerals on [TI.com](#).

### **33 ENVIRONMENTAL SAFETY AND HEALTH**

TI has a strong history of environmental stewardship and works to continually improve environmental performance and efficiency at its sites worldwide. We make significant investments to operate sustainably, reduce our carbon footprint, better manage waste and air emissions, and reduce water and energy consumption. Our environmental, safety and health (ESH) policy and principles guide our efforts to operate sustainably – from efficient product distribution and employee commuting to maintaining compliance with environmental regulatory requirements. Additional information on Citizenship and community can be found

[Ti.com](http://ti.com).

It is the responsibility of every TI employee to understand and support TI's ESH policy and principles. All TI employees globally receive ESH training on TI's programs to ensure their safety and health and contribution to environmental stewardship. TI's occupational health and safety management system helps us reduce or eliminate risk that could result in personal injury or illness. TI employees receive additional relevant training and communications based on their role and working environment. Contractors must also comply with TI's ESH standards. TI manufacturing sites worldwide have obtained International Standards Organization ISO 45001:2018 Requirements with guidance for use) and Occupational Health and Safety Management System (ISO) 14001 Environmental Management System external certifications.

### **34 RESPONSIBLE BUSINESS ALLIANCE**

TI is a member of the Responsible Business Alliance (RBA, Formerly the Electronic Industry Citizenship Coalition and follows the RBA Code of Conduct (CODE) see <http://www.responsiblebusiness.org/standards/code-of-conduct/>

The Code establishes standards to ensure that working conditions in the electronics industry supply chain are safe, that workers are treated with respect and dignity, and that business operations are environmentally responsible and conducted ethically. TI is actively working to implement the code throughout our supply chain.

### **35 ABBREVIATIONS**

|        |  |
|--------|--|
| AEC:   | Automotive Electronics Council                                       |
| AIAG:  | Automotive International Action Group                                |
| APQP:  | Advanced Product Quality Planning                                    |
| CODE:  | EICC Code of Conduct   |
| ECHA:  | European Chemicals Agency  |
| EU:    | European Union   |
| FMEA:  | Failure Mode and Effect Analysis                                     |
| GQG:   | General Quality Guidelines   |
| GRR:   | Gage Repeatability and Reproducibility                               |
| ISO:   | International Standardization Organization                           |
| JEDEC: | Joint Electron Devices Engineering Council                           |
| NDA:   | Non-disclosure agreement   |
| MSA:   | Measurement System Analysis  |
| OHSAS: | Occupational Health and Safety Assessment Series                     |
| PCN:   | Product Change Notification  |
| PPAP:  | Production Part Approval Process                                     |
| RBA:   | Responsible Business Alliance  |
| SBL:   | Standard Statistical Bin Outlier                                     |
| SPC:   | Statistical Process Control  |
| SVHC:  | Substances of Very High Concern                                      |
| SYL:   | Statistical Yield Outlier  |
| REACH: | Registration, Evaluation, Authorization and Restriction of Chemicals |
| WW:    | World Wide   |

### **36 RECORD OF CHANGES**

Date: 06/30/2014

Reason for change: Initial Release  
Paragraph modified: Initial Release

| Revision | Reason for Change   | Paragraphs Modified                                 | Date       |
|----------|---|---|------------|
| -        | Initial Release   | Initial Release                                     | 06/30/2014 |
| A        | Revised to change Vice President's signature  | Page 1  | 12/03/2014 |
| B        | <ul style="list-style-type: none"> <li>- Revised to change wording from TS/IS 16949 to IATF 16949</li> <li>- Updated purchasing and supplier management section</li> <li>- Changed Qualification / Reliability section</li> <li>- Changed section on PPAP</li> <li>- Changed Change Management section to new standards</li> <li>- Rewrite of EH&amp;S</li> </ul>   | 2, 4, 5, 9, 12, 16, 17, 18, 19, 20, 30              | 06/12/2017 |
| C        | <ul style="list-style-type: none"> <li>- Defined "TI Products" in Scope paragraph</li> <li>- Capitalized "Products" throughout document</li> <li>- Added Interested Parties, cybersecurity and anti-counterfeit paragraphs</li> <li>- Clarified Risk Management section with additional examples</li> <li>- Added reference to the customer return portal in the Customer Return paragraph</li> <li>- Modified RCM paragraph to provide clarity on TI's restricted chemical process</li> <li>- Changed EICC to RBA Responsible Business Alliance</li> </ul> | 1, 4, 5, 6, 7, 8, 11, 12,13, 14, 20, 22, 30, 31, 33 |            |
| D        | - Remove reference to document applying to only Automotive Products   | Title, 1  | 10/14/2019 |
| E-M      | - Modified to align with online revision  | No changes made                                     | 06/01/2020 |
| N        | <ul style="list-style-type: none"> <li>- Updated Anti-counterfeiting to include JEDEC standard</li> <li>- Updated customer returns to address TNI and EOS</li> <li>- Changed shelf life paragraph to date code to clarify the use of date codes</li> <li>- Minor changes improve clarity</li> </ul>   | 2, 4, 5, 6, 8, 21, 27, 29, 31, 33, 35               | 07/15/2020 |
| O        | <ul style="list-style-type: none"> <li>- Changed OHSAS 18001 certification in 2007 (Occupational health and safety) to ISO 45001:2018 certified in 2019 (Occupational health and safety management systems — Requirements with guidance for use)</li> <li>- Modified paragraph on Manufacturing Date Code</li> <li>- Minor changes to improve clarity</li> </ul>  | Page 1, Paragraph 13. 15, 18, 23, 27, 28, 33, 35    | 9/22/2021  |
| P        | <ul style="list-style-type: none"> <li>- Changed Cybersecurity to Information Technology Cybersecurity</li> <li>- Updated Risk Management to include Product Cybersecurity</li> <li>- Modified Anti-Counterfeiting</li> <li>- Updated links to Customer Material Specification and Restricted Chemicals and Materials List in Restricted Chemicals and Materials section</li> <li>- Updated Product Withdrawal/Discontinuance to mention evaluation kits and pre-production parts</li> </ul>  | Page 1, 2, 3, 4, 5, 8, 9, 12                        | 10/11/2023 |

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|  | <ul style="list-style-type: none"><li>- Updated link for Terms of Sales</li><li>- Updated Audits to reflect new process</li><li>- Updated SC Quality Director signature</li><li>- Minor changes to improve clarity</li></ul> |  |  |
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