"Total Customer Satisfaction By Providing Products With Exceptional Quality, Reliability and Performance Standards"

Introduction

RF Micro Devices, an ISO9001 company, is committed to providing products of world class design, performance, reliability and quality. Our quality program includes conservative design techniques, extensive subcontractor and supply line management, comprehensive statistical process control, and 100 percent RF and DC test. Whether manufactured at our own GaAs HBT foundry, or one of our foundry partners, RF Micro Devices' rigorous attention to quality has resulted in a high level or customer satisfaction. Because of this, RF Micro Devices has become one of the world's fastest growing RF integrated circuit manufacturers.

ISO 9001

RF Micro Devices is ISO9001 certified. ISO9001 breaks a quality system down into 20 key areas, or sections. These sections form the framework for RF Micro Devices' successful quality system. ISO9001 offers something many other quality systems do not: stringent requirements on the key elements of quality program framework, combined with the flexibility to decide how to best implement that framework. For a copy of our Corporate Quality Manual, please contact your RF Micro Devices sales representative.

Designed-in Reliability

Our products are designed and developed using conservative design rules and cutting edge commercial and proprietary design tools. In order to assure strict compliance to foundry specifications, all designs are scrutinized using computerized, proprietary Design Rule Checks (DRC's). These checks help ensure high reliability and significant manufacturing margin. In addition, simulation tools evaluate circuit performance under worst-case conditions of temperature and process variation. In all cases, the designs are centered on standard foundry processes and tolerances, and do not require any product-specific process control or screening.

Sub-Contract

RF Micro Devices supplements its in-house capabilities by using qualified foundries and off-shore packaging and assembly operations. All outside suppliers are well established, certified facilities with exceptional quality programs. After the facilities pass RF Micro Devices' initial qualification process, the compliance of our vendors to performance and quality requirements is strictly monitored. Our compliance assurance program includes incoming inspection operations, as well as regular audits.

Production Test

High speed, automated IC handlers and test equipment are used to ensure consistent lot-to-lot product uniformity. All products are 100 percent tested at RF Micro Devices for critical RF and DC parameters. The goal for all products is to maintain a Cpk>1.5 relative to each critical product specification (corresponding to a 4.5 sigma distribution). All production test data is evaluated using standard SPC techniques and then archived for future use. Any control limit violations will alert our Production Test and Quality departments that corrective action is required.

Process Control Monitors

Process control monitors (PCMs) are used throughout the production process, including critical areas of fabrication, assembly, and electrical test. The table below shows electrical, mechanical, reliability, and environment stress control monitors used to monitor final packaged products. These and other monitors are used to ensure the quality of all products, to guide our quality improvement efforts, and to focus our energy on areas which can further enhance our process capabilities.

Process Control Monitor Testing

(these tests are subject to change without notice)

Thermal Shock Test, Liquid-to-Liquid

- 30 Cycles @ T = -45°C to +125°C, Dwell 5 Minutes @ Each Temperature
- MIL-STD-883, Method 1011, Condition B (M)
- Quarterly Per Package Family, Process Technology and Assembly Location

Pressure Pot Test

- Temperature = +121°C @ 2 ATM & 100% Relative Humidity For 96 Hours
- Quarterly Per Package Family, Process Technology and Assembly Location

Operating Lifetest

- Ambient Temperature = +150°C For 185 Hours(min) to 1000 Hours(max)
- Bi-Quarterly Per Assembly Location and Process Technology

Solderability
- MIL-STD-883 Method 2003
- Quarterly Per Package Family and Assembly Location

Resistance to Solvents
- MIL-STD-883 Method 2015
- Quarterly Per Package Family and Assembly Location

Lead Integrity
- MIL-STD-883 Method 2004
- Performed Bi-Quarterly Per Package Family and Assembly Location

Bond Strength
- MIL-STD-883 Method 2011
- Bi-Quarterly Per Package Family, Assembly Location, and Process Technology

ESD
- MIL-STD-883 Method 3015
- Yearly Per Process Technology and Foundry

ESD

As with all high-performance integrated circuits, caution must be used when handling RF Micro Devices products. Without proper precautions, electrostatic discharge can be a major contributor to device failures.

Electrostatic discharge sensitivity (ESDS) is defined as the level of susceptibility of a device to damage by static electricity. The level of susceptibility of a device is found by ESDS classification testing, and is used as the basis for assigning an ESDS class. RF Micro Devices continually evaluates devices to determine the ESD sensitivity level. RF Micro Device's standard method of ESD testing is Human Body Model (HBM), although Charged Device Model (CDM) or Machine Model (MM) testing can be performed as well. Knowing the ESD sensitivity will enable the end user to asses the adequacy of work areas, shipping materials, storage materials, and production equipment used while handling RF Micro Devices parts. We recommend that all personnel wear conductive smocks, heel straps on both feet or conductive shoes, wrist straps (RF Micro Devices recommends the use of 3M 722 continuous monitor wrist straps), and antistatic hand lotion. Production facilities should have ESD safe floors, and all benches, chairs, and production equipment should be grounded. ESD generating materials (paper, glass, plastic, Scotch tape, styrofoam, etc.) should be kept out of ESD safe areas at all times. All employees should be soft grounded via a 1Mohm resistor, and all equipment should be hard grounded.

Continuous process improvement and the relentless drive to exceed customer quality and reliability needs is a critical part of our success. Please contact RF Micro Devices for more detailed information on our Quality Program.