Reliability

Reliability Program for Commercial Processes and Packaging

Hittite Microwave Corporation (HMC) understands that reliability is of the utmost importance to our customers. Hittite’s customers require our products to work under life conditions and continue to work for the life of their product. For these reasons, Hittite has a dedicated group to ensure component reliability.

Below are the Hittite qualification flows. Testing is devised to simulate exposure to environments the product may experience during assembly, test, and life in end-user applications based upon JEDEC specifications, with zero failure acceptances, and different criteria for Process Qualification or Package Qualification.

Quality Test Reports (QTR) are written for each of our Qualified Packages and IC Processes. The QTRs can be found by clicking [here].

![Reliability Diagram](image-url)
Reliability Tests

**Package Reliability**

*Initial Characteristics* - Devices are electrically tested at room temperature for DC and critical RF parameters.

*Moisture Sensitivity Level (MSL)* – MSL pre-conditioning is performed per JESD22-A113.

*Final Electrical Test* - Devices are electrically tested at room temperature to DC and critical RF parameters.

*Unbiased Highly Accelerated Stress Test (uHAST)* - Devices are subjected to 96 hours of 85% relative humidity at a temperature of 130°C and pressure (15 PSIG). This test is performed in accordance with JESD22-A118.

*Temperature Cycle (T/C)* - Devices are subjected to 500 non-operating temperature cycles from -65°C to 150°C in accordance with JESD22-A104.

*High Temperature Storage Life (HTSL)* - Devices are subjected to 1000 hours at 150°C per JESD22-A103.

**Materials Quality**

*Physical Dimensions* – Devices are inspected by Opto-Mechanical means per specific package outline drawings. These devices need not be electrically functional.

*Solderability* – A total of 22 leads are subjected to steam aging and 240°C - Dip and Look test. These devices need not be electrically functional. This test is performed in accordance with JESD22-B102.

**IC Process Reliability**

*High Temperature Operating Life (HTOL)* - Devices are subjected to 1000 hours of accelerated operating life test at Tj ≥ max allowable die temperature, with a DC bias applied. The supply current (I<sub>ds</sub>) is periodically monitored. This test is in accordance with JESD22-A108.

*ESD Stress Test (HBM):* ESD exposure performed on 3 parts per JEDEC JS-001-2010.