BROADCOM®

Reliability Data Sheet

SO16

Small Outline (High CTI) Mechanical and Environmental Testing

Description

The document's reliability data shown includes Broadcom reliability test data from the reliability tests done on this product family. All of these products use similar processes and materials. The data in Table 1 and Table 2 reflects actual test data for the devices. Before stress, all devices are preconditioned at MSL 1 using a solder reflow process (260°C peak temp) and 20 temperature cycles (–55°C to +12°C, 15 minutes dwell, 1 minute transfer). This data is taken from testing on Broadcom devices using internal Broadcom processes, material specifications, design standards, and statistical process controls.

The data is not transferrable to other manufacturers' similar part types.

Definition of Failure

Abnormal resistance, that is, "open or short failure", is the definition of failure in this data sheet. Specifically, failure occurs when the device fails contact resistance either high or low, and/or when the device experiences abnormal leakages, or both.

Reliability Testing

Broadcom subjects the devices to a series of reliability tests, including environmental, mechanical and electrical tests, to ensure the product meets the intended reliability expectations. The tables provided in this datasheet show the results of reliability testing conducted by Broadcom over a period of time as shown in the test conditions.

Table 1: Mechanical Tests (Testing Done on a Constructional Basis)

Test Name	Reference Standard	Test Conditions	Units Tested	Units Failed
Temperature Cycling	JESD-A104	–65°C to 150°C, Transfer = 1 minute, Dwell = 15 minutes, 500 cycles	231	0
Solderability (RoHS condition)	JESD-B102	1 hour steam aging (93°C), followed by solder dip (260°C, 5s)	30	0
Physical Dimensions	JESD-B100	Conformance to datasheet package drawings	30	0
External Visual Inspection	JESD-B101	Per specification.	All qualification parts	0
Pre-conditioning	J-STD-20 JA113	As per reference standard (to conform to MSL 1)	1155	0

Table 2: Environmental Tests (Testing Done on a Constructional Basis)

Test Name	Reference Standard	Test Conditions	Units Tested	Units Failed
Temperature-Humidity-Bias	JESD-A101	T_A = 85°C, RH = 85%, Biased, Time = 1000 hours	462	0
High-Temperature Reverse Bias	JESD-A108	T_A = 150°C, Biased, Time = 1000 hours	231	0