

SO16 (White)

Mechanical and Environmental Testing

Description

The reliability data shown includes Broadcom® reliability test data from the reliability tests done on this product family. All of these products use similar process and materials. The data in [Table 1](#) and [Table 2](#) reflects actual test data for devices. Before stress, all devices are preconditioned at MSL 1 using a solder reflow process (260°C peak temperature) and 20 temperature cycles (–55°C to +125°C, 15-minute 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 transferable to other manufacturers' similar part types.

Definition of Failure

Inability to switch, that is, *functional failure*, is the definition of failure in this data sheet.

Reliability Testing

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

NOTE: Broadcom reserves the right to modify the data and is correct at time of release.

Test Results

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

Test Name	Reference Standard	Test Conditions	Units Tested	Units Failed
Temperature Cycling	JESD-A104	–55°C to +125°C, transfer = 1 minute, dwell = 15 minutes, 1000 cycles	3707	0
Solderability (RoHS Condition)	JESD-B102	8 hours steam aging (93°C), followed by solder dip (260°C, 5 seconds)	15	0
Pre-conditioning	J-STD-20 JA113	As per reference standard (to confirm to MSL 1)	4527	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	2154	0
Highly Accelerated Stress Test (HAST)	JESD-A110	T _a = 130°C, RH = 85%, unbiased, time = 96 hours	331	0
Unbiased Highly Accelerated Stress Test (uHAST)	JESD-A118	T _a = 130°C, RH = 85%, unbiased, time = 96 hours	1558	0

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

Test Name	Reference Standard	Test Conditions	Units Tested	Units Failed
Autoclave	JESD-A102	T _a = 121°C, RH = 100%, unbiased, time = 96 hours	526	0
High Temperature Bake	JESD-A103	T _a = 150°C, unbiased, time = 1000 hours	1409	0

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