BROADCOM®

Reliability Data Sheet

Industrial Plastic Optocouplers

SO5 Package
Mechanical and Environmental Testing

Description

The reliability data in this document 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 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.

NOTE: This data is not transferable to other manufacturer's similar part types.

Definition of Failure

Abnormal resistance, that is an 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 that the product meets the intended reliability expectations. The tables provided in this data sheet 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	–55°C to +125°C Transfer = 1 minute Dwell = 15 minutes 1000 cycles	1787	0
Solderability (RoHS Condition)	JESD-B102	8 hours steam aging (93°C), followed by solder dip (260°C, 5 seconds)	60	0
Physical Dimensions	JESD-B100	Conformance to data sheet package drawings	140	0
Preconditioning	J-STD-20 JA113	As per reference standard (to conform to MSL 1)	4518	0

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

Test Name	Reference Standard	Test Conditions	Units Tested	Units Failed
Highly Accelerated Stress Test (HAST)	JESD-A110	T_A = 130°C, RH = 85% Biased Time = 96 hours	737	0
Unbiased HAST	JESD-A118	T_A = 130°C, RH = 85% Unbiased Time = 96 hours	785	0
Autoclave	JESD-A102	T_A = 121°C, RH = 100% Unbiased Time = 96 hours	109	0
High Temperature Bake	JESD-A103	T_A = 150°C Unbiased Time = 1000 hours	972	0