

Ironwood Electronics

XBT Test socket
0.4 mm pitch

Measurement Results

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Objective

The objective of these measurements is to determine the mechanical performance of Ironwood Electronics test socket. Parameters to be determined are contact resistance and life cycle.

Performance Characterization

The test examines the relationship between contact resistance over spring probes life cycle count. A clamshell socket was used for this experiment. 54 pins were assembled onto a clamshell BGA socket that was mounted on the test board and connected to a multi meter. A shorted BGA device was inserted in and out every cycle. Once the BGA device was inserted into the socket, compression screw was turned clockwise to put the desired compression force. The test set up was adjusted such that the BGA device moves down 0.3mm which was the chosen travel for the spring probe. Contact resistance data was measured via multi meter connected to the test PCB and recorded. Contact resistance data collected at each cycle interval was shown in Figure 1. It can be seen from the graph that the contact resistance of each series starts less than 50mOhms over **500 cycles**. Since same BGA device was used for multiple cycles, the contact resistance gradually increases during each cycle count. It can be seen from the graph that each series data shows this phenomenon of using same device for multiple cycles. When a new device is used for cycling, the contact resistance is restored and starts below 50 milli ohms. Based on the spring design and probe material data, it can be concluded that the spring probe operates over 10,000 cycles with 50mOhms average contact resistance.

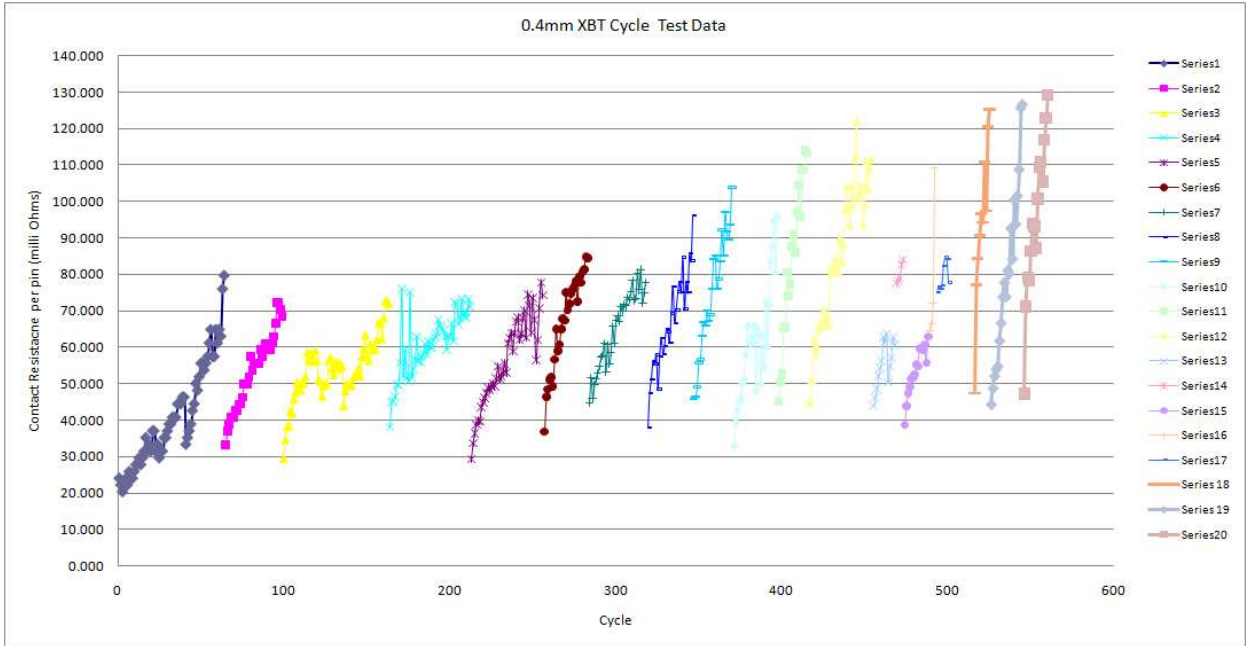


Figure 1: 0.4mm XBT Cycle Test Data

Conclusion:

Reliability of test sockets is critical to ship products without defect. Validating performance of test socket gives confidence to test engineer in testing their end product. Different tests were performed to validate spring probe that can be used in test applications. Cycle test validates the number cycle up to which the spring probe will perform without degradation. This means reduced test downtime and increased throughput for customer.