

Application Information

Microprocessor Quality Control

An integrated circuit manufacturer of high performance microchips needed to perform a compression force test on their microchips after they were mounted to their customer's circuit boards. They had several internal integrity tests of their microprocessors before they left their facilities. However, once mounted to their customer's printed circuit board, some damage was being reported and they did not perform a test that simulated the effects of the assembly process on the chip.

The assembly procedure of mounting the microchip to the printed circuit board is delicate and critical to both components lasting performance. To determine if their chips were adhering to their minimum thresholds, they needed to simulate the customer's installation process to the printed circuit board to detect if their chip was failing as the circuit board manufacturer suspected.

To simulate this assembly process, a compression test was performed. Three Shimpo items were recommended to complete the compression test to the elevated quality standards necessary: 1 FGS-100EL Motorized Force Test Stand, 1 FGV-10XY Digital Force gauge with 10 lb (5 kg) capacity and data output, plus one Jacobs Chuck Grip attachment mounted to the force gauge which secured a 2 mm push pin that provided the localized compression forces on the chip. The FGS-100EL motorized test stand provided a very slow controlled pace which perfectly simulated the speed of the board/chip assembly process. The FGV-10XY with included software produced a curve which provided the exact point of failure due to the 1000 Hz sampling speed.

Performing the test to failure, they found that not only were their chips meeting the necessary assembly force limits, but that they substantially surpassed the tolerance levels, proving the customer's installation process to be the cause of the damage and not the microchip itself. The chip manufacturer was relieved they were not at fault and would not be subject to return costs. They found the test to be such a simple, yet invaluable means to simulate their customer's operations they implemented this testing procedure across all their quality control production testing. They now could ensure they would be eliminated from any future board assembly quality issues.

Equipment Used

- *FGS-100EL Motorized Force Test Stand*
- *FGV-10XY Digital Force Gauge with 10 lb (5 kg) Capacity*
- *FG-M6JAC5U Jacobs Chuck with 0.02" (0.05 mm) to 0.20" (5 mm) diameter opening*



**FGS-100EL Force Test Stand
with FGV-10XY Digital Force Gauge**