

Production Throughput Doubles

with Keysight i3070 Advanced Throughput Multiplier

Maximizing production throughput with the best test coverage is always a manufacturing goal. However, these two things usually do not go hand in hand. Having the best test coverage often requires a sacrifice of test time, and longer test cycles lead to lower production throughput.

Keysight's i3070 in-circuit tester has a long history of bringing value to customers. Innovations include vectorless technology and cover-extend technology to provide additional test coverage to integrated devices and connectors. Its throughput multiplier with panel test and inline system improves production throughput.

The i3070 four-module system is flexible. It allows parallel testing of four low-node-count (< 1,296 nodes) boards across its four modules. You also can combine all four module resources to test one high-node-count (up to 5,184 nodes) board.

With the latest technology advancements, board size has shrunk, density has increased, and accessible node count has decreased. Customers wish to use the i3070 system to achieve better production throughput for an emerging category of boards with medium node count (between 1,296 and 2,592 nodes).



Company:

- Global electronics manufacturing services (EMS) company building networking boards

Key Issues:

- Low production throughput for boards with a node count of 1,296 to 2,592
- Long test cycle time

Solutions:

- i3070 advanced throughput multiplier feature

Results:

- Shortened test cycle time by 44%
- Nearly doubled production throughput

The Challenge: Low Production Throughput for Medium-Node-Count Boards

A global EMS company in Penang, Malaysia, that manufactures networking boards for a leading original equipment manufacturer needed to improve its production throughput.

The network boards are in the new product introduction stage and will reach mass production in six months. They have a node count of between 1,296 and 2,592. Testing occurred in a panel of two on an i3070 four-module system. The EMS company was testing the boards sequentially, with board No. 1 followed by board No. 2. The total test time took approximately 95 seconds. This is far off the 70-second cycle time needed to meet the daily production output target.

The EMS company turned to Keysight for advice. Purchasing another i3070 four-module system to meet the production output target was one possible solution. However, Keysight puts customer success at the core of our solutions. To achieve a positive, sustained outcome, Keysight decided to explore a better alternative.

The Solution: i3070 Advanced Throughput Multiplier Feature

The advanced throughput multiplier is a new feature that improves overall test throughput by approximately 2x. It allows testing of two homogeneous printed circuit board assemblies (each PCBA with a node count of between 1,296 and 2,592) simultaneously across two banks in a four-module i3070 system.

With a onetime hardware (high-speed link switchboard) upgrade to the i3070 four-module system, the system can combine two module (bank 2) resources to test one network board and the other two module (bank 1) resources for the other board. The testing of both boards runs in parallel across the two banks instead of sequentially.

Using the latest i3070 software version 09.20pc and a feature license, the EMS company developed and fabricated a fixture with the advanced throughput multiplier feature enabled. The software automatically assigns bank resources to respective boards. The engineer debugs the tests as usual after fixture fabrication. Applying this enhancement requires no additional engineering education by the development and debug engineer.

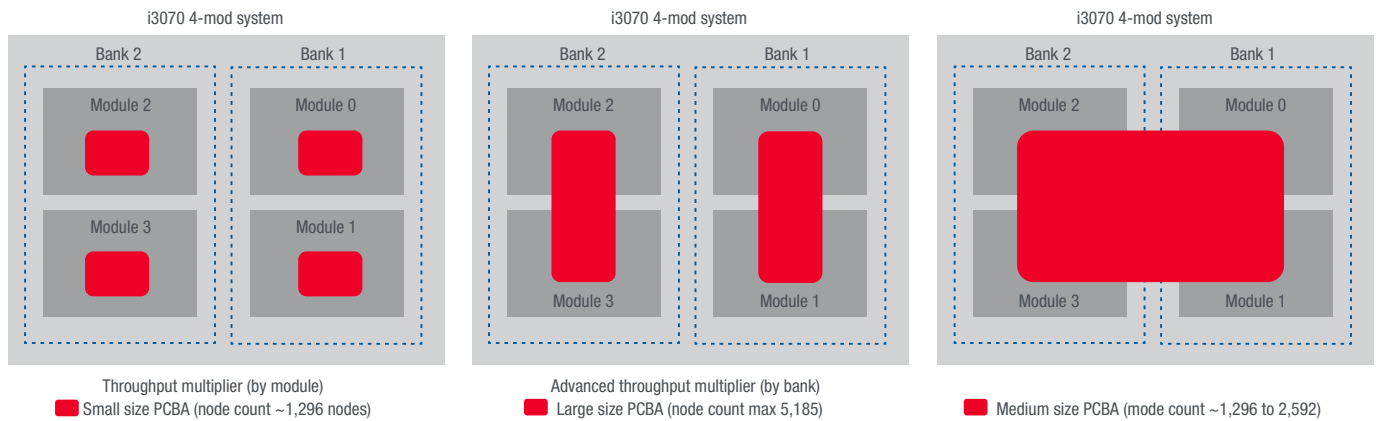


Figure 1. Flexible configuration of the i3070 four-module system

The Results: Shortened Test Cycle Time by 44%, Almost Doubling Production Throughput

The EMS company implemented the advanced throughput multiplier on its production systems, and it has tested more than 2,000 board panels. Production throughput has increased by 1.8x, with 80% more boards produced during the same period. The company has not detected any increase in false rejects.

The process reduced the overall time for testing a panel of two boards simultaneously in parallel from 95 seconds to 53 seconds. That is a savings of 44% in total test time.

This productivity improvement comes without increased engineering effort or additional floor space, operators, testers, or fixture costs.

Going Forward

Aside from the throughput improvement on boards with a node count of between 1,292 and 2,592, another key advantage of this enhancement is that it is backward compatible with what the EMS company was doing.

The same i3070 four-module system with the advanced throughput multiplier enhancement adds flexibility to the EMS company's testing configuration. Testing can range from the existing throughput multiplier on four low-node-count boards across four modules to one high-node-count board with all four modules resources combined and now two medium-node-count boards in parallel across two banks.

If you would like to talk to someone about Keysight's advanced throughput multiplier, call your Keysight representative or go to www.keysight.com/find/contactus.

Related Information

To find out the latest on i3070 or the advanced throughput multiplier, visit www.keysight.com/find/i3070.



"Implementing the advanced throughput multiplier onto our existing i3070 four-module systems is the best solution to our production throughput challenge that we could even wish for. Production efficiency improvement is achieved with minimum investment and effort. Now we can provide more value to our customers."

— Test director, EMS company

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