Why custom isn't always costly

Resolving component shortage issues can involve custom test solutions, innovative design adaptations and serious troubleshooting. With the right skills it can also be cost-effective says general manager of Winslow Adaptics, Josh Mancey

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What purchasing trends are you seeing in the test and development markets?

Demand for machined test sockets is increasing. The desire for smaller, fine-pitch, high-speed devices has significantly increased the choice in package types available to system designers. Due to high front-end tooling costs, it's becoming less viable for test socket manufacturers to provide a commercial, off the shelf test socket solution to meet demand and as a result the trend is towards machined test sockets.

Manufacturer consolidation and the inevitable obsolescence caused by newer technologies has created a surge in the requirement for legacy lines. Often these devices have been stored for some time and are not sourced from manufacturers' stock. When a COTS solution for test, emulation or prototyping isn't available a machined socket is often the only answer.

Doesn't custom mean expensive?

Cost will always be relative to the environment and the application, but custom doesn't always speak expensive. Very often it's the cost of not engaging with a specialist manufacturer that becomes prohibitive. It's crucial that your test socket is robust and reliable, and that the results you see are from the device under test, not the test socket.

Is it possible to reduce test costs?

You may want to consider whether it's necessary to access all signals in a single test procedure. In practise it's feasible to reduce the pin count of a high density test socket for a high count BGA package to 25 or 50 per cent of the I/Os. This requires the user to write their test programme accordingly and to rotate the package in the socket to complete the test. Whilst slowing the test process, this can introduce a significant hardware cost saving that could be beneficial during counterfeit or post storage testing.

Custom machining will also facilitate the addition of multiple test cavities in a single clamshell design to increase test throughput. As an example, the Gate Driver

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LMG1205YFXR for Texas Instruments is a DSBGA12 measuring just 1.9 by 1.75mm. A single test socket can include 25 test cavities for this type of package providing cost benefits of up to 80 per cent. Sockets can be manufactured with both surface mount and through board interconnect.

How about leadtimes?

Often when a test socket is required, it's required urgently. Manufacturers who specialise in machined test sockets operate with design and piece part standardisation. This facilitates typical leadtimes of 20 working days, however this can be significantly improved when required. COTS production test sockets often have a five to eight week leadtime from the manufacturer.

Does size and form matter?

In a word, no. A mil-aero company had a number of obsolete Actel A1010 FPGAs that had been in storage for future use. The devices required full functional testing at -55 to 125°C prior to release for production. The package still had tie bars attached to the package leads which were therefore unformed. Machining a socket meant this could be accommodated with ease.

What information is needed from the customer?

The device part number or datasheet, test environment and test quantity. If the device is attached to a circuit board so, for example, an in-circuit test is required, then some detail of the position of neighbouring components is required.

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