



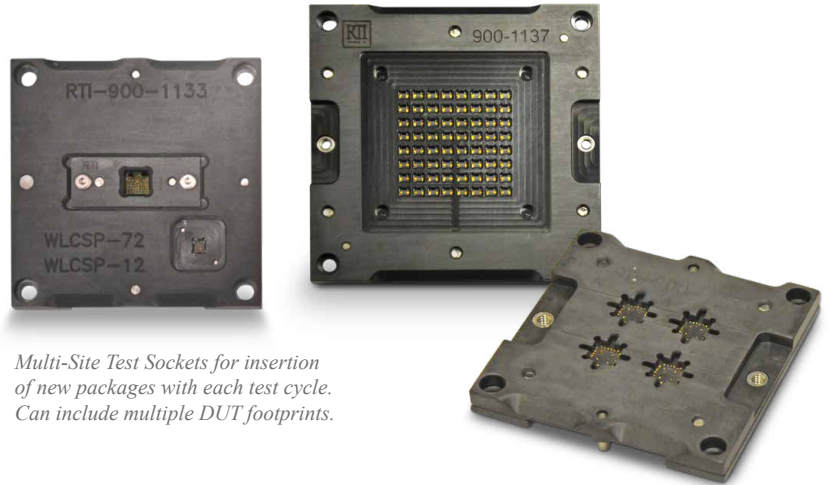
# Robson Technologies, Inc.

## Dedicated vs. Cartridge Carriers for Multi-Site Testing

### Similar but different in design:

Cartridge Carriers and traditional multi-site IC test sockets may share similar capabilities when it comes to operational performance and volume testing but are fundamentally different in the way devices under test interface with the socket itself.

The key differences are seen in the test socket design and the way the DUT's engage the contacts in the test socket. Traditional Multi-Site sockets are mounted to the PCB and DUTs are loaded directly into the test socket with each test cycle. With Cartridge Carriers, DUT's are loaded once into a carrier unit which then interfaces with the pogo pin test socket.



*Multi-Site Test Sockets for insertion of new packages with each test cycle. Can include multiple DUT footprints.*

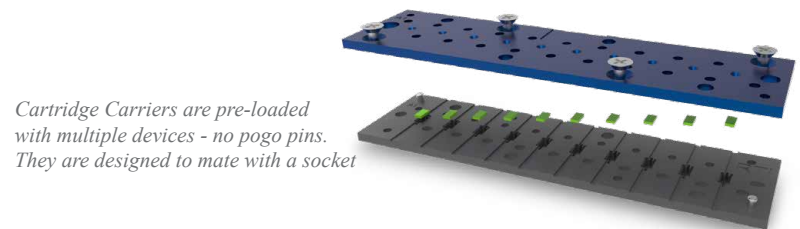
### Similar but different in purpose:

Multi-site test sockets are designed to reduce the cost per test site; especially helpful in high density burn-in and low-volume production hand test environments. The number of test sites would be determined by the size and pitch of the DUT, leveraging the amount of force required at each test site distributed across the entire test socket footprint to prevent warping of the assembly while staying mindful of ease of operation. Most multi-site test sockets are designed for a specific device footprint and for a specific DUT board or test application.

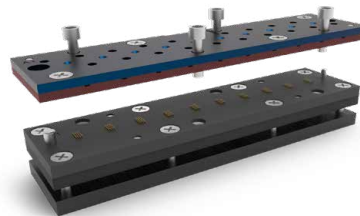
Cartridge Carriers are designed to carry a DUT through all stages of the test cycle. They reduce device handling errors encountered when working with very small or fragile devices that are subject to getting lost or damaged during socket loading or when moved between test platforms and departments.

Since the cartridge carriers themselves allow for multiple devices to be loaded at once, they can also be used with compatible multi-site spring pin based test sockets to enjoy the benefits of reduced cost per test site in many test applications.

Cartridge carriers are also intended to be a standardized platform to reduce long term cost of test and eliminate some recurring engineering charges encountered when designing dedicated multi-site test sockets.



*Cartridge Carriers are pre-loaded with multiple devices - no pogo pins. They are designed to mate with a socket*



*Carrier can be screwed down to low profile multi-site socket.*



*Carrier can be mounted to a multi-site socket with clamshell lid to secure it during test.*



*Carrier can be mounted to a single site socket with clamshell lid to secure it during test.*

*Carrier is aligned at each test site for individual device testing.*



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## Dedicated vs. Cartridge Carriers for Multi-Site Testing (cont.)



### Multi-Site for Hand Test:

### Cartridge Carrier for Hand Test:

**Device Types:**

Any type of packaged IC, discrete component, and some modules. DUTs usually >3mm in size.

Ideal for sub-2mm WLCS, MEMS, and bumped die devices that are easily lost or damaged when handled

**Socket Loading:**

Devices are individually loaded and removed from each site in the test socket between test cycles and across tester platforms.

Devices are pre-loaded into a multi-site carrier that is then mounted and removed from the test socket between test cycles and across tester platforms.

**Socket Mounting:**

The DUT board must seat and route signals from every site on the multi-site test socket, regardless if only one site is being tested.

The DUT board can also mount and route signals from a single site test socket which aligns to and contacts each individual test site on the multi-site cartridge carrier.

**Device Handling:**

Devices are handled every time the socket is loaded and unloaded between test cycles.

Devices are only handled when loading or unloading the cartridge carrier, not between each test cycle.

**Compression:**

A clip-on or screw down lid applies downward force directly on each DUT, pushing the DUT against the electrical contacts in the socket. Lid applies force; contacts provide resistance.

The top plate of the cartridge carrier assembly provides resistance when the cartridge is mounted to the pogo pin test socket. Spring pins in the test socket provide force, carrier lid provides resistance.

**Electrical Contacts:**

Spring pins, elastomers, and similar

Spring pins only

**Socket Footprints:**

Test sockets with fully customizable footprints and test site positioning for each DUT board.

Test sockets for every test board must be made compatible with the cartridge footprint first.

**Number of Sites:**

The contact footprint at each test site on the socket must match the DUT footprint. Each test site can be drilled for a unique footprint.

Contact footprint at each site on the socket can be a universal array. Positioning of drill holes on the cartridge must match the DUT footprint and mask unused pins.