

Semiconductor / Connector obsolescence and lead-time solutions.

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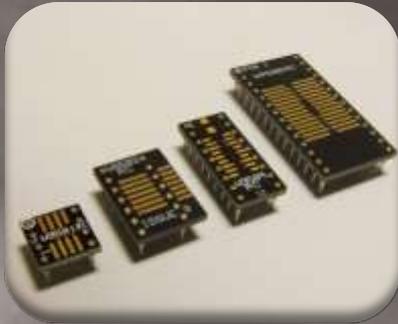
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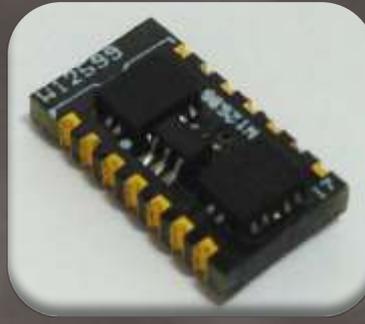


Innovative Solutions to Semiconductor Obsolescence and Leadtime Issues

Footprint Convertors



ASIC Replacement



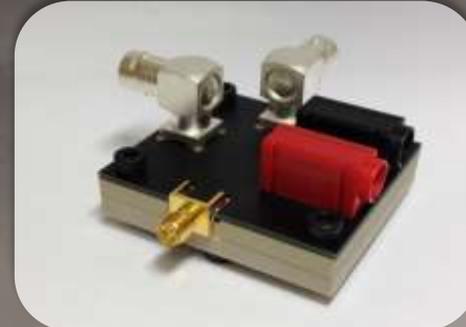
FPGA Retargeting



Standard Test Solutions



Custom Test Solutions

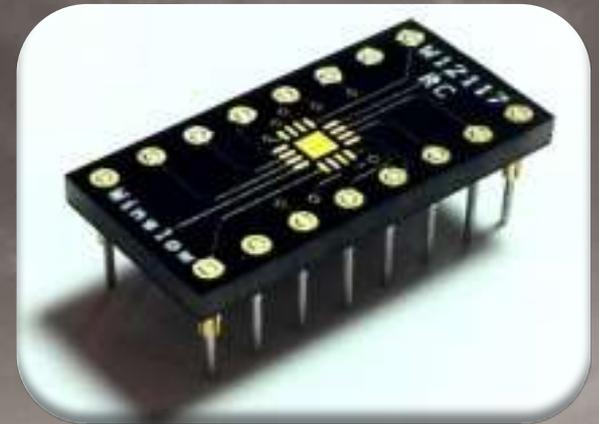
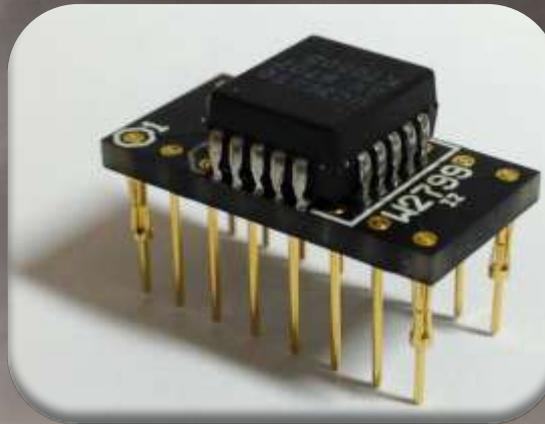
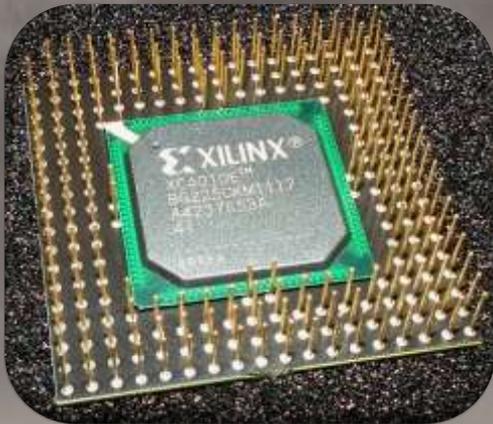


Footprint Convertors

Any termination and package style can be converted into another desired footprint

Form, Fit and Function replacement either with a component from the same die family or a small assembly to achieve the same results.

The adapter program can be used to assist both lead-time and obsolescence issues in manufacturing in ones to full production quantities



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Example - Footprint Convertors

Ordering Information

PART	TEMP RANGE	PIN-PACKAGE
MAX912CPE	0°C to +70°C	16 Plastic DIP
MAX912CSE	0°C to +70°C	16 Narrow SO
MAX912EPE	-40°C to +85°C	16 Plastic DIP
MAX912ESE	-40°C to +85°C	16 Narrow SO
MAX913CPA	0°C to +70°C	8 Plastic DIP
MAX913CSA	0°C to +70°C	8 SO
MAX913EPA	-40°C to +85°C	8 Plastic DIP
MAX913ESA	-40°C to +85°C	8 SO
MAX913EUA	-40°C to +85°C	8 μ MAX

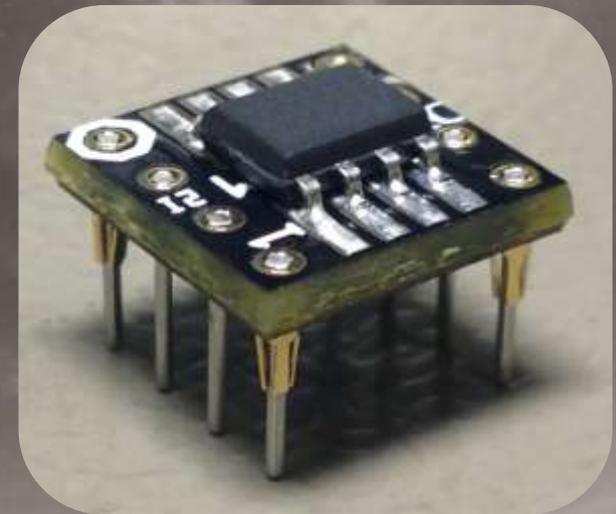
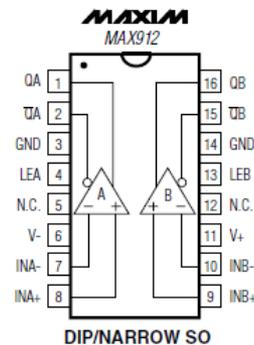
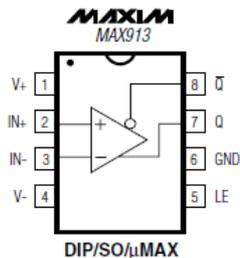
If available, components from the same device family can be converted to another package very easily.

The temperature range will be kept the same, and as standard the footprint will not exceed the original device dimensions.

8 pin DIL unavailable? 8 pin SO available?
= Standard product

Pin Configurations

TOP VIEW

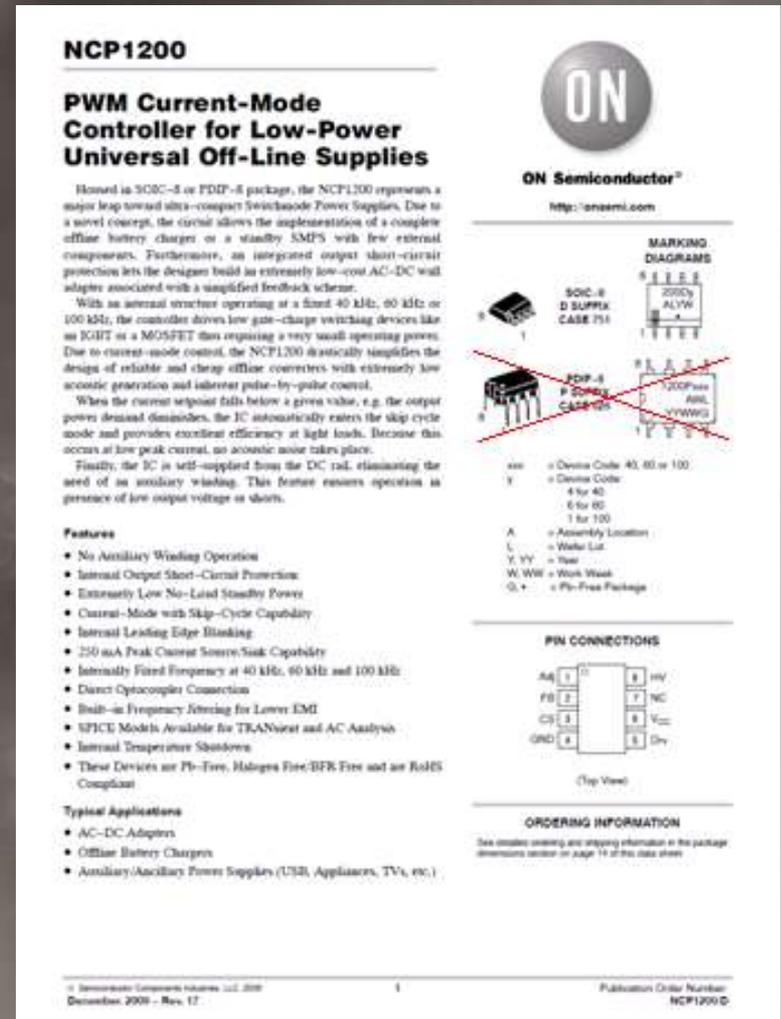


Footprint Convertors – Case Study

A large industrial OEM contacted Winslow Adaptics as an On Semi device went out on allocation. Our client required a quantity of 15k per week to meet their manufacturing requirements and had only four weeks stock available to them after the original DIL package variant was pushed out to 24-week lead-time.

Not prepared to source from the grey market, they requested an Adaptic solution to bridge their production gap.

The device was a NCP1200 – Switch mode power supply.



NCP1200

PWM Current-Mode Controller for Low-Power Universal Off-Line Supplies

Based in SOIC-8 or PDIP-8 packages, the NCP1200 represents a major leap toward ultra-compact Switchmode Power Supplies. Due to a novel concept, the circuit allows the implementation of a complete offline battery charger or a standby SMPS with few external components. Furthermore, an integrated output short-circuit protection lets the designer build an extremely low-cost AC-DC wall adapter associated with a simplified feedback scheme.

With an internal structure operating at a fixed 40 kHz, 60 kHz or 100 kHz, the controller drives low gate-charge switching devices like an IGBT or a MOSFET thus ensuring a very small operating power. Due to current-mode control, the NCP1200 drastically simplifies the design of reliable and cheap offline converters with extremely low acoustic generation and inherent pulse-by-pulse control.

When the current setpoint falls below a given value, e.g. the output power demand diminishes, the IC automatically enters the skip cycle mode and provides excellent efficiency at light loads. Because this occurs at low peak current, no acoustic noise takes place.

Finally, the IC is self-supplied from the DC rail, eliminating the need of an auxiliary winding. This feature ensures operation in presence of low output voltage or shorts.

Features

- No Auxiliary Winding Operation
- Internal Output Short-Circuit Protection
- Extremely Low No-Load Steady Power
- Current-Mode with Skip-Cycle Capability
- Internal Leading Edge Blanking
- 250 mA Peak Current Source-Sink Capability
- Internally Fixed Frequency at 40 kHz, 60 kHz and 100 kHz
- Direct Optocoupler Connection
- Built-in Frequency Jittering for Lower EMI
- SPICE Models Available for TRANsient and AC Analysis
- Internal Temperature Shutdown
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

Typical Applications

- AC-DC Adapters
- Offline Battery Chargers
- Auxiliary/Accessory Power Supplies (USB, Appliances, TVs, etc.)

MARKING DIAGRAMS

SOIC-8 D SUPPLX CASE 751

PDIP-8 P SUPPLX CASE 108

ON Semiconductor®
http://onsemi.com

xxx = Device Code: 40, 60 or 100
Y = Device Code: 4 for 40, 6 for 60, 1 for 100
A = Assembly Location
L = Water Lot
V, VY = Trace
W, WW = Work Week
Q, * = Pin-Free Package

PIN CONNECTIONS

ADJ	1	8	HV
FB	2	7	NC
CS	3	6	V _{CC}
OND	4	5	Div

(Top View)

ORDERING INFORMATION

See ordering marking and shipping information in the package dimensions section on page 14 of this data sheet.

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Publication Order Number:
NCP1200 D



Footprint Convertors – Case Study

The surface mount equivalent was freely available and it was quickly established that functionally these parts could be utilised.

The surface mount SO8 devices were to be free issued to Winslow and mounted on to an adapter assembly before being tape and reeled and shipped to the client.



Footprint Convertors – Case Study

Winslow proposed an initial 4-wk leadtime to cover material, component and manufacturing leadtimes, with drops of 15k per week to follow.

The Adaptic was designed, manufactured, assembled and packaged for less than \$0.50 per assembly, matching the original DIL package component pricing.

Winslow supported the OEMs production until the correct package became available 150,000 adapters later.

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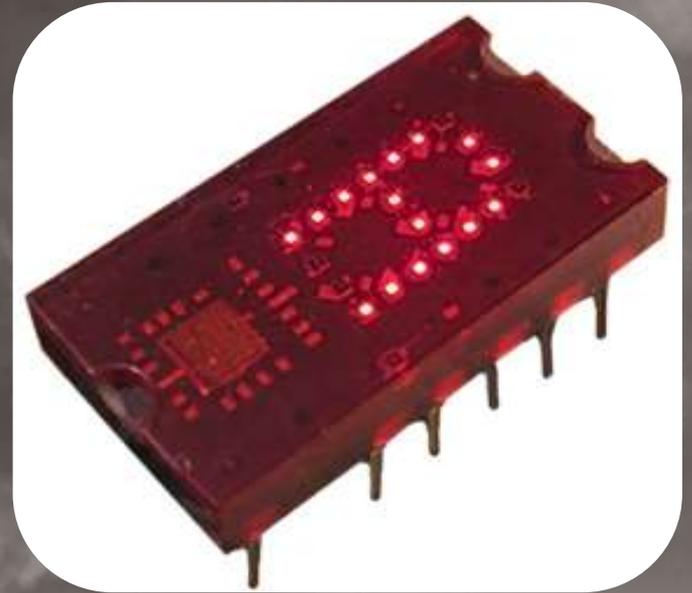


Semiconductor Obsolescence - Case Study

An enquiry was received from a large telecommunications OEM.

The device was a TIL311 – Hexadecimal display and was used across a number of the customers product range.

The option of a life time buy was available, but due to cost implications our client was looking for a more cost effective solution.



Semiconductor Obsolescence - Case Study

TIL311
HEXADECIMAL DISPLAY WITH LOGIC

REVISED - MARCH 1972 - REVISED DECEMBER 1987

SOLID-STATE HEXADECIMAL DISPLAY WITH INTEGRAL TTL CIRCUIT TO ACCEPT, STORE, AND DISPLAY 4-BIT BINARY DATA.

- 0.300-inch (7.62-mm) Character Height
- High Brightness
- Left-and-Right-Hand Decimal
- Separate LED and Logic Power Supplies May Be Used
- Wide Viewing Angle
- Internal TTL MSI Chip With Latch, Decoder, and Driver
- Operates from 5-V Supply
- Constant-Current Drive for Hexadecimal Characters
- Easy System Interface

mechanical data

These assemblies consist of display chips and a TTL MSI chip mounted on a header with a red molded plastic body. Multiple displays may be mounted on 0.480-inch (11.43-mm) centers.

NOTES:

A. All linear dimensions are in inches and (parenthetical) in millimeters.

B. The pin-position for spacing is 0.100 (2.54) between centerlines. Each centerline is located within 0.010 (0.25) of its low longitudinal position relative to pins 1 and 14.

C. Allocated tolerances of character segments and decimal point dimensions are nominal.

Pin 1 LED SUPPLY VOLTAGE

Pin 2 LATCH DATA INPUT B

Pin 3 LATCH DATA INPUT A

Pin 4 LEFT DECIMAL POINT CATHODE

Pin 5 LATCH STROBE INPUT

Pin 6 OMITTED

Pin 7 COMMON CATHODE

Pin 8 SLANTING INPUT

Pin 9 OMITTED

Pin 10 RIGHT DECIMAL POINT CATHODE

Pin 11 OMITTED

Pin 12 LATCH DATA INPUT D

Pin 13 LATCH DATA INPUT C

Pin 14 LOGIC SUPPLY VOLTAGE, V_{CC}

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The device datasheet was reviewed and it was decided that the original device would be recreated by using 22 x 0402 size LEDs, a small microcontroller and numerous discrete components to include resistors valued to ensure the replacement LED retained an identical luminosity to the original device.

Code was written to programme the microcontroller to the clients requirement and specification.

Our client is supported with small volume manufacture as only 2000 to 3000 devices are required to cover the remaining expected life and maintenance of the project.



Application Specific Adapters

Application specific integrated circuit adapters are more customized for a particular use than the footprint convertors.

The IC's themselves have been altered to perform a specific function within the clients circuit. The functionality is required to be known, before this can be recreated.

When these types of device go obsolete, it can be a major issue if mitigation has not been pre-planned. Winslow produce a bridge, to either provide short term solution, or something that can be used to future proof the design.

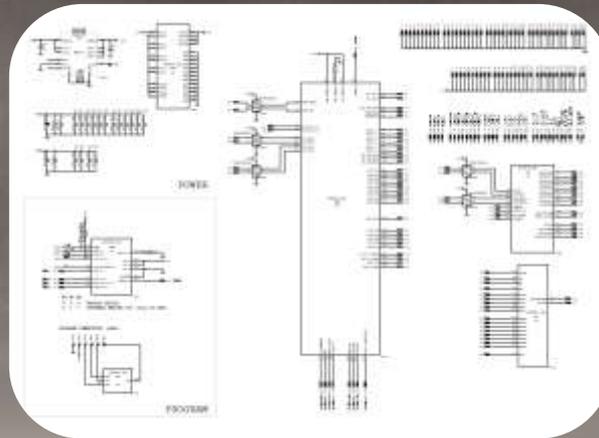


Application Specific – Case Study

A defence company contacted Winslow Adaptics with a issue they were having with a particular ASIC device.

Winslow were requested to manufacture an alternative to this ASIC and were given a component list and schematic to recreate the ASIC functionality.

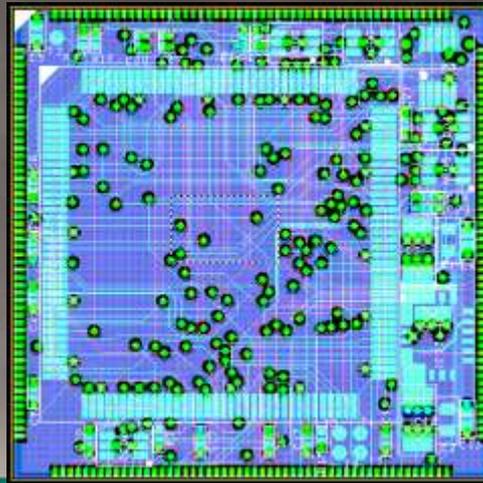
The task was to fit all of the replacement devices into the original ASIC footprint, and to deliver something that was the functional equivalent. within the desired space envelop.



Application Specific – Case Study

Before a quotation can be produced, early design routes are taken to ensure space availability is adequate for both individual component footprints the final adapter assembly. Winslow review the information supplied by the design authority and also make recommendations to use smaller components where possible – this makes the PCB design easier and ultimately more cost effective for the customer.

In this case the components were also to be procured and mounted by Winslow, so reel sizes are considered prior to quote.



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Application Specific – Case Study

The original component was a QFP (quad flat pack) package, so the adapter was required to be surface mount. This was achieved using edge cast-elations and to date over 6000 have been manufactured to support legacy hardware.



Winslow Adaptics are capable of designing within the remit of DO-254 design assurance for Airborne Electronic Hardware.



FPGA Retargeting

FPGA retargeting from Winslow Adaptics has been proven to be a cost effective solution to the client base.

It involves taking the architecture of an old FPGA and transferring this data to a newer modern FPGA. This again future-proofs the clients design and is classed as an upgrade.

As FPGAs become more common, the technology will advance and older designs will be phased out of production, leaving users with decisions to make.

Winslow's transition can assist with the upgrade, but also keep the clients existing PCB in production and take away the re-design requirement.



FPGA Retargeting- Case Study

The issue arose when a ASIC replacement adapter that had been manufactured by Winslow for over 15 years, had a last time buy notice put on the 'replacement' FPGA. Winslow informed their client of the last time buy, but decided against purchasing and holding stock due to cost implications.

Instead it was decided that the FPGA used would be a newer technology to upgrade the system and continue use for future builds. The product was used across many of the clients product lines.

The device in questions is a Xilinx Spartan.



FPGA Retargeting- Case Study

The initial work to be undertaken was investigation, to see if the device data could be transferred. All information was received from the client and dissected.

An alternative FPGA was found which required additional circuitry, mainly to reduce the voltage levels as per the manufacturers recommended advice. The footprints were layed out and pricing was offered for all steps of the conversion covering:

- Code Recovery & FPGA selection
- Re-generate code
- Produce I/O compatibility circuitry
- Hardware Modernisation

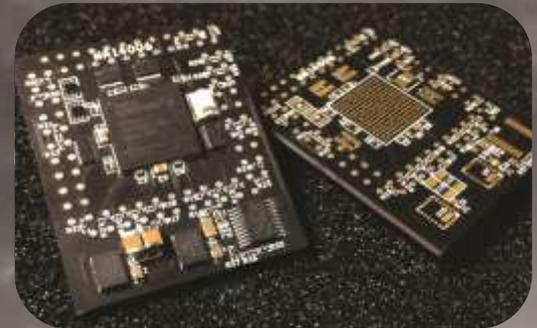


FPGA Retargeting- Case Study

Winslow monitor component availability of your adapter designs once a project has been completed. As this was an upgrade to a previously designed adapter that had been in the field for 13 years, our monitoring allowed us to purchase 12 months stock of the original FPGA as a last time buy.

The result was a planned six month adapter refresh project over the year assuring no hardware availability risk.

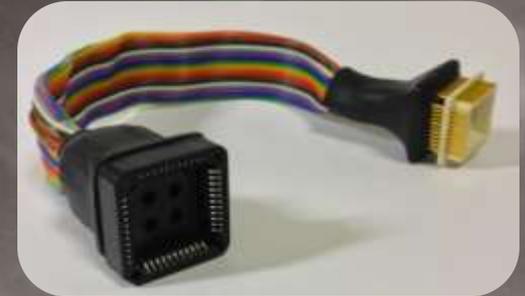
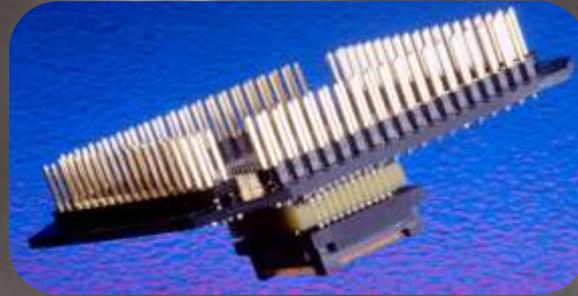
The samples were shipped to the client for trials, where minor adjustments to the software and clock speeds, made a perfect transition from the old FPGA to the new.



Test Solutions



Single Probe / Multi probe Test clips



Cable Assemblies



Custom Test Fixtures



Termination Styles

SMT, Thru Hole or Spring Probe to 0.3mm pitch to include non-magnetic for MEMS devices.



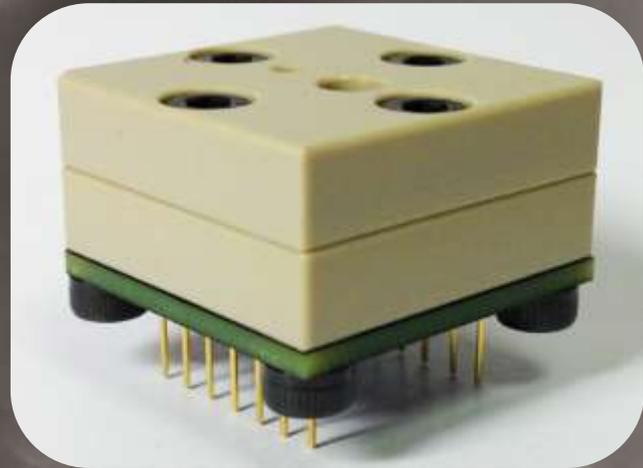
PCB already designed?

We can design around the environment.

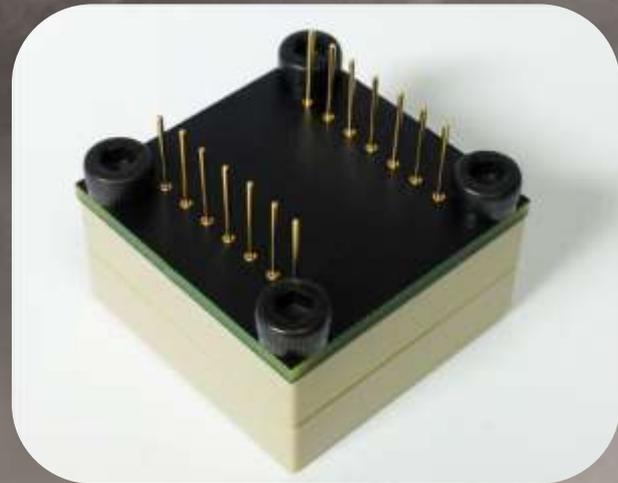


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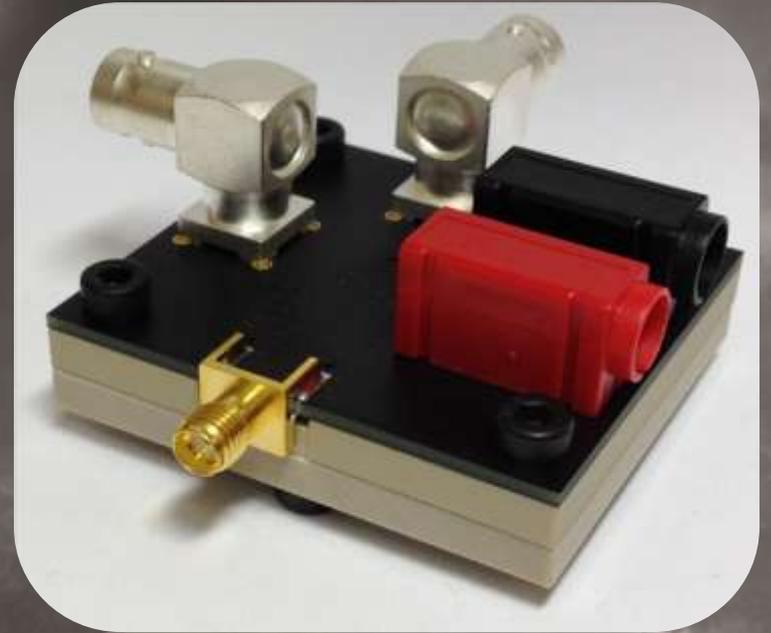
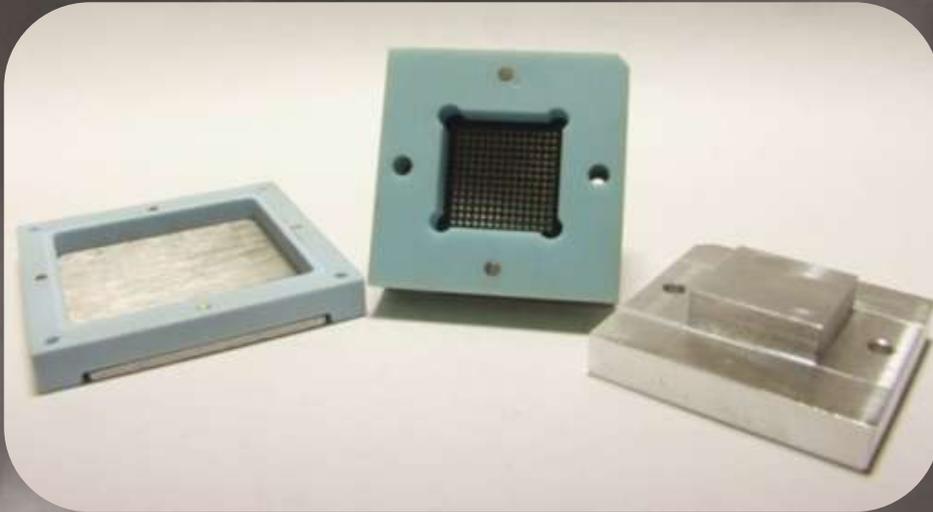


Low Volume precision engineered socket platforms for custom hybrid packages.



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Development products available

Connectors can be included as well as Cable assemblies and box builds.

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