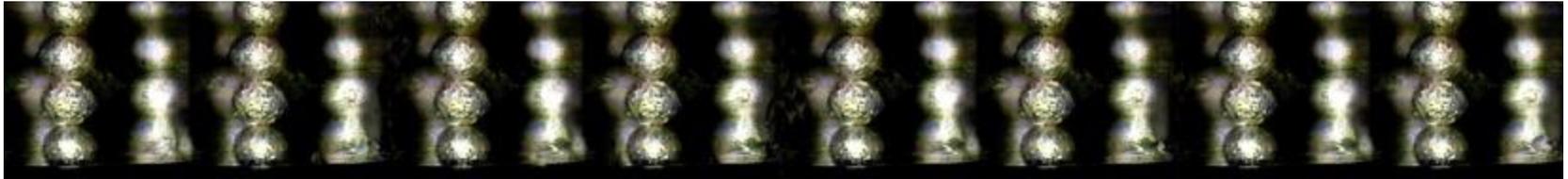


# Paricon Capability Presentation May2021



# Company Overview

- Founded in 1997, technology acquired from Bell Labs
- Paricon holds 40 Patents, more pending
- Manufacturing of the elastomeric fabric PariPoser
- Strong application support and manufacturing of interconnect solutions featuring PariPoser fabric (sockets, interposer, etc)



# PariPoser Material

- Highest performance interconnect – no solder!!
  - Low loss (milli Ohms/pitch)
  - Fine pitch (<0.1 mm)
  - Low profile (<0.4mm)
  - High bandwidth (>100GHz)
  - High current carrying capability of  
>6000A/in<sup>2</sup>, 10A/mm<sup>2</sup> both @40°C temp rise
  - High grade silicone (passes NASA outgassing requirements)

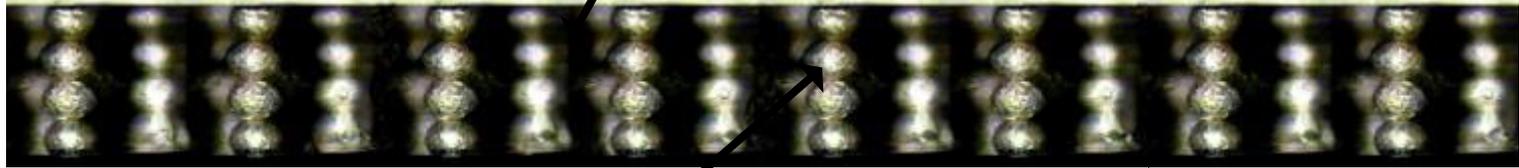


# PariPoser<sup>®</sup>

## Interconnection Fabric

~90% Silicone  
~10% Metal

**Silicone**



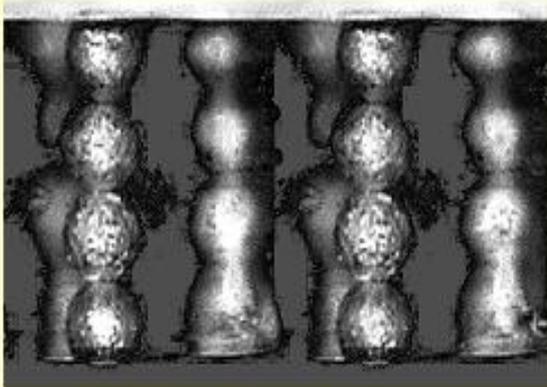
**BallWire<sup>®</sup> Conductor**

PariPoser takes  
**NO MECHANICAL SET**  
with multiple compressions

50 $\mu$ m-380 $\mu$ m thick  
0.1mm - 1.27mm pitch

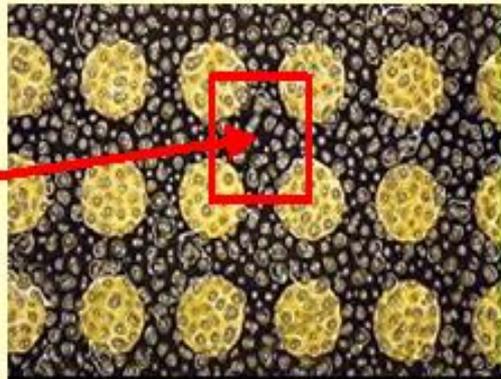
# PariPoser

It Takes *BallWires*<sup>®</sup>  
to Connect to 40 GHz  
and Beyond!

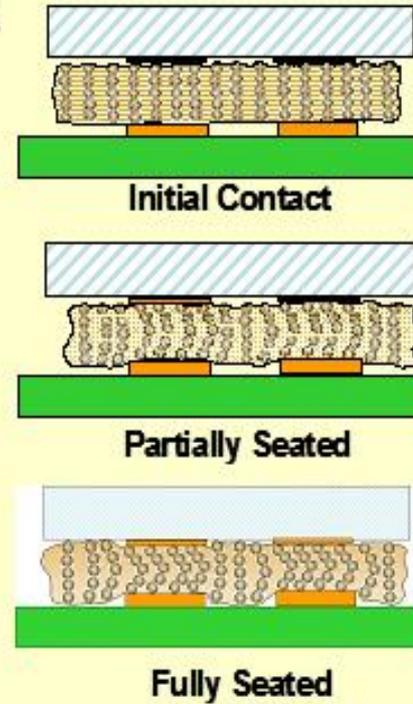


BallWire Contact

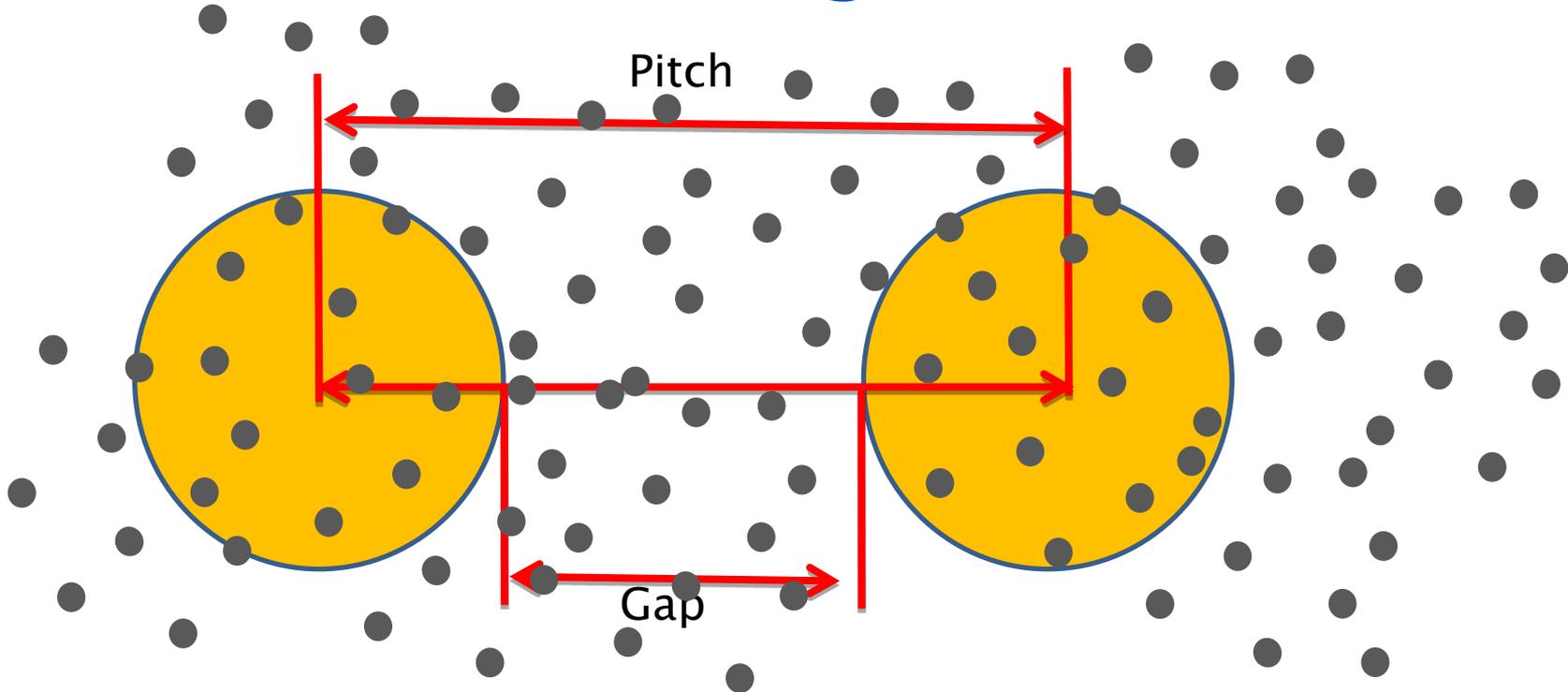
30 to 50 BallWires  
per Pitch Square



PariPoser<sup>®</sup> Fabric on LGA Pads



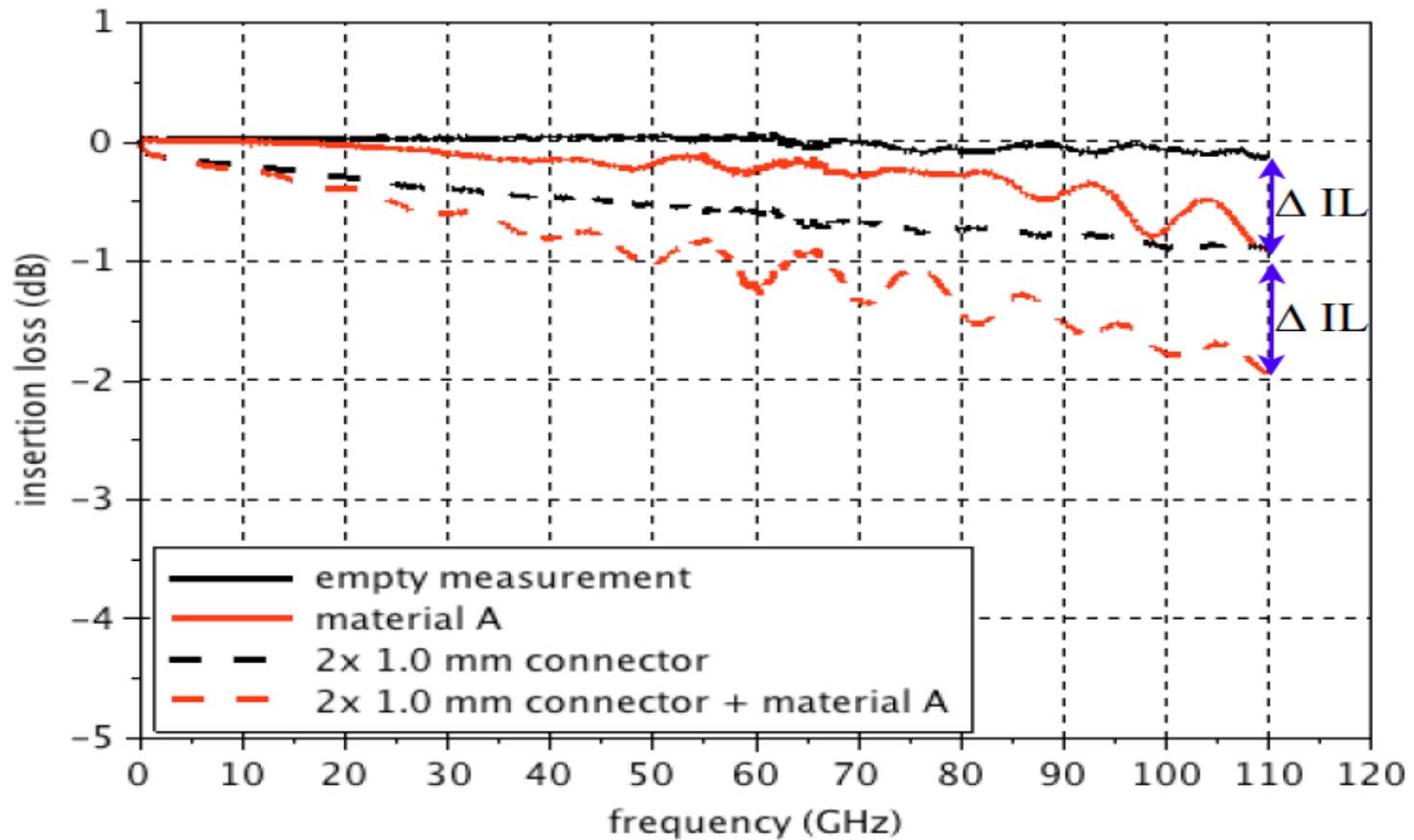
# Contact Design Rules



Gap  $\geq$  40% of Pitch (@1 mm pitch, gap of 400 $\mu$ m required)

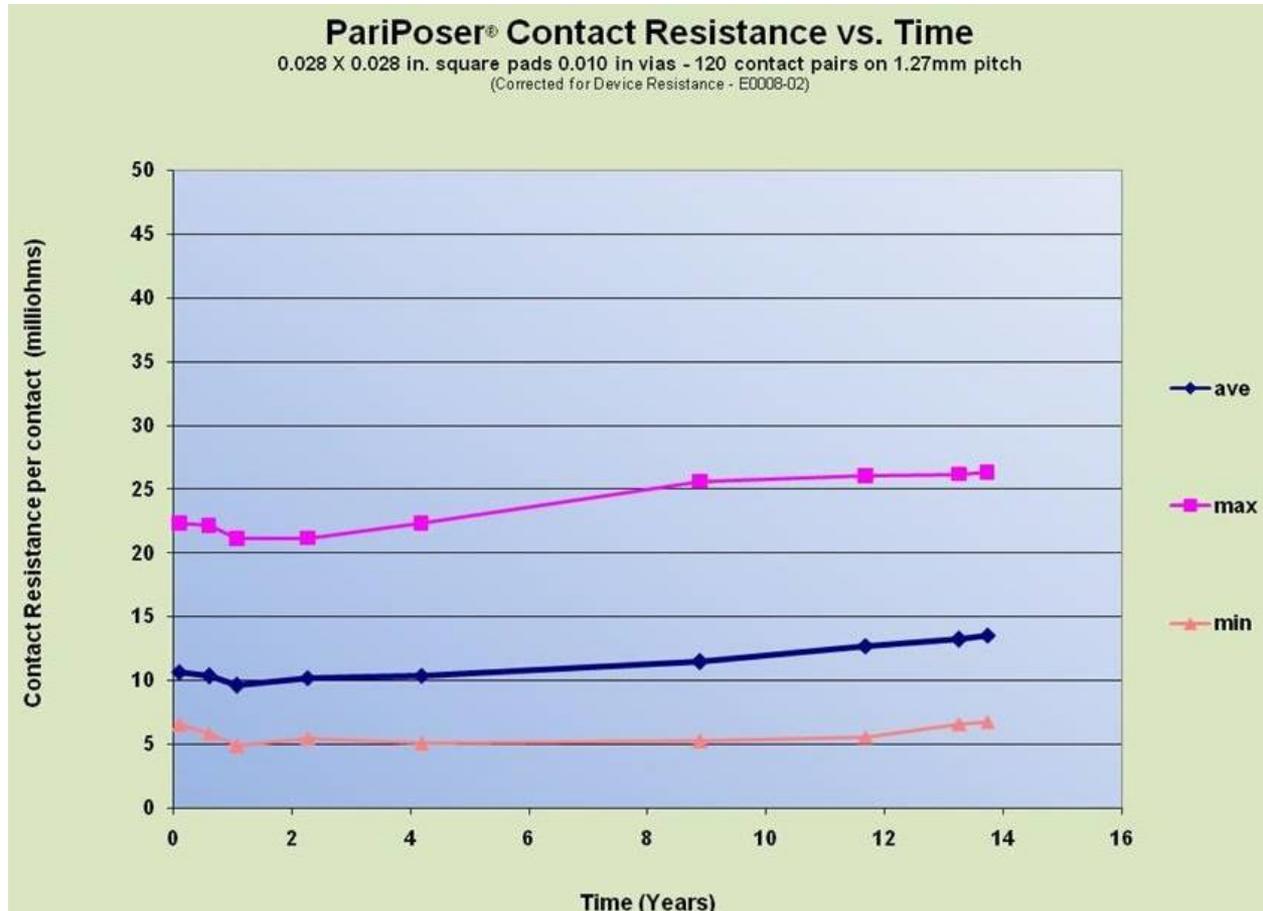
Pad  $\geq \pi(60\% \text{ of Pitch})^2/4$  (@1mm pitch, 600 $\mu$ m pad dia)

# High Frequency Performance



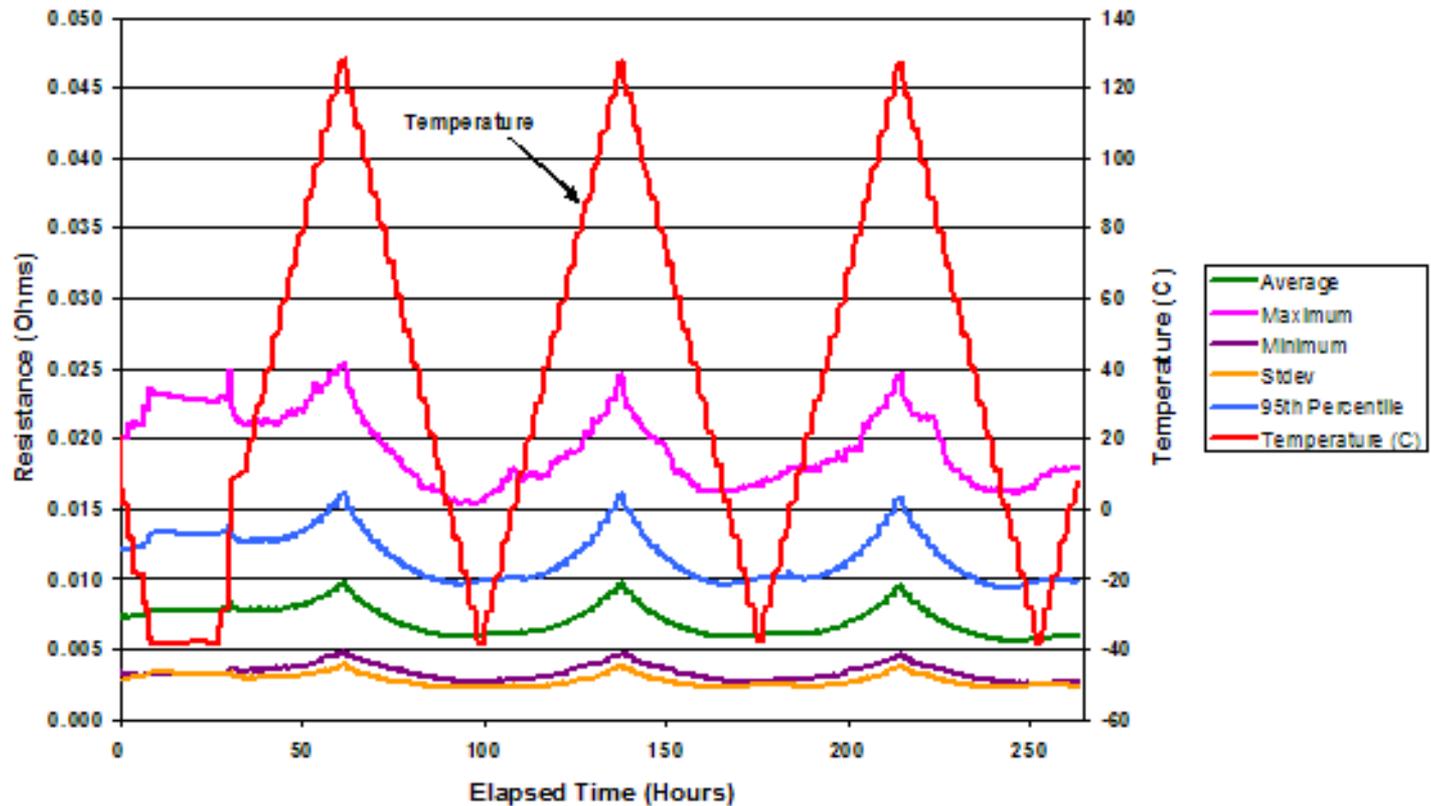
results curtesy University Erlangen

# Long Term Stability

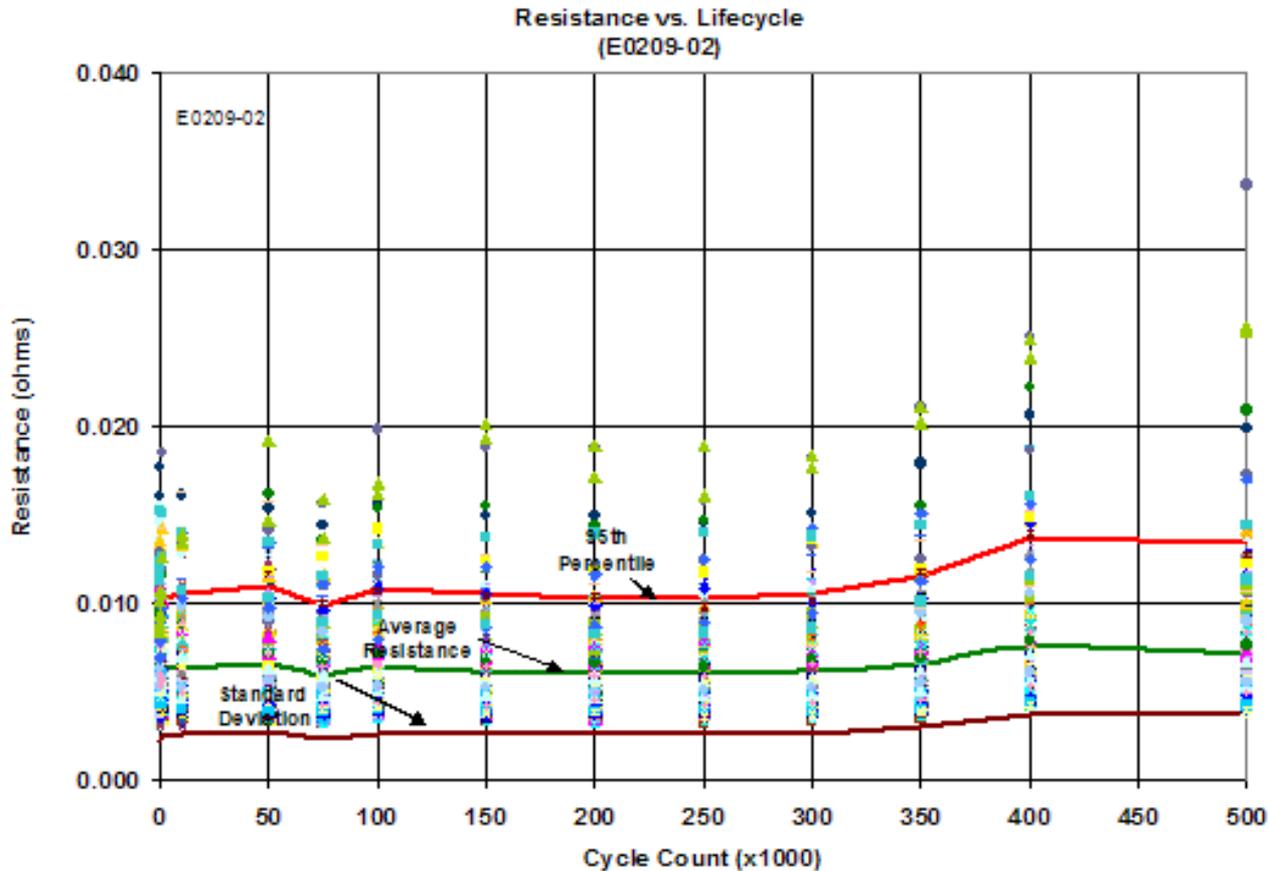


# Thermal Cycling Studies

Resistance vs. Time at Temperature  
(E0210-01)



# Resistance vs Lifecycle



# Variety of PariPoser Products

	1.27mm	1.0mm	0.8mm	0.65mm	0.5mm	0.4mm	0.3mm	0.2mm	0.1mm
Construction	Ni/Ag Silicone Sheet								
Thickness	0.38mm	0.25mm	0.22mm	0.17mm	0.14mm	0.11mm	0.09mm	0.06mm	0.05mm
Combined Min Pad Height (3)	0.071mm	0.071mm	0.053mm	0.053mm	0.036mm	0.036mm	0.027mm	0.018mm	0.018mm
Pad Diameter	0.76mm	0.6mm	0.48mm	0.39mm	0.3mm	0.24mm	0.18mm	0.12mm	0.06mm
Pad Gap (4)	0.51mm	0.4mm	0.32mm	0.26mm	0.20mm	0.16mm	0.12mm	0.08mm	0.04mm
Pad Loading (g/contact) (5)	80.6	50	32	21.1	12.5	8	4.5	2	0.5

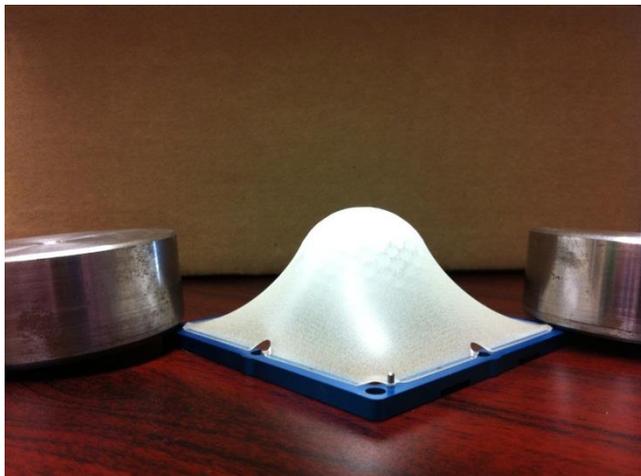
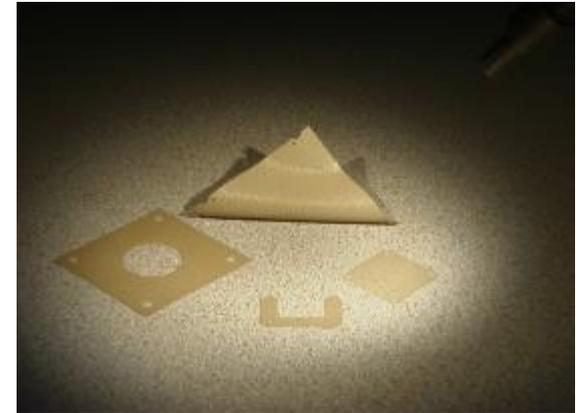


[\\_RUPPtronik\\_Paricon\\_Pariposer-Material\\_Data\\_Sheet REV H.pdf](#)



# PariPoser Implementation

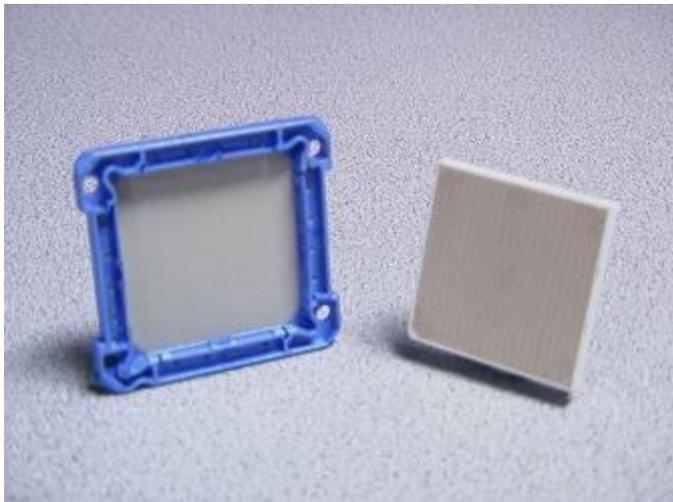
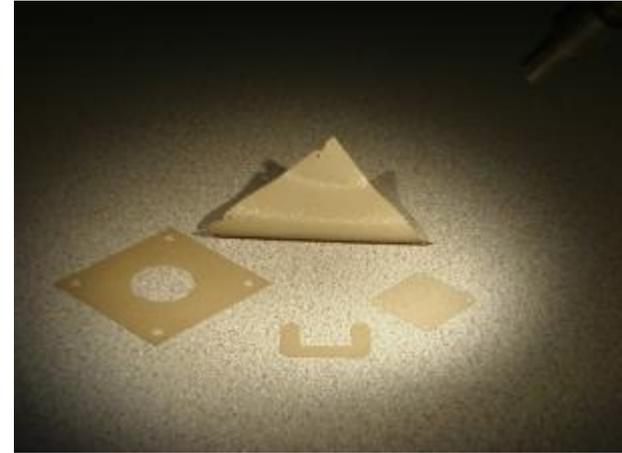
- PariPoser can be used on its own without the need of frames and fixtures
- No special tools are required to cut PariPoser



- PariPoser, because of its elastomeric properties, has the ability to be versatile - whatever your requirement

# Temperature Performance

- Operating temperature range with loose PariPoser:  
-55°C to +80°C.

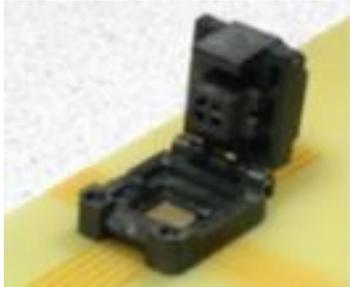


Operating temperature range with PariPoser stretched on a frame:

- -55°C to +125°C
- -55°C to +150°C
- -55°C to +180°C/210°C 1h

# Standard Paricon Test Sockets

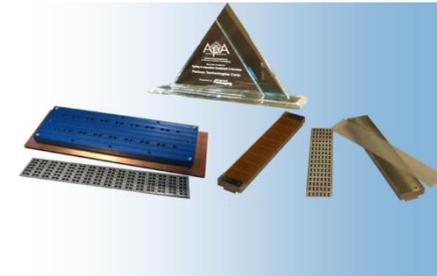
F01 Clam Shell Socket



F12 Custom Socket



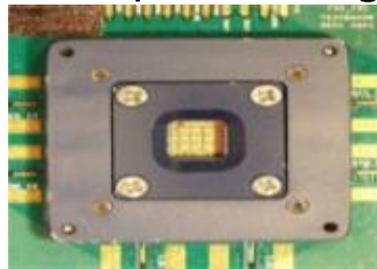
F05 Strip Line Socket



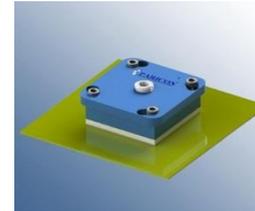
F14 Lock & Load



F07 Open Probing Socket



F10 Socket



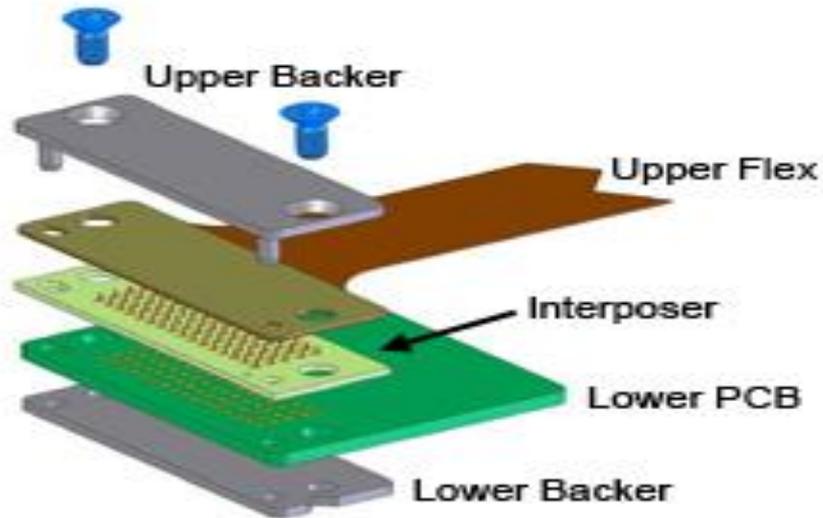
F15 Snap Socket



F06 Multi device socket system



# Flex-to-Board

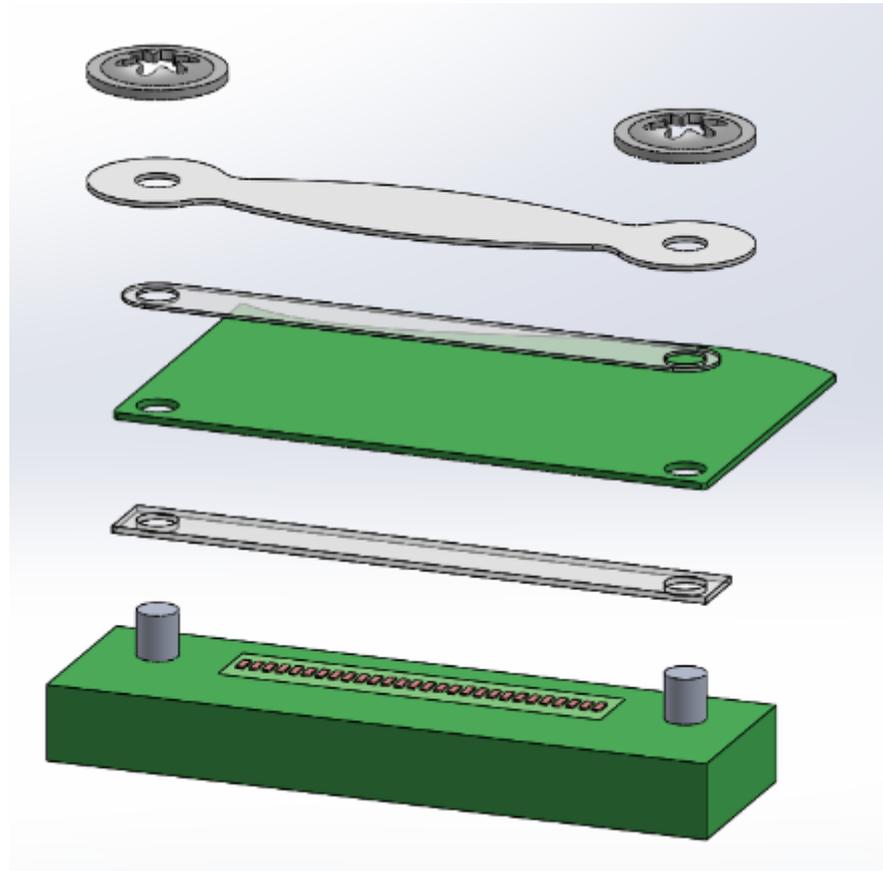


Example Flex-to-Board Assembly

- No solder compression mount
- High density
- Mixed signaling
- Low contact resistance

# Low Profile Flex Connector

- Push nut
- Spring
- Load leveling interface
- Flex
- PariPoser interface
- Guiding pins
- PCB

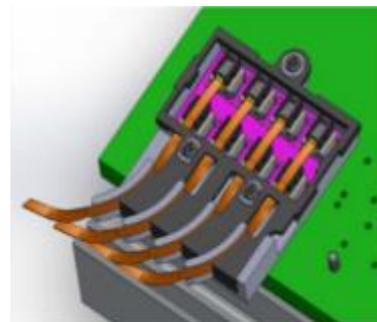


# High Speed PCB Optical Engine Interconnect System

- No solder interconnection
- Suitable for high density IOs
- Low profile
- Reduces maintenance & rework, improves yield
- Optical engines with heat sink & cable interfaces

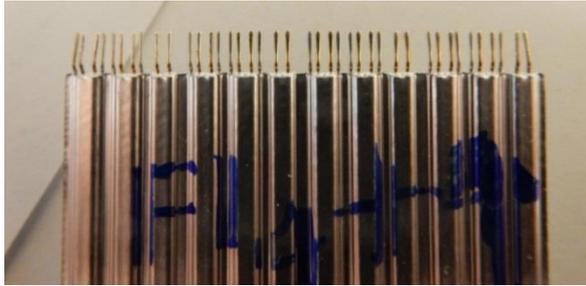


2way optical engine assembly with heat sink and optical cable



8way optical engine assembly

# High Speed Cable-to-Board Connector

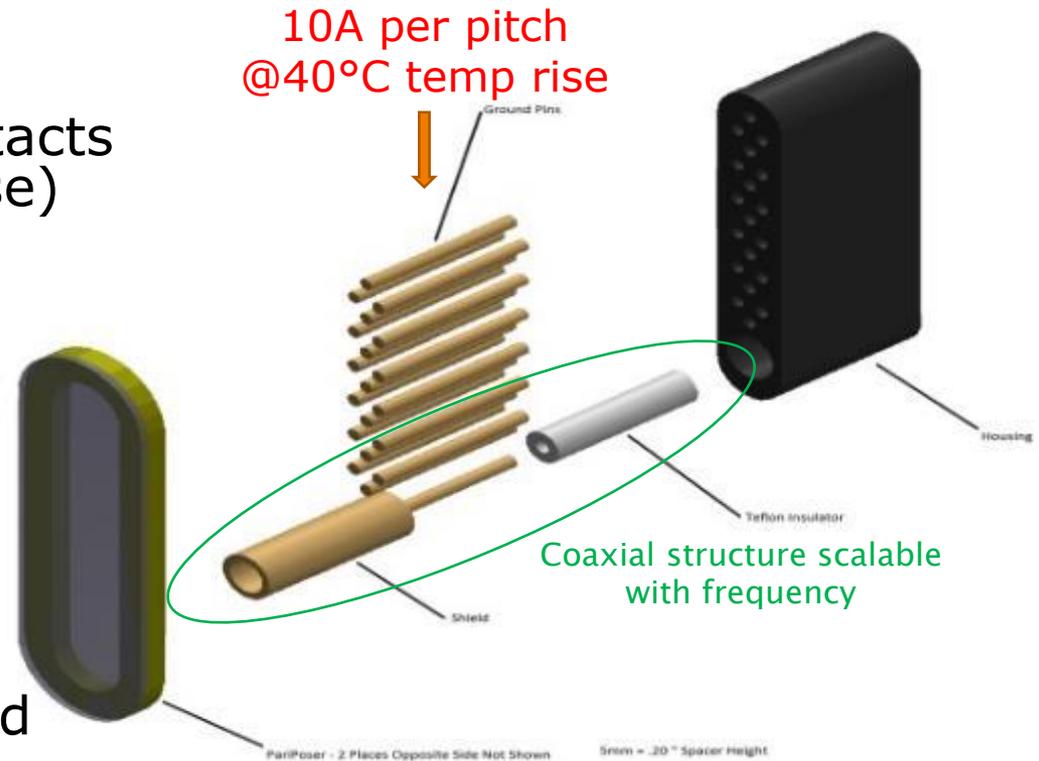


- No solder assembly
- High bandwidth (>80GHz)
- Low RF loss (<0.3db @ 40GHz)
- Low profile (4.8 mm)
- Low interface resistance (<10 milliohms)

# Board-to-Board Interconnect using PariPoser

## Applications:

- High current handling contacts (10A/mm<sup>2</sup> @40°C temp rise)
- Battery charging
- Humidity sealed contacts
- Military radar
- High speed data
  
- Very reliable contact with ~8-10 vertical ballwires/pad
- High density I/O
- Mixed signal RF+DC
- Coaxial contacts to >100GHz



# Wafer-to-PCB-Connector using PariPoser

Pressure and Cooling Plate

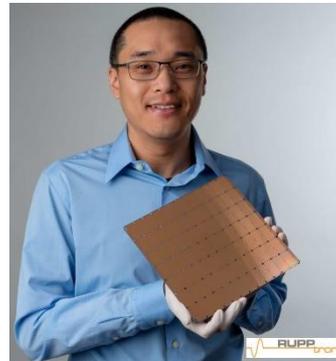
Wafer

PariPoser®

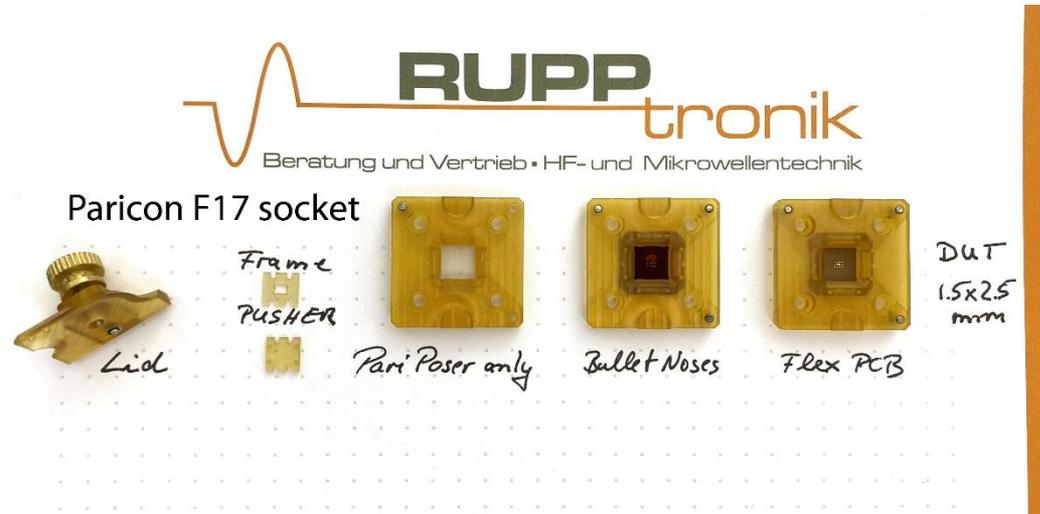
PariPoser®

PCB or Substrate

Cooling Plate



# Realized DUT contacting solutions using PariPoser



PariPoser®  
elastomeric interconnection material,

*when properly implemented*

has the ability to meet reliably electronic  
packaging, industry performance  
and cost objectives  
in long term interconnection applications



I would like to thank you very  
much for your valuable time and  
your interest in this  
presentation!!



# RUPPtronik

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