

VIRTUAL EVENT



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May 3-7, 2021

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Semiconductor market in 2021 and beyond: sustainable growth, or bubble?

John West



Virtual Event • May 3 - 7, 2021

VLSIresearch

Overview

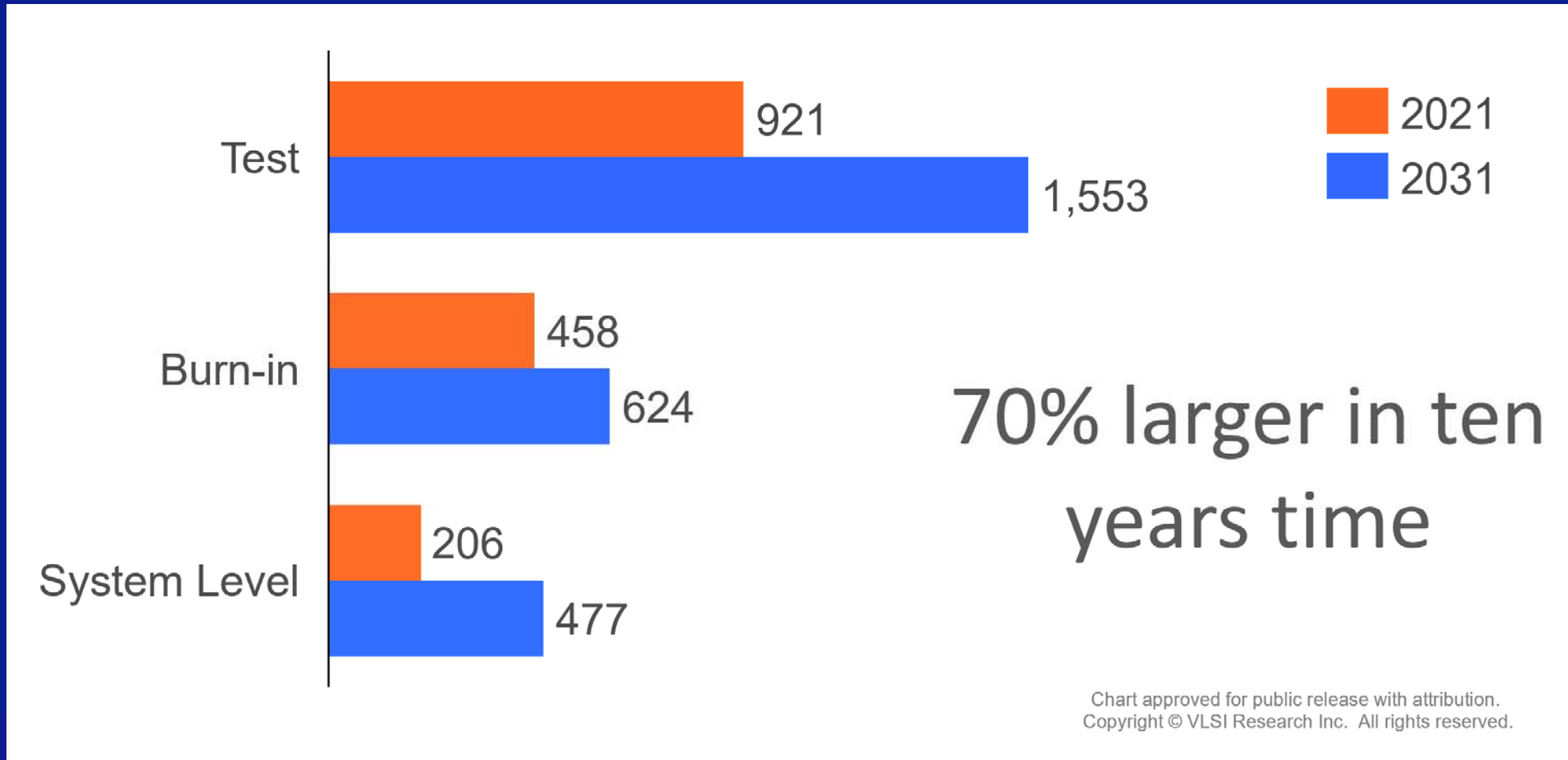
What's driving the industry super-cycle

Markets go down as well as up – spotting changes early

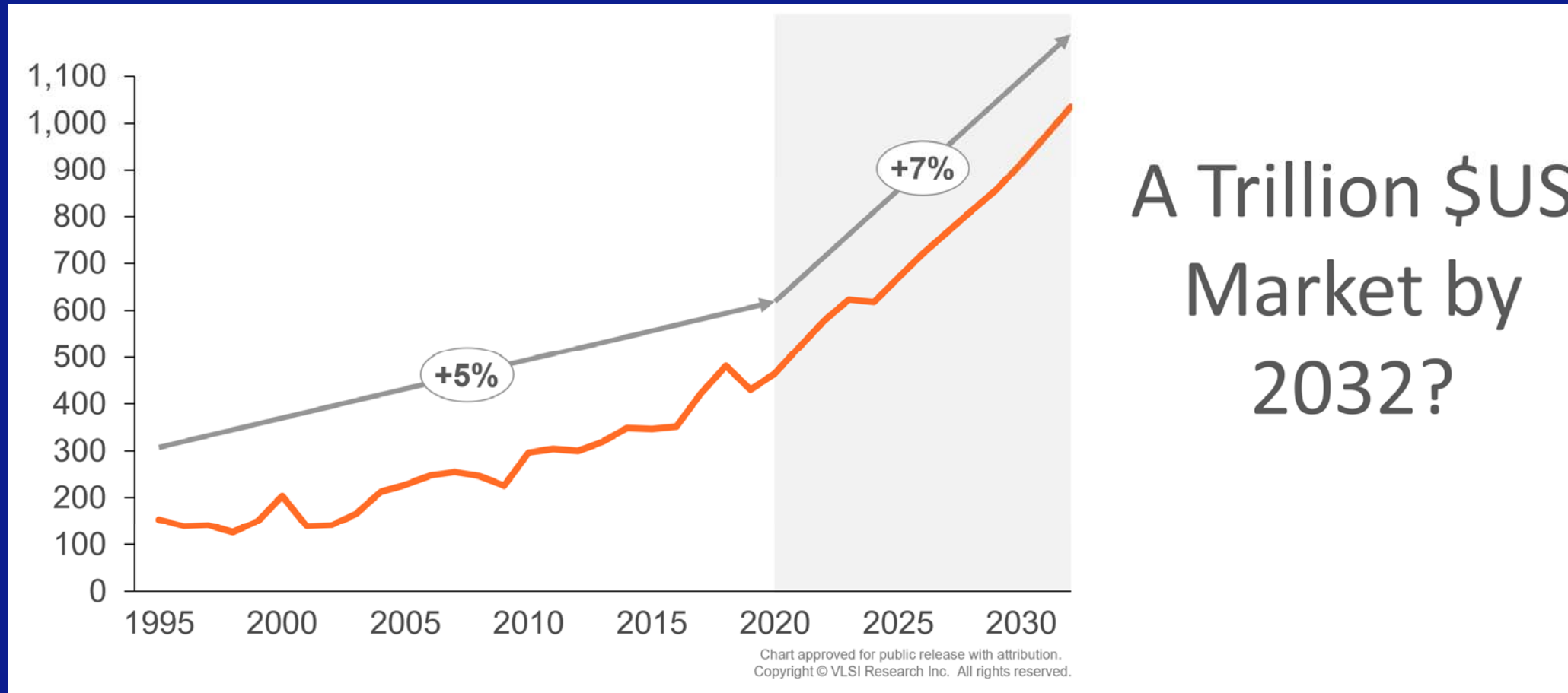
What will the market look like in ten years time?

What does this mean for you?

Sockets for semiconductor test: A vision of the future, revenues in \$M



Semiconductor Revenues, \$Bn



A Trillion \$US
Market by
2032?

What's changed to supercharge the industry?

Digital Transformation – accelerated by the pandemic

It's a data centric world – no longer driven by human consumption

Silicon content – (cm²) of electronic devices is increasing

A clear technology pathway – manufacturing at the 3nm node

What are the risks of the industry crashing?

3 downturns in the past 20 years

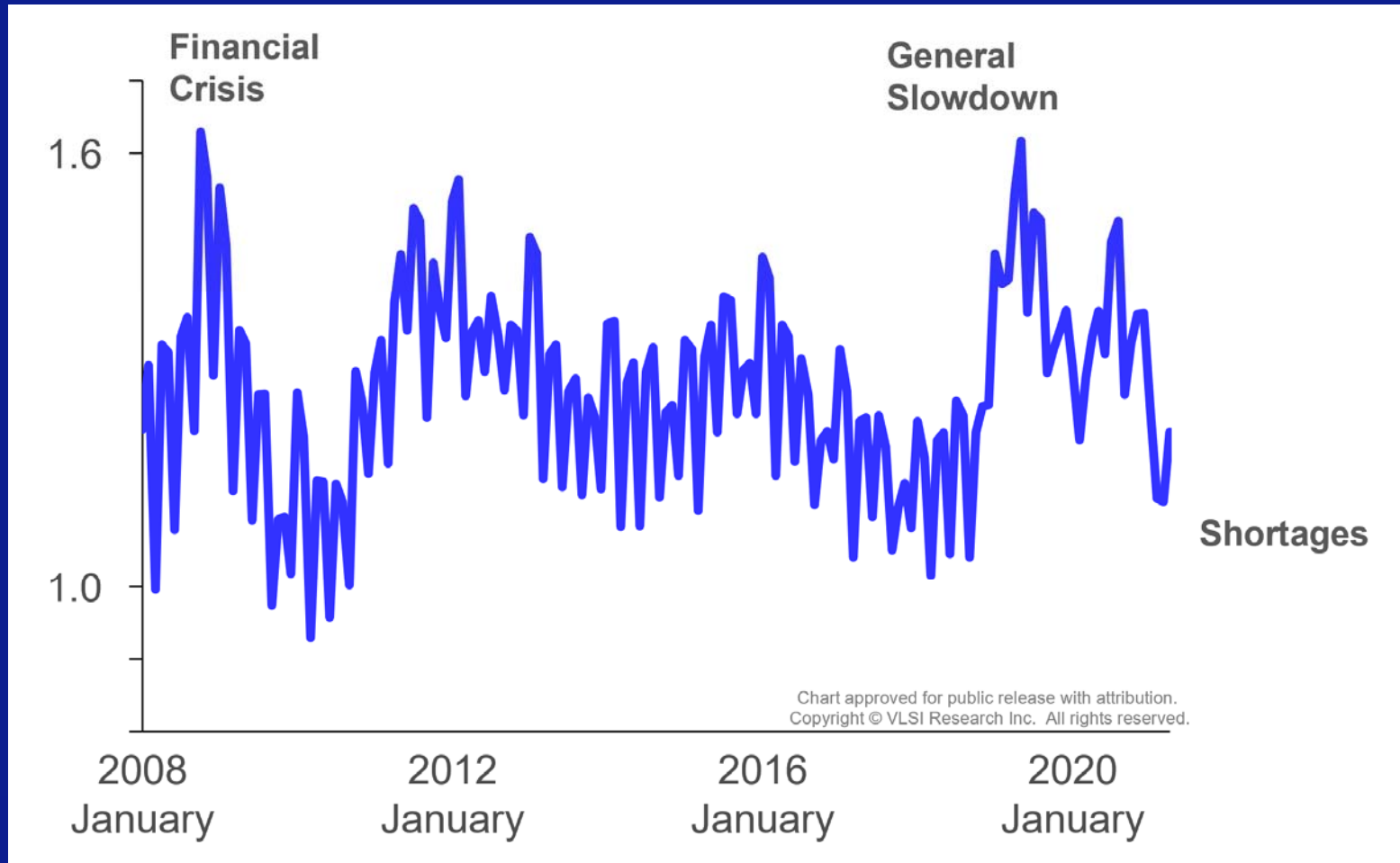
2001	-32%	Technology boom/bust
2008/9	-12%	Financial crisis
2019	-11%	General slowdown

Next downturn “due” in 2024 – what will this one be like?

How will we know it's started?

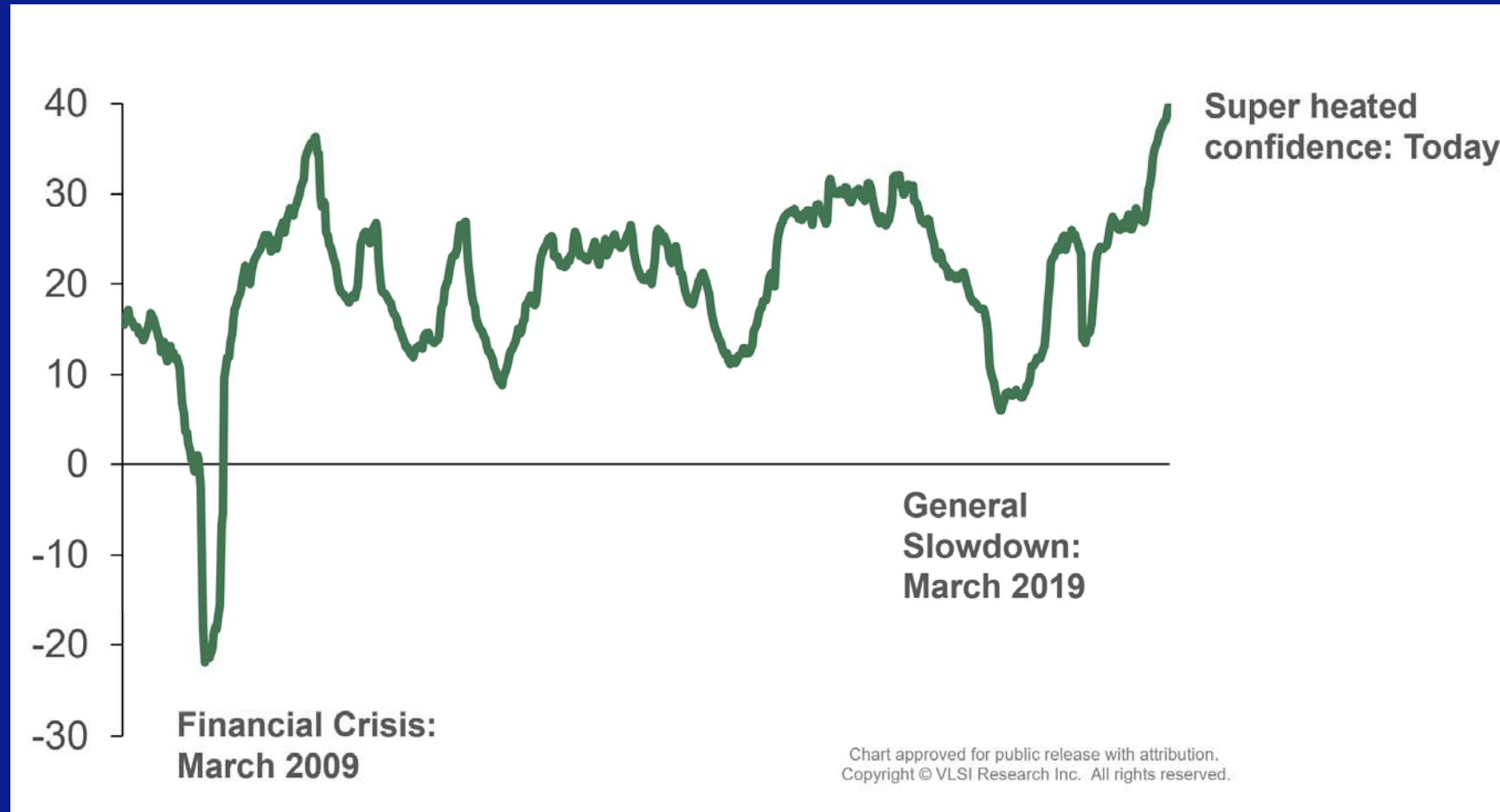
The warning signs to look out for?

Chip inventory in months of inventory



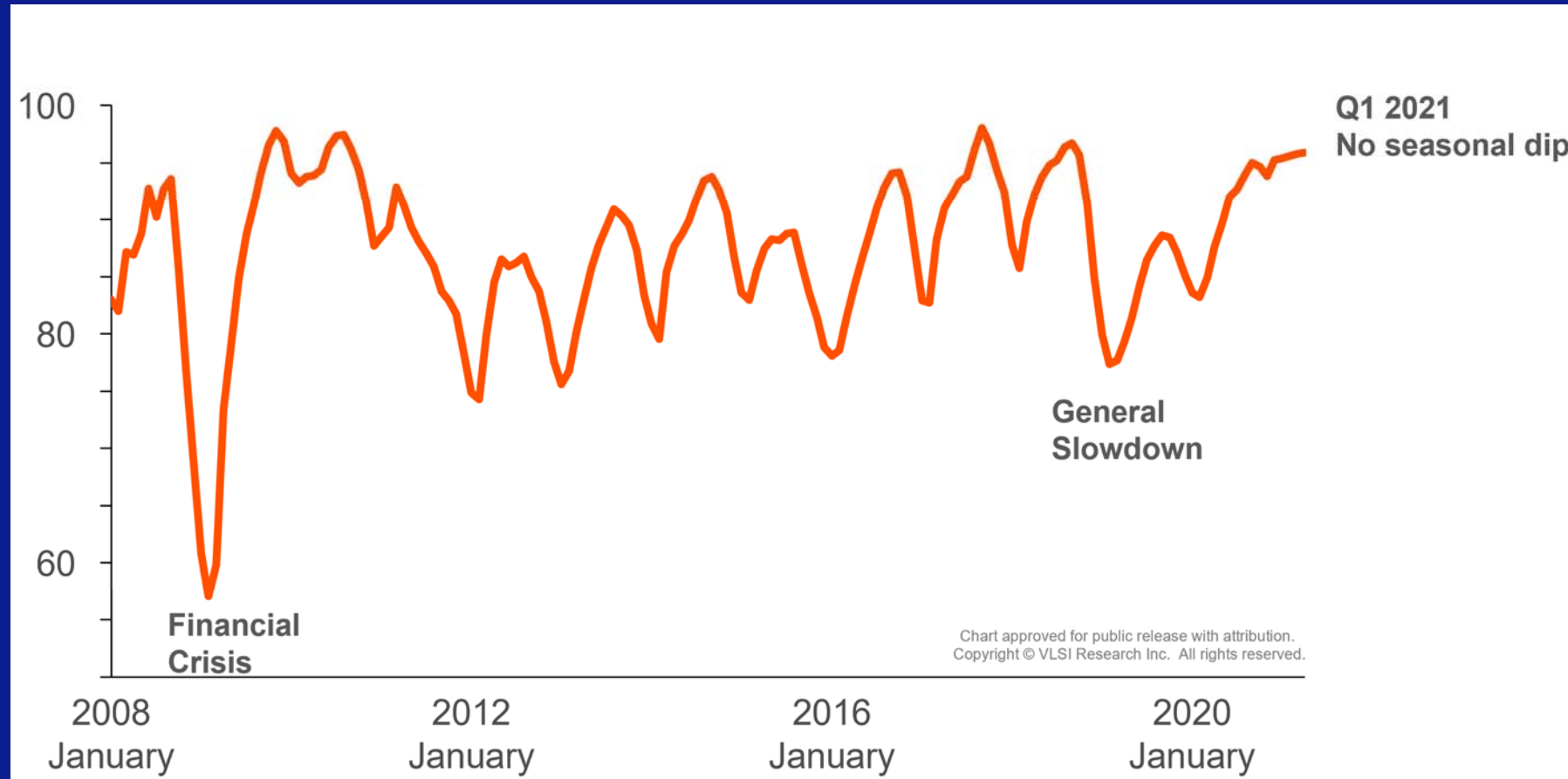
The warning signs to look out for?

Industry Sentiment (Temperature in degrees C)



The warning signs to look out for?

Manufacturing utilization rate, %



Review – what you need to do?

- Check inventories
- Check what clients are saying
- Check equipment utilization

Pay attention to the data – it's out there

Review: Semiconductors

2021 is going to be a great year: on track to grow 19.7%

Shortages to continue into 2022

Average annual growth rate of 8.7% over next 5 years

A \$1Tn market by 2032

Are you ready for this?

More complex chips – more challenging to test

2.5 x sub 20nm chip designs

1.7 x high speed chip designs

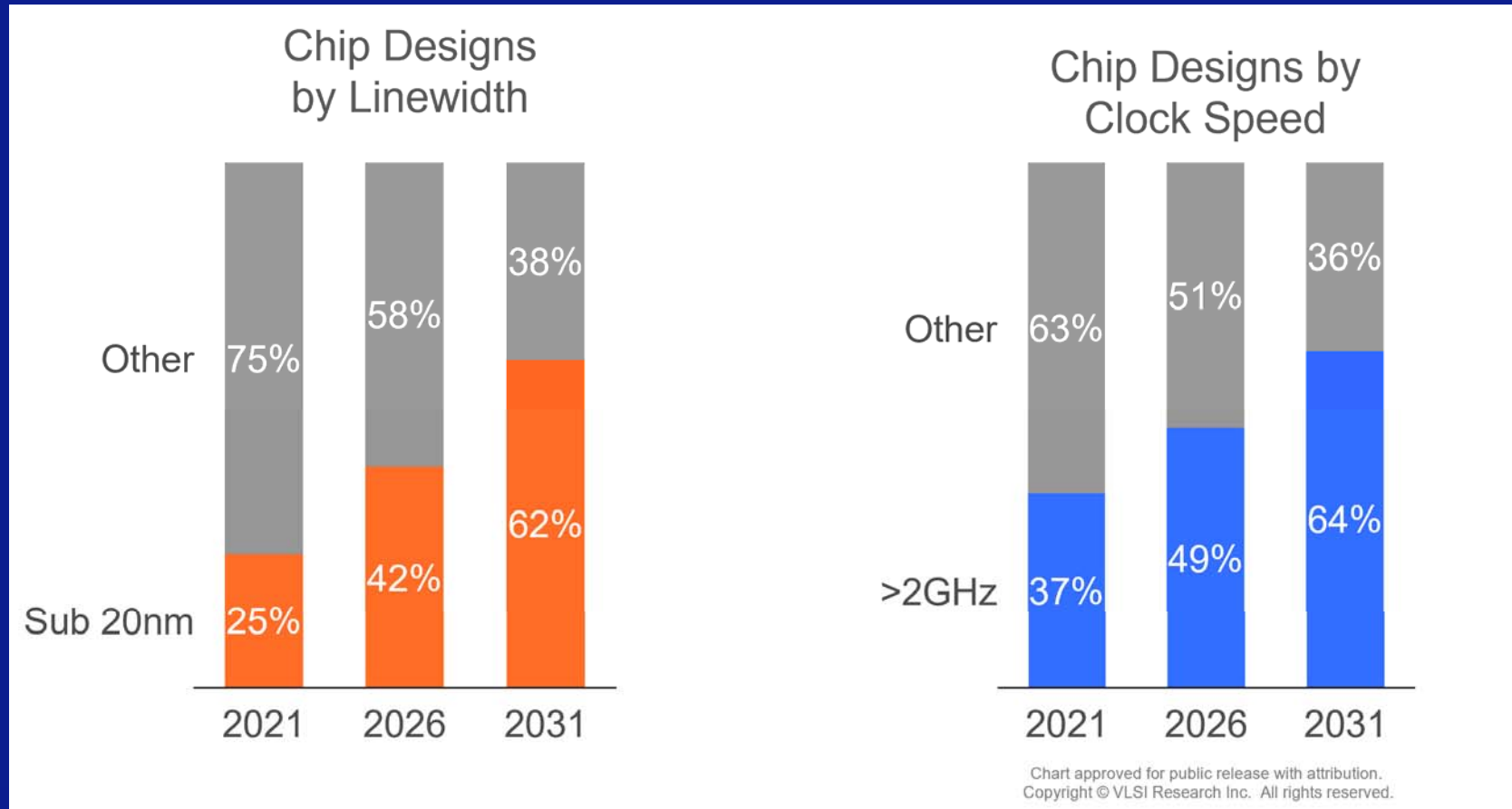
2.5 x number of advanced packages

2.8 x number of pins

As a supplier of test and burn-in sockets, will you be ready?

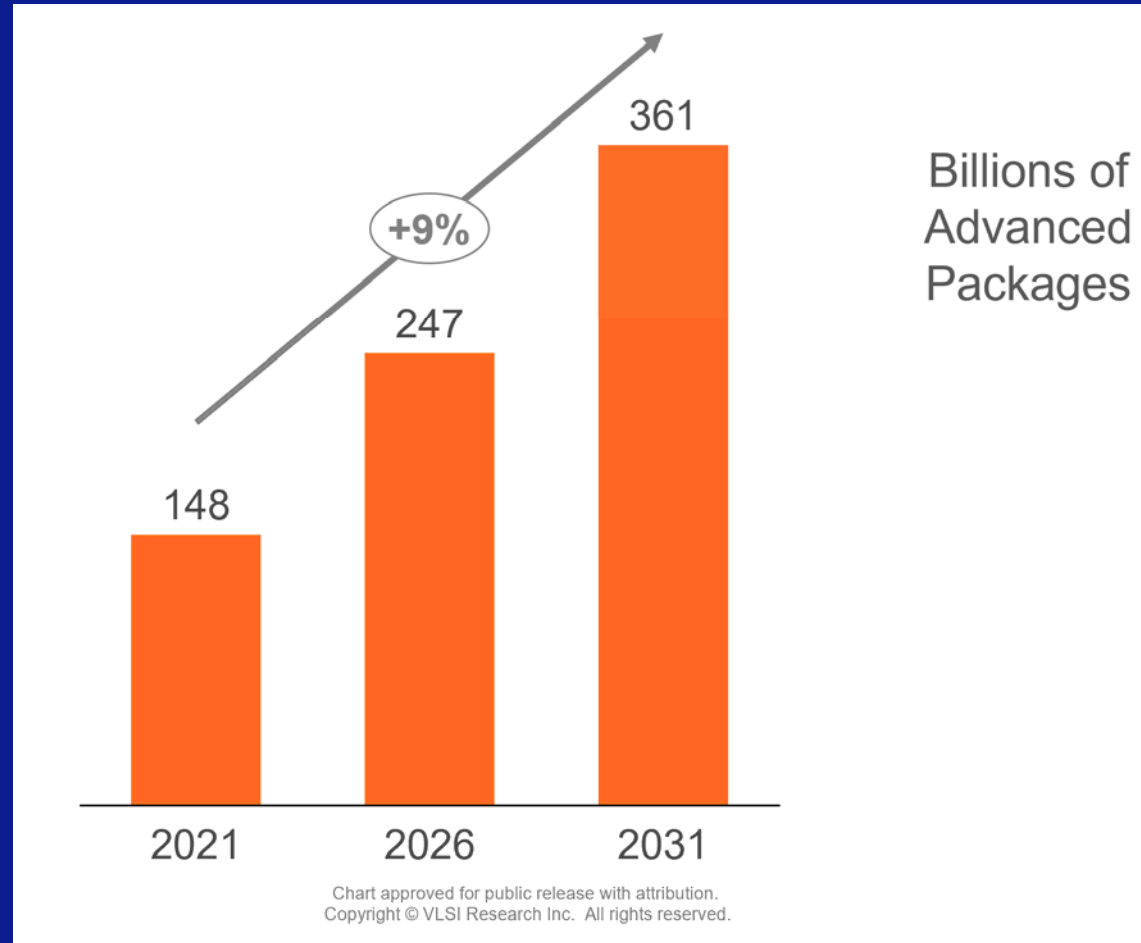
Chip complexity on the rise

Number of chip designs not growing, but complexity is:



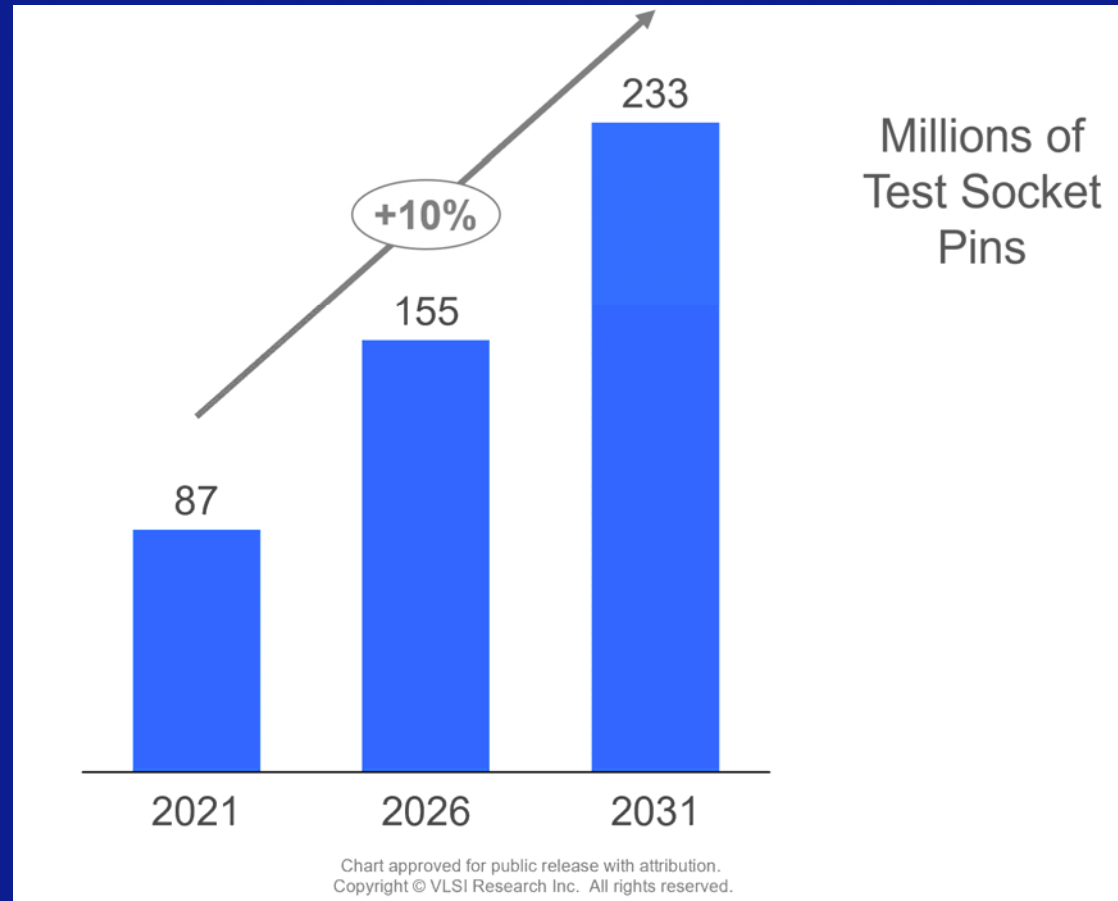
Advanced Packaging

Outgrowing the market

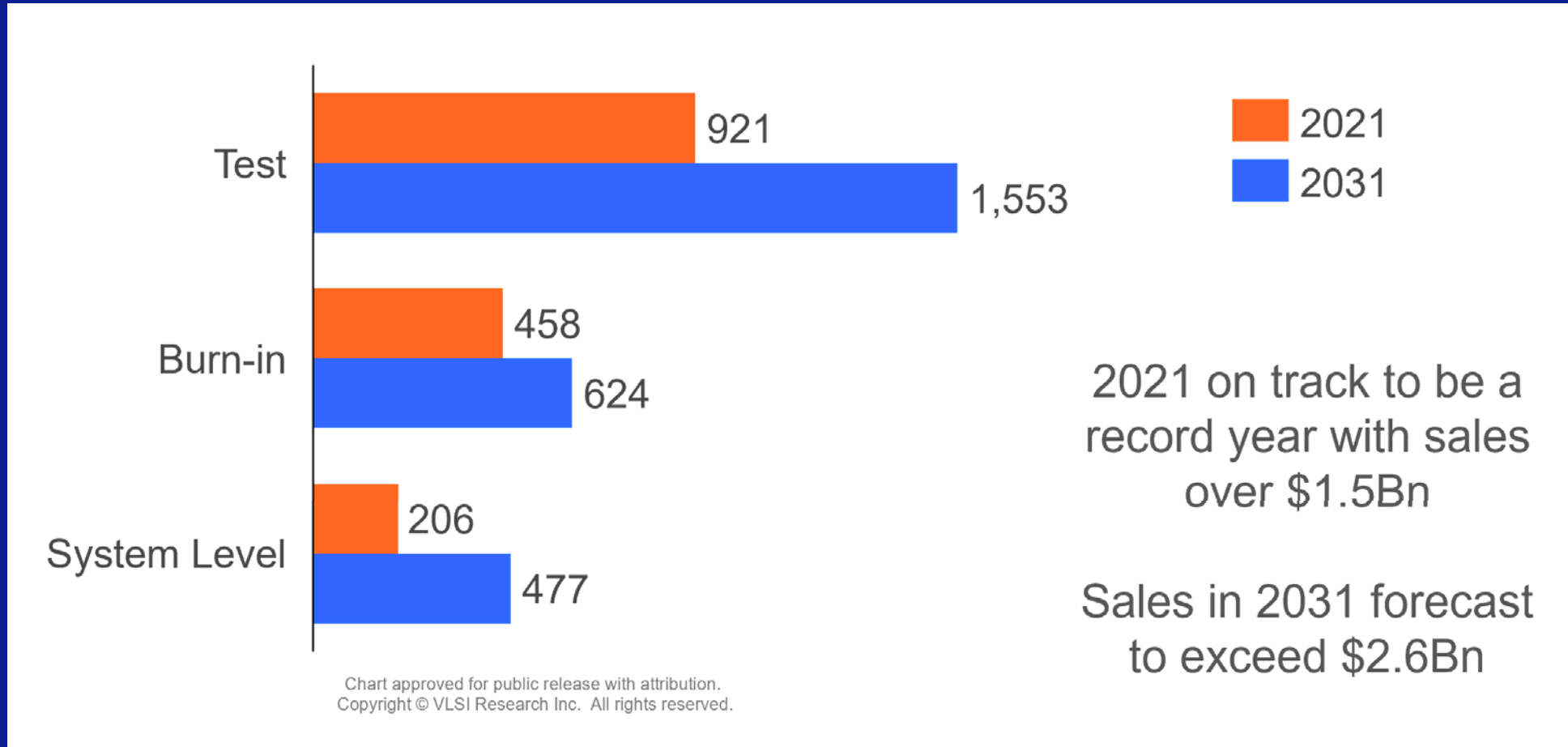


Test socket pins

Outgrowing the market



Sockets for testing semiconductors: 2021 compared to 2031



Getting ready for the next ten years

Market will not just be bigger, but will need suppliers that can step up to meet the challenges

- Capacity
- Technology
- Resources/capability
- Data

Questions?

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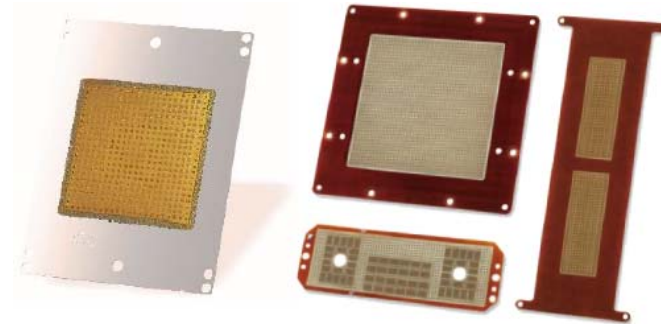


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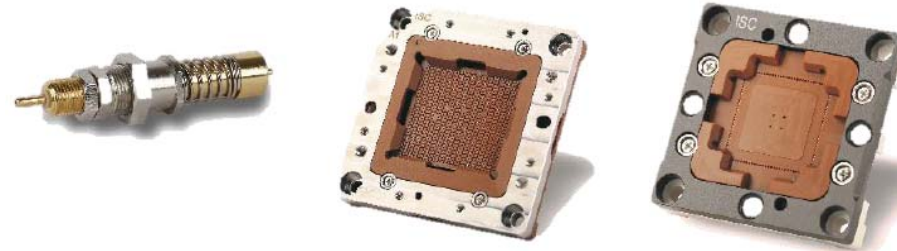
ELASTOMET SOCKET & INTERPOSERS

- High performance and competitive price
- High speed & RF device capability
- Various customized design to meet challenge requirement



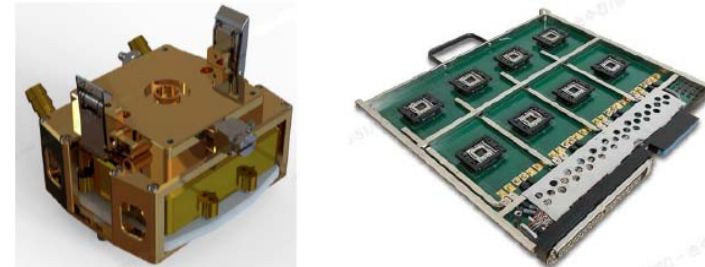
POGO SOCKET SOLUTIONS

- Excellent gap control & long lifespan
- High bandwidth & low contact resistance



THERMAL CONTROL UNIT

- Extreme active temperature control
- Safety auto shut-down temperature monitoring of the device & thermal control unit
- Full FEA analysis & Price competitiveness



BURN-IN SOLUTIONS

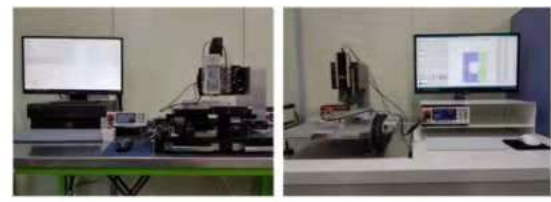
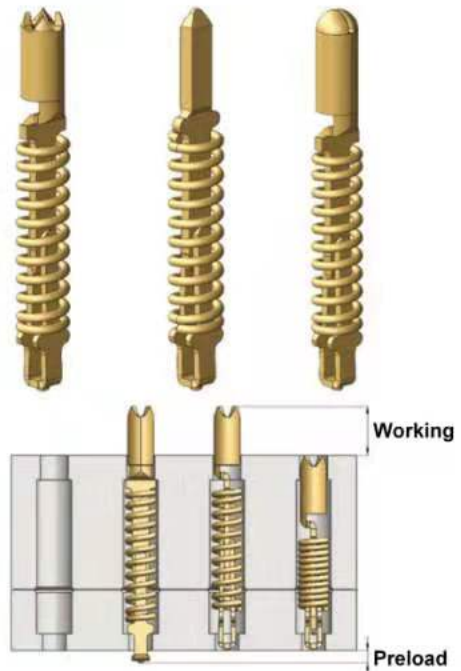
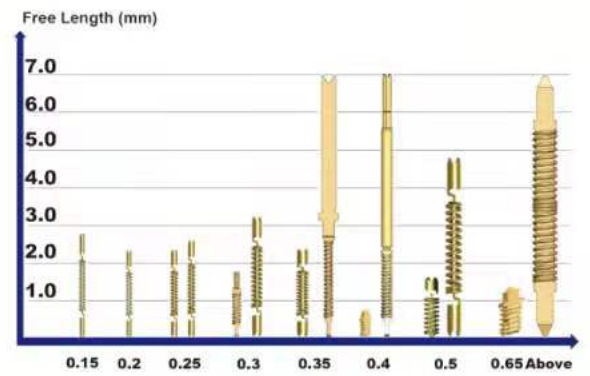
- Direct inserting on the board without soldering
- Higher performance BIB solution

Spring probe by stamping

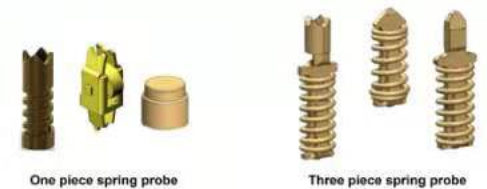
Spring probe by stamping

Automation
Pin assembly and Quality control

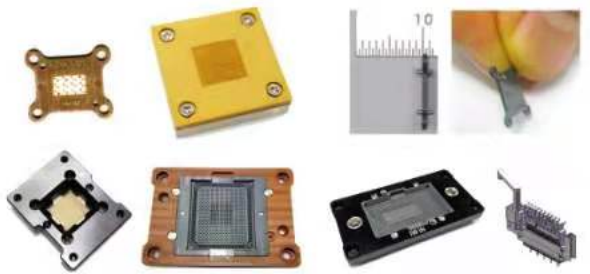
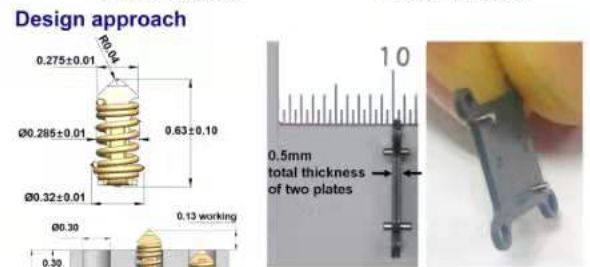
Spring probe pins for High speed



Extremely short spring probes by stamping



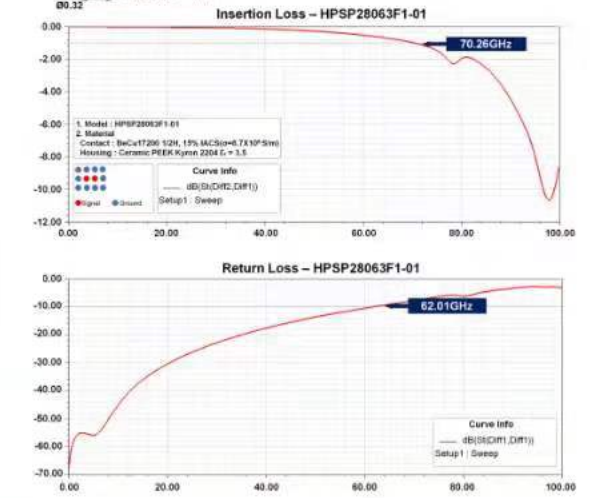
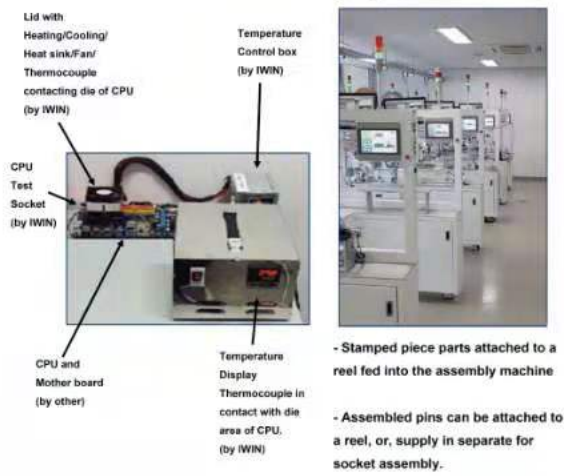
- 250 kinds of spring probe pin
- 300 kinds of test socket (44,000 Pin count socket possible)
- One piece spring probe
- Three piece spring probe
- High speed product → 0.63mm free length spring probe pin available
- Finest Pitch → 0.15mm Pitch



Patented

Pitch(mm)	Free Length(mm)	Current Carrying(Amps)
0.15/0.2/0.25	2.17~	0.5~
0.3	1.5~	1.5~
0.35	2.08~	1.8~
0.4	0.8~	2.5~
0.5	1.5~	3.0~
0.65	1.13~	9.0~
0.8	3.14~	3.0~

Socket and Lid Pin assembly (Fully automated machines)



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