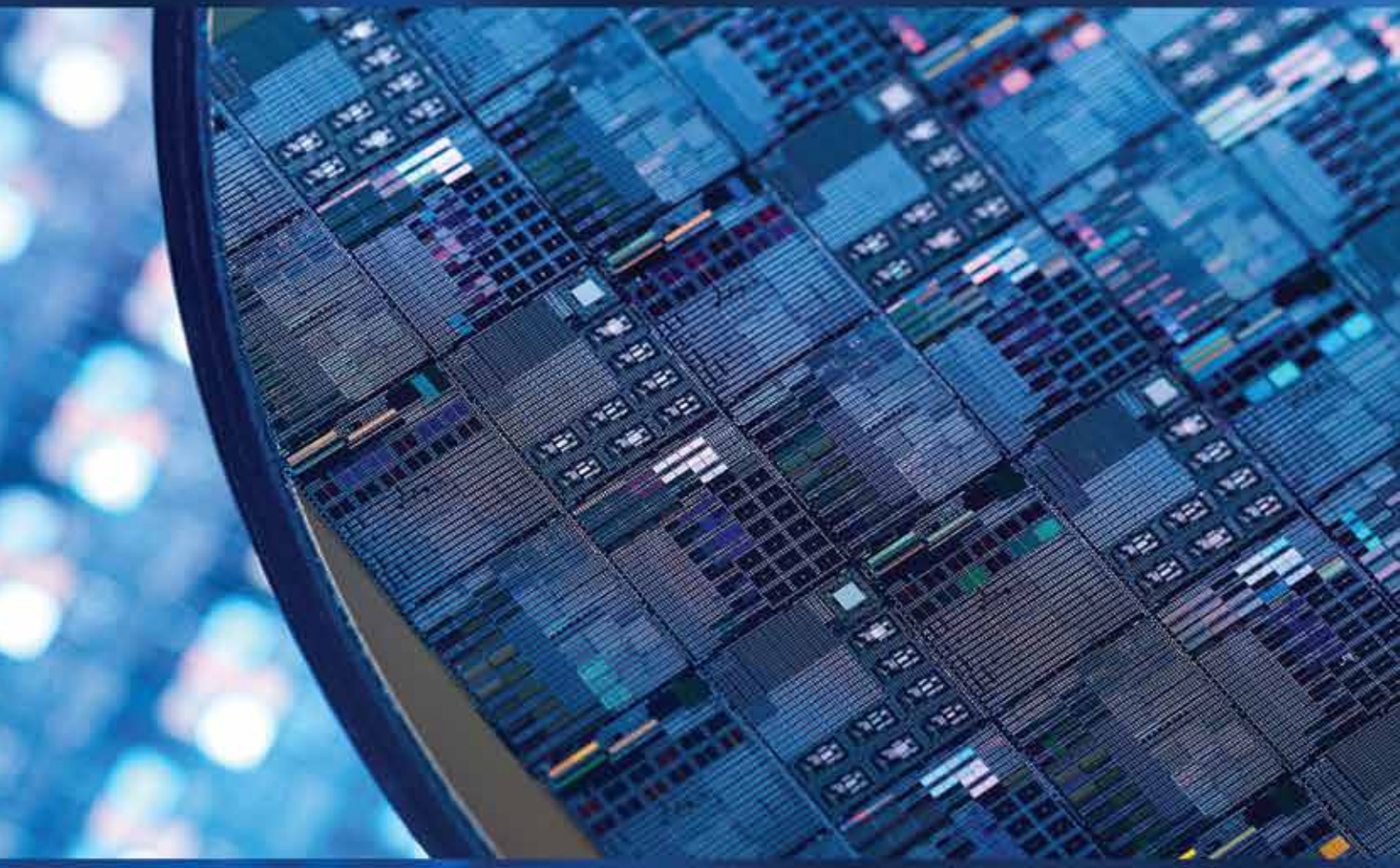
RICUS
SEMICON SOLUTIONS

Semiconductor Backend Tools Catalog



2022

ORICUS
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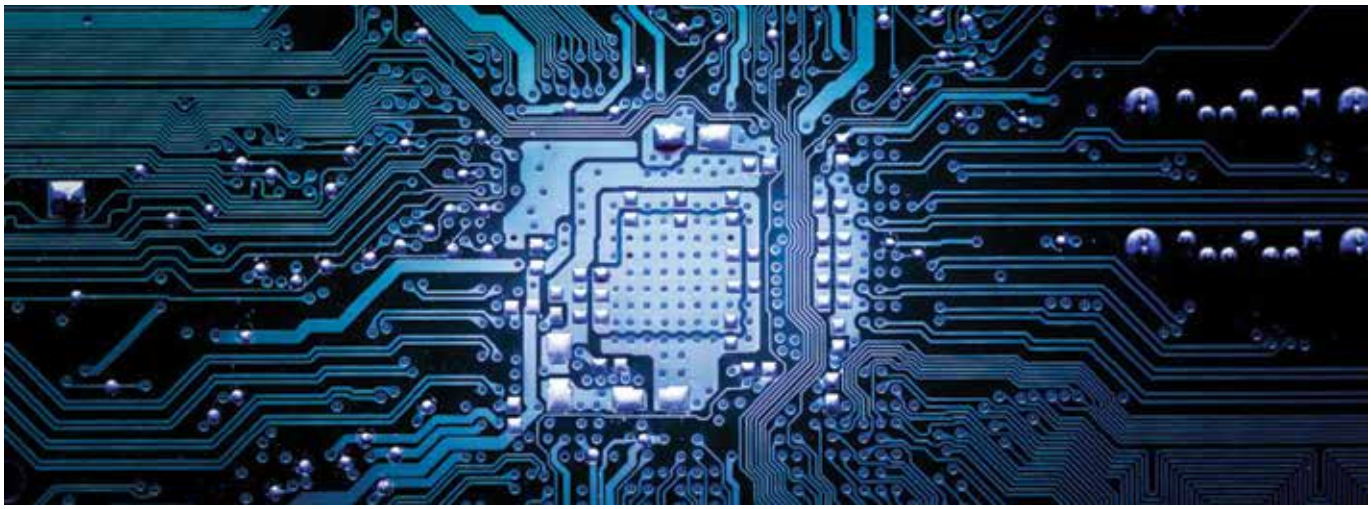
AT A GLANCE



Oricus Semicon Solutions is an innovative Semiconductor Tools manufacturing company who, with almost 100 years of collective expertise, craft high tech bespoke tooling solutions for the global Semiconductor Assembly and Test industry.

From one-off customised products to large scale production, our R&D strength, precision manufacturing experience and problem-solving capabilities are impeccable. With a passion for engineering and customer oriented service, we deliver price competitive precision Semiconductor Tooling solutions to a global market with a local presence.

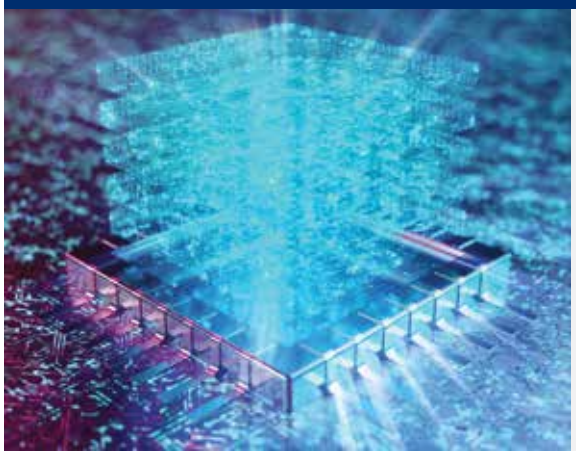
Oricus is a made up of a global network of professionals with strong commitment and passion for our work. The company is managed and operated with a spirit of professionalism based on the foundation of integrity, equality and respect. We are determined, objective with a sense of ownership to deliver on our goals. We value our values, professionalism, passion, perseverance and our relentless pursuit to deliver value for our customers.

Authenticity **Expertise** **Professionalism** **Perseverance** **Passion** **Community**

Oriented to Customer's needs

We excel at creating specials – one of a kind pieces, with one of a kind craftsmanship combining with the latest in manufacturing technology to produce micro precision tooling. Oricus can Design and Manufacture either one-offs or high volume orders to your unique specifications, from High Temperature resistant tools for Power Devices to tools with complex geometries for 3D Advanced Packaging.

Industry Leading Solutions

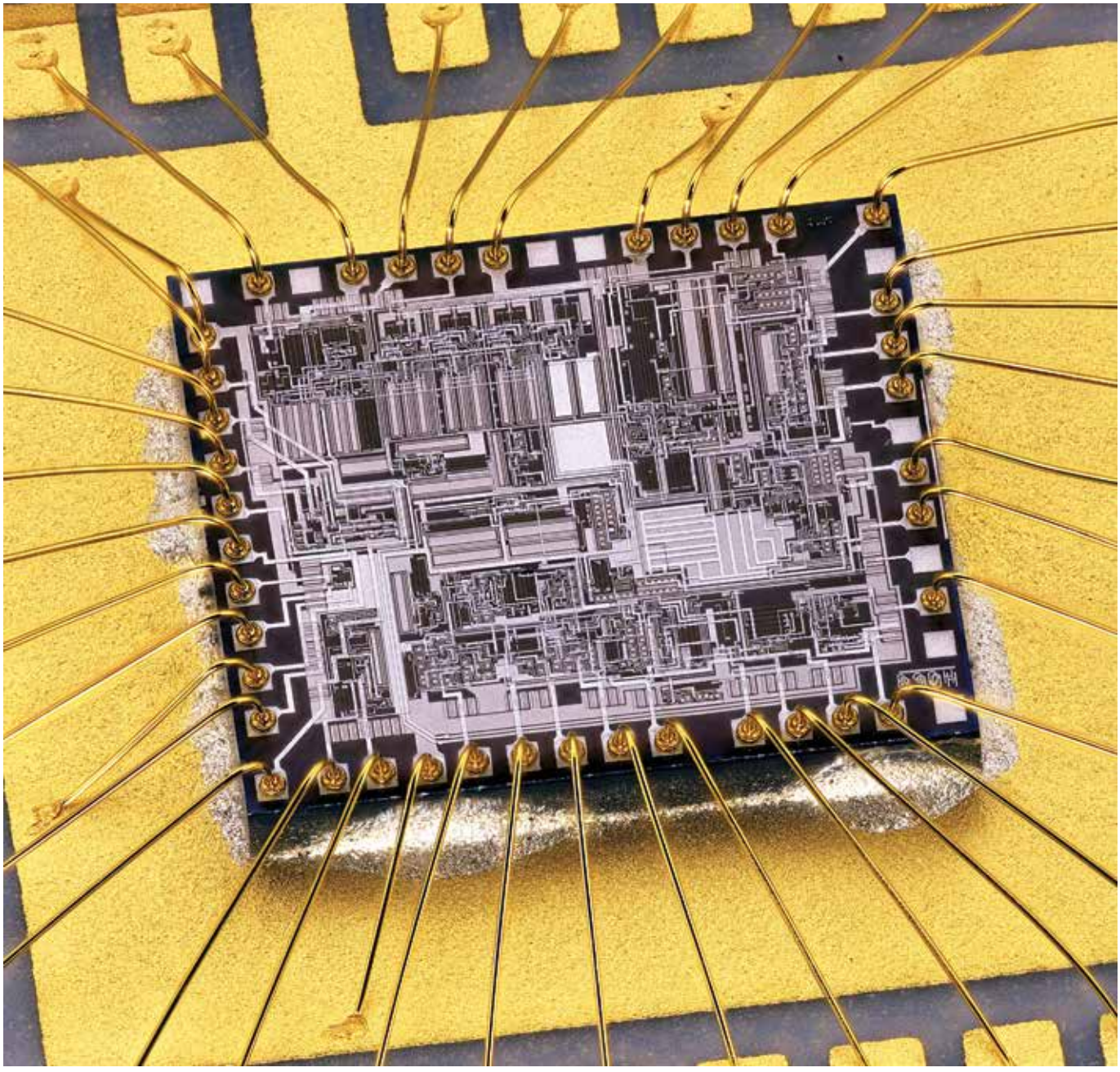


Our Technical Sales Consultants and R&D teams of seasoned Semiconductor Assembly and Test industry professionals will study your chip and package requirements and offer effective and competitive tooling solutions that will work right out of the box. Oricus has the solution to your tooling requirements. Leave it to us and you can focus on your key processes.

Research and Development

R&D is the cornerstone of our commitment to deliver market leading tooling solutions. Our Material Science know-how, coupled with our Manufacturing Expertise and knowledge on the latest demands of Integrated Circuits Packaging allow us to offer tools that maximizes productivity and minimizes downtime.

Bond Test



Bond Test. Product Families

Die Attach Test

Die Shear Tools are attached to Die Shearing Test Equipment for testing the shear strength of the die and the substrate it is attached on.

Wire Bond Test

Shear strength of Wire Bonds and Solder Balls can be accurately tested using precision machined Ball Shear Tools.

Part Numbers And Ordering

Type Code

B - Ball Shear Tool

D - Die Shear Tool

W - Wire Pull Hook

Material Grade

A to Z. Refer to material tables for full listing

Tip Width Code

For widths:
4 digit code
0254 = 2.54mm

BT	D	—	V	D	—	0001	—	0254	—	1

Product Code

BT - Bond Test

Material Code

V - Carbide

Running Serial

0001 - 9999
Serial to identify the specific design of this tool

Design Version

1 to 99

Die Shear Tools

Die Shear Testing is an important process to understand the mechanical reliability of adhesives applied to the Die and Substrate.

Die Shear Tools are attached to Die Shearing Test Equipment for testing the shear strength of the die and the substrate it is attached on. Die Shear Tests may utilize high shear loads up to 200KG.

It is our recommendation that the width surface of the Die Shear Tool Face is at least 25% larger than the side of the die which comes into contact with the Die Shear Tool.

Equipment Compatibility

Royce
Nordson DAGE
XYZ
Rhesca

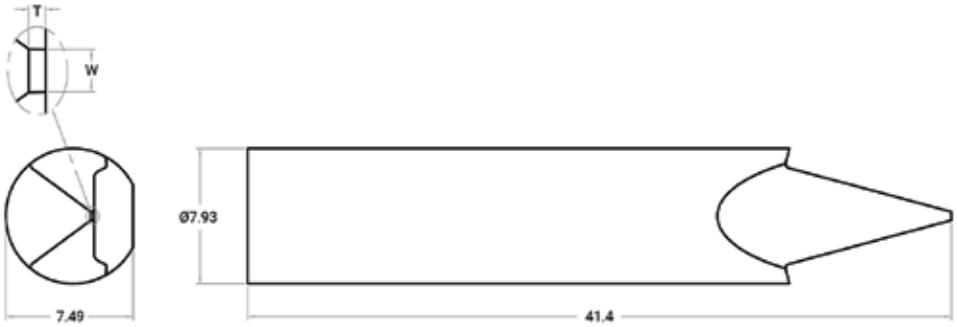
Material

Carbide

Customization

Diameter
Length
Tip Profiles

Part Number	W (mm)	T (mm)
BTD-VD-0001-0254-01	2.54	0.50
BTD-VD-0001-0305-01	3.05	0.50
BTD-VD-0001-0317-01	3.17	0.50
BTD-VD-0001-0508-01	5.08	0.50



Features

- Suitable for use in Die Shear Test Equipment from manufacturers such as Royce, Nordson DAGE, XYZ, Rhesca and more
- Wide range of designs available, from 80% coverage to >100% coverage
- Die Shear Tools and manufactured to conform to MIL STD 883 requirements

Benefits

- Glossy mirror finish on Tool Face aids operator positioning and set up
- Extended Tool Face designs allows for better test conditions
- Our custom designs are especially beneficial for small and micro geometry testing

Ball Shear Tool

Ball Shear Test one of the most commonly performed Quality Control Tests performed on Semiconductor interconnects such as Wire Bonds and Solder Balls, which can be test sheared individually with a precisely manufactured tool that is accurately positioned above the surface of the Device Under Test (DUT).

The precision and position of the Shear Tool is critical to ensure accuracy, reliability and repeatability during Shear Testing. Mechanical properties such as shear force and displacement are measured throughout the test.

Part Number	W (mm)	T (mm)
BTB-VD-0001-0051-01	0.51	0.13
BTB-VD-0001-0051-02	0.51	0.25
BTB-VD-0001-0076-01	0.76	0.13
BTB-VD-0001-0076-01	0.76	0.25

Applications

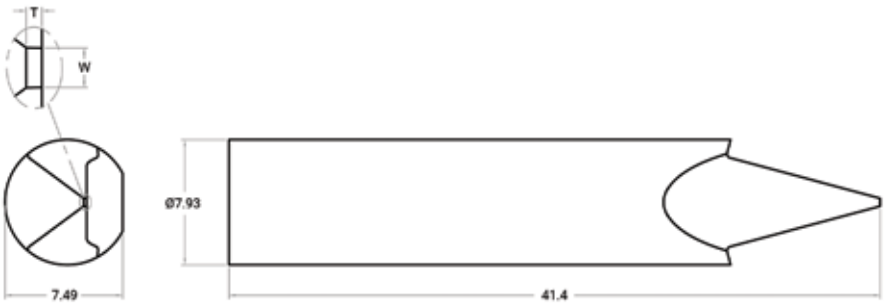
Ductile
Pad Lift
Ball Lift
Interfacial Break

Equipment Compatibility

Royce
Nordson DAGE
XYZ
Rhesca

Material

Carbide



Features

- Suitable for use in Die Shear Test Equipment from manufacturers such as Royce, Nordson DAGE, XYZ, Rhesca and more
- Available in a wide range of Carbide, HSS and Superalloy materials to suit your application
- Suitable for testing Ductile, Pad Lift, Ball Lift and Interfacial Break failure modes

Benefits

- Application specific designs ensures test consistency by avoiding neighboring bumps
- Tool design thoroughly considers the test site's geography to ensure the integrity of channels are not affected during testing
- Extended Tool Face designs allows for better test conditions
- Our custom designs are especially beneficial for small and micro geometry testing

Wire Pull Hook

Wire Pull Testing is an established methodology for testing the mechanical reliability of wire bonding interconnects used for Semiconductors. Load is usually applied at 90° perpendicular to the Device Under Test (DUT).

There are namely 2 methods of testing, Destructive and Non Destructive Testing. Destructive Testing tests the ultimate strength of the wire bond, until the point where the bond fails. Non Destructive Testing (NDT) applies a preload to the bonded interconnect for a certain duration. NDT is usually used for integrity and reliability test for high value devices.

Applications

Ball Bond interconnects
Wedge Bond interconnects
Ribbon Bond interconnects

Wires Compatibility

Gold
Aluminium
Copper
Silver

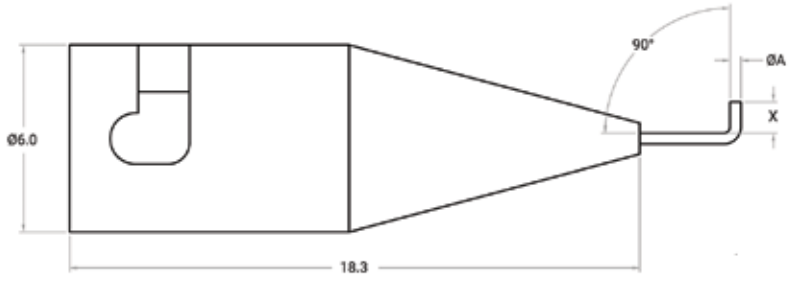
Equipment Compatibility

Royce
Nordson DAGE
XYZ
Rhesca

Material

Carbide

Part Number	ØA (mm)	X (mm)
BTW-LG-0001-001	Ø0.35	1.00
BTW-LG-0001-002	Ø0.40	1.00
BTW-LG-0001-003	Ø0.50	1.00
BTW-LG-0001-004	Ø0.60	1.00



Features

- Suitable for use in Die Shear Test Equipment from manufacturers such as Royce, Nordson DAGE, XYZ, Rhesca and more
- Available in a wide range of Stainless Steels and Tool Steels to suit your application
- Designed for both Destructive and Non Destructive test methods
- Used for Ball Bond, Wedge Bond and Ribbon Bond interconnects

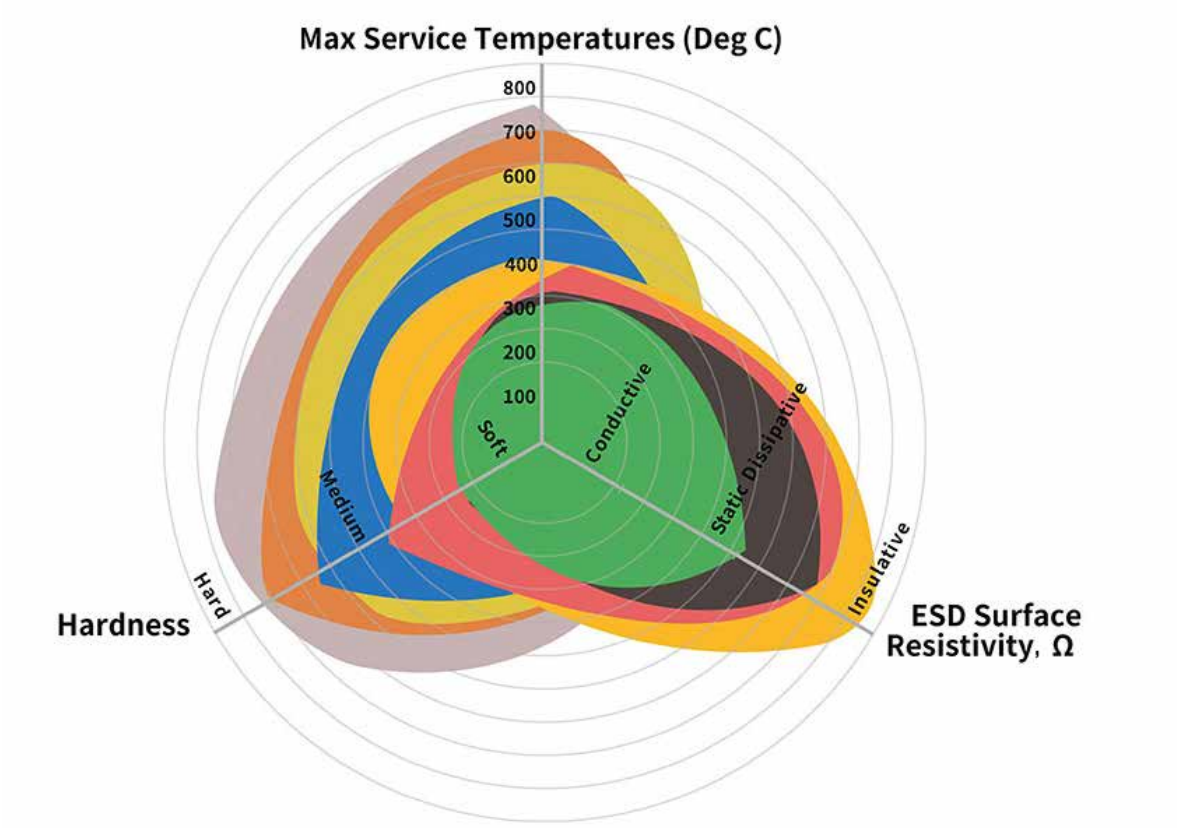
Benefits

- Application specific designs for testing regular Wires, Ribbons and SMT Gullwing leads
- Customizable Wire Pull Hook materials to cater for Gold, Aluminium, Copper and Silver wires
- Micro Pull Hooks manufactured to suit the testing of very low loop height interconnects

MATERIALS

Oricus's extensive line of engineered materials specially developed and selected to offer optimal tooling performance for your specific Semiconductor Backend process. Our in-house materials are closely developed in partnership with Original Equipment Manufacturers with input from our customers. For externally procured materials, each material goes through a rigorous Quality Assurance and Performance Assessment programme before making it into our material list.

Oricus' in depth understanding and experience of materials allows us to formulate tooling solutions that work for you. As part of our value proposition, we study the conditions of your application and suggest the most appropriate material that meets your needs.



Tungsten Carbide *WC Line*

Superalloy *SA Line*

Stainless Steel *SS Line*

Tool Steel *TS Line*

Non Ferrous Metals *NF Line*

Performance Engineering Plastics *SP Line*

Engineering Plastics *EP Line*

Rubber *R Line*

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WC LINE

Tungsten Carbide

High Wear & High Temp Resistance

Carbide, K15

Carbide, K30

Carbide, M30

Carbide K40

Carbide, MG30

SA LINE

Superalloy

All-Round Superior Performance

Haynes 25 (L605)

Inconel Alloy 625
Inconel Alloy 718
Incoloy Alloy 925

Nitronic 50
Nitronic 60

Titanium Grade 2

Stellite 6
Stellite 31

SS LINE

Stainless Steel

Balanced Properties

15-5 PH
17-4PH

SUS 430F
SUS 420
SUS 440C
SUS 316
SUS 301
SUS 304
SUS 303

TS LINE

Tool Steel

High Strength

CPM-10V
SKD 11
SKH 51
Mirrax 40
ASP 23
Stavax
XW 10
XW 42
Assab 718 - HH

HSS
DF2
DF3
Ramax HH
Rochling 2315

NF LINE

Non Ferrous Metals

Special Applications

Aluminium 7075
Aluminium 6061

Copper
Brass
Hovadur K350

SP LINE

Performance Engineering Plastics

Advantageous Performance & Value

Torlon 4432 (PAI)
Torlon 4301 (PAI)
Torlon 5030 (PAI)
Torlon 7130 (PAI)

Vespel SCP5050(P)
Vespel SP 21 (PD)
Vespel SP1 (PI)

ESD Semitron 520
ESD Semitron 420
ESD Semitron 410C
ESD Semitron 225

EP LINE

Engineering Plastics

Economical And Versatile

Acrylic/ Polycarbonate

TECAFORM SD

Delrin ESD
Delrin White
Delrin Black
POM

PEEK
PEEK HT
PEEK GF 30%
PEEK CF 30%

R LINE

Rubber

Geometric Flexibility
ESD Protection

NBR
NBR (Soft)
NBR (Hard)
NBR (Coated)

HPR
HPR (Soft)
HPR (Hard)

UPR

CR (ESD)
CR

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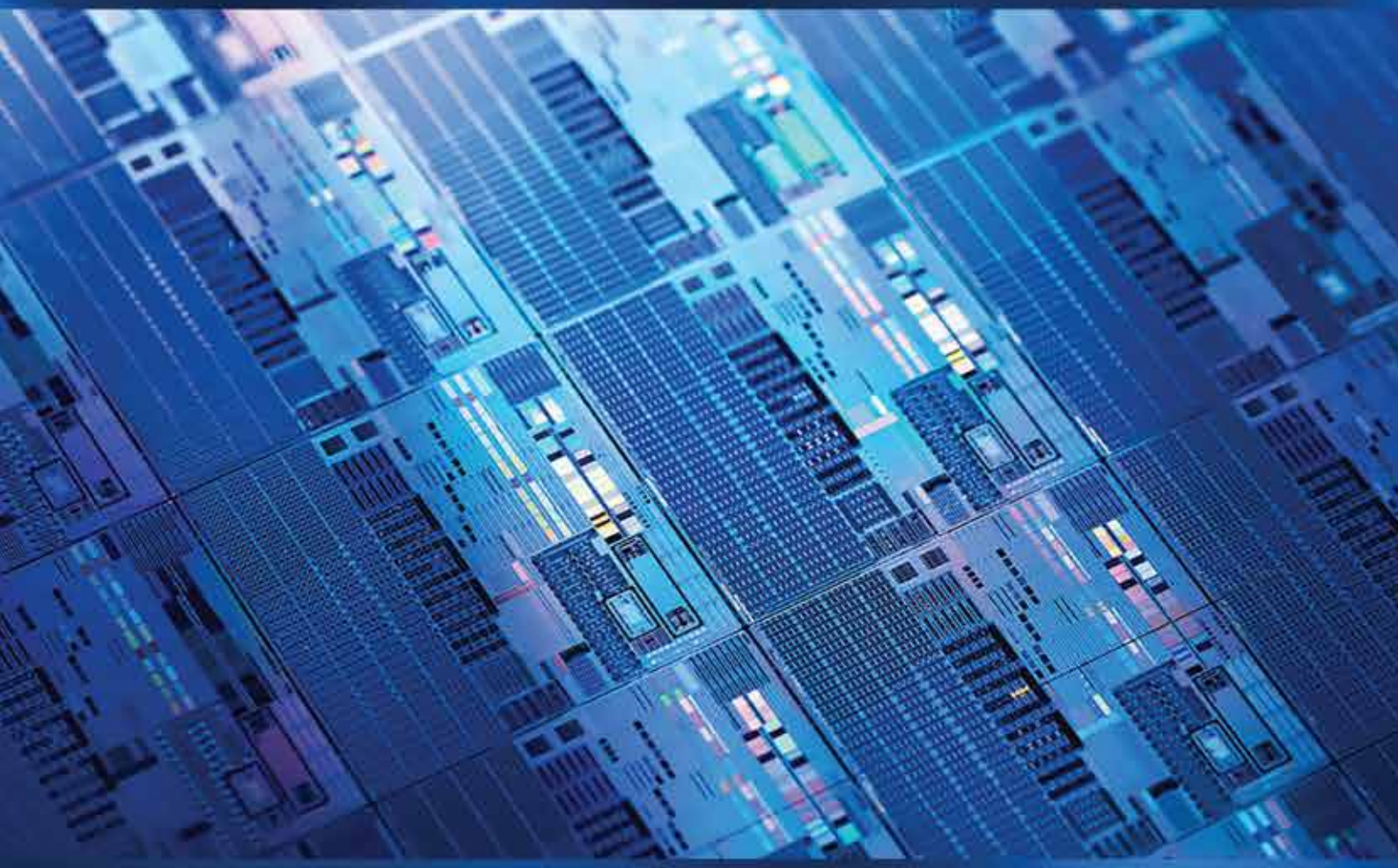

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