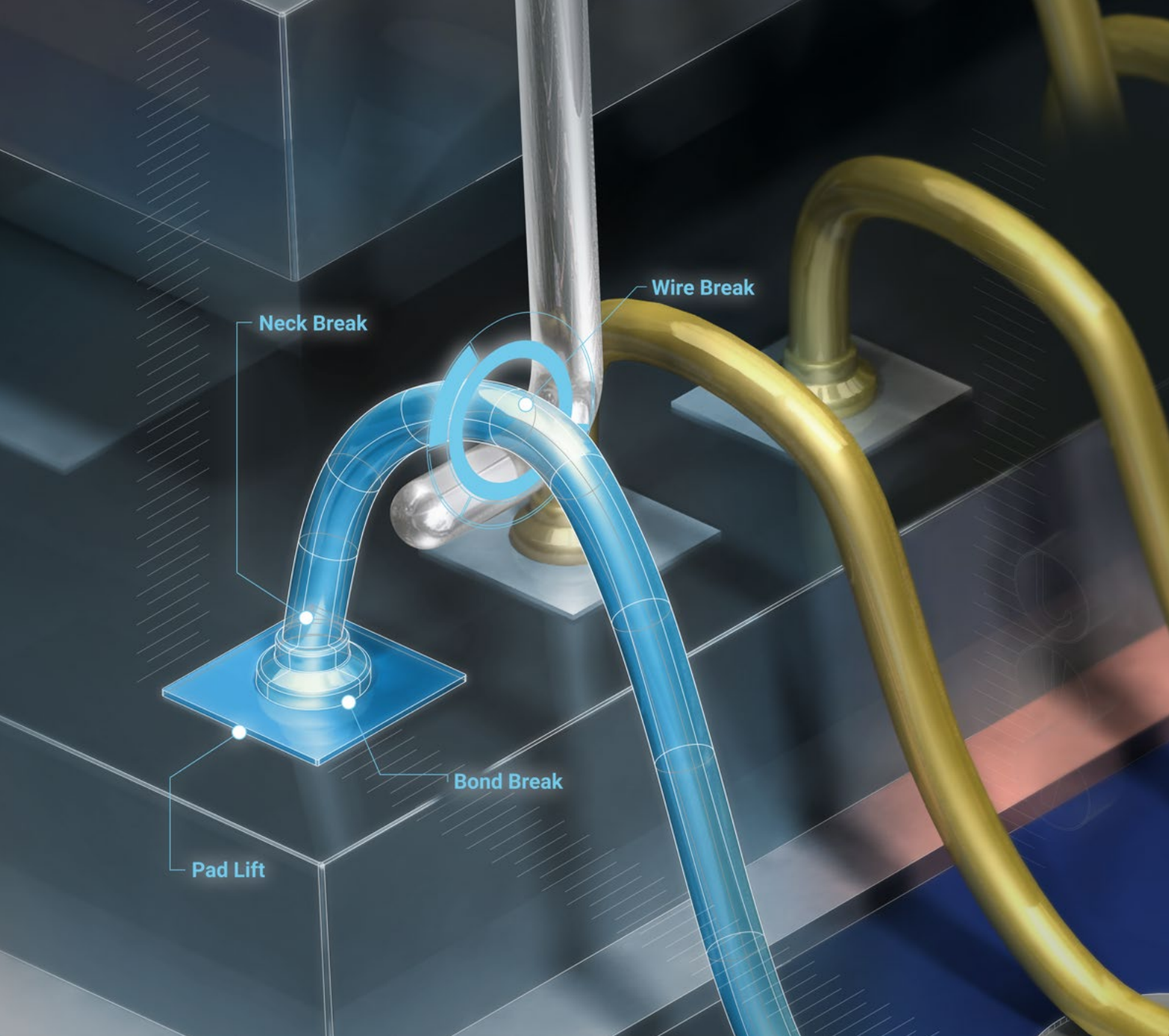




Bond Testing Portfolio

Find Every Failure™

www.nordson.com/TestInspect

Nordson
Test & Inspection

Nordson Test & Inspection

Founded in 1954, Nordson Corporation is a market leading industrial technology company with annual revenues of over \$2.1 billion and more than 7,500 employees worldwide.

Nordson Test & Inspection offers its SMT & Semiconductor customers a robust product portfolio, including Acoustic, Optical and both Manual and Automated X-ray Inspection systems, X-ray Component Counting systems and Semiconductor measurement sensors. Nordson Test & Inspection is uniquely positioned to serve its customers with best-in-class precision technologies, passionate sales and support teams, global reach, and unmatched consultative applications expertise.



BT Products

Test Your Design

Bondtesters

AOI Products

Proprietary Advanced Technology

Optical Inspection & Metrology

WS Products

Improve Your Yields

Semiconductor Metrology Sensors

AMI Products

Qualify Your Design

Acoustic Inspection

AXI Products

High Speed High Flexibility

Automated X-ray Inspection

MXI Products

Making the Invisible, Visible

Manual X-ray Inspection

AXM Products

Measuring the Invisible

Automated X-ray Metrology

CC Products

Maximize Efficiency

X-ray Component Counting

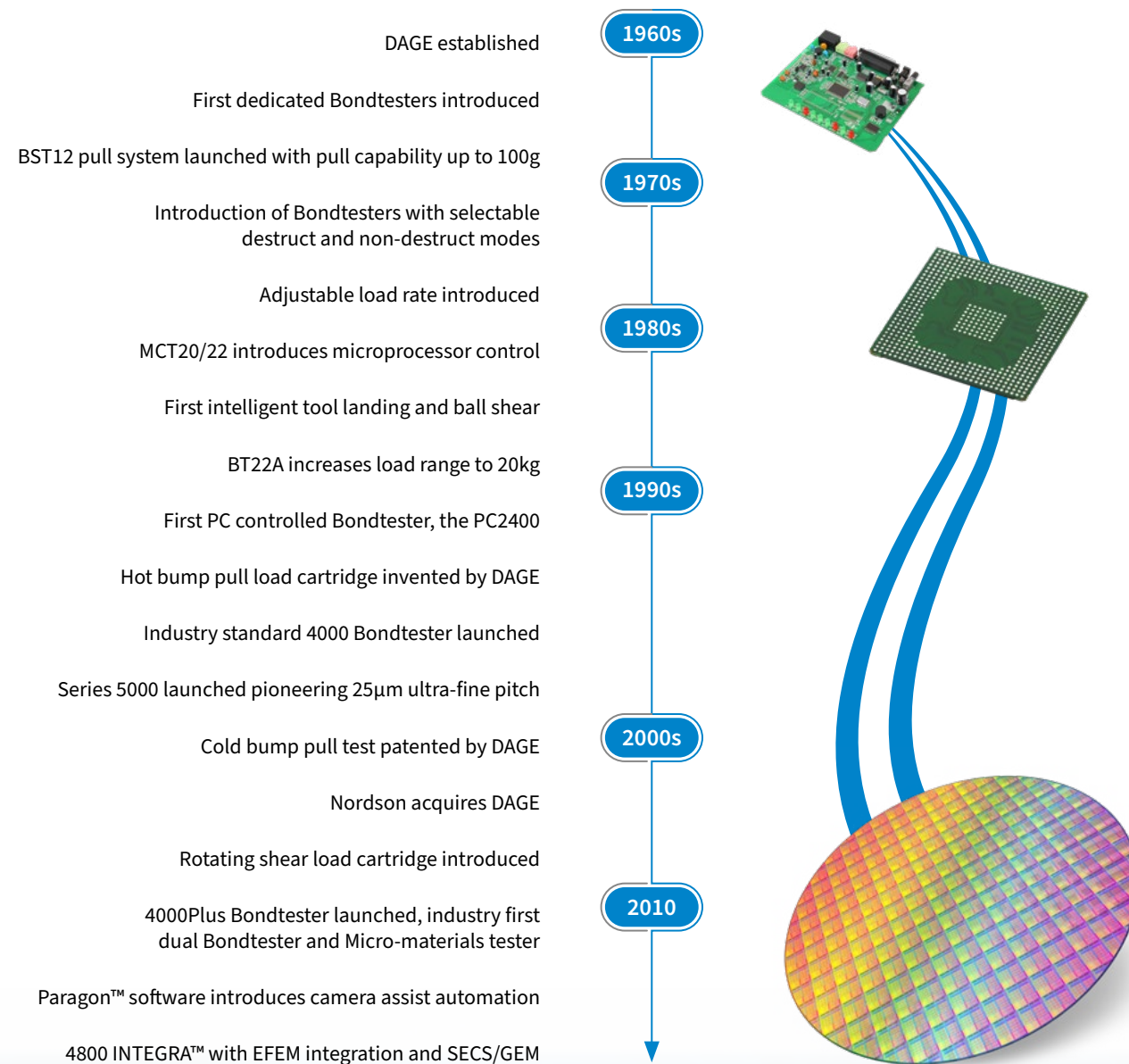
XT Products

High Speed High Resolution

X-ray Technologies

Pioneers of Bond Testing

Complete Integration



For over fifty years Nordson has been the market leading provider of award winning Bond Test Systems.

Produced at our state of the art production facility in Aylesbury, UK and engineered for excellence to ensure ultimate accuracy and repeatability, Nordson Bondtesters are at the forefront of technology to meet the wide range of applications required by our customers.



The Right Product for the Right Application

Production

4000PLUS

STELLAR 4000

4000HS Shear

High Speed Bondtester

The Gold Standard Bondtester

Advanced Bondtester

Operator-Free

4600

4600-W

Automated Bondtester

Non-Contact Wafer Bondtester

4800

4800 INTEGRA™

CLEAN ROOM

Automated Wafer Bondtester

Factory Integrated Wafer Bondtester

Bond Testing

Automated Bond Testing

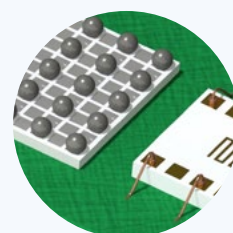
High Speed - 4000HS Shear

Fast set-up, easy to learn,
maximum comfort.

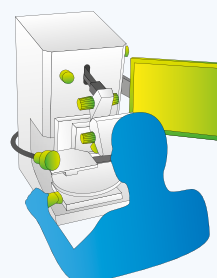


“ I spend a lot of time manually testing.
I chose the 4000HS Shear as it is the most
ergonomic and easy-to-use system. ”

Simple PCBAs
and components



Ergonomic and
easy-to-use



High precision



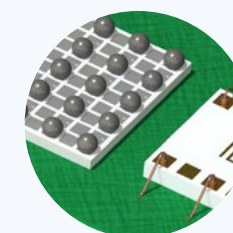
Gold Standard - STELLAR 4000

Fast set-up, easy to learn,
maximum comfort.

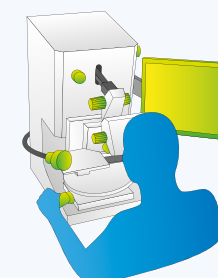


“ I spend a lot of time manually testing.
I chose the STELLAR 4000 as it is the most
ergonomic and easy-to-use system. ”

Simple PCBAs
and components



Ergonomic and
easy-to-use



High precision



Advanced Bondtester - 4000Plus

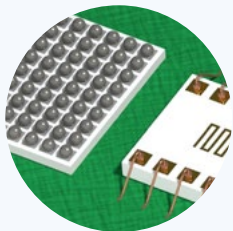
Test More With Automation

Superior accuracy for complex samples and advanced test types.



“My samples are complex with a wide variety of components. The 4000Plus gives me the accuracy and flexibility I need.”

Complex and high density components



High accuracy and high flexibility



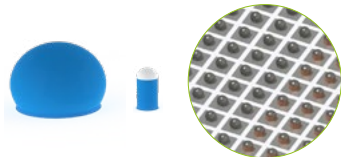
Very high precision



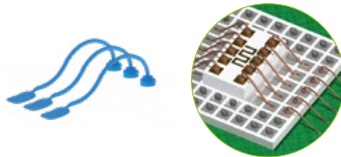
For the most complex devices with a high density of bumps or very fine pitch wires, automation is the only way to ensure maximum test accuracy.

Automation gives you the precision required to achieve the highest data integrity, test after test.

Small dimensions
High density



Complex product
Fine pitch



	Manual	4600	Handler Wafer / Lead Frame
Test repeatability	Rotary encoders	High resolution linear encoders	
Data integrity	Operator alignment	Fiducial recognition alignment	Fiducial recognition + OCR
Test procedure	Operator control	Automatic test	
Product safety	Manual load / unload		Automatic load / unload
Throughput and ROI	Variable (operator dependent)		

Automated Testing - 4600 Series

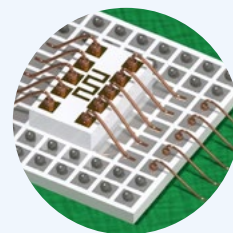
Wafer Solution - 4600-W

Maximum repeatability for the most demanding applications.

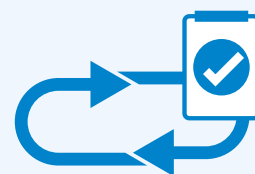


My interconnects are extremely small and it is crucial to remove operator influence. The 4600 allows me to test a whole batch at once.

Highest complexity products



Maximum repeatability and accountability



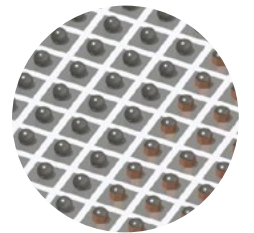
Ultimate precision



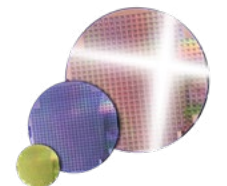
High precision automated wafer handling with OCR.



Micro-bumps, micro pillars



50mm - 250mm wafers



Extreme precision



Robotic handler

“My wafers have sensitive fine pitch bumps and it's too easy to damage them. 4600-W gives me peace of mind with zero broken wafers.”

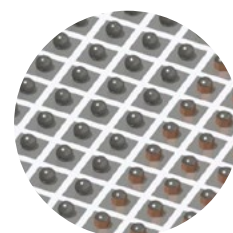
Dedicated Wafer Tester - 4800

4800 Integra™

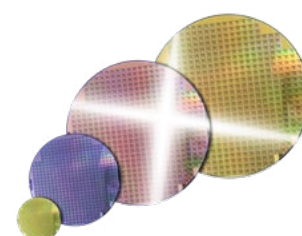
High density interconnect
quality control.



Micro-bumps,
micro pillars



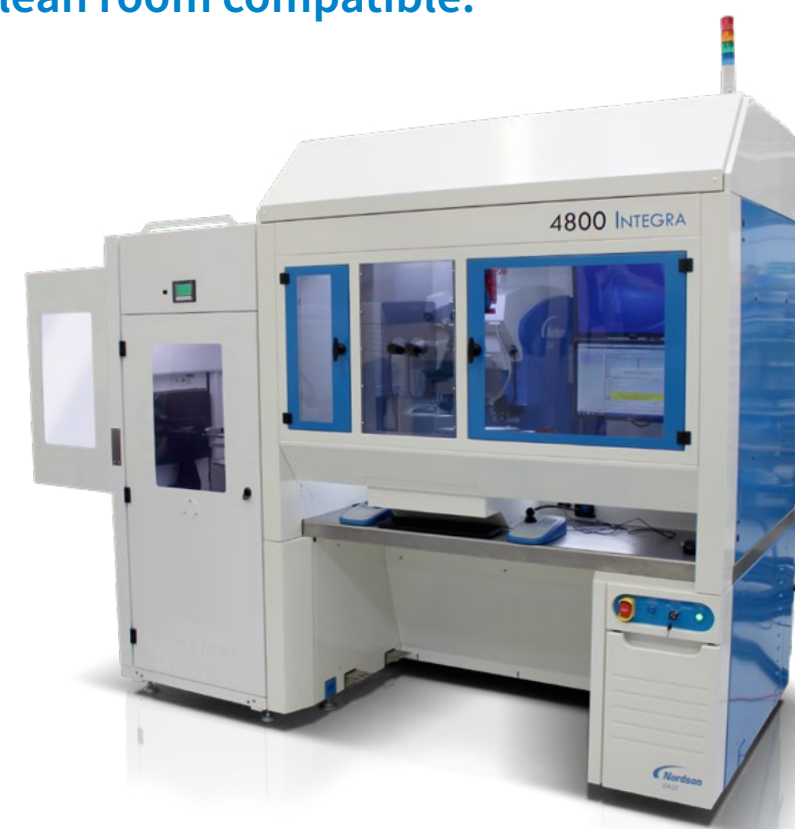
50mm - 300mm
wafers



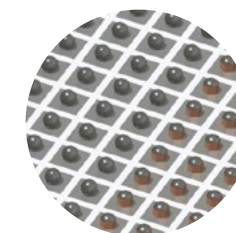
Ultimate precision



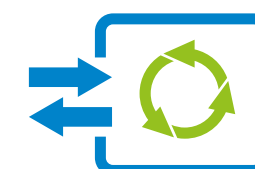
Integrated wafer handling that's
clean room compatible.



Micro-bumps,
micro pillars



Island of
automation



Extreme precision



Robotic handler

“ I perform fine pitch testing on bumps and pillars for a range of wafer sizes. The 4800 even handles my extremely warped wafers. ”

“ I test a high volume of wafers and achieve the highest throughput with the 4800 INTEGRA. It's fire and forget so I can be more efficient. ”

Find Every Failure

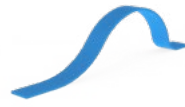
Test Components



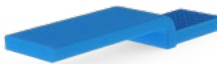
Wirebond



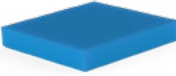
Solder Ball



Ribbon



Tab



Die



Surface Mount Device

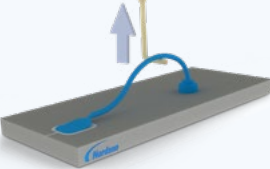


Surface Pad

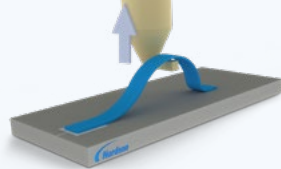


Micro-pillar

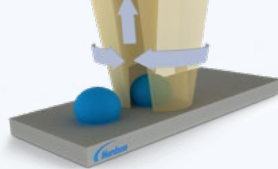
Standard Pull Tests



Wirebond Pull

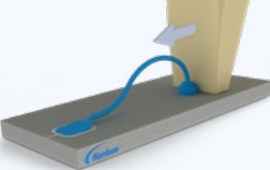


Ribbon Pull



Cold Bump Pull

Standard Shear Tests



Wirebond Shear



Ball Shear

Advanced Tests

Variable heights and dimensions.



Passivation Shear

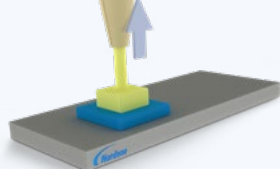


Micro-pillar Shear (base)

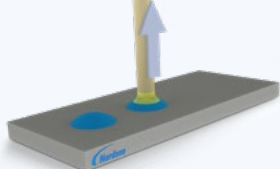


Micro-pillar Shear (cap)

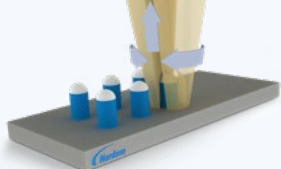
For difficult to grip or small dimensions.



Stud Pull

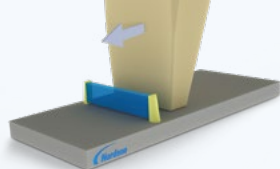


Hot Bump Pull

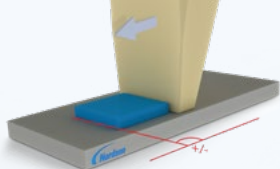


Micro-pillar Pull

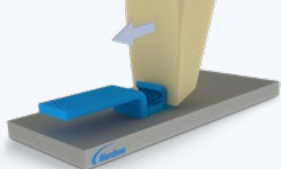
Larger components and higher forces.



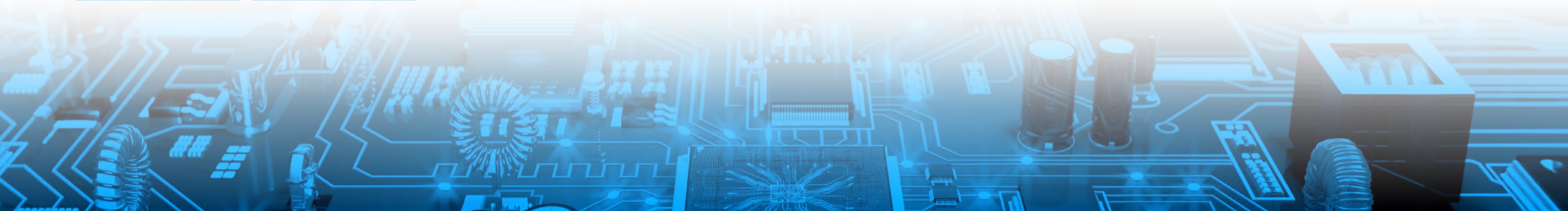
Surface Mount Device Shear



Die Shear

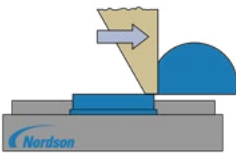
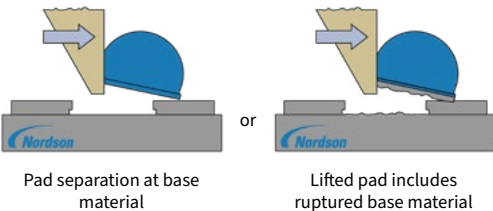
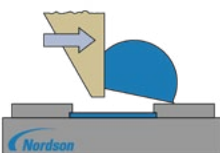
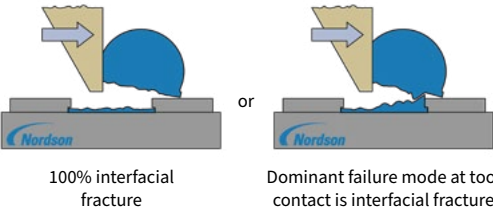


Tab Bond Shear

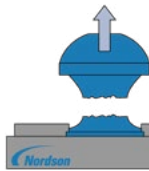
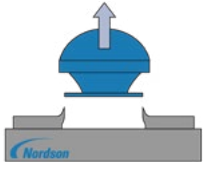
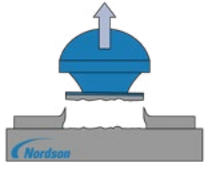
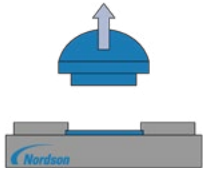
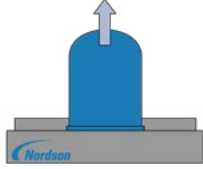


Bond Test Failure Modes

Solder Ball Shear Testing

Failure Mode	Description	Illustration
Ductile	Solder ball fracture at or above the surface of the solder mask within the bulk solder material.	
Pad Lift	Solder pad lifts with solder ball; lifted pad may include ruptured base material.	
Ball Lift	Solder ball lifts from pad; pad is not completely covered by solder/intermetallic and the top surface of the pad plating is exposed.	
Interfacial Break	The break is at the solder/intermetallic interface or intermetallic/base metal interface. The interfacial fracture may extend across the entire pad or be the dominant failure mode at the tool contact region.	

Solder Ball Pull Testing

Failure Mode	Description	Illustration
Type A: Ductile	A – Ductile: Solder ball fracture at or above the surface of the solder mask within the bulk solder material.	 Ductile (pad fracture surface view) 
Type B: Quasi-Ductile	B – Quasi-Ductile: Mixed ductile/brittle fracture with the dominant failure mode (>50% area) being ductile.	 Quasi-Ductile (pad fracture surface view) 
Type A: Pad Lift Or Type B: Pad Crater	A – Pad Lift: Solder pad lifts with solder ball. B – Pad Crater: Lifted pad includes ruptured base material.	 Pad Lift  Pad Crater
Non-wet	Solder ball lifts from pad and any portion of the pad top-surface plating is exposed.	
Type A: Brittle	A – Brittle: The break is at the solder/intermetallic interface or intermetallic/base metal interface.	 Brittle (pad fracture surface view) 
Type B: Quasi-Brittle	B – Quasi-Brittle: Mixed brittle/ductile fracture with the dominant failure mode (>50% area) being brittle.	 Quasi-Brittle (pad fracture surface view) 
Ball Extrusion	Solder ball is stretched but not fractured. Invalid failure – repeat test with replacement solder ball samples after appropriate adjustments.	



For more information, speak with your Nordson representative or contact your Nordson regional office

Nordson Test & Inspection Europe
ti-sales-eu@nordson.com

Nordson Test & Inspection SEA
ti-sales-eu@nordson.com

Nordson Test & Inspection Africa
ti-sales-eu@nordson.com

Nordson Test & Inspection Americas
ti-sales-us@nordson.com

Nordson Test & Inspection China
ti-sales-cn@nordson.com

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ti-sales-sg@nordson.com

Nordson Test & Inspection Taiwan
ti-sales-tw@nordson.com

Nordson Test & Inspection Korea
ti-sales-korea@nordson.com



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