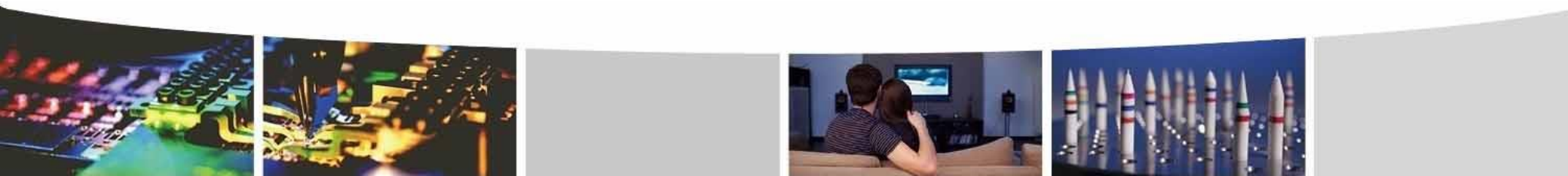




New Ball Bonder Release



About Kulicke & Soffa (K&S)

Kulicke & Soffa is a Global Technology & Market Leader in Semiconductor Assembly Equipment

- Founded in the US in 1951 and incorporated in 1956
- Publicly traded since 1971 on NASDAQ: KLIC
- Strong presence in Asia with over 80% sales in Asia
- HQ in Singapore since 2010
- Over 2500 employees



- K&S is a major equipment supplier in the semiconductor assembly segment
- K&S is a leader in wire bonding with market >60%
- K&S is moving strongly into Advanced Packaging with the APAMA brand, Hybrid and Advanced SMT
- K&S also produces tools for wire bonding and dicing blades
- Today, K&S is happy to announce the launch of 2 new ball bonders with advanced processes.

Advanced Interconnect Solutions

Ball Bonders
ICorn PLUS, ICorn ProCu PLUS, ConnX-LED PLUS, ICorn MEM PLUS, ConnX ELITE PLUS, ATPremier PLUS (WLB)

Wedge Bonders
PowerFusion HL, TL, HLx, Asteron C, Asteron i-Multi, Asteron EV, EVC

AP-APAMA
APAMA C2W (Local), APAMA C2S (Local), APAMA DA (Die Attach)

AP-Hybrid
Hybrid (Mass)

AP-LITEQ
LITEQ (Lithography)

Electronics Assembly
iK, iFlex

Software & Service
KNet, AutoQIP, K&S Care

Advanced Interconnect Solutions

Capillaries
ICap, DuraCap, SIGMA II, NEXXUS, Fortus, CIC, Lumos, VERSACAP, quantis, CuPRA 3G, ACSMax, ACSLite, ACSpro, TeraCap, VITACAP

Wedge Tools
Wedge Tools, Ribbon Tools

Dicing Blades
Opto+, Opto, UniPlus, FCC, E-AccuPlus, AccuPlus, Silicon, Copper, Nova

New Product – RAPID Pro



- First of a new Smart Series
- Launch in Semicon China 2018
- Ready for Sale in Mar 2018

Improved
Process
Capability

Improved
Efficiency

Machine
Health
Monitoring

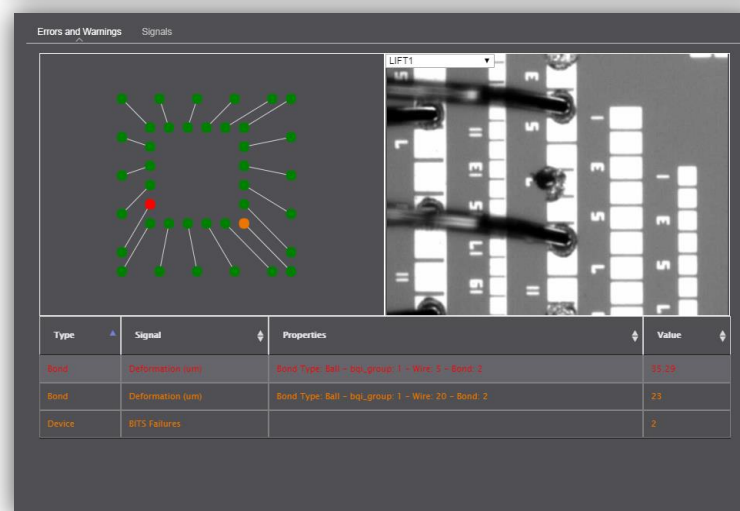
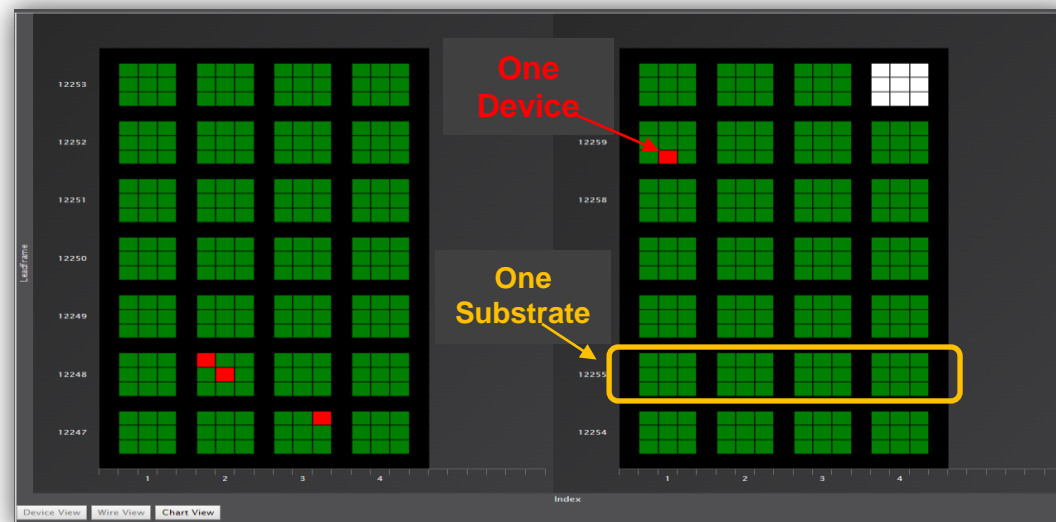
**RAPID Pro
Values**

Real Time
Process
Monitoring

Data
Collection,
Analytics

Real-Time Process Monitoring

- Quickly access and visualize performance data for recent history
 - Ball Deformation
 - USG System
 - Ball Diameter
 - Ball Placement
 - Missing Bonds/Wires
 - PRS Alignment
 - Die Height, Placement, Rotation, and Tilt
- All analyzed data is logged to a database and linked to Strip Map ID for future traceability



Real-Time Performance Monitoring



- Real-time monitoring of key subsystem health and performance
- USG System, XYZ System, Temperature, Crosshair Offset

RAPID™ Pro Summary



- RAPID Pro introduces real-time process and performance monitoring and advanced data analytics to ensure the highest yield possible
- Enhanced control system enables data collection of key subsystem and data storage for full traceability
- New response based processes deliver robust process performance with maximized productivity and simplified optimization

The RAPID™ Pro bonder will extend K&S technical leadership to overcome packaging challenges of today and tomorrow...

New Product OptoLux™

- K&S has been in LED market since 2008
- OptoLux is K&S newly designed LED Bonder driving a *New Standard* in LED Packaging Technology

2008 - Maxum Elite



2009 – Launch ConnX-LED^{PS}™



2015 – Launch ConnX-LED PLUS^{PS}™



2018
OptoLux™



New Product - OptoLux™

■ Key Benefits:

- **Increased UPH** – faster bonding process and alignment schemes
- **Quick Suite™ LED** – advanced processes for Au, Cu, and Ag alloy wire
- **Lowest Cost of Ownership**

■ Release Plan:

- Production shipments available in Mar 2018
- Official launch at Semicon China in Mar 2018



Revolutionizing LED Wire Bonding

- Focused on new Ease-of-Use approach that will revolutionize Wire Bonding in the LED market for Au, Ag-Alloy & Cu wire
- A new concept “Quick-LED Suite” that allow
 - *Quick* to learn
 - *Quick* to optimize
 - *Quick* to use
 - *Quick* to Market
- **Advanced Process Capabilities:**
 - **Quick-LED Suite™ Processes** maximize UPH and simplify process optimization
 - **Accu-Bump LED** bump formation mode improves SSB process robustness

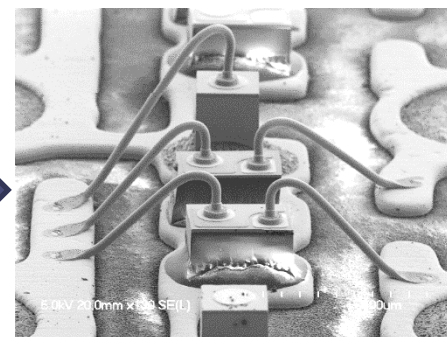


- **Quick-LED Suite™ Processes** - Starting points are set based on application information to get a **Quick Start**
- Simplified parameter entry to achieve **Quick Optimization**
- Processes are tuned for **Quick Performance** and high UPH

App Information		
Cap Part Number	Unknown	
Tip Diameter ^{2,3}	4.30	mils
Chamfer Diameter ^{1,2,3}	1.30	mils
Outer Radius ²	0.90	mils
Wire Type	Gold	
Wire Diameter ^{1,2,3}	0.70	mils
Die Pad Thickness ¹	1.00	microns
Die Pad Metallization	Au	
Bond Pad Opening ¹	70.00	microns
Lead Frame Plating ²	Ag or Au	
Misc Comment	Unknown	
1 Load Application Information		
2 Save Application Information		
¹ Required for QuickBond-LED		
² Required for QuickStitch-LED		
³ Required for ProStitch Plus/ProStitch Plus-Ag		
Done		



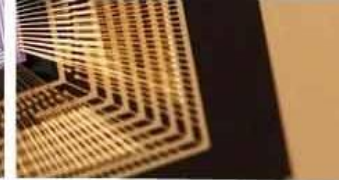
QuickBond-LED					
Group 1					
Select Wire or Group					
Limits: Min 20 Max 125					
Bond Selector Bond1					
Setup			Bond Adjust		
Est Ball Diameter	50	microns	USG	0	%
FAB Size Adjust	0.00	microns	Force	0	%
Deform Mode	OFF		Time	0.00	ms
Scrub Mode	OFF		USG Ramp	0	%
USG Frequency	High		Force Ramp	0	%
USG Mode	Constant Current		USG Ramp2	0	%
			Force Ramp2	0	%
Deform Adjust			Scrub Adjust		
USG	0	%	USG	0	%
Force	0	%	Force	0	%
Time	0.00	ms	Scrub Frequency	0	%
			Scrub Cycles	1	
			Scrub X Amplitude	0	%
			Scrub Y Amplitude	0	%
Done					



Summary

- K&S focus a significant effort in developing ball bonder for current and future needs
- Today, K&S is offering 2 new ball bonders for 2 different markets
- RAPID Pro is the first model moving towards “smart bonder” concept to fit into a “smart factory” or Industrial 4.0 ready
- The OptoLux is to offer an revolution way of program and optimize process for the LED wire bonding – quicker, higher productivity and lower CoO

You are welcome to our Booth to find out about the 2 new Bonders



Thank You

