smiths interconnect

Kelvin Probes Solution Customer Presentation

2021.11

BEYOND CONNECTIVITY

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Value Proposition

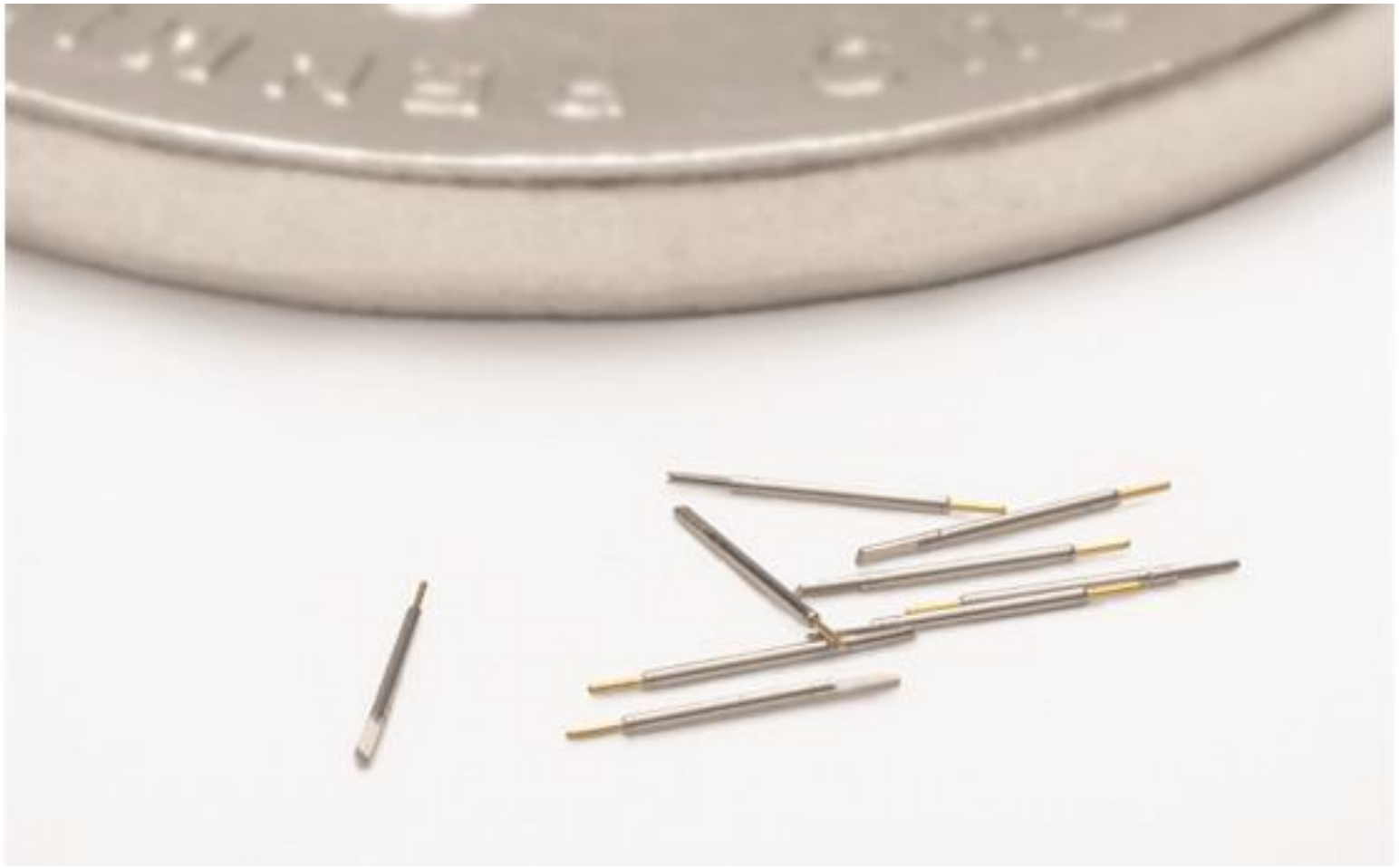
Kelvin probes for Peripheral and Array Devices.

Our Kelvin probes leverage the same DNA and world class quality that Smiths Interconnect spring probes are globally recognized for in the semiconductor market. The product's unique chisel tip provides reliable, stable contact resistance for applications where test performance is critical.

Designed in Standard Array test sockets or Volta WLCSP probe heads, Kelvin probes provide a robust, low maintenance, long life test solution. For even longer life, Kelvin probes can be optimized with Smiths Interconnect's proprietary homogenous alloy to deliver a high touchdown count HVM production solution.

Leveraging state-of-the-art manufacturing processes, Kelvin probes reach a pin-to-pin spacing of just 70µm and a pin-to-PCB spacing of 250µm. The Kelvin line covers device pitches of 0.35 mm and above.

As industry requirements continuously evolve, Smiths Interconnect innovates Kelvin probe product line to ensure that it supports all new technology standards.



Kelvin Pin Key Product Features

Technical Highlights

- Device contact pitch: 0.35mm pitch and above
- Operating Temperature Range: -55°C to 120°C
- Device packages: BGA, WLCSP, QFN
- Pin to pin tip distance is 0.07mm-0.14mm
- Insertions: >500,000
- Innovative beveled offset tip allows for tighter centers, down to 0.25mm on the device pad

Benefits

- Suited for 0.35mm pitch and above applications
- Four-terminal measurement for low resistance power and analog test
- Ease of maintenance
- Excellent signal integrity
- Self-cleaning

Kelvin Pin/Socket Application and Audience

End markets

Communication

Computer

Medical

Consumer

Automobile

IC Functions

Wi-Fi, Bluetooth

Graphics/Display

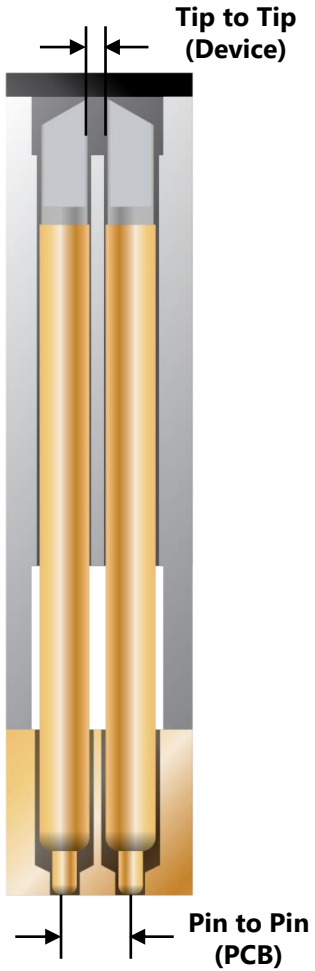
Digital Controls

Power Management

Analog RF

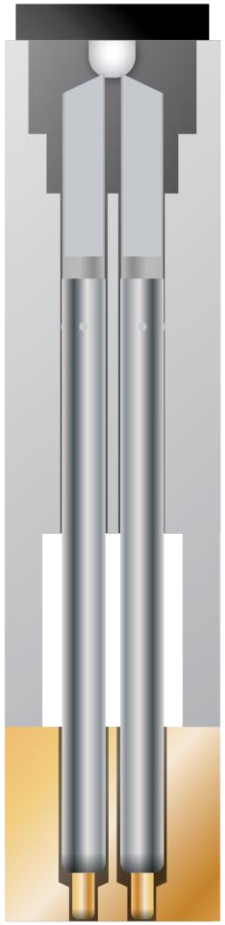
Radio

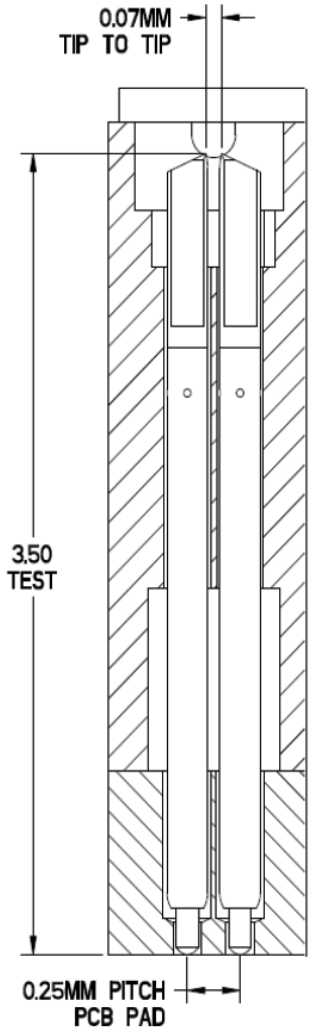
Kelvin Pin List



Pitch	0.35mm (Full Matrix)	0.40mm (Full Matrix)	0.40mm (QFN Pad)	0.50mm (Full Matrix)
Tip to Tip (Device)	0.07mm	0.07mm	0.10mm	0.14mm
Pin to Pin (PCB)	0.25mm	0.25mm	0.40mm	0.35mm
Pin P/N	851-1003350-H00		623-0248-H13	101851-001

350µm Pitch Kelvin Probe P/N 851-1003350-H00

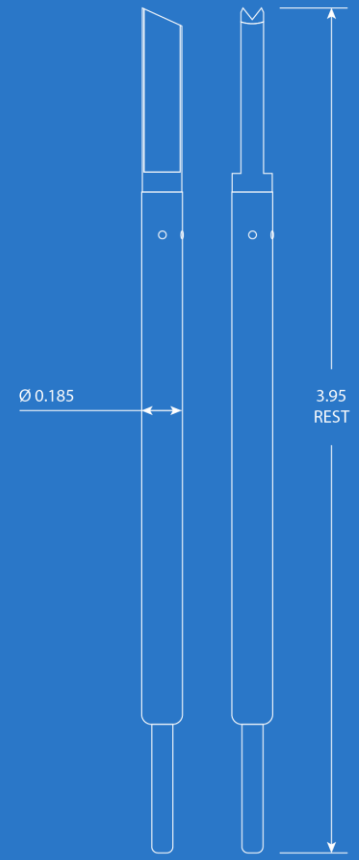




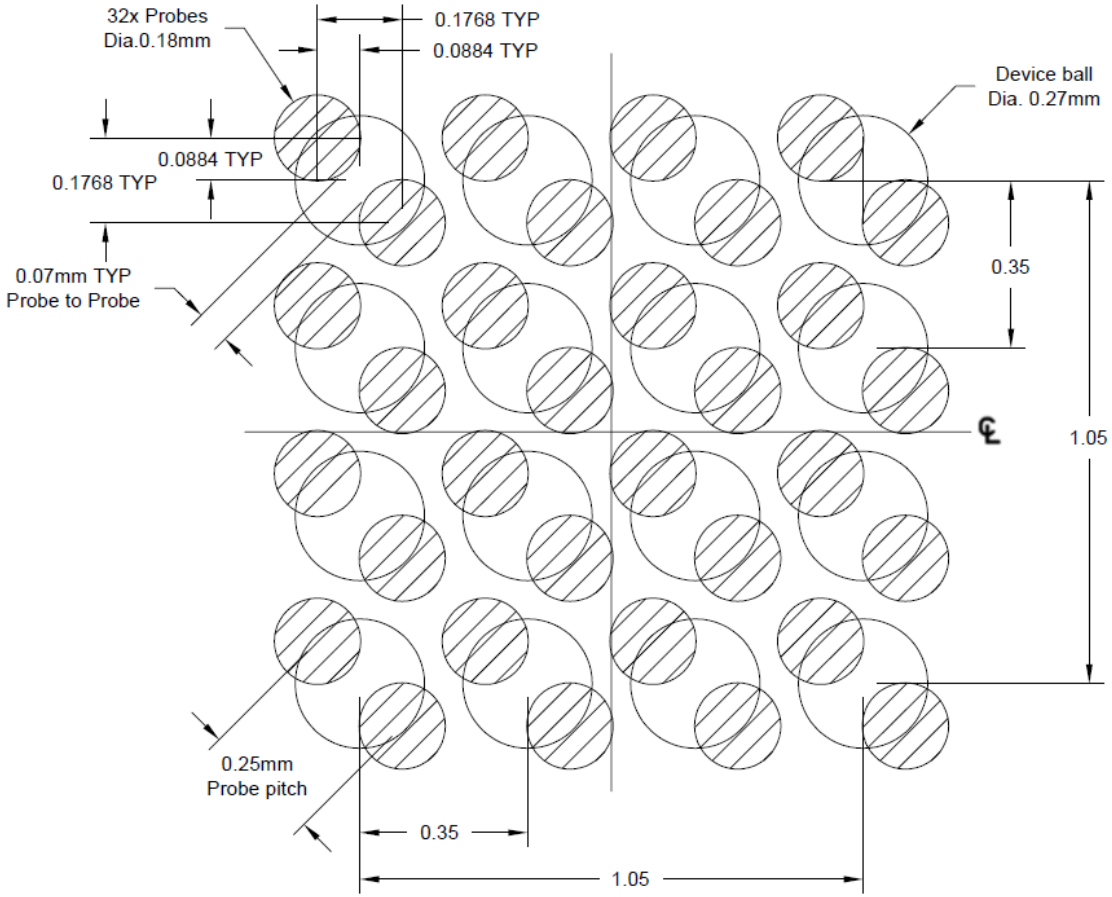
350µm Pitch Kelvin Probe P/N 851-1003350-H00 Specification

- **Mechanical**
  - Typical Application: BGA/WLCSP
  - Minimum Device Pitch: 0.35mm @array,
    0.25mm @single-row
  - Force: 15.5gf @ 0.45mm Recommended Travel
  - Operating Temperature Range: -55°C to 120°C
  - Device Side Contact: 2-Point Crown Tip
  - PCB Side Contact: Conical Radius Tip
- **Electrical**
  - Contact Resistance: < 100 mΩ average
  - Current Carrying Capability: 1.3 A
    - Measured in free air
- **Plating**
  - Device Side Plunger: Homogenous alloy
  - PCB Side Plunger: Gold plated
  - Barrel: Gold plated Inside
  - Spring: Gold plated

Plunger Tip

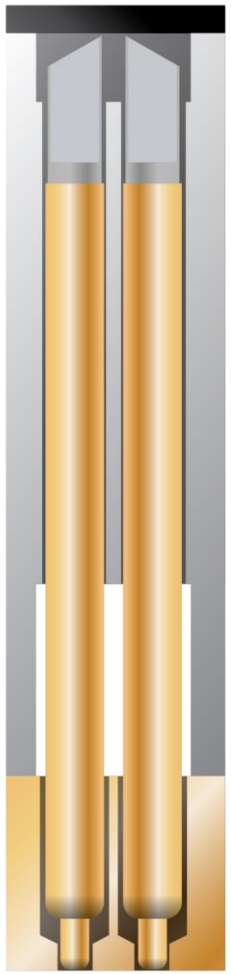


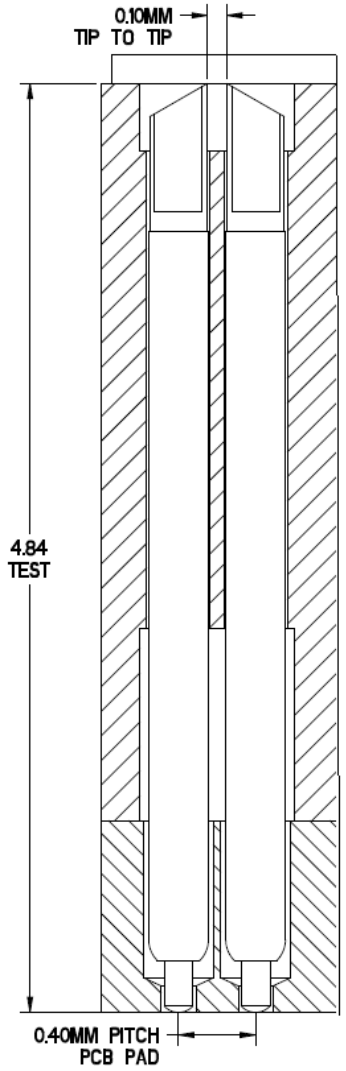
350µm Pitch Kelvin Probe- Footprint



350µm Pitch
Full Matrix Footprint

400µm Pitch Kelvin Probe P/N 623-0248-H13

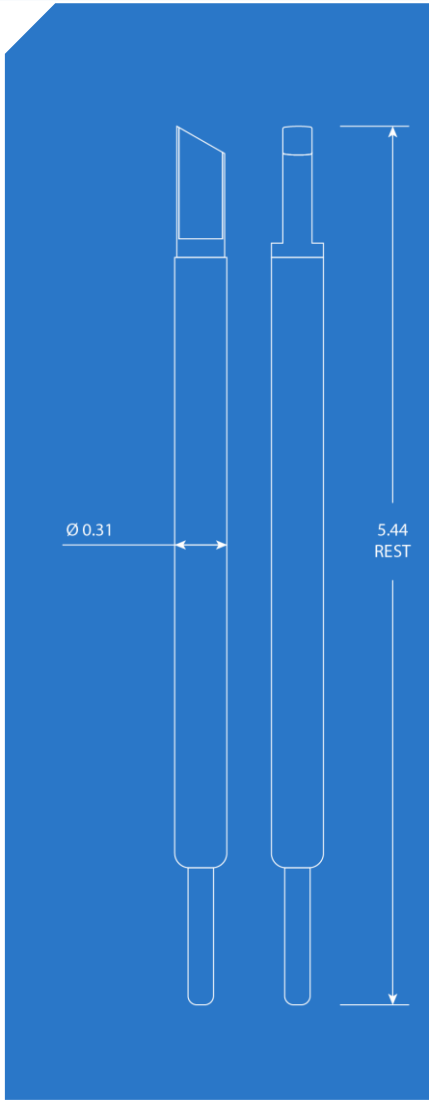




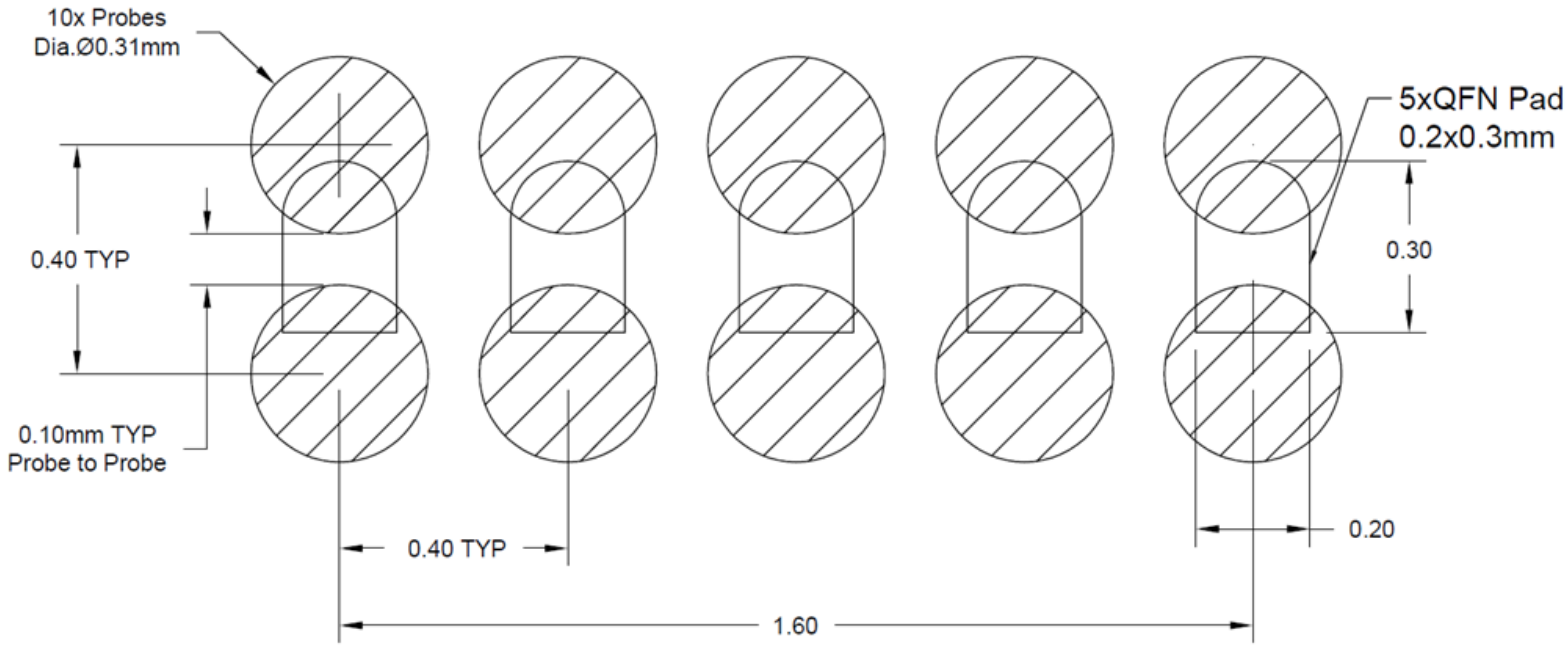
400µm Pitch Kelvin Probe P/N 623-0248-H13 Specification

- **Mechanical**
  - Typical Application: QFN
  - Minimum Device Pitch: 0.6mm @array
    0.4mm @single-row
  - Force: 28.0gf @ 0.60mm Recommended Travel
  - Operating Temperature Range: -55°C to 120°C
  - Device Side Contact: Edge
  - PCB Side Contact: Conical Radius Tip
- **Electrical**
  - Contact Resistance: < 60 mΩ average
  - Current Carrying Capability: 3.0 A
    - Measured in free air
- **Plating**
  - Device Side Plunger: Homogenous alloy
  - PCB Side Plunger: Gold plated
  - Barrel: Gold plated
  - Spring: Gold plated

Plunger Tip

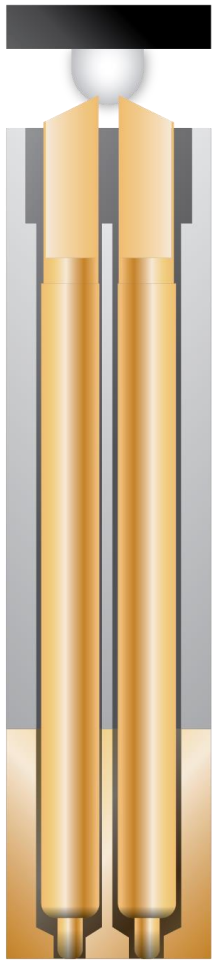


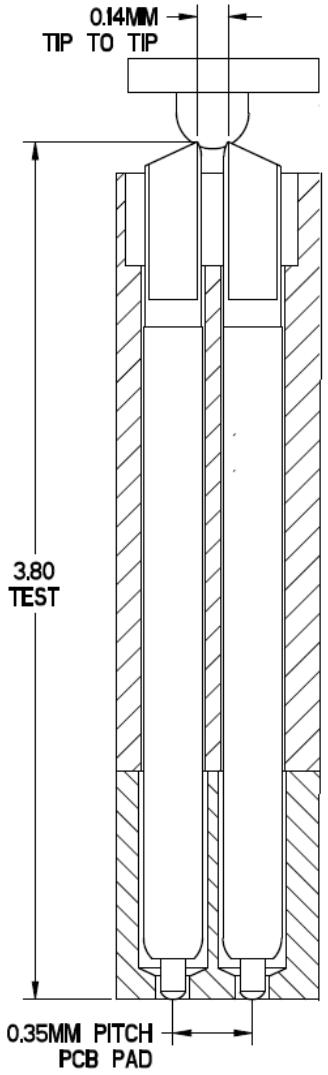
400µm Pitch Kelvin Probe - Footprint



400µm Pitch
QFN Footprint

500µm Pitch Kelvin Probe P/N 101851-001

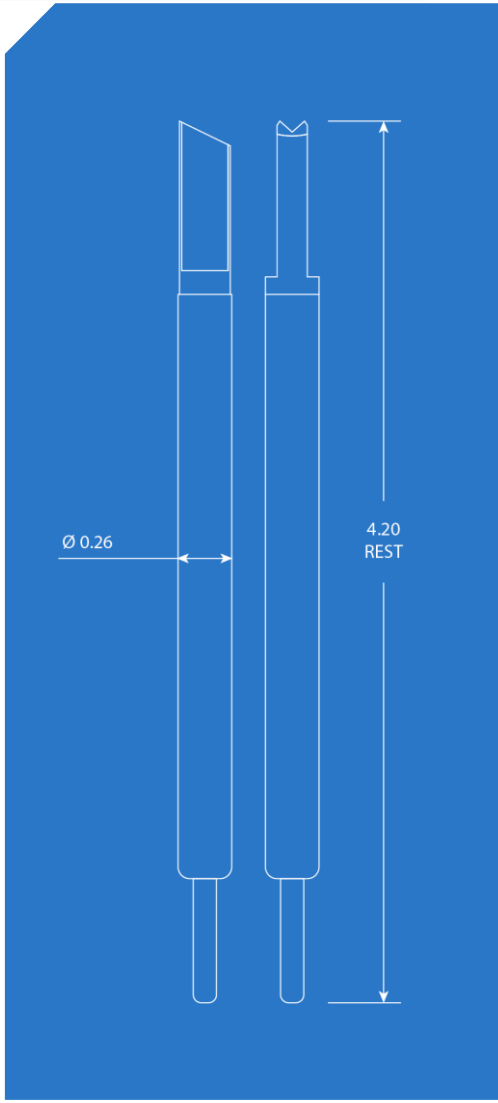




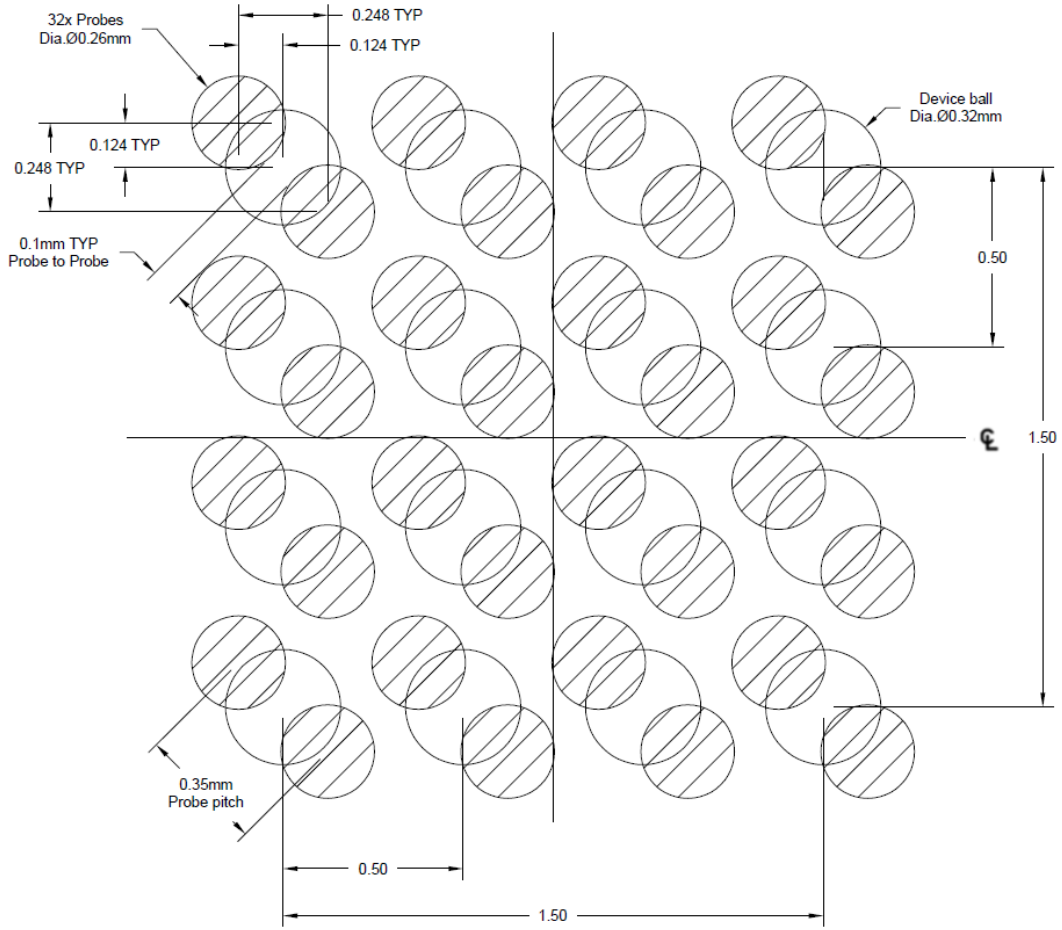
500µm Pitch Kelvin Probe P/N 101851-001 Specification

- **Mechanical**
  - Typical Application: BGA/WLCSP
  - Minimum Device Pitch: 0.50mm @array
    0.35mm @single-row
  - Force: 18.0gf @ 0.40mm Recommended Travel
  - Operating Temperature Range: -55°C to 150°C
  - Device Side Contact: 2-Point Crown Tip
  - PCB Side Contact: Conical Radius Tip
- **Electrical**
  - Contact Resistance: < 60 mΩ average
  - Current Carrying Capability: 2.0 A
    - Measured in free air
- **Plating**
  - Device Side Plunger: Gold plated
  - PCB Side Plunger: Gold plated
  - Barrel: Gold plated
  - Spring: Gold plated

Plunger Tip



500µm Pitch Kelvin Probe - Footprint



500µm Pitch
Full Matrix Footprint

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