MINI COBRA™ UPDATE

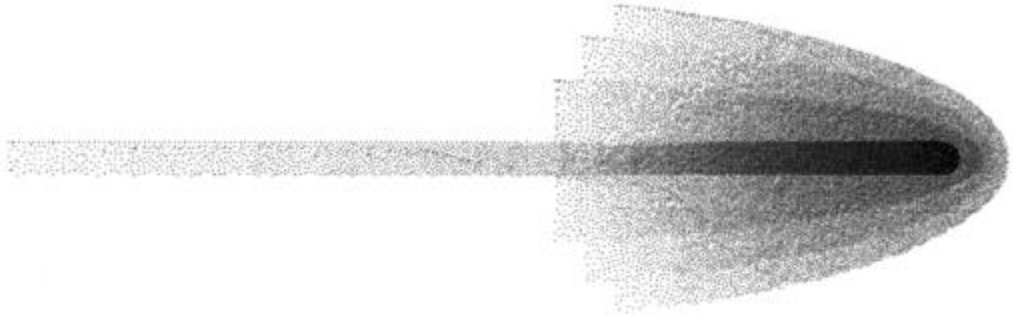
Presented by:Donald Wayne Brown
Director, Probe Card Division
Prepared by: Anthony Paul Martel
Sr. R&D Technician

REDUCED PAD PITCH COBRA

MINI COBRA™

- MINI COBRA ™
  - 100µ Pitch, Peripheral
  - 105µ Minimum Pitch, Multi-Dut
  - 120µ Matrix

Beta Device

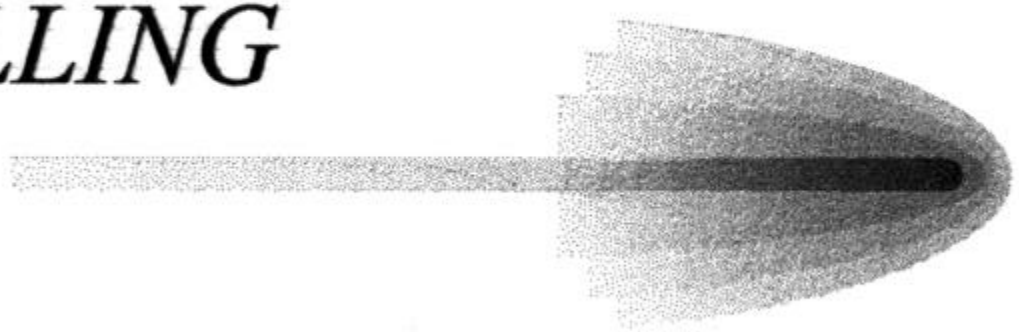


- 100μ Pitch
- Contact 2.5 mil dia.
  - Pointed Tip
- Peripheral
- 100 mA per Contact (Continuous)
- Aluminum Bond Pads

IMPACT MARKS

- Contacts Touching on Aluminum Wafer
  - 5 Mils. Overdrive from First Touch Down
  - Impact Measures .0003 in Diameter
  - Minimum Pad Damage

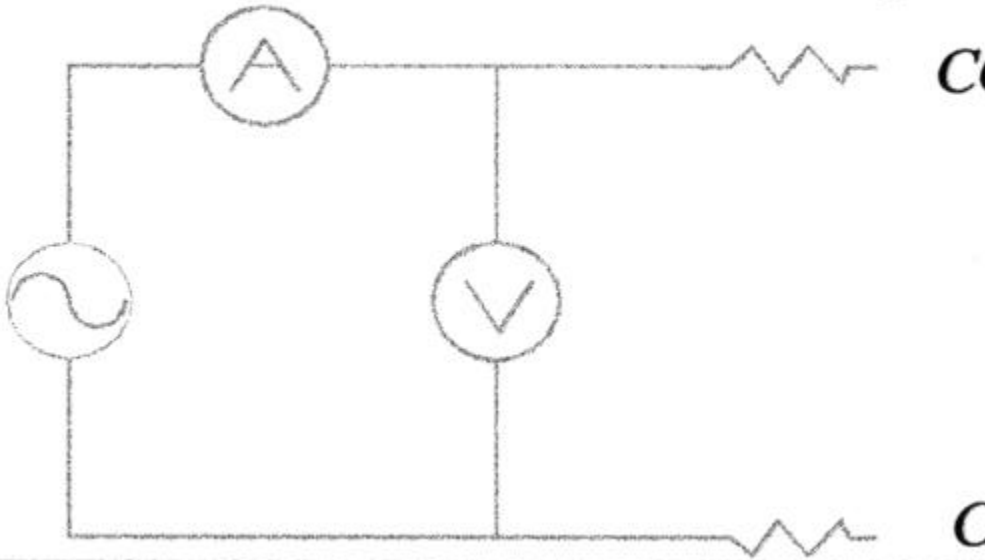
LASER DRILLING



- Laser Machining used to Provide Micro Holes for Probe Contacts

LEAKAGE TEST RESULTS of MATERIAL "A"

- The measurements were taken with a Hewlett-Packard model 4156A Semiconductor Parameter Analyzer

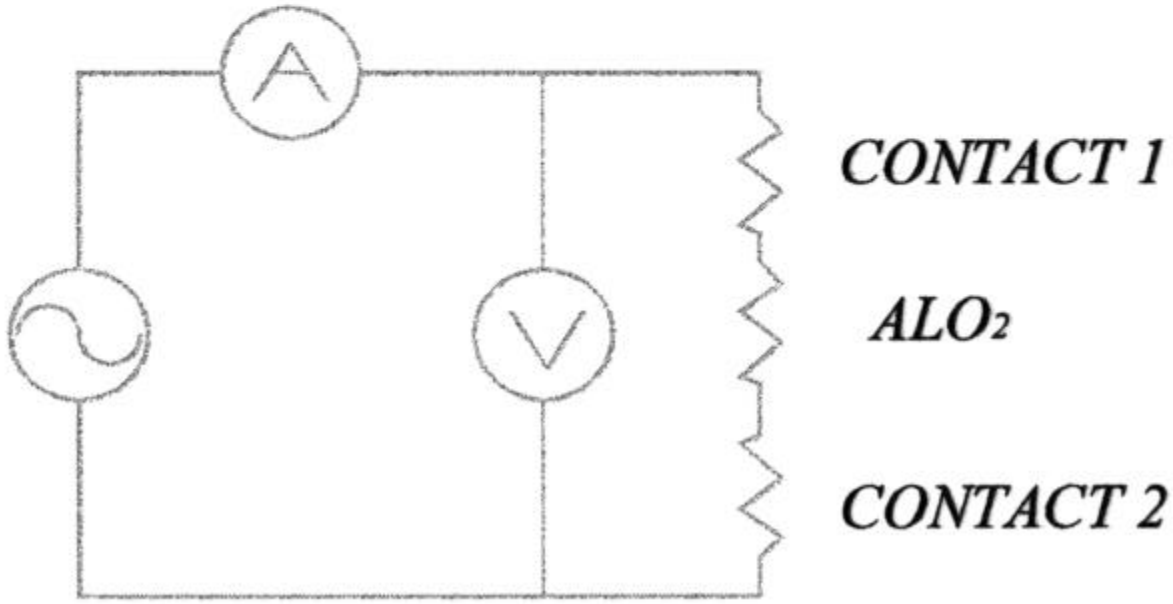


FORCE Vs DEFLECTION

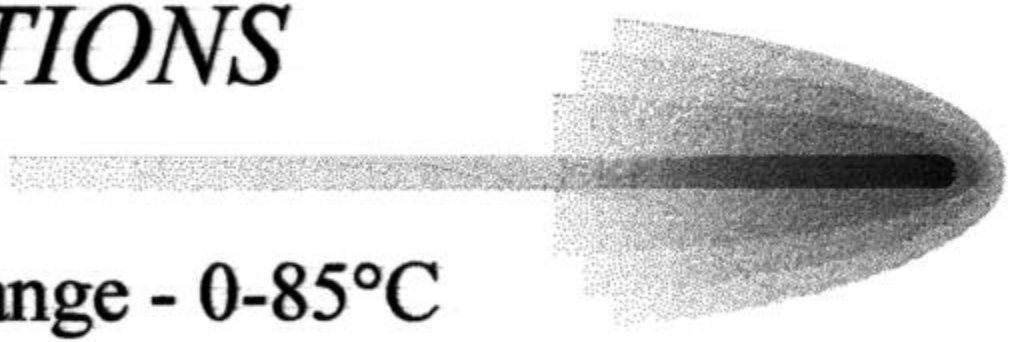
- Working Area of Contact is 3-5 Mils Deflection
- 5 Mils Deflection Delivers 10-12 Grams

RESISTANCE Vs TIME

- Path/System Resistance of 2 Contacts
- Contact Force needed to Reduce Resistance

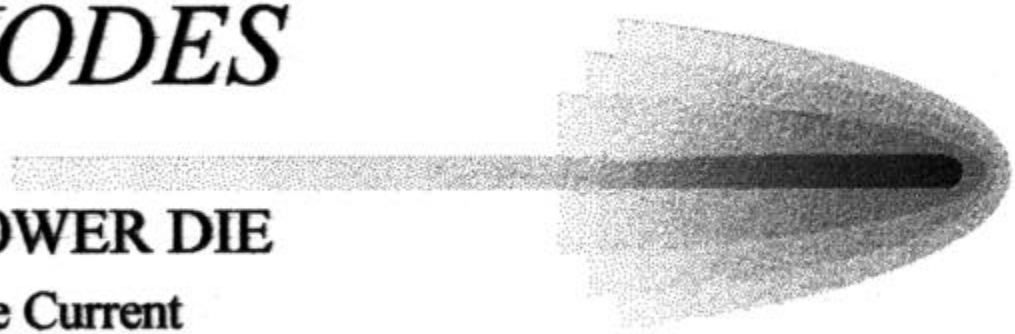


MINI COBRA SPECIFICATIONS



- Temperature Range - 0-85°C
- Impact Accuracy- ± 12.5µ
- Life 250K Touch Downs
- Planarity - Pointed <.003" Flat <.00075"
- Field Repairability - Yes
- Current Carrying Capability - 200 mA

FAILURE MODES



- MELTING of LOWER DIE
  - due to Excessive Current
- MELTING of CONTACTS
- EXCEEDING YIELD STRENGTH of CONTACTS
  - Over Travel 8 Mils.
- OVERHEATING of CONTACTS
  - Affects on Yield Strength/Gram Force
  - Contact Arcing/Welding
  - Increase in Frictional Forces
  - Inadequate Overdrive to Penetrate
    - Wafer Oxidation
    - Dielectric Residues
    - Organic Films

WHAT'S NEXT?

- Space Transformer Development
  - Flex
  - MLC
- 135 °C Temperature Probing

THANKS FOR LISTENING!

WENTWORH LABORATORIES