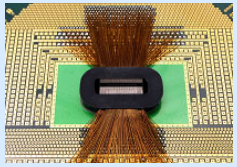
SPECIAL APPLICATIONS PROBE CARDS

JEM also offers the following types of special applications probe cards:

- **CEN-Series Probe Cards**
- **High Current**
- **High Density**
- **High Speed**
- **Ultra Fine Pitch**
- **Wafer Level Burn-in**



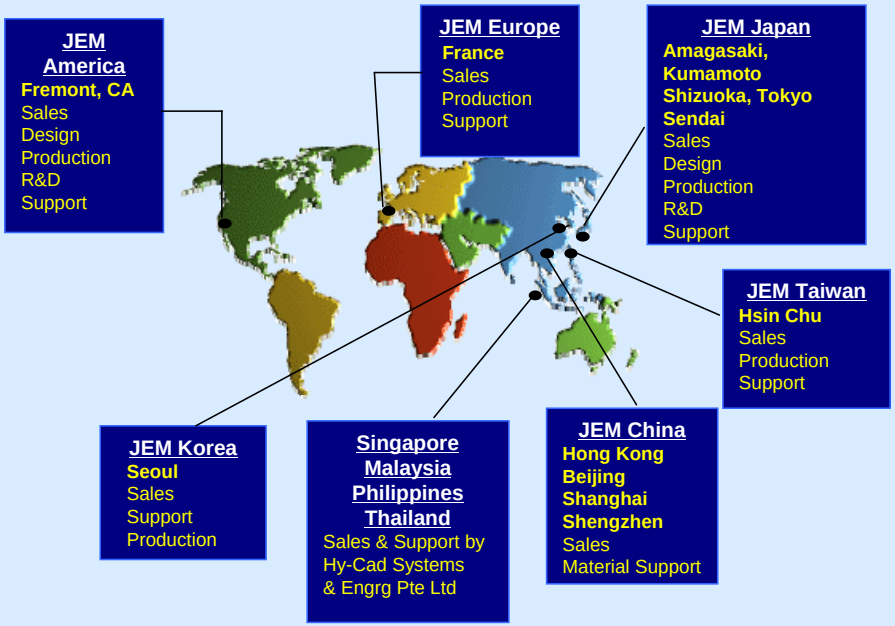
Special Application Probe Card

PROBE CLEANING & MAINTENANCE

JEM offers a number of on-line and off-line cleaning products for tip cleaning and tip shape maintenance as a complete solution for our customers.

JEM GLOBAL SUPPORT

Recognizing that we need to be close to our customers to provide prompt effective technical support and fast delivery services, the JEM Group has been expanding its facilities globally. Currently, we have sales, service and manufacturing facilities in the Japan, US, Europe, Taiwan, Korea, China and Vietnam.



JEM Authorised Distributor :-

Hy-Cad Singapore (HQ) – Mr Bobby Fong, Tel: +65 6288 6123, Email: bobby.fong@hy-cad.com
Hy-Cad Malaysia + Hy-Cad Thailand + Hy-Cad Philippines

Japan Electronic Materials Corporation

The World Leader in Probe Card Manufacturing

The Company

Japan Electronic Materials (JEM) is a world leader in Probe Card manufacturing. Since 1970, JEM Group has supplied Probe Cards to leading semiconductor manufacturers worldwide. We develop proprietary Probe Cards for high-integration and high-speed devices, drawn on our integrated knowledge and innovative unique technologies, including materials, processes, structure and mechanical designs.

JEM manufacture a diversified line of probing products: Cantilever, Vertical and Special-Applications Probe Cards. Our Probe Cards are used in technologies such as Linear, Memory, Gate Array, Microprocessor, Power IC, ASIC, LCD Driver, Thermal Head, Diode, Optical IC, ECL and GaAs.

JEM has been aggressively expanding its overseas business through its established worldwide production bases. Currently, JEM has sales and manufacturing facilities in Japan, US, Europe, Korea, China, Taiwan and Vietnam.

Research n Development

JEM is renowned for its innovative probing technologies. Our Research & Development policy is to foresee market needs 5 years ahead and to systematically seek innovative ideas. Our R&D effort is focused in areas such as pad pitch, high parallelism configuration, and probe material improvement. Equipped with the latest equipment, our R&D teams in Japan and the US strive to bring new, improved probing solutions to meet the ever-increasing frequency, density, thermal requirements as well as device complexity in a timely manner.

Quality Commitment

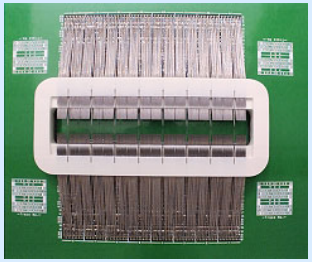
JEM has a strong quality commitment to our customers. Each of our products goes through a rigorous in-process and out-going quality analysis to ensure that it meets customer's specifications. JEM Japan is ISO9001:2000 and ISO14000 certified in September 2004. JEM America is ISO9001:2000 certified from UL in November 2003 (Fremont facility) and April 2004 (Texas facility).

Cantilever Technology

Vertical Technology

OVERVIEW – *Cantilever Technology*

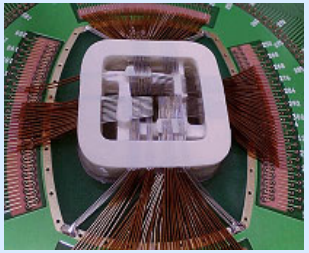
Cantilever technology – JEM has been specializing in Cantilever Probe cards for Memory and Logic for over 25 years. Cantilever Probe Card is a robust, cost-effective probing solution for applications such as high parallelism, fine pitch, parametric testing, etc. The quality of JEM Cantilever Probe Card has excellent reputation in the industry, and one of the contributing factors is the quality of their probe card design. Our designers conduct probe spacing and gram force analysis as well as simulation of probe card warpage, due to high temperature and high probe force, to achieve optimized probe geometries. These analyses are imperative in ensuring uniform probe force, contact resistance and scrub mark.



Multi-dut Probe Card

Multi-dut Probe Cards

Multi-Dut Probe Cards allow our customers to make full use of the advanced ATE performance, leading to significant reduction in test time and test costs. JEM has capability to build probe cards up to 81 Duts with probe count exceeding 3000 probes as well as multi-dut cards with large array sizes and flexible configurations. We have patented the step ring design for high-parallelism cards. This design allows uniform contact force between the inner and outer rows and enables use of uniform probe diameter.



Logic Shelf Probe Card

Logic Shelf Probe Cards

Logic Shelf Probe Card is a more efficient probing approach for logic devices and its is recommended for devices with peripheral pads. Based on the existing cantilever technology, the Logic Shelf Probe Card features a bridge construction and a unique probe layout. Compared to the conventional diagonal quad configuration, the bridge construction offers more consistent scrub marks and balanced contact force, while the unique probe layouts results in higher test productivity . With fewer touchdowns required, test time will be shortened and throughput will be increased, contributing to lower cost of ownership. 1x2 and 2x2 configurations are available and other configurations maybe available upon request.

Agilent 4073

Keithley S600

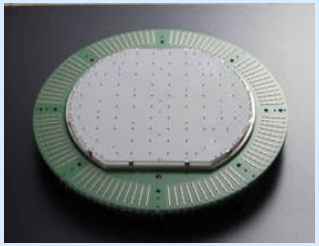
CP-Series (Cantilever Parametric) Probe Cards

CP-Series Probe Card enables high-precision parametric measurements with extremely low leakage current. When used in conjunction with a high-precision test system, the resulting leakage current can be as low as 1fA at 1VDC. The CP-Series Probe Card structure also reduces the capacitance to level which is much lower than the typical probe cards. For outgoing QA testing, JEM use specialized measurement equipment from Agilent and Keithley to measure the leakage of each probe. Currently, JEM is an approved probe card vendor for the following parametric test systems:

- Agilent 4062/4071/4073 Parametric Test System
- Keithley S600/S630 Parametric Test System

OVERVIEW – *Vertical Technology*

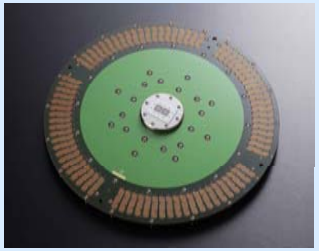
Vertical technology – JEM offers a diverse line of Vertical Probe Cards suitable for a wide spectrum of probing applications. We are confident to provide a number of performance benefits that are unattainable in a conventional cantilever probe cards. Combining breakthroughs in interconnect technology and precision manufacturing techniques, JEM Vertical Probe Cards provide a reliable and cost-effective solution for the next-generation devices and high parallelism testing for 300mm-wafers.



VC-Series Probe Card

VC-Series Probe Cards

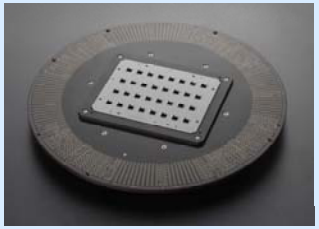
- Multi-die Memory Probing
- Multi-die Logic Device Probing
- Wafer Level Burn-in



VS-Series Probe Card

VS-Series Probe Cards

- Area Array Probing
- C4 Probing
- Solder or Copper Bump Probing



VE-Series Probe Card

VE-Series Probe Cards

- Image Sensor Devices