Substrates for flexible electronics and “systems-in-package”
Substrates for flexible electronics and “systems-in-package”

• Outline
  – Systems-in-package technology
  – Hyper-BGA (Si-filled Teflon, semi-flexible)
  – DuPont Teijin Films (PET & PEN)
  – Flexible stainless steel
  – iNEMI flexible substrate roadmap
Endicott Interconnect provides leading edge first and second level packaging and assembly solutions that bring value and competitive differentiation to our customers.
Integrated Systems Technology Evolution

- Embedded Actives
- Optical Interconnect
- Flexible Substrates
- Embedded Passives
- Electrical Interconnect

Function Density

HyperBGA

Organic z-interconnect

Integrated Optical, Passives

Enhanced Thermal and Power Management

Integrated Flex, Optical, Passives & Actives

- Data Rate Gb s⁻¹
  - 5
  - 10
  - 20
  - 40

- Time
  - 2000
  - 2005
  - 2010
  - 2015

Endicott Interconnect
Driving Assembly into the Package

Function and Density (cm⁻²)

- Embedded Passives
- Embedded Discretes
- Active

- Nano Materials

Years:
- 1995
- 2000
- 2002
- 2005
- 2010+

PWB
HyperBGA
Embedded Passives
Endicott Interconnect
High Density Flexible Circuitry on Plastic at EI

Thin Flexible Interposer

Space Transformer

Interposer

C4

C4

Wafer

Sculpted Pads

Bumps

Laser Micromachining

ECBU Chip Carrier

Power Modules

Fine feature circuitization on flexible films:
14 µm line and space
Development and Manufacturing Partnership for Medical Application Using World’s Finest Pitch Soldered Flip Chip Interconnect

ENDICOTT, NY, February 22, 2007 —

Endicott Interconnect Technologies, through their partnership with Unovis-Solutions, announced today that they have entered into a Manufacturing Services Agreement with a leading manufacturer of intravascular ultrasound (IVUS) catheters. Under terms of the Agreement, EI will develop and manufacture a state-of-the-art flexible substrate or circuit and assemble flip chip components to it per the manufacturer’s specifications. EI will procure materials and fixtures to be used in the flexible substrate fabrication and assembly process. The device manufacturer will be responsible for purchasing minimum quantities of the flexible circuit assembly over a 2-year period totaling $3.9 million.
Percutaneous Medical Device

- Flexible PI substrate
- PZT (receiver/transmitter)
- multiple flip chip die
- 22 µm bumps on 70 µm pitch

“These are some of the finest pitched, soldered interconnect flip chips in production anywhere in the world today.”

Part of an IVUS catheter device, which provides an ultrasound image from inside a coronary artery and is used to diagnose and assess vascular and structural heart disease.