

# MODEL 143

## Custom Commercial Modules

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### FEATURES

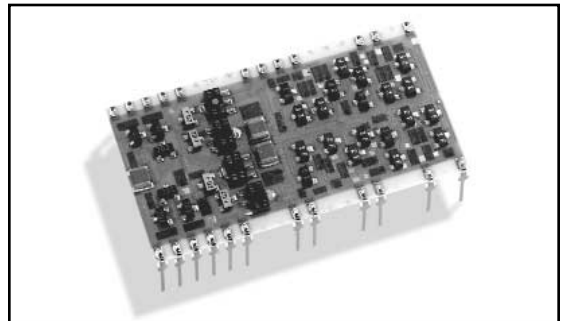
- Low cost surface mount assembly
- Chip on board capability
- Reduced board size
- Ceramic board
- Integral thick film resistors
- U.S. design & management
- U.S. or offshore Assembly
- Versatile lead configuration
- Low profile outline

### DESCRIPTION

Whether you are upgrading your “through-hole” circuit board to surface mount or developing a new design, BI Technologies has the solution for you. BI commercial hybrids can be used as subassemblies on a motherboard, or they can encompass your entire circuit.

Hybrid assemblies are being used in an increasing number of applications. BI commercial assemblies are circuit boards based on ceramic material rather than conventional polymer materials. In small to mid-sized assemblies, ceramic substrates offer price competitive solutions and many quality and design advantages.

Resistors are directly screened onto the substrate and other components are typically surface mounted. Chip and wire attachment is available for components where required. A variety of lead frame configurations are available to create SIP's, DIP's, through hole, and surface mountable assemblies. Polymer encapsulation can be used to protect components and proprietary designs.



### IMPLEMENTATION

BI has an experienced design team that provides customer assistance on new programs from the proposal/estimate phase through development and into production.

During the proposal phase, a customer interface will be set up to develop and price alternate design approaches. During the development phase, a close working arrangement will be maintained through prototype samples and into production.

Simply submit a circuit schematic, dimensional constraints, critical components and any special requirements to BI Marketing. BI will produce a sizing estimate and costing workup to meet your design goals.

### COMMITMENT

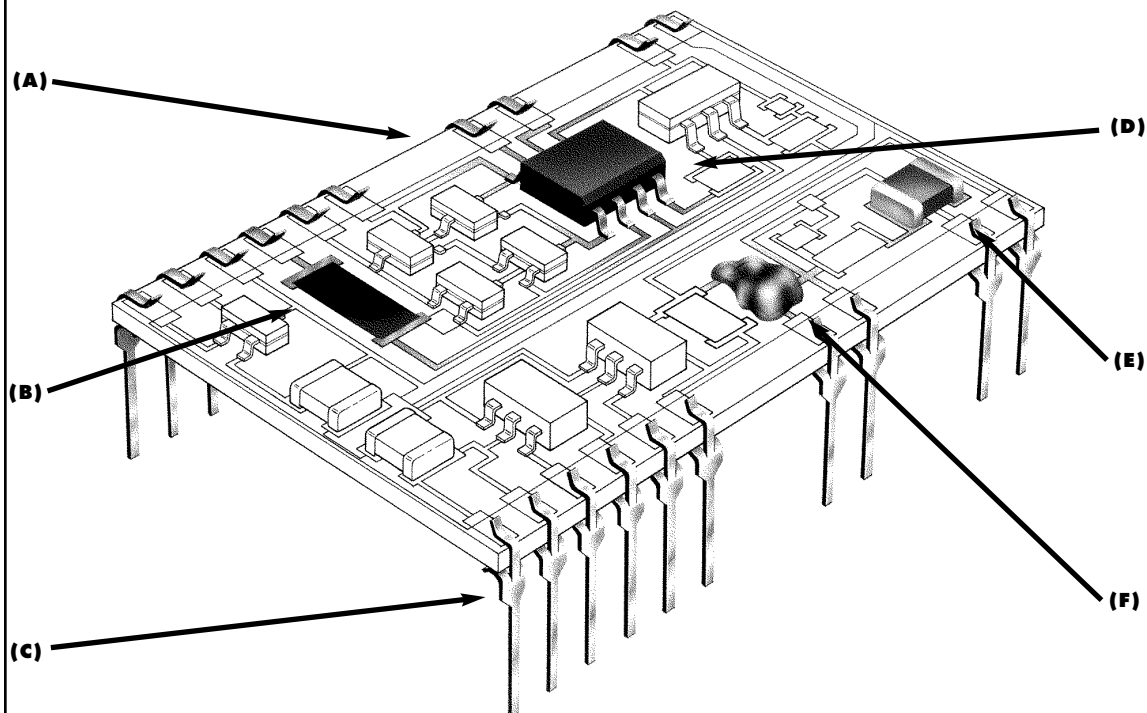
BI is committed to servicing your needs. BI has been a dominant force in the commercial and military hybrid microelectronics industry since its conception. Our reputation is built on over 25 years of proven reliability and quality. Program Management, engineering, and quality departments are located in Fullerton, California for ease of contact and interface. BI's domestic location is your window to global facilities. BI Fullerton can draw on multiple factory locations, including Mexico, Scotland, Asia and Fullerton, to select the optimum resources for your assembly needs.

Specifications subject to change without notice.

## ADVANTAGES OF SURFACE MOUNT

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**Low Cost, High Quality**



#### **CERAMIC BOARD (A)**

Our hybrids use ceramic (alumina) substrates to achieve optimum size reduction and reliability. Ceramic substrates produce an environmentally superior product. The advantages of ceramic over polymer board construction include: better heat dissipation, elimination of blistering, minimal moisture absorption, reduced size and improved performance. For small-sized assemblies (up to approx. 2" x 2"), ceramic board construction is usually the low cost choice. Thick film conductors, typically Palladium silver or gold, as small as 5 mil wide, are screened onto the substrate. Multilayer construction of up to five metal layers is standard.

#### **PRECISION SCREENED RESISTORS (B)**

Thick film resistors are screened directly onto the substrate utilizing a wide range of resistor inks, yielding high precision at low cost. Our thick film resistors can be ratio matched to 0.1% with absolute tolerances of 0.5%. Thick film resistors can be located underneath surface mount devices, or screened onto the back of the substrate for increased circuit densities.

#### **INTERCONNECT FLEXIBILITY (C)**

Lead frames can be attached to accommodate a variety of interconnection requirements. Leads can be affixed to any or all edges of the substrate and can be configured for various mounting styles. Additionally, a wide variety of standard sockets can be attached to allow plug-in capability to your next level of assembly.

#### **SURFACE MOUNT SEMICONDUCTORS (D)**

BI has experience with a wide range of surface mountable semiconductors in packaged configurations, including SOT, SO, SOL and PLCC. Our commercial hybrids will also accommodate semiconductor die attached and wire bonded directly to the substrate. This allows us to utilize ASICs and other semiconductors not currently offered in a surface mountable package.

#### **SURFACE MOUNT PASSIVE COMPONENTS (E)**

Ceramic and tantalum capacitors, chip inductors and resistor chips all lend themselves to surface mount assembly. Axial leaded components can be formed and mounted as well.

#### **ENCAPSULATION (F)**

Surface mount hybrids do not normally require encapsulation. However, encapsulation may be applied if desired for rigidity or for protection of proprietary circuit design. When chip and wire elements are used, these are generally individually "glob-topped" to provide protection for the device; the entire module may then be fully encapsulated.