

MICROSITE™ ASSEMBLY PROCEDURE FOR SINGLE STATION ULTRASONIC BONDER

A six cavity assembly fixture is depicted in this document using the ICODE semiconductor as a typical device to be affixed to the module substrate. Depending on operator efficiency, greater productivity may be obtained by using a 9 or 12 cavity device. The semiconductor module format is a 35mm strip that may be assembled in a reel format or in segregated strips of 200mm or greater. A proficient technician is capable of bonding 180 modules an hour using a manual assembly station.

Equipment Required:

Single station ultrasonic bonder with 60X microscope. \$15,000.00

Single station die injector / pick & place with 60X microscope. \$15,000.00

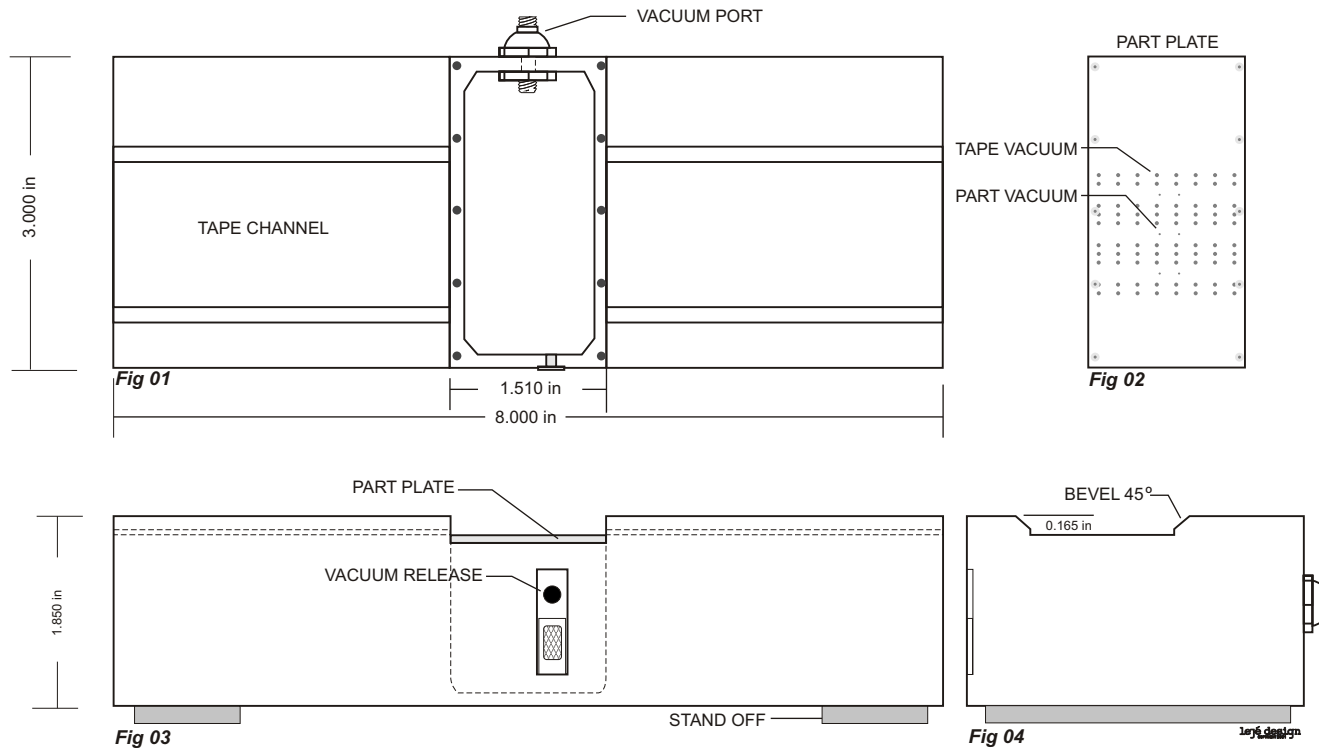
Dispensing system for conformal coat and conductive adhesive. 7,500.00

MicroSite assembly fixture with vacuum pump. 1,265.00

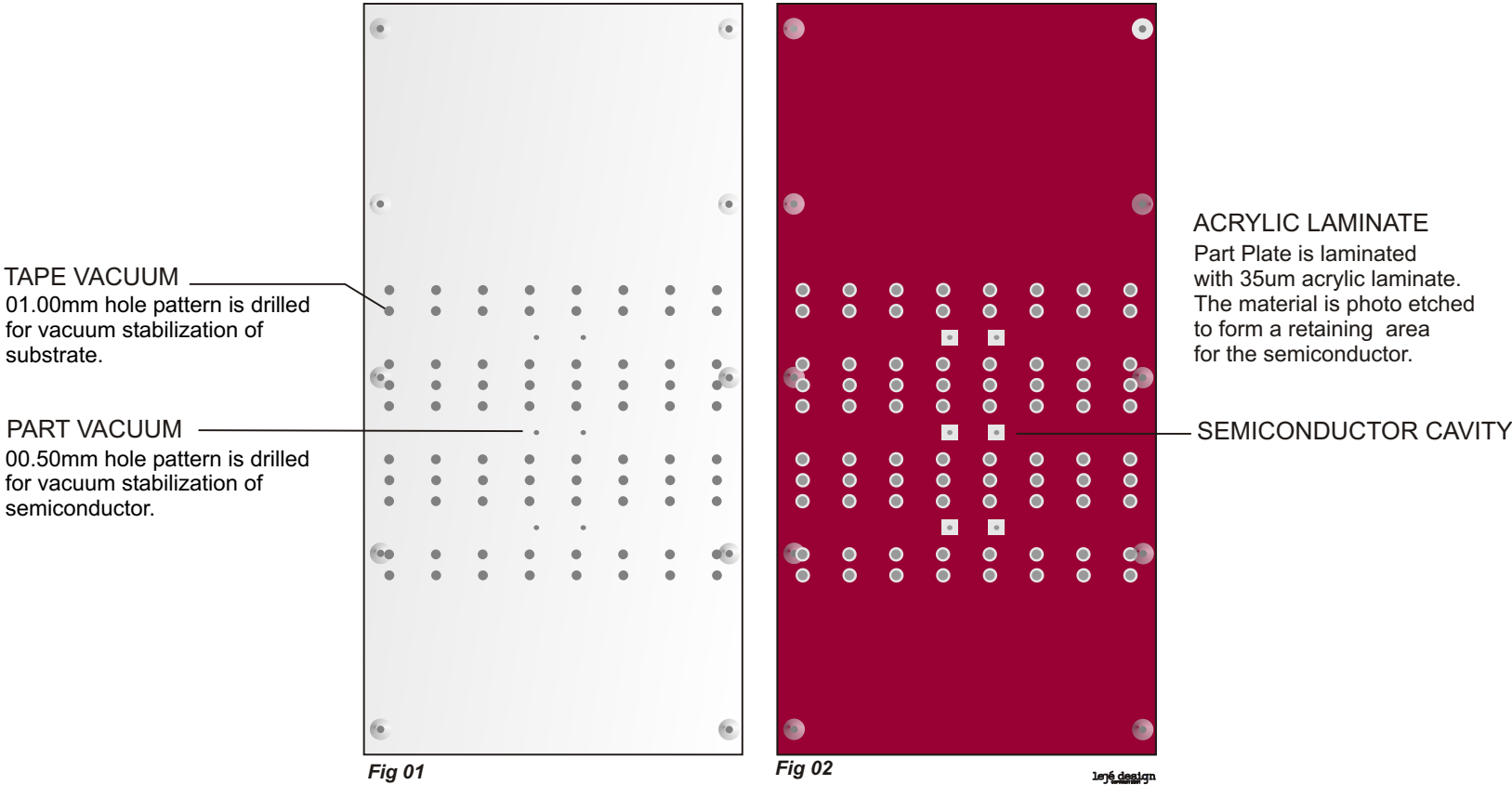
Pull strength tester. 650.00

Assembly fixture (*fig 01*) with part plate (*fig 02*) removed. Assembly fixture is machined from a single block of 6120 aluminum. Gross height of assembly surface is adjusted by adding stand off blocks to the bottom of fixture. Finite assembly surface height is obtained by placing spacing gaskets between the part plate and the vacuum cavity. The gaskets may be obtained from IGC in incremental thicknesses. Assembly surface height can vary depending on make and model of bonding equipment.

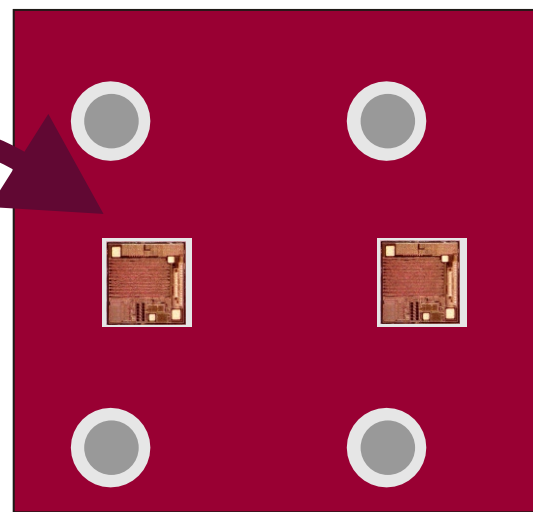
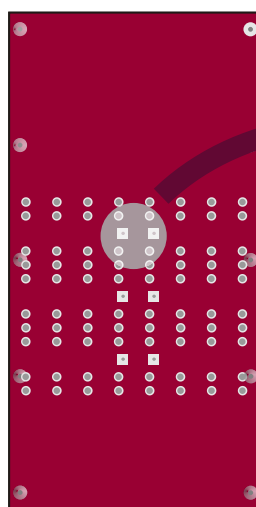
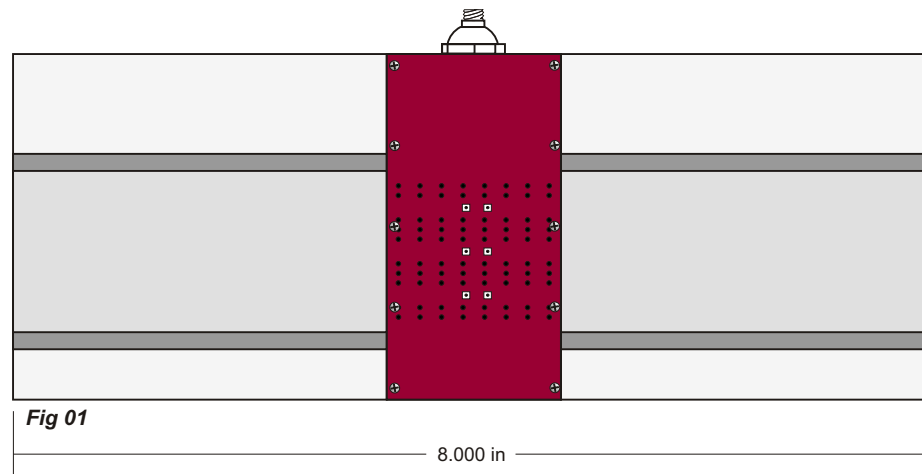
A vacuum is employed to hold the die and tape firmly in place when assembling a chip module. When engaged in the assembly procedure the assembly fixture is continuously charged with a vacuum. The vacuum is activated and deactivated with



A part plate for a six cavity assembly is illustrated (fig 01). The placement cavities for the semiconductors are formed by photo imaging 35um acrylic material on the part plate (fig 02). Instructions for this procedure may be obtained from IGC or part plates for specific die and cavity configurations may be ordered from IGC at a nominal cost.



The part plate is mounted to the assembly fixture (*fig 01*). The vacuum is engaged and the semiconductors are placed in the designated cavities (*fig 03*).



The MicroSite™ tape is placed over the die site (*fig 01*) and is pulled to the assembly surface by the vacuum (*fig 04*). The bonding tabs on the tape will be registered over the bond pads of the semiconductor.

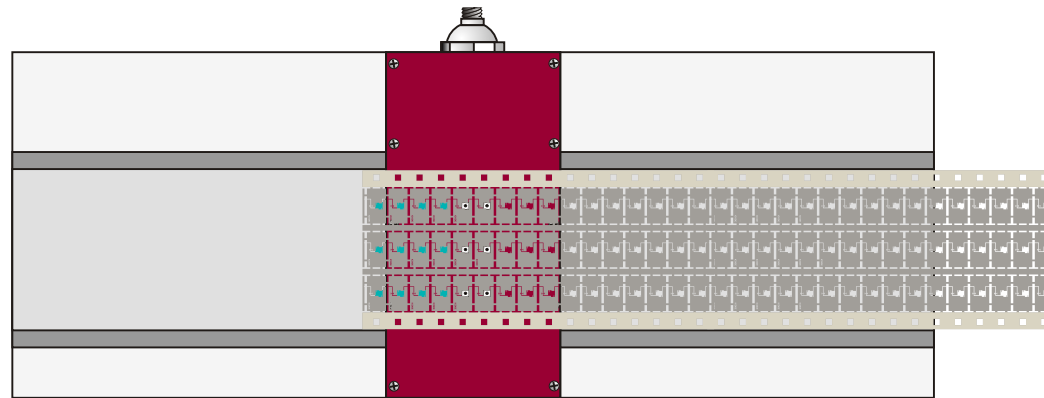


Fig 01

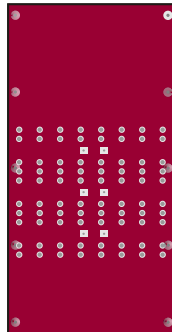


Fig 01

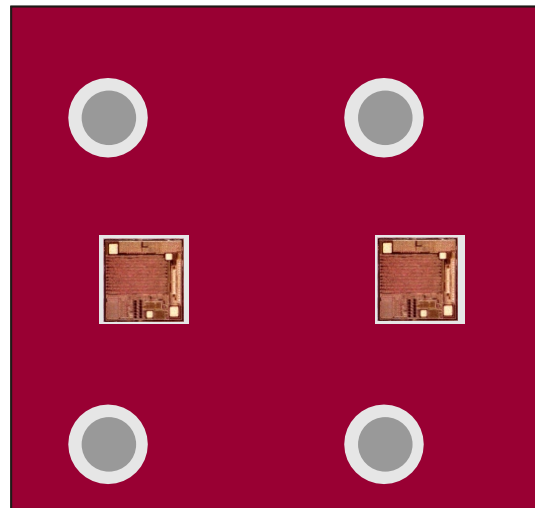


Fig 03

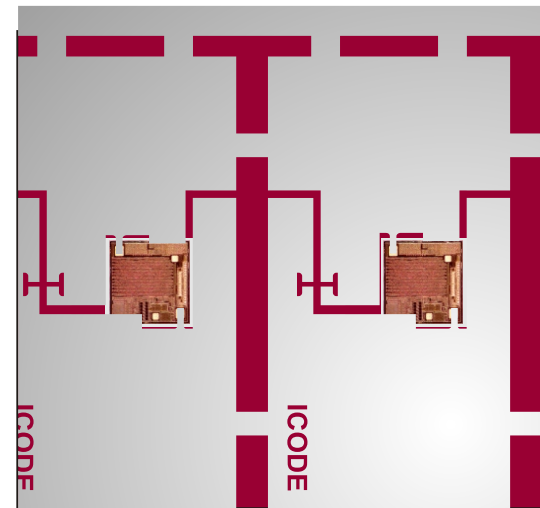
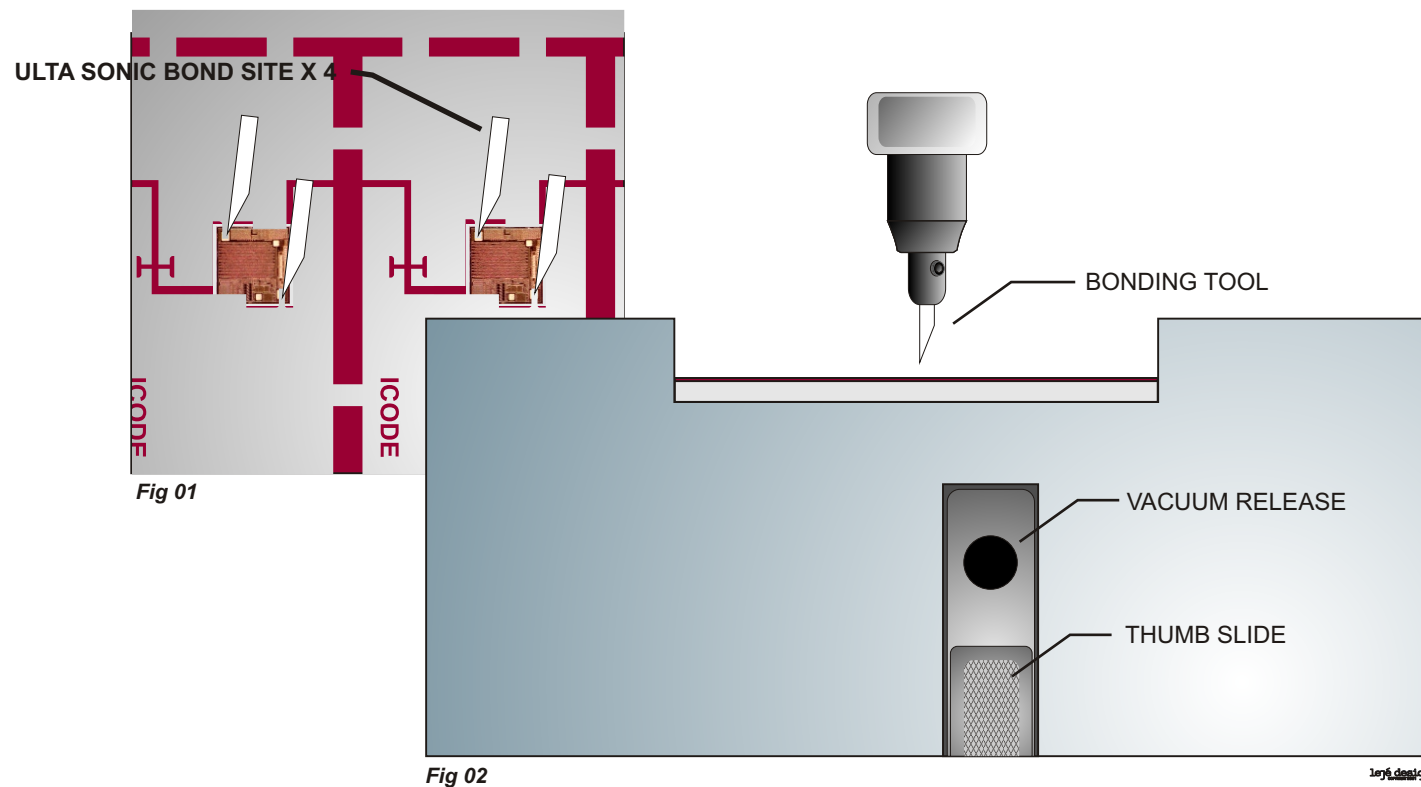


Fig 04

The ultra sonic bonding tool is aligned over the bonding site by the operator and the bonding procedure is executed. Specific bonding parameters for substrate material and semiconductors may be obtained from IGC. The six semiconductors in the fixture are bonded by the operator and the vacuum is released using the thumb slide.

The operator tilts the substrate material back from the assembly surface. The vacuum is engaged and the assembly procedure is repeated.



The ultra sonic bonding procedure may be employed in a fully automated assembly environment by using several methods of part placement and a vacuum assisted carousel.

