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TITLE

PROCESS OF MANUFACTURING A MICROELECTRONIC DEVICE USING A REMOVABLE SUPPORT SUBSTRATE AND ETCH-STOP

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METHOD OF FABRICATING A MICROELECTRONIC DEVICE

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ABSTRACT OF THE DISCLOSURE

A microelectronic device is fabricated by furnishing a first substrate (40) having a silicon etchable layer (42), a silicon dioxide etch-stop layer (44) overlying the silicon layer (42), and a single-crystal silicon wafer (46) overlying the etch-stop layer (44), the wafer (46) having a front surface (52) not contacting the etch stop layer (44). A microelectronic circuit element (50) is formed in the single-crystal silicon wafer (46). The method further includes attaching the front surface (52) of the single-crystal silicon wafer (46) to a second substrate (58), and etching away the silicon layer (42) of the first substrate (40) down to the etch-stop layer (44). The second substrate (58) may also have a microelectronic circuit element (58') therein that can be electrically interconnected to the microelectronic circuit element (50).

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METHOD OF FABRICATING A MICROELECTRONIC DEVICE

BACKGROUND OF THE INVENTION

This invention relates to microelectronic devices, and, more particularly, to a microelectronic device that is moved from one support to another support during fabrication.

Microelectronic devices are normally prepared by a series of steps such as patterning, deposition, implantation, growth, and etching that build up an electronic circuit on or near the top surface of a thin substrate wafer. Interconnection pads are placed on the surface of the wafer to provide connections to external leads or to other microelectronic devices. Such a microelectronic device is considered a two-dimensional structure in the plane of the substrate wafer. There are usually multiple layers of deposited conductors and insulators, but each layer is quite thin. Any height of the device in the third dimension perpendicular to the substrate surface is much less than the dimensions in the plane of the substrate wafer, and is often no more than a few thousand Angstroms.

The microelectronic devices or arrays of such devices are usually placed inside a protective housing called a package, with leads or connection pads extending out of the package. When the microelectronic devices are used, a number of the packages with their contained microelectronic devices are normally affixed to a base such as a phenolic plastic board. Wires are run between the various devices to interconnect them. There may be metallic traces imprinted onto the base to provide common power, ground, and bus connections, and the base itself has external connections. Such boards with a

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