

U.S. DEPARTMENT OF COMMERCE  
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FEE RECORD SHEET

0814080 02/09/93 08006120 08-3250 140 101 732.00CH PD-92654

PTO-1556  
(5/87)

SERIAL NUMBER	FILING DATE	CLASS.	GROUP ART UNIT
08/006,120	01/19/93	437	1107

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**\*\*CONTINUING DATA\*\*\*\*\***  
 VERIFIED

**\*\*FOREIGN/PCT APPLICATIONS\*\*\*\*\***  
 VERIFIED

FOREIGN FILING LICENSE GRANTED 07/07/93

STATE OR COUNTRY	SHEETS DRAWING	TOTAL CLAIMS	INDEPENDENT CLAIMS	FILING FEE RECEIVED	ATTORNEY DOCKET NO.
CA	3	21	3	\$862.00	PD-92654

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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

5 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  
10 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  
15 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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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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