Exhibit 12

US008791581B2

(12) **United States Patent**
Leedy

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(54) **THREE DIMENSIONAL STRUCTURE MEMORY**

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This patent is subject to a terminal disclaimer.

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Related U.S. Application Data

(63) Continuation of application No. 12/788,618, filed on May 27, 2010, now Pat. No. 8,653,672, which is a continuation of application No. 10/143,200, filed on May 13, 2002, now abandoned, which is a continuation of application No. 09/607,363, filed on Jun. 30, 2000, now Pat. No. 6,632,706, which is a continuation of application No. 08/971,565, filed on Nov. 17, 1997, now Pat. No. 6,133,640, which is a continuation of application No. 08/835,190, filed on Apr. 4, 1997, now Pat. No. 5,915,167.

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USPC **257/777**; 257/778; 257/685; 257/686

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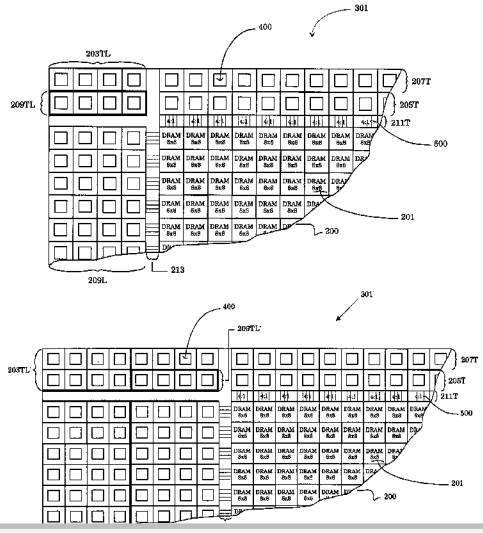
(57) **ABSTRACT**

A Three-Dimensional Structure (3DS) Memory allows for physical separation of the memory circuits and the control logic circuit onto different layers such that each layer may be separately optimized. One control logic circuit suffices for several memory circuits, reducing cost. Fabrication of 3DS memory involves thinning of the memory circuit to less than 50 microns in thickness and bonding the circuit to a circuit stack while still in wafer substrate form. Fine-grain high density inter-layer vertical bus connections are used. The 3DS memory manufacturing method enables several performance and physical size efficiencies, and is implemented with established semiconductor processing techniques.

161 Claims, 9 Drawing Sheets



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