



US005892718A

United States Patent [19]

[11] Patent Number: **5,892,718**

Yamada

[45] Date of Patent: **Apr. 6, 1999**

[54] **SEMICONDUCTOR MEMORY DEVICE HAVING A REDUNDANCY FUNCTION**

3-59895 3/1991 Japan .
7-65595 3/1995 Japan .

[75] Inventor: **Yukinori Yamada**, Tokyo, Japan

Primary Examiner—Vu A. Le
Attorney, Agent, or Firm—Foley & Lardner

[73] Assignee: **NEC Corporation**, Tokyo, Japan

[21] Appl. No.: **934,539**

[57] **ABSTRACT**

[22] Filed: **Sep. 22, 1997**

A semiconductor memory device comprises memory cell blocks M1–Mn disposed for respective I/O pads and a redundant memory cell block MR, a programmable circuit programmable based on a failed information for controlling transfer switches T1 and T2 to couple each of the I/O pads with corresponding memory cell block or with adjacent memory cell block by excepting a failed memory cell block and including the redundant memory cell block based on the failed information. In a roll call test mode, the I/O pads coupled with adjacent memory cell blocks output a fixed value regardless of data stored in the memory cell blocks to notify a failed memory cell block for facilitating failure analysis.

[30] **Foreign Application Priority Data**

Sep. 20, 1996 [JP] Japan 8-250245

[51] Int. Cl.⁶ **G11C 7/00**

[52] U.S. Cl. **365/200; 365/230.03; 365/225.7**

[58] Field of Search 365/200, 230.03,
365/225.7, 230.06

[56] **References Cited**

U.S. PATENT DOCUMENTS

5,661,689 8/1997 Shinkai 365/200

FOREIGN PATENT DOCUMENTS

3-58398 3/1991 Japan .

7 Claims, 5 Drawing Sheets

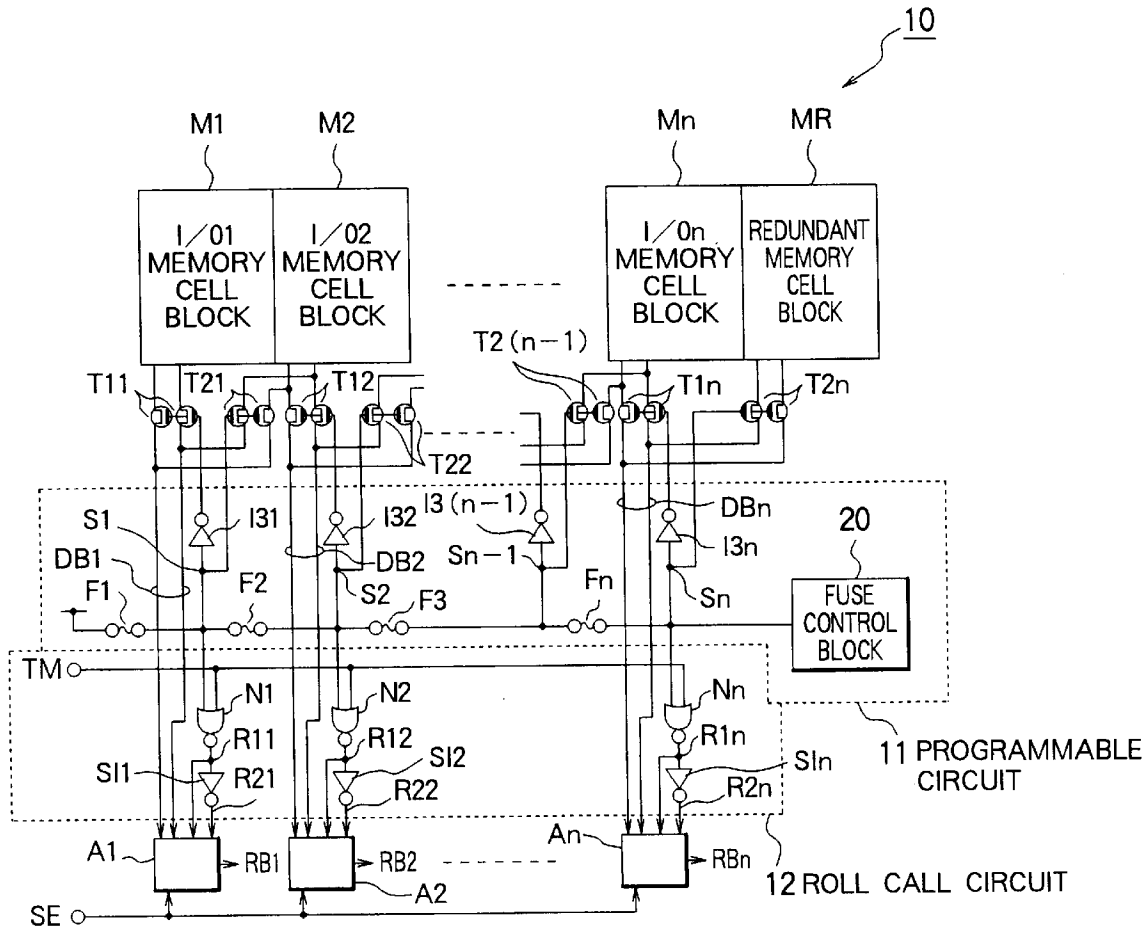


FIG. 1
PRIOR ART

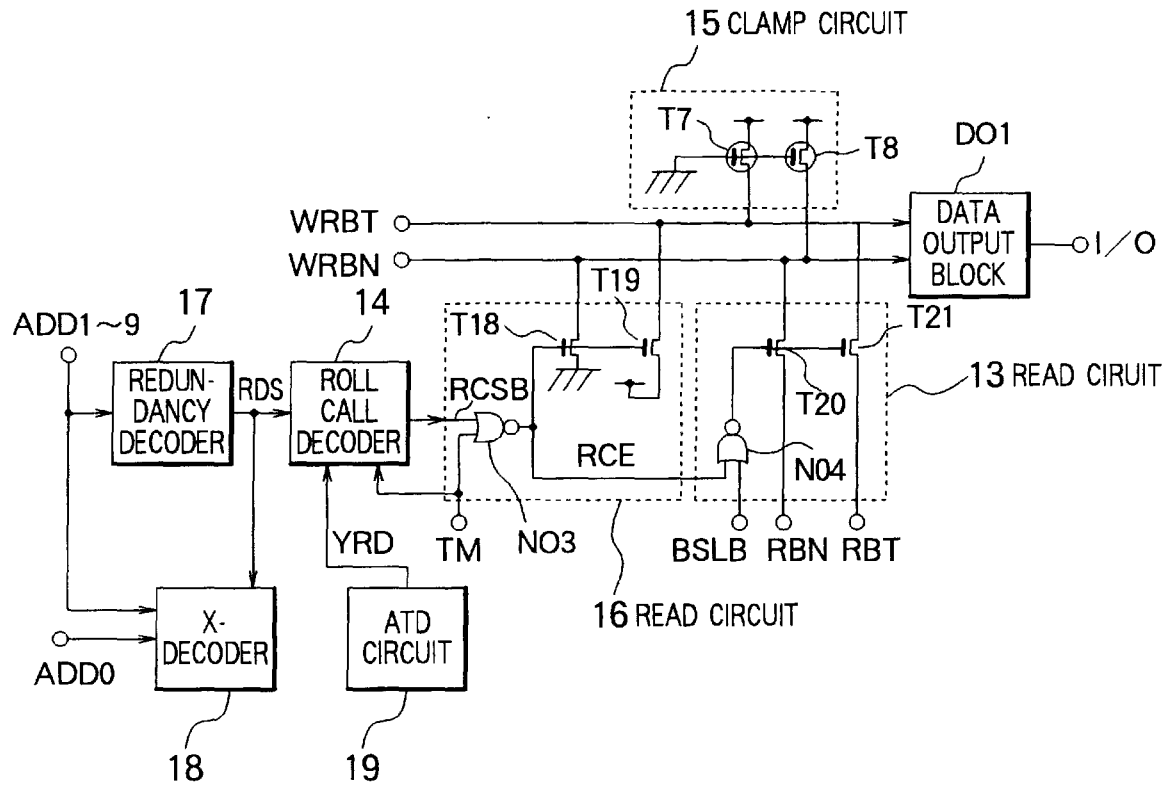


FIG. 2
PRIOR ART

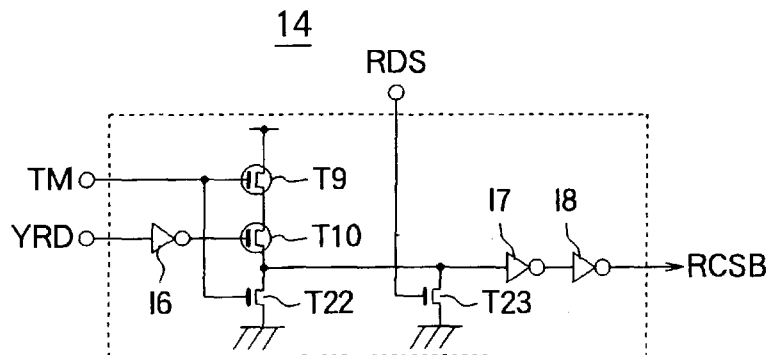


FIG. 3

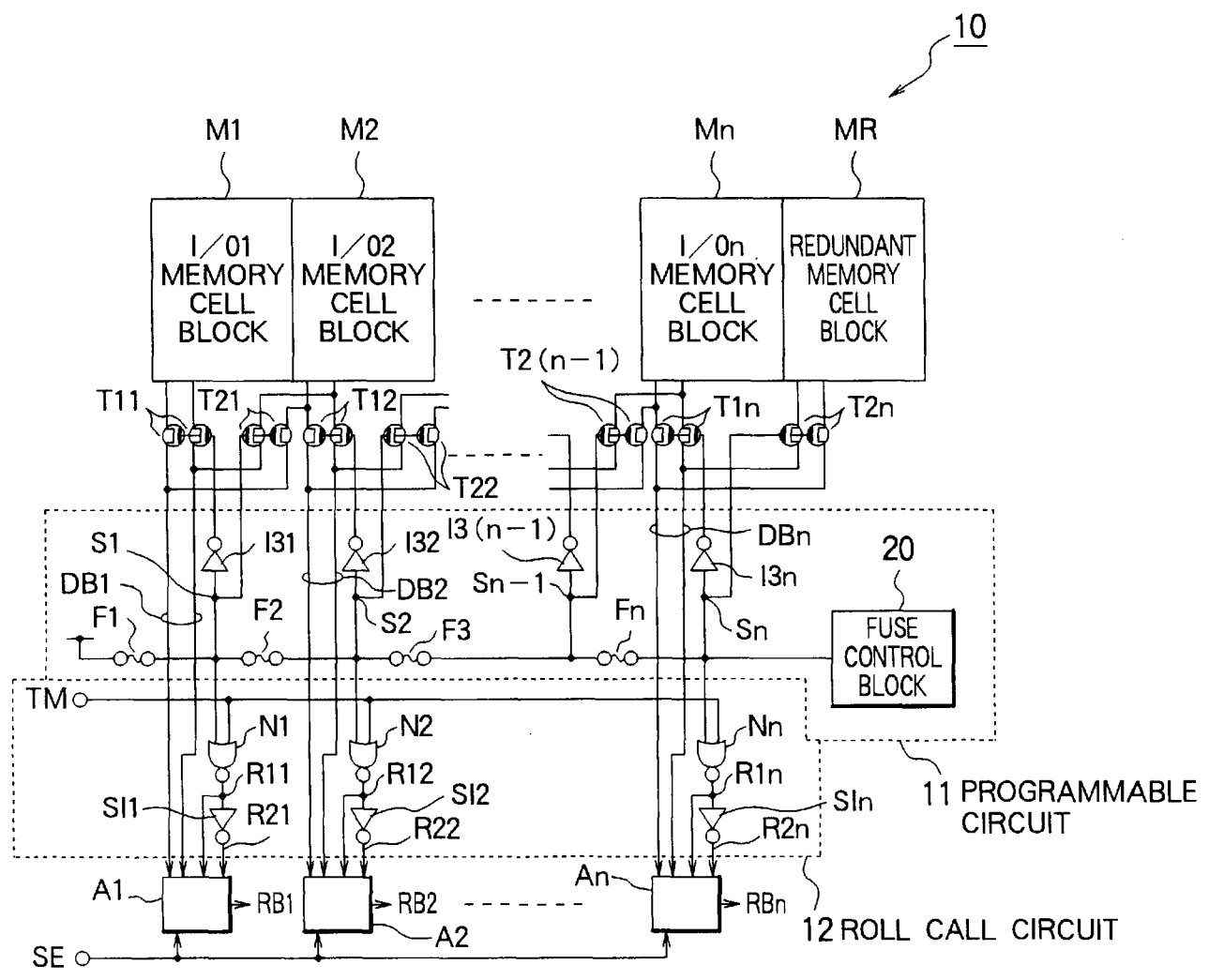


FIG. 4

20

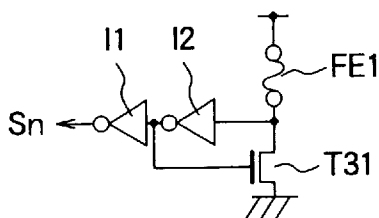


FIG. 5

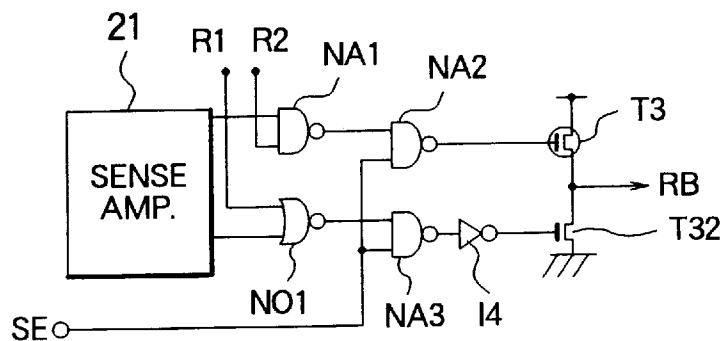
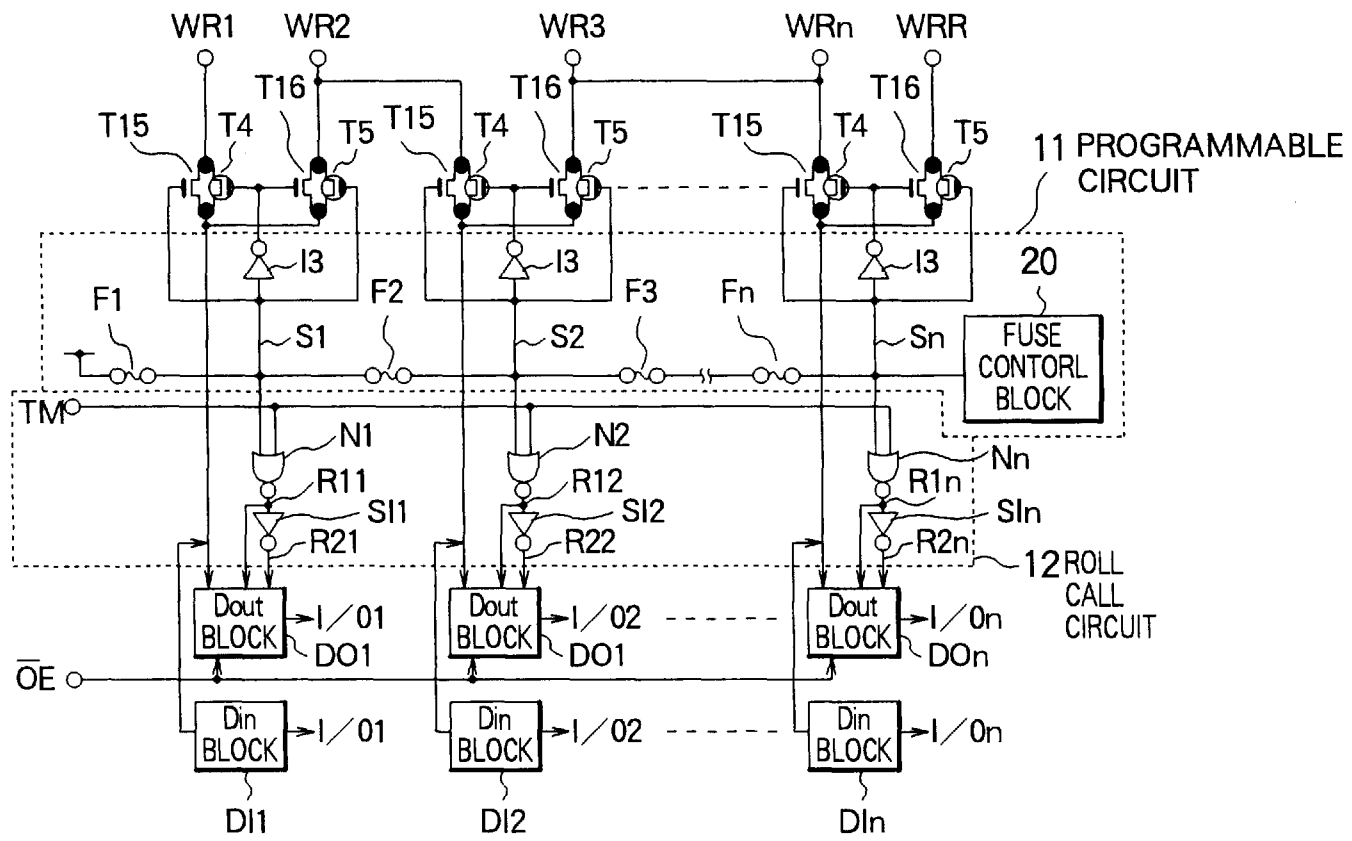


FIG. 6



Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.