US005894441A

United States Patent [19]

Nakazawa

[11] Patent Number: 5,894,441

[45] Date of Patent: Apr. 13, 1999

[54] **SEMICONDUCTOR MEMORY DEVICE WITH REDUNDANCY CIRCUIT**

[75] Inventor: **Shigeyuki Nakazawa**, Tokyo, Japan

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

[21] Appl. No.: **09/050,354**

[22] Filed: **Mar. 31, 1998**

[30] **Foreign Application Priority Data**

Mar. 31, 1997 [JP] Japan 9-081203

[51] Int. Cl.⁶ G11C 7/00
[52] U.S. Cl. 365/200; 365/230.03; 365/230.06
[58] Field of Search 365/200, 201, 365/230.03, 230.06

[56] **References Cited**

U.S. PATENT DOCUMENTS

5,349,556	9/1994	Lee	365/200
5,355,339	10/1994	Oh et al.	365/200
5,359,560	10/1994	Suh et al.	365/200
5,798,974	8/1998	Yamagata	365/200
5,808,948	9/1998	Kim et al.	365/200

Primary Examiner—Vu A. Le
Attorney, Agent, or Firm—Sughrue, Mion, Zinn, Macpeak & Seas, PLLC

[57] **ABSTRACT**

A semiconductor memory device which enhances the relief efficiency of defective bit lines by means of redundant bit lines is disclosed. To a column redundancy decoder are supplied not only a Y address but also a part of an X address. When a Y address corresponding to a defective bit line is supplied to the column redundancy decoder, the column redundancy decoder generates a detection signal. In this case, replacement by means of a redundant bit line is carried out if the part of the X address indicates a region where the defective bit line exists, and the replacement by means of a redundant bit line will not take place if it indicates a region where the defective bit line does not exists.

15 Claims, 8 Drawing Sheets
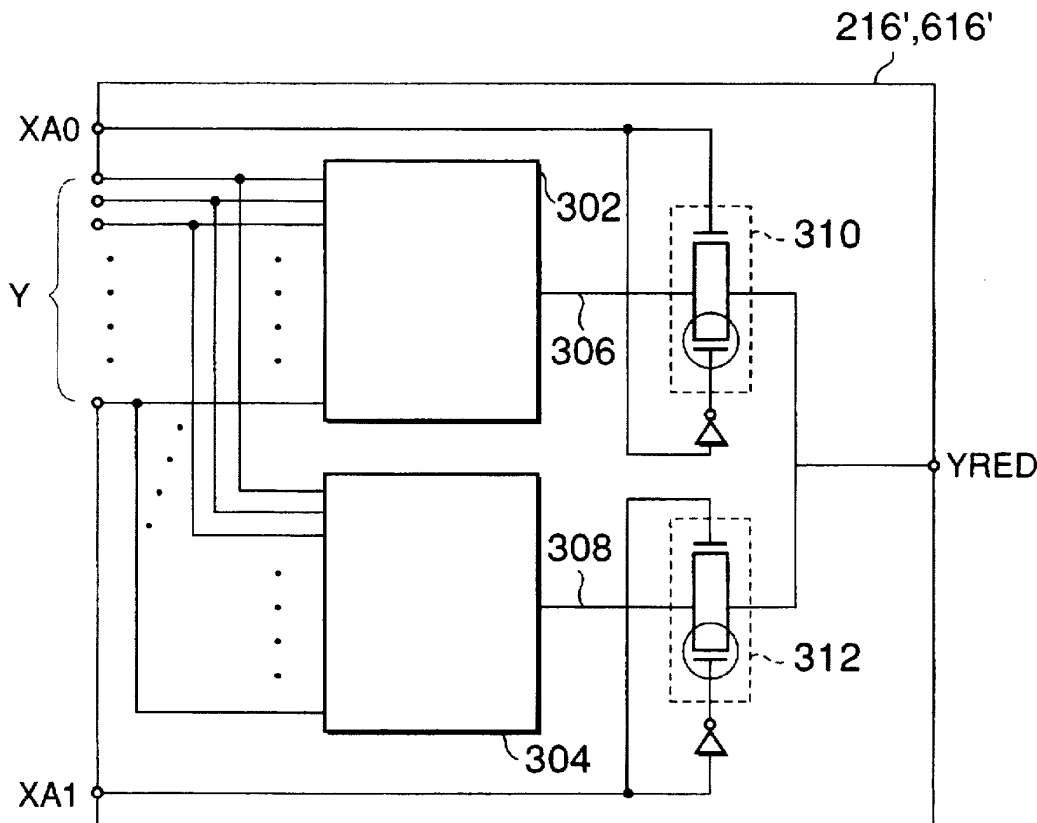
FIG.1
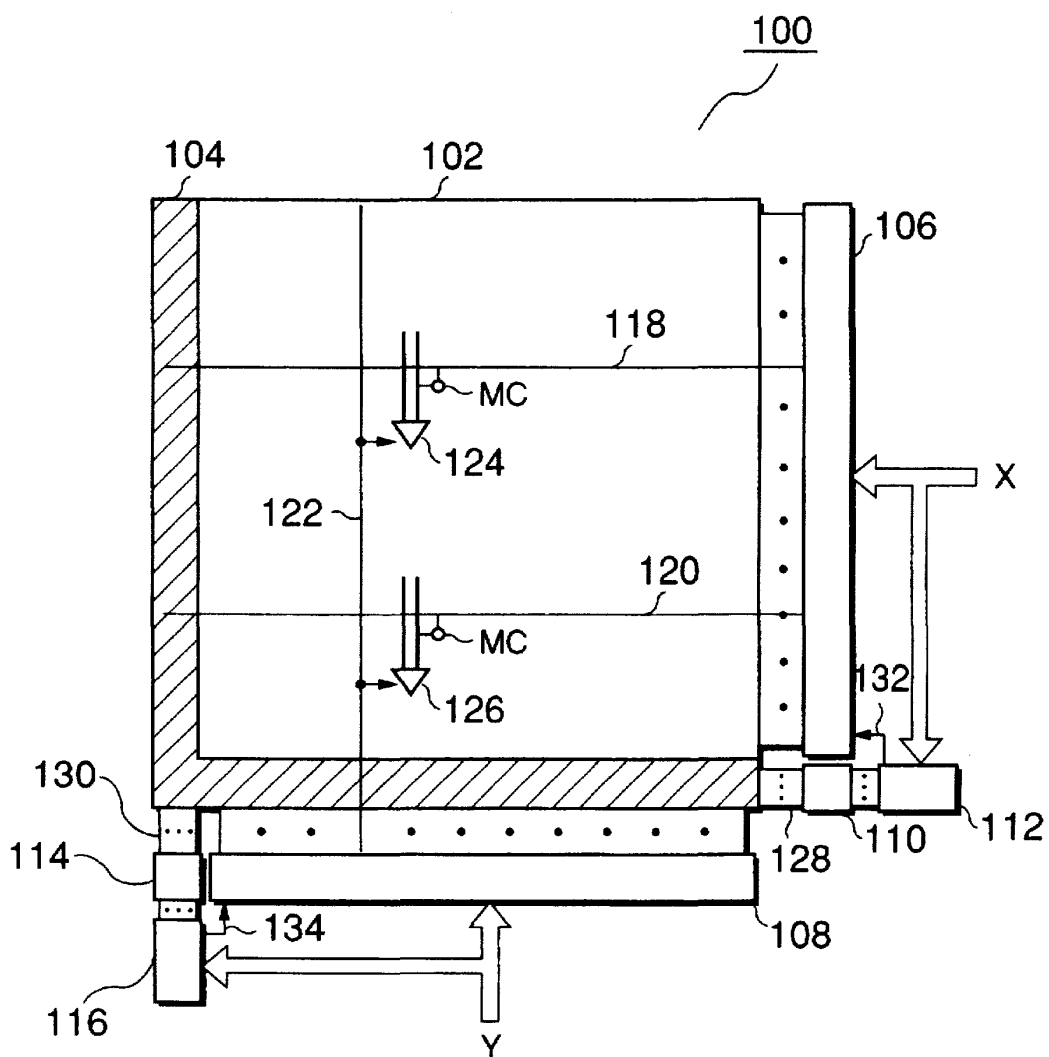
FIG.2
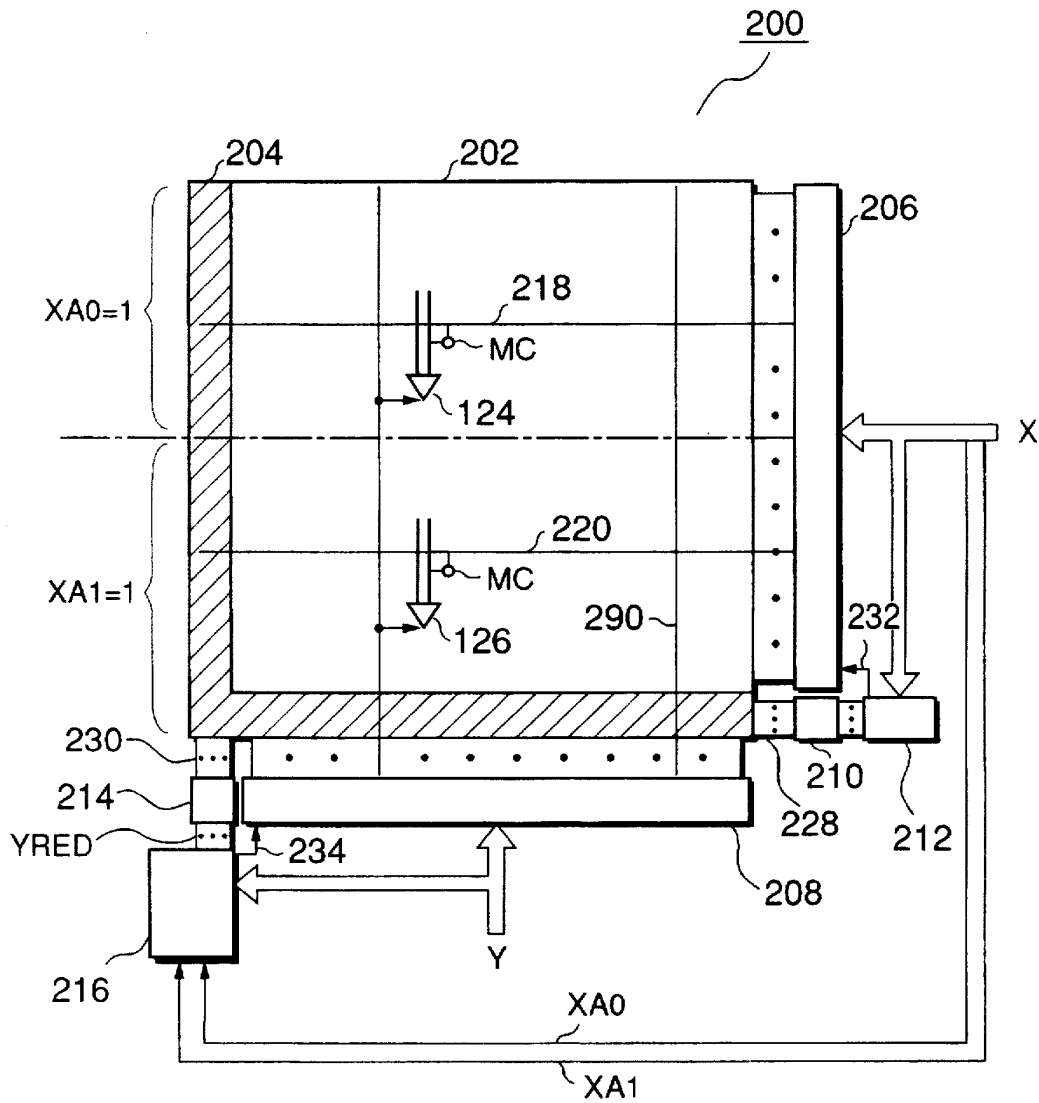
FIG.3

FIG.4

FIG.5

DOCKET ALARM
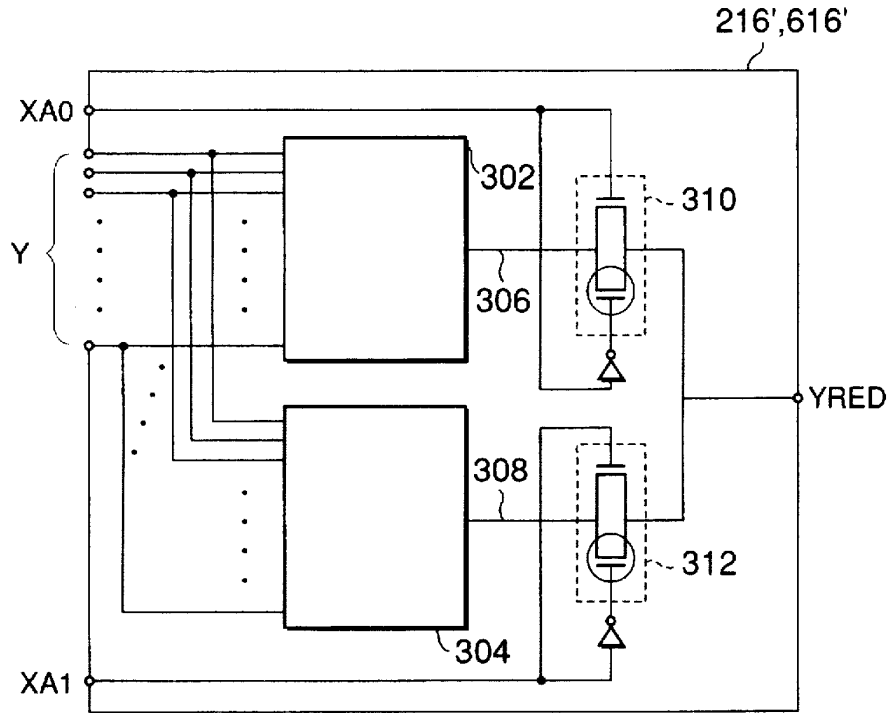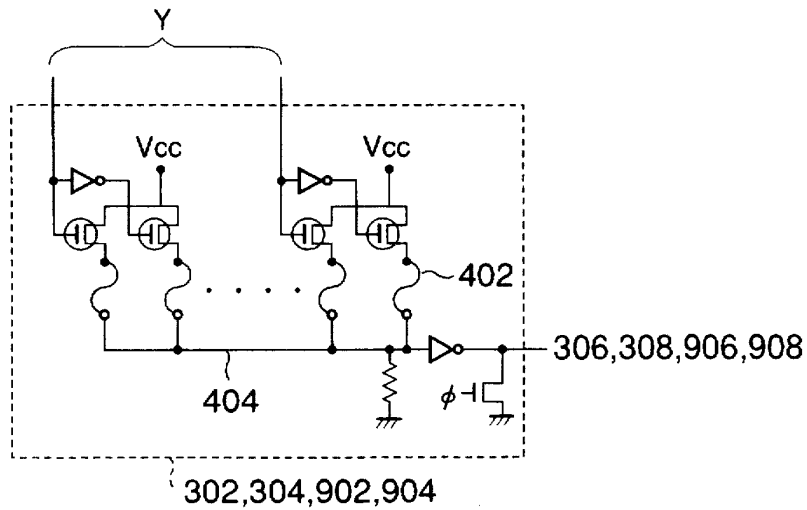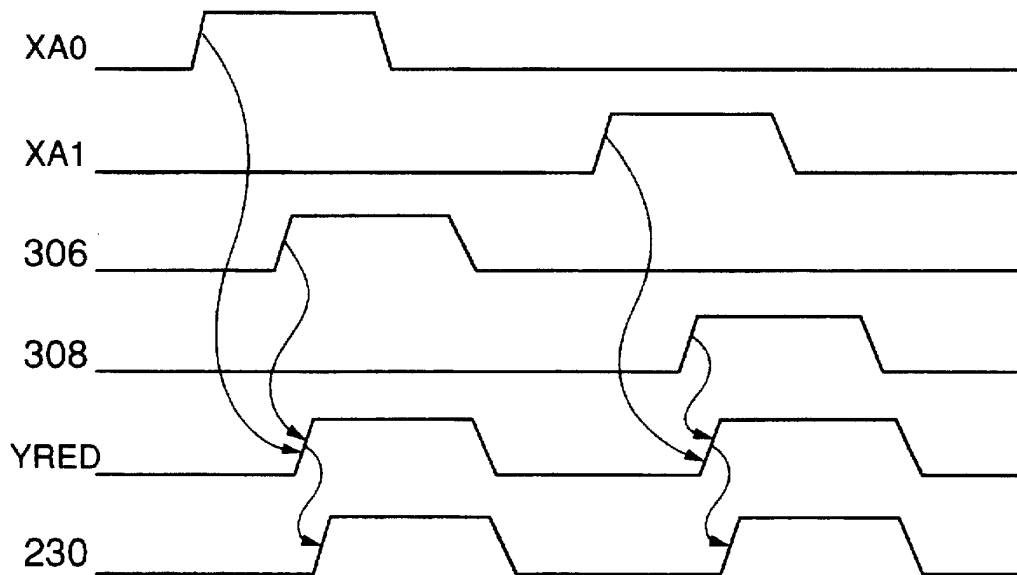
Explore Litigation Insights

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.

fastcase®
Smarter legal research.