



(43) International Publication Date
11 October 2001 (11.10.2001)

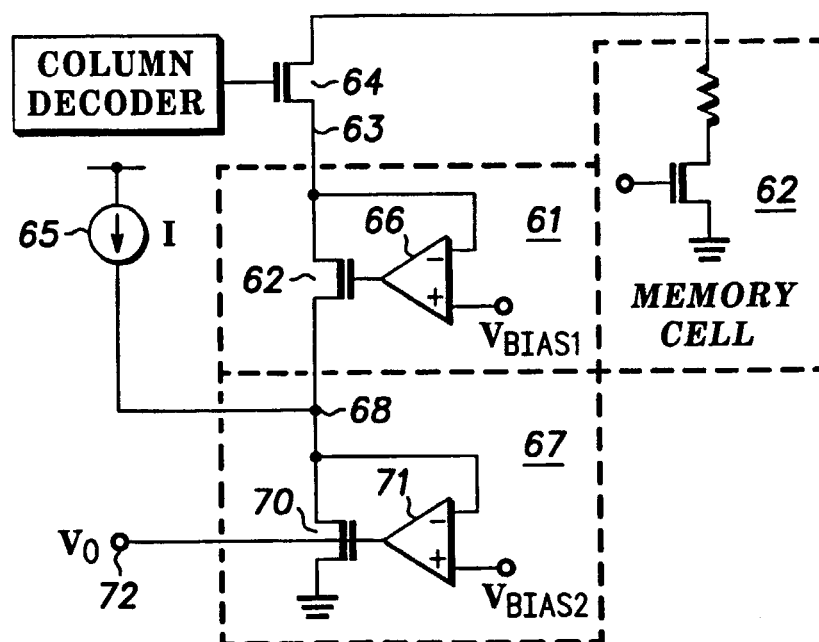
PCT

(10) International Publication Number
WO 01/75891 A3

- | | | |
|--|--|---|
| (51) International Patent Classification⁷:
G05F 1/56, H03F 3/347, H01L 45/00 | G11C 11/15. | (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW. |
| (21) International Application Number: | PCT/US01/10334 | |
| (22) International Filing Date: | 29 March 2001 (29.03.2001) | |
| (25) Filing Language: | English | |
| (26) Publication Language: | English | |
| (30) Priority Data: | 09/540,794 31 March 2000 (31.03.2000) US | (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). |
| (71) Applicant: MOTOROLA INC. [US/US]: 1303 East Algonquin Road, Schaumburg, IL 60196 (US). | | |
| (72) Inventor: NAJL, Peter: 14028 South 9th Street, Phoenix, AZ 85048 (US). | | Published:
— <i>with international search report</i> |
| (74) Agent: MOTOROLA, INC.: Intellectual Property Department, AZ 11/56-238, 3102 North 56th Street, Phoenix, AZ 85018 (US). | | (88) Date of publication of the international search report:
31 January 2002 |

[Continued on next page]

- (54) Title:** CURRENT CONVEYOR AND METHOD FOR READOUT OF MTJ MEMORIES



- (57) Abstract:** A current conveyor for readout of a magnetic tunneling junction memory cell is coupled to a data readout line (63) connected to at least one MTJ memory cell (62). The current conveyor (61) includes a FET (66) with a source terminal (68) coupled to a current source (65) and a drain terminal coupled to the data readout line (63). The gate terminal of the FET is connected to an output terminal of an operational amplifier (66) connected to receive negative feedback from the data readout line and to receive a bias voltage on a second input terminal. The current conveyor has very low input impedance so that minimum data readout line swing is achieved.



For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.