

(19) World Intellectual Property Organization
International Bureau



G00002

(43) International Publication Date
27 June 2002 (27.06.2002)

PCT

(10) International Publication Number
WO 02/050998 A3

(51) International Patent Classification⁷: H03F 3/193, 1/48

(71) Applicant (for MG only): **IBM UNITED KINGDOM LIMITED** [GB/GB]; PO Box 41, North Harbour, Portsmouth, Hampshire PO6 3AU (GB).

(21) International Application Number: PCT/GB01/05681

(22) International Filing Date:
19 December 2001 (19.12.2001)

(72) Inventor: **GHOSHAL, Uttam**; 10421 Indigo Broom Loop, Austin, TX 78733 (US).

(25) Filing Language: English

(74) Agent: **WALDNER, Philip**; IBM United Kingdom Limited, Intellectual Property Law, Hursley Park, Winchester, Hampshire SO21 2JN (GB).

(26) Publication Language: English

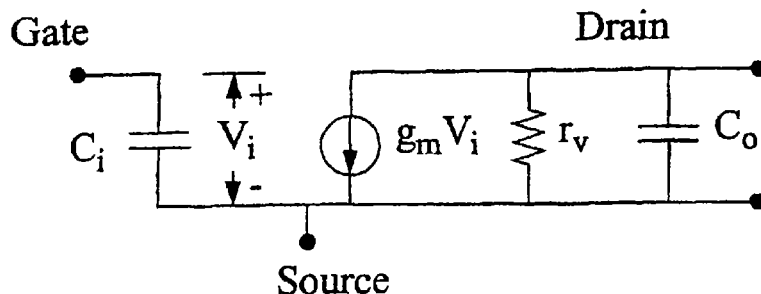
(30) Priority Data:
09/740,435 19 December 2000 (19.12.2000) US

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.

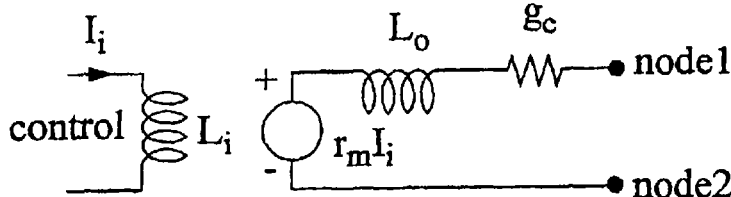
(71) Applicant: **INTERNATIONAL BUSINESS MACHINES CORPORATION** [US/US]; New Orchard Road, Armonk, NY 10504 (US).

[Continued on next page]

(54) Title: WIDEBAND DUAL AMPLIFIER CIRCUITS



FET



MTJ

(57) Abstract: Dual amplifying circuits having a magnetic tunnel junction device (MTS) and a field effect transistor (FET) configured in a complementing set are disclosed herein. In one embodiment, the field effect transistor (FET) is operable to control a current level of a current operating signal flowing through the magnetic tunnel junction device (MTS). In another embodiment, the magnetic tunnel junction device (MTS) is operable to control a voltage level of a voltage signal being applied to a gate terminal of the field effect transistor (FET). The gain-bandwidth product of both embodiments is greater than the individual gain-bandwidth products of the individual devices through the elimination of noise contributing resistive type circuit elements.



162162

WO 02/050998 A3

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, 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, GQ, GW, ML, MR, NE, SN, TD, TG).

(88) Date of publication of the international search report:
17 October 2002

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.

Published:

— with international search report