

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
17 June 2021 (17.06.2021)



(10) International Publication Number
WO 2021/116796 A1

(51) International Patent Classification:
H03M 3/00 (2006.01) *H03F 3/45* (2006.01)

(21) International Application Number:
PCT/IB2020/060647

(22) International Filing Date:
12 November 2020 (12.11.2020)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2024414 10 December 2019 (10.12.2019) NL

(71) Applicant: **INSIAVA (TPY) LTD** [ZA/ZA]; Atterbury Estate, Building 7, First Floor, 19 Frikkie de Beer Street, 0063 Pretoria (ZA).

(72) Inventor: **SUNTKEN, Artur, Wilhelm**; Plot 146 Luiperd Road, Tierpoort, 0056 Pretoria (ZA).

(74) Agent: **DAVIES, James, Hasely**; Adams & Adams, PO Box 1014, 0001 Pretoria (ZA).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, IT, JO, JP, KE, KG, KH, KN,

KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to the identity of the inventor (Rule 4.17(i))
- of inventorship (Rule 4.17(iv))

Published:

- with international search report (Art. 21(3))
- in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE

(54) Title: AN AMPLIFIER CIRCUIT TO ENABLE ACCURATE MEASUREMENT OF SMALL ELECTRICAL SIGNALS

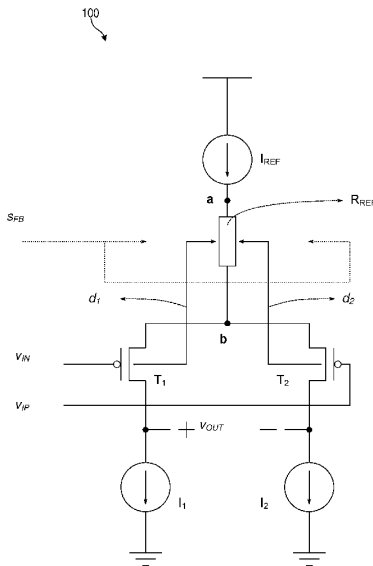


FIG. 1

(57) Abstract: An amplifier circuit includes a resistor divider (R_{REF}) comprising n resistive elements, two main nodes defined at each end thereof, two readout nodes (d_1 , d_2), resistor nodes (q) defined between adjacent resistive elements, and an input current source (I_{REF}) connected or connectable to the first main node (a). The resistor divider (R_{REF}) comprises two arrays of addressable switch elements controllable by a feedback signal (S_{FB}) to be open or closed. The amplifier circuit includes a differential pair of transistors (T_1 , T_2), wherein source terminals of each of the transistors (T_1 , T_2) are connected to the second node (b), gate terminals of the transistors (T_1 , T_2) are connected to input signals (v_1 , v_2), drain terminals of the transistors (T_1 , T_2) are connected to current sources (I_1 , I_2), and bulk terminals of the transistors (T_1 , T_2) are connected to the readout nodes (d_1 , d_2). The amplifier circuit functions as a difference amplifier, wherein the bulk terminals affect a threshold of the respective transistors (T_1 , T_2) so as to add or subtract a differential signal derived from the readout nodes (d_1 , d_2) of the resistor divider (R_{REF}) determined by the feedback signal (S_{FB}).

WO 2021/116796 A1