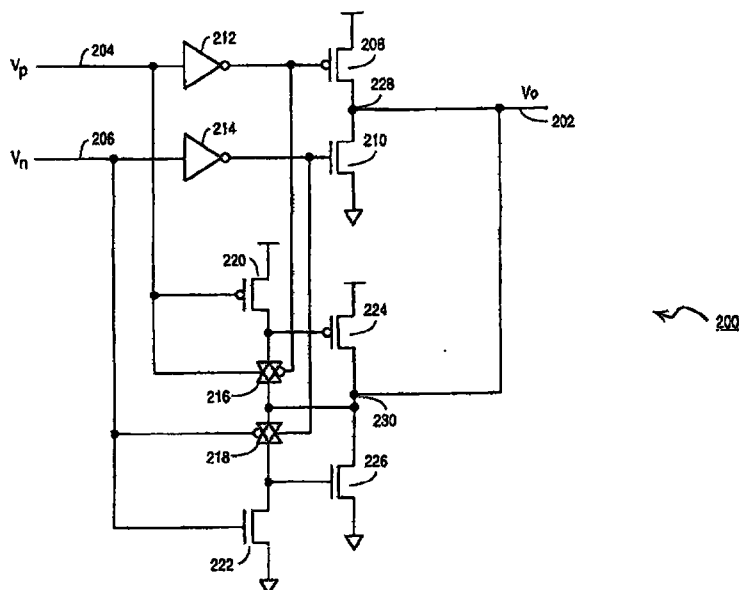




## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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| <b>(51) International Patent Classification <sup>6</sup> :</b><br><b>H03K 17/16, 19/0175, 19/094</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>A1</b> | <b>(11) International Publication Number:</b> <b>WO 00/02313</b><br><b>(43) International Publication Date:</b> 13 January 2000 (13.01.00)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>(21) International Application Number:</b> PCI/US99/14435<br><b>(22) International Filing Date:</b> 24 June 1999 (24.06.99)<br><b>(30) Priority Data:</b><br>09/108,606      1 July 1998 (01.07.98)      US<br><b>(71) Applicant (for all designated States except US):</b> INTEL CORPORATION [US/US]; 2200 Mission College Boulevard, Santa Clara, CA 95052 (US).<br><b>(72) Inventor; and</b><br><b>(75) Inventor/Applicant (for US only):</b> GRIFFIN, Jed, D. [US/US]; 3025 Periwinkle Street, Forest Grove, OR 97116 (US).<br><b>(74) Agents:</b> MILLIKEN, Darren, J. et al.; Blakely, Sokoloff, Taylor & Zafman LLP, 7th floor, 12400 Wilshire Boulevard, Los Angeles, CA 90025 (US). |           | <b>(81) Designated States:</b> AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, 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, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, 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), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).<br><br><b>Published</b><br><i>With international search report.</i> |

**(54) Title:** A CMOS DRIVER**(57) Abstract**

A CMOS input/output driver (200) having constant output impedance ( $Z_o$ ), the driver comprising a drive pMOSFET (208) and a drive nMOSFET (210) for driving an output node (202) HIGH and LOW, a pMOSFET (224) having a drain coupled to the output node and switchable so that its gate is coupled to the output node when the drive pMOSFET is driving the output node HIGH, and an nMOSFET having a drain coupled to the output node and switchable so that its gate is coupled to the output node when the drive nMOSFET is driving the output node LOW. The betas of the drive pMOSFET, the drive nMOSFET, the pMOSFET, and the nMOSFET are matched so that the output impedance of the drive is approximately independent of the output node voltage.