

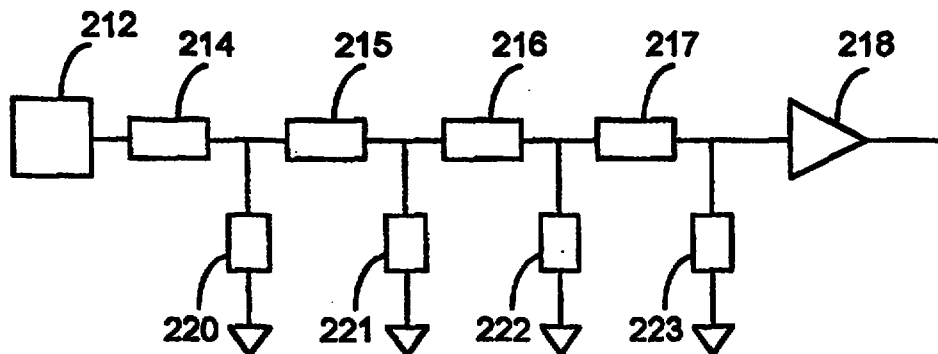


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(21) International Application Number: PCT/US98/07233 (22) International Filing Date: 10 April 1998 (10.04.98) (30) Priority Data: 60/043,244 16 April 1997 (16.04.97) US (71) Applicant: THE BOARD OF TRUSTEES OF THE LELAND STANFORD JUNIOR UNIVERSITY [US/US]; Suite 350, 900 Welch Road, Palo Alto, CA 94304-1850 (US). (72) Inventors: KLEVELAND, Bendik; 1240 Thurston Avenue, Los Altos, CA 94024-6864 (US). LEE, Thomas, H.; 939 Bubb Road, Cupertino, CA 95014 (US). (74) Agents: TEST, Aldo, J. et al.; Flehr Hohbach Test Albritton & Herbert LLP, Suite 3400, 4 Embarcadero Center, San Francisco, CA 94111-4187 (US).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, 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, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, 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, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i>

(54) Title: DISTRIBUTED ESD PROTECTION DEVICE FOR HIGH SPEED INTEGRATED CIRCUITS**(57) Abstract**

A distributed electrostatic discharge (ESD) protection circuit (210) is used in high frequency integrated circuit. A transmission line from an integrated circuit (IC) pad (212) or package pin couples a plurality of ESD elements (220-223). The ESD element (220-223), such as diodes, are distributed along the transmission line and coupled from the transmission line to ground or a power supply. The effective impedance of the transmission line and ESD elements (220-223) is defined to match the impedance of an external line. Distributed ESD protection circuit (210) provides a high frequency signal path that can be used well into the GHz frequency range and also provides effective ESD protection.