PCT WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 7 : H01L 21/768, 23/522 — A1

(11) International Publication Number: WO 00/03433

(43) International Publication Date: 20 January 2000 (20.01.00)

(21) International Application Number: PCT/US99/14926

(22) International Filing Date: 30 June 1999 (30.06.99)

(30) Priority Data:
09/113,578 10 July 1998 (10.07.98) US

(71) Applicant: APPLIED MATERIALS, INC. [US/US]; 3050 Bowers Avenue, Santa Clara, CA 95054 (US).

(72) Inventor: PARIKH, Suketu, A.; 444 Saratoga Avenue #13A, Santa Clara, CA 95050 (US).

(74) Agents: BERNADICOU, Michael, A. et al.; Blakely, Sokoloff, Taylor & Zafman LLP, 7th Floor, 12400 Wilshire Boulevard, Los Angeles, CA 90025 (US).

(81) Designated States: JP, KR, SG, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

Published
With international search report.

(54) Title: MISALIGNMENT TOLERANT TECHNIQUES FOR DUAL DAMASCENE FABRICATION

(57) Abstract

The present invention provides integrated circuit fabrication methods and devices wherein dual damascene structures are formed which compensate for misalignment between the via pattern and the trench pattern by widening the trench (238) at the point (239) where the misalignment has occured. Methods and devices are also provided wherein the trench width (326) is not affected by misalignment thus preventing electrical shorts between closely spaced interconnect lines, thus technique resulting in a reduction of the width of the via (332). Further embodiments of the present invention include the use of single layer masks, such as silicon–based photosensitive materials (418) which form a hard mask upon exposure to radiation. In additional embodiments, manufacturing systems (610) are provided for fabricating IC structures. These systems include a controller (600) which is adapted for interacting with plurality of fabrication stations (620, 622, 624, 626, 628, 630 and 632).

