990233-7

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International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : H01L 21/768 — A1

(11) International Publication Number: **WO 98/31049**

(43) International Publication Date: 16 July 1998 (16.07.98)

(21) International Application Number: PCT/US97/19533

(22) International Filing Date: 29 October 1997 (29.10.97)

(30) Priority Data:

60/034,232	6 January 1997 (06.01.97)	US
08/898,555	22 July 1997 (22.07.97)	US

(63) Related by Continuation (CON) or Continuation-in-Part (CIP) to Earlier Application
US 08/898,555 (CON)
Filed on 6 January 1997 (06.01.97)

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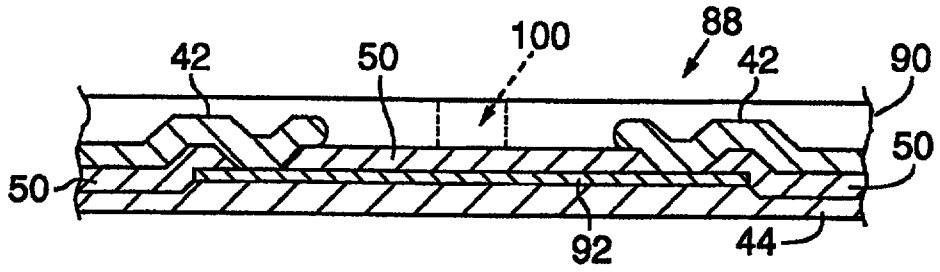
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(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, 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
With international search report.

(54) Title: LASER BASED METHOD AND SYSTEM FOR INTEGRATED CIRCUIT REPAIR OR RECONFIGURATION



(57) Abstract

The present invention provides a method and system for irradiating resist material from multiple target positions (150) on one or more IC chips (12) with individually directed laser output pulses (74, 94). In one embodiment, an IC (12), including one or more etch targets (104, 106) such as conductive links (72, 92), is coated with an etch protection layer (90) of photoresist material. Then, position data direct, toward multiple positions (150) on the photoresist material, individual laser output pulses (94) of predetermined parameters selected to expose the photoresist material. Because photoresist exposure requires less energy than link blowing, low–power UV lasers (120) can be employed, and their shorter wavelengths permit a smaller practical laser output spot size (98). Because the nonablative process does not generate debris, an optical component (148) can be brought within 10 mm of etch protection layer (90) to focus the laser output pulses (94) to a spot size of less than two times the wavelength of laser output (140). Thus, an advantage of this embodiment permits microcircuit manufacturers to decrease the pitch distance (28) between circuit elements (14). After the photoresit layer (90) is developed, the accessible etch target (92) can be etched to repair or reconfigure the IC device. In another embodiment, slightly higher UV power laser output pulses (74) can be employed to ablate an etch protection resist layer (70) so any type of etch protection coating such as nonphotosensitive resist materials can be utilized with substantial manufacturing and cost benefits. Etching of the accessible etch targets (60, 62) follows this process.