

Title (en)

METHOD AND DEVICE FOR ANISOTROPIC ETCHING OF HIGH ASPECT RATIO

Title (de)

VERFAHREN UND EINRICHTUNG ZUM ANISOTROPEN ÄTZEN MIT HOHEM SEITENVERHÄLTNIS

Title (fr)

PROCEDE ET DISPOSITIF DE GRAVURE ANISOTROPE DU SILICIUM A HAUT FACTEUR D ASPECT

Publication

**EP 1464078 A1 20041006 (FR)**

Application

**EP 02806334 A 20021231**

Priority

- FR 0204588 W 20021231
- FR 0200032 A 20020103

Abstract (en)

[origin: WO03060975A1] The invention concerns a method which consists in: plasma etching treatment of a substrate (2) contained in a chamber (1) whereof the atmosphere (5) is maintained at low pressure by a vacuum-generating device (6, 7). Plasma-generating means (8) generate a plasma (9) which acts on the surface (2a) of the substrate (2). The etching method consists in subjecting the substrate (2) to an alternating succession of steps comprising: a plasma etching step with etching gas derived from an etching gas source (19), a second plasma passivation step with passivating gas derived from a passivating gas source (20), followed by a selective plasma pulsed depassivation step by the action of a cleaning plasma gas derived from a cleaning plasma gas source (21) which removes the polymer in the base zone of the cavities (2b) more efficiently than the etching gas, thereby enabling formation of cavities (2b) having an aspect ratio higher than 30, with increased speed, and good selectivity with respect to the mask protecting the substrate (2).

IPC 1-7

**H01L 21/3065**; **H01L 21/308**; **B81B 1/00**; **B81C 1/00**

IPC 8 full level

**B81C 99/00** (2010.01); **H01L 21/3065** (2006.01); **H01L 21/308** (2006.01)

CPC (source: EP US)

**B81C 1/00619** (2013.01 - EP US); **H01L 21/3065** (2013.01 - EP US); **H01L 21/30655** (2013.01 - EP US); **H01L 21/3085** (2013.01 - EP US); **B81C 2201/0112** (2013.01 - EP US)

Citation (search report)

See references of WO 03060975A1

Citation (examination)

DE 19919469 A1 20001102 - BOSCH GMBH ROBERT [DE]

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR IE IT LI LU MC NL PT SE SI SK TR

DOCDB simple family (publication)

**WO 03060975 A1 20030724**; EP 1464078 A1 20041006; FR 2834382 A1 20030704; FR 2834382 B1 20050318; JP 2005515631 A 20050526; JP 4576122 B2 20101104; US 2005103749 A1 20050519

DOCDB simple family (application)

**FR 0204588 W 20021231**; EP 02806334 A 20021231; FR 0200032 A 20020103; JP 2003560972 A 20021231; US 50065404 A 20040702