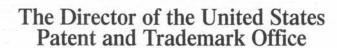
The United States of America



Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America, and if the invention is a process, of the right to exclude others from using, offering for sale or selling throughout the United States of America, or importing into the United States of America, products made by that process, for the term set forth in 35 U.S.C. 154(a)(2) or (c)(1), subject to the payment of maintenance fees as provided by 35 U.S.C. 41(b). See the Maintenance Fee Notice on the inside of the cover.

David J. Kypos

Director of the United States Patent and Trademark Office



US007939374B2

(12) United States Patent Yang

(10) Patent No.:

US 7,939,374 B2

(45) Date of Patent:

May 10, 2011

(54) SUPPLY MECHANISM FOR THE CHUCK OF AN INTEGRATED CIRCUIT DICING DEVICE

(75) Inventor: Hae Choon Yang, Singapore (SG)

(73) Assignee: Rokko Systems Pte Ltd., Singapore

(SG)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35

U.S.C. 154(b) by 0 days.

- (21) Appl. No.: 12/895,342
- (22) Filed: Sep. 30, 2010

(65) Prior Publication Data

US 2011/0021003 A1 Jan. 27, 2011

Related U.S. Application Data

(62) Division of application No. 11/660,940, filed as application No. PCT/SG2005/000288 on Aug. 23, 2005, now Pat. No. 7,829,383.

(30) Foreign Application Priority Data

Aug. 23, 200	04 (SG)	 200405166-0
Mar. 22, 200	05 (SG)	 200501802-3

- (51) Int. Cl. H01L 21/00 (2006.01)
- (52) U.S. Cl. .. 438/113; 438/464; 438/460; 257/E21.327

See application file for complete search history.

(56) References Cited

U.S. PATENT DOCUMENTS

4,407,262	A	10/1983	Wirz et al.
4,688,540	A	8/1987	Ono et al.
5,953,590	A	9/1999	Piper et al.
6,196,532	B1	3/2001	Otwell
2001/0007253		7/2001	Saito
2003/0159528	A1	8/2003	Kim et al.
2003/0203538		10/2003	Peng et al.
2007/0184646			Nakagawa et al.

FOREIGN PATENT DOCUMENTS

JP	6-47220		2/1994
JP	2003-163178		6/2003
JP	2005-158983		6/2005
KR	2002-0049954		6/2002
KR	10-2004-0044087		5/2004
KR	10-2004-0085280		10/2004
KR	10-2006-0063318		6/2006
-WO	WO-01/85367		11/2001
WO	WO-03/095169		11/2003
WO	WO-2004/053967	A1	6/2004
WO	WO-2005/062375	A2	7/2005
WO	WO-2005/109492	A1	11/2005

Primary Examiner — Thanh V Pham

Assistant Examiner - Mark A Laurenzi, III

(74) Attorney, Agent, or Firm - Dickstein Shapiro LLP

(57) ABSTRACT

A system for dicing substrates to singulate integrated circuit units within in them includes a dicing machine (Z) which operates with a chuck table (4). A lifting assembly (Ax,Ay) deposits substrates to be singulated onto the chuck table (4) at substantially the same time as it removes previously singulated units from the chuck table (4).

5 Claims, 23 Drawing Sheets

