(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
26 September 2002 (26.09.2002)

PCT

(10) International Publication Number
WO 02/075025 A3

(51) International Patent Classification[7]: C30B 29/06, 15/00, 15/14

(21) International Application Number: PCT/US01/43044

(22) International Filing Date: 22 October 2001 (22.10.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/245,610 3 November 2000 (03.11.2000) US
09/871,255 31 May 2001 (31.05.2001) US

(71) Applicant: MEMC ELECTRONIC MATERIALS, INC. [US/US]; P.O. Box 8, 501 Pearl Drive, St. Peters, MO 63376 (US).

(72) Inventors: FALSTER, Robert, J.; P.O. Box 8, 501 Pearl Drive, St. Peters, MO 63376 (US). VORONKOV, Vladimir; Viale Gherzi, 31, I-28100 Novara (IT).

(74) Agents: SCHUTH, Richard, A. et al.; Senniger, Powers, Leavitt & Roedel, One Metropolitan Square, 16th Floor, St. Louis, MO 63102 (US).

(81) Designated States *(national)*: CN, JP, KR, SG.

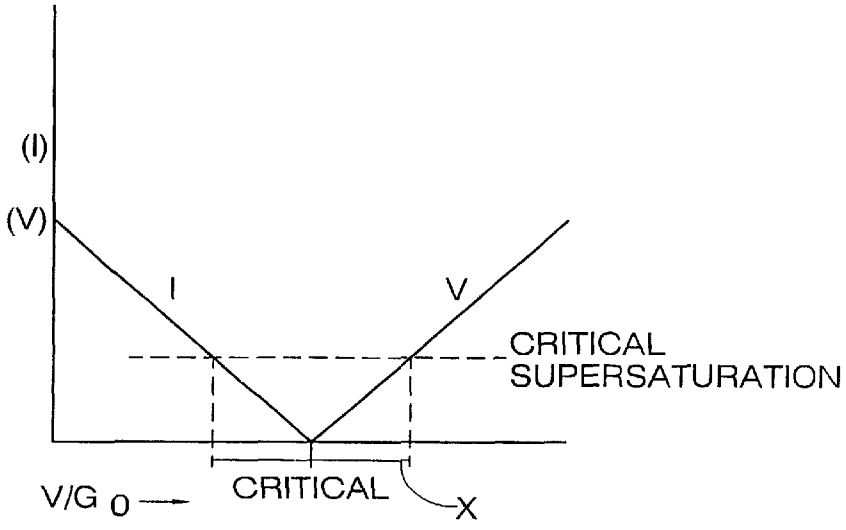
(84) Designated States *(regional)*: European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR).

Published:
— *with international search report*

(88) Date of publication of the international search report:
20 March 2003

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: PROCESS FOR PREPARING LOW DEFECT DENSITY SILICON USING HIGH GROWTH RATES



(57) Abstract: The present invention relates to a process for growing a single crystal silicon ingot which contains an axially symmetric region which is substantially free of agglomerated intrinsic point defects. The process comprises (i) forming a region within the constant diameter portion in which vacancies are the predominant intrinsic point defect; (ii) heating the lateral surface of the ingot to cause a thermally induced inward flux of silicon self interstitial atoms into the region from the heated surface which reduces the concentration of vacancies in the region; and (iii) maintaining the temperature of the region in excess of the temperature, TA, at which agglomeration of vacancy point defects into agglomerated defects occurs during the period of time between the formation of the region and the reduction of the concentration of vacancies in the region.

WO 02/075025 A3