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

CORRECTED VERSION

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
16 January 2003 (16.01.2003)

PCT

(10) International Publication Number
WO 03/004734 A1

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

(21) International Application Number: PCT/US01/44081

(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
60/252,715	22 November 2000 (22.11.2000)	US
09/871,255	31 May 2001 (31.05.2001)	US
09/972,608	5 October 2001 (05.10.2001)	US

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

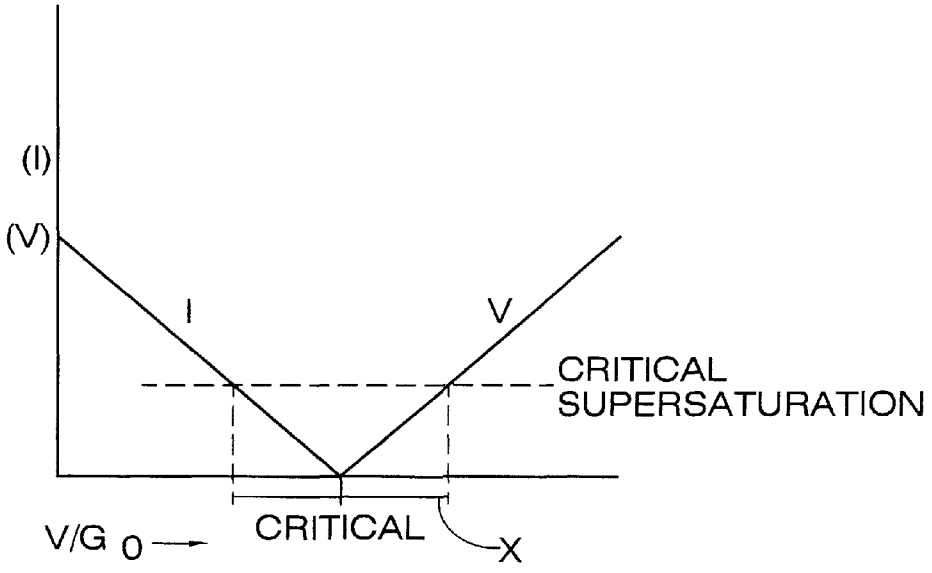
(84) Designated States *(regional)*: European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR).

Published:
— *with international search report*

(48) Date of publication of this corrected version:
10 April 2003

[Continued on next page]

(54) Title: METHOD FOR THE PRODUCTION OF LOW DEFECT DENSITY SILICON



(57) Abstract: A process for the preparation of a silicon single ingot in accordance with the Czochralski method. The process for growing the single crystal silicon ingot comprises controlling (i) a growth velocity, v, (ii) an average axial temperature gradient, G0, during the growth of a constant diameter portion of the crystal over a temperature range from solidification to a temperature of no less than about 1325 C to initially produce in the constant diameter portion of the ingot a series of predominant intrinsic point defects including vacancy dominated regions and silicon self interstitial dominated regions, alternating along the axis, and cooling the regions from the temperature of solidification at a rate which allows silicon self-interstitial atoms to diffuse radially to the lateral surface and to diffuse axially to vacancy dominated regions to reduce the concentration intrinsic point defects in each region.

WO 03/004734 A1

(15) Information about Correction:
see PCT Gazette No. 15/2003 of 10 April 2003, Section II

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.