Inventors; and


Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, [Continued on next page]

Title: INTEGRATED BYPASS DIODE ASSEMBLIES FOR BACK CONTACT SOLAR CELLS AND MODULES

Abstract: The present invention comprises methods for manufacturing solar cell modules having improved fault tolerance and the ability to maximize module power output in response to non-optimal operation of one or more solar cells in the module. To improve the fault tolerance, the individual solar cells may each have a bypass diode coupled thereto that when a single solar cell faults, only the faulted solar cell is affected. In one embodiment, a transistor may be used to improve the fault tolerance of a solar cell module.
before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(88) Date of publication of the international search report: 23 September 2010

Published:

— with international search report (Art. 21(3))
A. **CLASSIFICATION OF SUBJECT MATTER**

**HOI 31/042(2006.01)1, HOI 29/861(2006.01)1**

According to International Patent Classification (IPC) or to both national classification and IPC

B. **FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

HOI 31/042, HOI 27/14, HOI 31/04, HOI 31/045, HOI 31/06, H02J 7/35

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords bypass, diode ,via

C. **DOCUMENTS CONSIDERED TO BE RELEVANT**

<table>
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<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No</th>
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<tr>
<td>A</td>
<td>US 2008-0142071 AI (DORN, RANDY et a1 .) 19 June 2008 See whol e document .</td>
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<td>A</td>
<td>US 4933022 AI (SWANSON, RICHARD M ) 12 June 1990 See whol e document .</td>
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**Further documents are listed in the continuation of Box C**

**See patent family annex**

A Special categories of cited documents

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

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"O" document referring to an oral disclosure, use, exhibition or other means

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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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"Y" document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

**Date of the actual completion of the international search**

04 AUGUST 2010 (04 08 2010)

**Date of mailing of the international search report**

04 AUGUST 2010 (04.08.2010)

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Form PCT/ISA/210 (second sheet) (July 2009)
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<tr>
<td>EP 1744372 A2</td>
<td>17.01.2007</td>
<td>GB 2428331 A</td>
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<td>US 4933022 A1</td>
<td>12.06.1990</td>
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