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(54) Title: ELECTRODE CONFIGURATIONS FOR SEMICONDUCTOR DEVICES

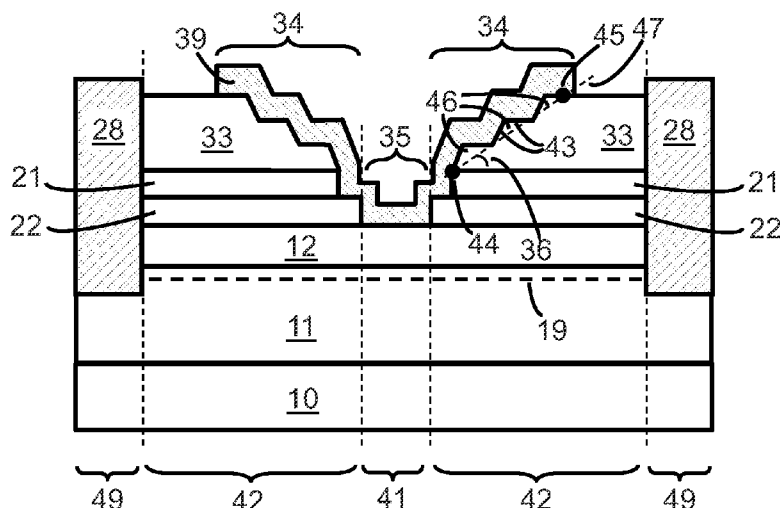


Figure 5

(57) Abstract: A III-N semiconductor device can include an electrode-defining layer having a thickness on a surface of a III-N material structure. The electrode-defining layer has a recess with a sidewall, the sidewall comprising a plurality of steps. A portion of the recess distal from the III-N material structure has a first width, and a portion of the recess proximal to the III-N material structure has a second width, the first width being larger than the second width. An electrode is in the recess, the electrode including an extending portion over the sidewall of the recess. A portion of the electrode-defining layer is between the extending portion and the III-N material structure. The sidewall forms an effective angle of about 40 degrees or less relative to the surface of the III-N material structure.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/027146**A. CLASSIFICATION OF SUBJECT MATTER****H01L 29/78(2006.01)i, H01L 21/336(2006.01)i, H01L 21/28(2006.01)i**

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)

H01L 29/78; H01L 29/47; H01L 29/778; H01L 21/28; H01L 29/20; H01L 21/285; H01L 29/22; H01L 29/02

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: III-N, recess, sidewall, electrode, transistor

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2011-0049526 A1 (CHU, RONGMING et al.) 03 March 2011 See abstract; paragraphs[0002]-[0062]; figs.5,10,13,16	1-11,12-14,15-28, 29-30,31-44,45-47, 48-62,63-79
A	WO 2005-059983 A1 (NITRONEX CORPORATION) 30 June 2005 See abstract;page 5, line 27 - page 7, line 27; fig.1A	1-79
A	WO 2008-021544 A2 (THE REGENTS OF THE UNIVERSITY OF CALIFORNIA) 21 February 2008 See abstract; page 8, line 20 - page 10, line 6; fig.2G	1-79
A	WO 2010-090885 A2 (TRANSPHORM INC.) 12 August 2010 See abstract; paragraphs[0023],[0024]; fig.8	1-79

 Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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