

**PATENT COOPERATION TREATY**

**PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference <b>M1710473</b>	<b>FOR FURTHER ACTION</b>		See item 4 below
International application No. <b>PCT/JP2018/007820</b>	International filing date ( <i>day/month/year</i> ) <b>01 March 2018 (01.03.2018)</b>	Priority date ( <i>day/month/year</i> ) <b>30 March 2017 (30.03.2017)</b>	
International Patent Classification (8th edition unless older edition indicated) <b>See relevant information in Form PCT/ISA/237</b>			
Applicant <b>MURATA MANUFACTURING CO., LTD.</b>			

<p>1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).</p> <p>2. This REPORT consists of a total of 7 sheets, including this cover sheet.</p> <p>In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.</p>																								
<p>3. This report contains indications relating to the following items:</p> <table> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table> <p>4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).</p>	<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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	Date of issuance of this report <b>01 October 2019 (01.10.2019)</b>
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**PATENT COOPERATION TREATY**

**TRANSLATION**

From the  
INTERNATIONAL SEARCHING AUTHORITY

**PCT**

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

Date of mailing (day/month/year)	<b>24.04.2018</b>
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Applicant's or agent's file reference <b>M1710473</b>	<b>FOR FURTHER ACTION</b> See paragraph 2 below
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International application No. <b>PCT/JP2018/007820</b>	International filing date (day/month/year) <b>01.03.2018</b>	Priority date (day/month/year) <b>30.03.2017</b>
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International Patent Classification (IPC) or both national classification and IPC  
**H01L23/12 (2006.01) i, H01F27/06 (2006.01) i, H01F27/29 (2006.01) i, H01G2/06 (2006.01) i, H01L25/00 (2006.01) n**

Applicant  
**MURATA MANUFACTURING CO., LTD.**

1. This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/JP	Date of completion of this opinion	Authorized officer
Facsimile No.		Telephone No.

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2018/007820

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:
  - the international application in the language in which it was filed
  - a translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).
2.  This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))
3.  With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:
  - a.  forming part of the international application as filed:
    - in the form of an Annex C/ST.25 text file.
    - on paper or in the form of an image file.
  - b.  furnished together with the international application under PCT Rule 13ter.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.
  - c.  furnished subsequent to the international filing date for the purposes of international search only:
    - in the form of an Annex C/ST.25 text file (Rule 13ter.1(a)).
    - on paper or in the form of an image file (Rule 13ter.1(b) and Administrative Instructions, Section 713).
4.  In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No. PCT/JP2018/007820
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<b>Box No. V</b>	<b>Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</b>
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1. Statement			
Novelty (N)		Claims <u>3, 5, 7, 10</u>	YES
		Claims <u>1-2, 4, 6, 8-9, 11</u>	NO
Inventive step (IS)		Claims _____	YES
		Claims <u>1-11</u>	NO
Industrial applicability (IA)		Claims <u>1-11</u>	YES
		Claims _____	NO

2. Citations and explanations:	
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Document 1: JP 2007-305740 A (MURATA MANUFACTURING CO., LTD.) 22 November 2007, paragraphs [0027]-[0030], fig. 1 (Family: none)

Document 2: JP 10-065338 A (MURATA MANUFACTURING CO., LTD.) 06 March 1998, fig. 1 (Family: none)

Document 3: JP 8-241827 A (MURATA MANUFACTURING CO., LTD.) 17 September 1996, fig. 11 (Family: none)

Document 4: JP 2007-048844 A (MURATA MANUFACTURING CO., LTD.) 22 February 2007, paragraph [0038], fig. 1 (Family: none)

Document 5: WO 2011/021364 A1 (PANASONIC CORPORATION) 24 February 2011, paragraphs [0050]-[0053], [0087]-[0093], fig. 1-3, 9 (Family: none)

(1) The invention as in claims 1-2, 4, 6, and 8-9 lacks novelty and does not involve an inventive step in the light of document 1 cited in the ISR.

(Claim 1)

Document 1 discloses a configuration in which

**Box No. V** Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

surface-mounted components 30A, 30B are mounted on the upper surface of a ceramic laminate 11, and a cavity C is formed on the lower surface. It is considered that the "ceramic laminate 11" and "cavity C" mentioned here correspond to the "substrate" and "recess part" in the present application. Moreover, it is also indicated that a second terminal electrode 13B is formed on the bottom surface on the inside of the cavity C and a first terminal electrode 13A is formed on a peripheral edge part of the cavity C. Therefore, it is considered that the "second terminal electrode 13B" and "first terminal electrode 13A" disclosed in document 1 correspond to the "first electrode" and "second electrode" in the present application. Furthermore, it is obvious from fig. 1 that a portion ("first separation part" in the present application) in which a peripheral edge part is exposed is present between the first terminal electrode 13A and the cavity C.

(Claims 2 and 8)

From fig. 1, it is obvious that the lower surface of the second terminal electrode 13B is closer to the upper surface of the ceramic laminate 11 than the lower surface of the first terminal electrode 13A.

(Claims 4 and 9)

From fig. 1, it is obvious that a portion ("second separation part" in the present application) in which the bottom surface is exposed is present between the second terminal electrode 13B and a side surface of the cavity C.

**Box No. V** Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

(Claim 6)

Paragraph [0030] in document 1 also indicates that it is possible to employ an LTCC as a material that constitutes a part of the ceramic laminate 11.

(2) The invention as in claim 3 does not involve an inventive step in the light of document 1 cited in the ISR.

The thicknesses of the second terminal electrode 13B and the first terminal electrode 13A are merely a design matter, and a person skilled in the art could easily make the thicknesses approximately the same.

(3) The invention as in claims 5 and 10 does not involve an inventive step in the light of documents 1-3 cited in the ISR.

A configuration in which a peripheral part (mounting surface) is tilted toward the outside is merely a well-known configuration, e.g., as disclosed in documents 2 and 3, and a person skilled in the art could employ, as appropriate and as necessary, such a well-known configuration in the invention disclosed in document 1.

(4) The invention as in claim 7 does not involve an inventive step in the light of documents 1-4 cited in the ISR.

A configuration that additionally provides a case that covers a mounted component and some of a side surface of a substrate is merely a well-known

**Box No. V** Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

configuration, e.g., as disclosed in document 4, and a person skilled in the art could employ, as appropriate and as necessary, such a well-known configuration in the invention disclosed in document 1.

(5) The invention as in claim 11 lacks novelty and does not involve an inventive step in the light of document 5 cited in the ISR.

In consideration of fig. 9 disclosed in document 5, it is considered that the "wiring electrode 475," "wiring electrode 8," and "circuit substrate 7" correspond to the "first pad electrode," "second pad electrode," and "mounted substrate." In addition, document 5 discloses a configuration in which an electrode 405 ("second electrode" in the present application) is provided to a protuberant surface 404 of a substrate 401, and an electrode 473 ("first electrode" in the present application) is provided to a surface 472 recessed beyond the protuberant surface 404. Furthermore, it is indicated that it is possible to employ various arrangements with regard to the shape of recesses/projections pertaining to projection parts and recess parts on a substrate. Also, the example in fig. 2 discloses a configuration having a recess part in the center and a projection part on a peripheral part.

From fig. 9, it is also obvious that a wiring electrode 8 and electrode 405, and wiring electrode 475 and electrode 473 are joined, respectively, by using electrodes 9, 474.