

**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>13.12.2016</b>
-------------------------------------	-------------------

Applicant's or agent's file reference <b>0249SP364872</b>	<b>FOR FURTHER ACTION</b> See paragraph 2 below
--	--

International application No. <b>PCT/JP2016/083476</b>	International filing date (day/month/year) <b>11.11.2016</b>	Priority date (day/month/year) <b>27.11.2015</b>
---	---	---

International Patent Classification (IPC) or both national classification and IPC  
**H05K1/14 (2006.01) i**

Applicant  
**SONY CORPORATION**

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/JP2016/083476

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/JP2016/083476
--

<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>
------------------	---

1. Statement			
Novelty (N)		Claims <u>4, 7-11</u>	YES
		Claims <u>1, 2, 3, 5, 6</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:	
--------------------------------	--

(Documents in column C of the ISR)

Document 1: DE 10 2007 046 493 A1 (CONTINENTAL AUTOMOTIVE GMBH) 09 April 2009, paragraph [0027], fig. 2, 3, 7 & WO 2009/043649 A2

Document 2: JP 8-195540 A (HITACHI, LTD.) 30 July 1996, paragraphs [0003]-[0007], fig. 1-4 (Family: none)

Document 3: US 7005584 B2 (LEVI, Robert at al.) 28 February 2006, fig. 3-7 (Family: none)

Document 4: JP 2005-5092 A (SONY CORP.) 06 January 2005, paragraphs [0016]-[0019], [0025]-[0030], fig. 1, 2, 4 (Family: none)

Document 5: Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 4670/1980 (Laid-open No. 106471/1981) (FUJITSU, LTD.) 19 August 1981, fig. 4, 5 (Family: none)

(Opinion on novelty and inventive step)

Claims 1, 2, 3, 5, 6

Document 1

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2016/083476

**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**

Document 1 describes a substrate as in fig. 2 being assembled as seen in fig. 3 and 7.

The surfaces connecting the surface present on a component 14 on a substrate (2) (corresponding to the "single-piece substrate" of the present application) present in the vertical direction and substrates (1, 4) (corresponding to the "substrate" and the "other substrate" of the present application) present in the horizontal direction in fig. 7 of document 1 are clearly different.

Document 1 indicates that a multilayer substrate can be used as the substrate (paragraph [0027]). Multilayer substrates generally comprise sheets forming a plurality of layers. Given the substrate as in fig. 2 of document 1, the laminating direction of the substrate (2) and the substrates (1, 4) is different from the vertical direction.

The invention as in claims 1, 2, 3, 5, and 6 therefore lacks novelty and does not involve an inventive step.

Claim 7

Document 1

It shall be apparent that multilayer substrates generally involve laminating a plurality of conductive patterns, whereby the necessary internal and external wiring is formed. This configuration can be employed, as appropriate, when a multilayer substrate is used.

Other matters have been examined with the cited claims.

The invention as in claim 7 therefore does not involve an inventive step.

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2016/083476

**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**

Claims 1, 2, 3

Document 2

Document 2 describes an electrical circuit device in which a component-mounting substrate (4, 4) is assembled vertically with respect to a substrate (1, 1).

The surfaces connecting the surface present on the component 2 on the component-mounting substrate (4, 4) (corresponding to the "single-piece substrate" of the present application) and the substrate (1, 1) (corresponding to the "substrate" and the "other substrate" of the present application) present in the horizontal direction in fig. 4 of document 2 are clearly different.

The invention as in claims 1, 2, and 3 therefore lacks novelty and does not involve an inventive step.

Claims 1, 2, 3

Document 3

Document 3 describes a substrate as in fig. 3 being assembled as seen in fig. 4-7.

The surfaces connecting the surface present on the component on the substrate (404, 408) (corresponding to the "single-piece substrate" of the present application) and the substrate (402, 406) (corresponding to the "substrate" and the "other substrate" of the present application) present in the horizontal direction in fig. 7 of document 3 are clearly different.

The invention as in claims 1, 2, and 3 therefore lacks novelty and does not involve an inventive step.

Claim 1

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2016/083476

**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**

Documents 4 and 1-3

Document 4 describes an electrical circuit device, in which a substrate (19A), as in fig. 4, is cut and rotated, resulting in a partial substrate (21A). The cross-section of the partial substrate is set against a circuit substrate (11, 11).

A component is not installed on the partial substrate of document 4, but positioning a component in a location corresponding to the partial substrate of document 4 is well-known, as exemplified in any of documents 1, 2, and 3, and does not go beyond what could be appropriately employed.

The invention as in claim 1 therefore does not involve an inventive step.

Claim 2

Documents 4 and 1-3

The partial substrate of document 4 is electrically connected to the circuit substrate (11, 11).

Other matters have been examined with the cited claims.

The invention as in claim 2 therefore does not involve an inventive step.

Claim 3

Documents 4 and 1-3

Positioning a component in a location corresponding to the partial substrate of document 4 is well-known, as exemplified in any of documents 1, 2, and 3, but in all cases the component is mounted in a different direction from the circuit substrate (11, 11) given in document 4, and this does not go beyond what could be appropriately

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2016/083476

**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**

employed.

Other matters have been examined with the cited claims.

The invention as in claim 3 therefore does not involve an inventive step.

Claim 4

Documents 4, 1-3, and 5

Document 4 involves partial wiring (22A) being used directly as an electrode.

However, when an electrode is provided to a corner part of a component or substrate, implementing the electrode on three surfaces facing the corner is well-known, as exemplified in document 5 (the pads (14, 16)), and this does not go beyond what could be appropriately employed.

Other matters have been examined with the cited claims.

The invention as in claim 4 therefore does not involve an inventive step.

Claims 5, 6

Documents 4 and 1-3

Document 4 indicates that a multilayer substrate can be used for the substrate (19A) that constitutes the partial substrate (21A) (paragraph [0029]). Because the cut cross-section of the partial substrate (21A) of document 4 is set against circuit substrate (11, 11), when the substrate (19A) is a multilayer substrate, the plane of lamination is clearly vertically set against the circuit substrate (11, 11).

Additionally, using a plurality of sheet-like

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2016/083476

**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**

substrates to form a multilayer substrate is common.

Other matters have been examined with the cited claims.

The invention as in claims 5 and 6 therefore does not involve an inventive step.

Claim 7

Documents 4 and 1-3

It shall be apparent that multilayer substrates generally involve laminating a plurality of conductive patterns and insulating layers, whereby the necessary internal and external wiring is formed. In cases where a multilayer substrate is used, a substrate having such internal wiring can be assumed as a matter of course.

Other matters have been examined with the cited claims.

The invention as in claim 7 therefore does not involve an inventive step.

Claim 8

Documents 4 and 1-3

Whether to have the substrate be a discrete item resulting from cutting a larger item, as in document 4, or to manufacture individual items having the ultimate shape thereof from the start does not go beyond what could be appropriately established.

Other matters have been examined with claim 7.

The invention as in claim 8 therefore does not involve an inventive step.

Claim 9

Document 4



WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2016/083476

**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

Document 4 describes an electrical circuit device, in which a substrate (19A), as in fig. 4, is cut and rotated, resulting in a partial substrate (21A). The cross-section of the partial substrate is set against a circuit substrate (11, 11).

Document 4 indicates that a multilayer substrate can be used for the substrate (19A) that constitutes the partial substrate (21A) (paragraph [0029]). Because the cut cross-section of the partial substrate (21A) of document 4 is set against circuit substrate (11, 11), when the substrate (19A) is a multilayer substrate, the plane of lamination is clearly vertically set against the circuit substrate (11, 11).

Document 4 does not indicate that the multilayer substrate is provided with a "through electrode" such as a so-called via hole or through hole.

However, a "through electrode" such as a via hole or through hole used as a connecting means for different layers in a multilayer substrate does not go beyond what could be provided as necessary and appropriate.

The invention as in claim 9 therefore does not involve an inventive step.

Claim 10

Document 4

The end part of the partial wiring (22A) in document 4 clearly constitutes an electrode electrically connected to the circuit substrate (11, 11).

Other matters have been examined with the cited claims.

The invention as in claim 10 therefore does not involve an inventive step.

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2016/083476

**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 11

Document 4

Providing a "through electrode" as investigated with claim 9 does not go beyond a commonly implemented connection.

Other matters have been examined with the cited claims.

The invention as in claim 11 therefore does not involve an inventive step.

**Box No. VII      Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:

Claim 4 is a dependent claim that cites claim 1, but despite it being clear that claim 4 could be described *together* with claim 2, which is another dependent claim that cites claim 1, these claims are not described *together*.

Claim 5 is a dependent claim that cites claim 2, but despite the fact that claim 5 could clearly be described *together* with claim 3, which is another dependent claim that cites claim 2, these claims are not described *together*.

In the points above, this application does not satisfy the requirements stipulated in PCT Rule 6.4(c).