

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
Stylesheet Version v1.2

EPAS ID: PAT3768068

<b>SUBMISSION TYPE:</b>	CORRECTIVE ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	Corrective Assignment to correct the CONVEYING PARTY DATA OF THE FIFTH INVENTOR, MATSUDA, TSUKASA previously recorded on Reel 037523 Frame 0811. Assignor(s) hereby confirms the ASSIGNMENT.
<b>RESUBMIT DOCUMENT ID:</b>	503711600

## CONVEYING PARTY DATA

Name	Execution Date
JONG-JIN LEE	11/03/2015
RAK-HWAN KIM	11/03/2015
BYUNG-HEE KIM	11/03/2015
JIN-NAM KIM	11/03/2015
WAN-SOO PARK	11/03/2015
NAE-IN LEE	11/03/2015
JAE-WON CHANG	11/03/2015
EUN-JI JUNG	11/03/2015
JEONG-OK CHA	12/07/2015
JAE-WON HWANG	11/03/2015
JUNG-HA HWANG	11/03/2015

## RECEIVING PARTY DATA

<b>Name:</b>	Samsung Electronics Co., Ltd.
<b>Street Address:</b>	129 Samsung-ro, Yeongtong-gu
<b>City:</b>	Suwon-si, Gyeonggi-do
<b>State/Country:</b>	KOREA, REPUBLIC OF
<b>Postal Code:</b>	443-742

## PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	15000302

## CORRESPONDENCE DATA

Fax Number: (703)668-8200

*Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.*

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Email: dcmalroom@hdp.com

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**Address Line 1:** P.O. BOX 8910  
**Address Line 4:** RESTON, VIRGINIA 20195

<b>ATTORNEY DOCKET NUMBER:</b>	9862-000685-US
<b>NAME OF SUBMITTER:</b>	GARY D. YACURA, REG. #35,416
<b>SIGNATURE:</b>	/Gary D. Yacura/
<b>DATE SIGNED:</b>	03/04/2016

**Total Attachments: 11**

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### PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1

Stylesheet Version v1.2

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
JONG-JIN LEE	11/03/2015
RAK-HWAN KIM	11/03/2015
BYUNG-HEE KIM	11/03/2015
JIN-NAM KIM	11/03/2015
TSUKASA MATSUDA	12/15/2015
WAN-SOO PARK	11/03/2015
NAE-IN LEE	11/03/2015
JAE-WON CHANG	11/03/2015
EUN-JI JUNG	11/03/2015
JEONG-OK CHA	12/07/2015
JAE-WON HWANG	11/03/2015
JUNG-HA HWANG	11/03/2015
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	Samsung Electronics Co., Ltd.
<b>Street Address:</b>	129 Samsung-ro, Yeongtong-gu
<b>City:</b>	Suwon-si, Gyeonggi-do
<b>State/Country:</b>	KOREA, REPUBLIC OF
<b>Postal Code:</b>	443-742

**PATENT****REEL: 037889 FRAME: 0843**

PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	15000302

## CORRESPONDENCE DATA

Fax Number: (703)668-8200

Phone: 703-668-8000

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Correspondent Name: HARNESS, DICKEY &amp; PIERCE, P.L.C.

Address Line 1: P.O. BOX 8910

Address Line 4: RESTON, VIRGINIA 20195

ATTORNEY DOCKET  
NUMBER:

9862-000685-US

NAME OF SUBMITTER:

GARY D. YACURA REG.NO. 35416

Signature:

/Gary D. Yacura/

Date:

01/19/2016

## Total Attachments: 9

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## RECEIPT INFORMATION

EPAS ID: PAT3701281

Receipt Date: 01/19/2016

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PATENT

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**SUBSTITUTE STATEMENT**

Circumstances permitting execution of this substitute statement:

- Inventor is deceased,  
 Inventor is under legal incapacity,  
 Inventor cannot be found or reached after diligent effort, or  
 Inventor has refused to execute the oath or declaration under 37 CFR 1.63.

If there are joint inventors, please check the appropriate box below:

- An application data sheet under 37 CFR 1.76 (PTO/AIA/14 or equivalent) naming the entire inventive entity has been or is currently submitted.

OR

- An application data sheet under 37 CFR 1.76 (PTO/AIA/14 or equivalent) has not been submitted. Thus, a Substitute Statement Supplemental Sheet (PTO/AIA/11 or equivalent) naming the entire inventive entity and providing inventor information is attached. See 37 CFR 1.64(b).

**WARNING:**

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

**PERSON EXECUTING THIS SUBSTITUTE STATEMENT:**Name: **Taeksung KIM**

Date (Optional):

Signature:

**APPLICANT NAME AND TITLE OF PERSON EXECUTING THIS SUBSTITUTE STATEMENT:**

If the applicant is a juristic entity, list the applicant name and the title of the signer:

**Samsung Electronics Co., Ltd.**

Applicant Name:

Title of Person Executing  
This Substitute Statement: **Vice President, Director of IP Prosecution**

The signer, whose title is supplied above, is authorized to act on behalf of the applicant.

**Residence of the signer (unless provided in an application data sheet, PTO/AIA/14 or equivalent):**City **Suwon-si**

State

**Gyeonggi-do**

Country

**Republic of Korea****Mailing Address of the signer (unless provided in an application data sheet, PTO/AIA/14 or equivalent)****Samsung Electronics Co., Ltd.  
129, Samsung-ro, Yeongtong-gu**City **Suwon-si**

State

**Gyeonggi-do**

Zip

**443-742**

Country

**Republic of Korea**

Note: Use an additional PTO/AIA/02 form for each inventor who is deceased, legally incapacitated, cannot be found or reached after diligent effort, or has refused to execute the oath or declaration under 37 CFR 1.63.

COMBINED DECLARATION (37 CFR §1.63) FOR UTILITY PATENT APPLICATION AND ASSIGNMENT FORM<sup>1</sup>

The undersigned acknowledges that this document is being used both as an assignment of the invention and as the declaration (37 CFR 1.63) for a Utility or Design Application.

WHEREAS, the undersigned, hereinafter referred to collectively as Assignor, has invented:

Title: **WIRING STRUCTURES, METHODS OF FORMING WIRING STRUCTURES AND METHODS OF MANUFACTURING SEMICONDUCTOR DEVICES**

for which Assignor is about to make or has made United States or International application for patent.

WHEREAS, as a below named inventor(s), I/(we) hereby declare that:

**Section I. Declaration**

This declaration is directed to:

- The attached U.S. non-provisional patent application, or
- U.S. non-provisional patent application number \_\_\_\_\_, filed on \_\_\_\_\_, or
- PCT international patent application number \_\_\_\_\_, filed on \_\_\_\_\_.

The above-identified application was made or authorized to be made by me (us).

I (we) believe that I am (we are) the original inventor (original joint inventors) of a claimed invention in the above-identified application.

I (we) hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

<sup>1</sup> This form requires the use of an Application Data Sheet.

SEC Ref No. IE-201412-041-1-US0 Attorney Ref No. 9862-000685-US

SAMSUNG ELECTRONICS CO., LTD.

I hereby state that I have reviewed and understand the contents of the above identified application, including the claims.

I acknowledge that I am aware of the duty to disclose information which is material to patentability as defined in 37 CFR § 1.56.

## Section II. Assignment

In consideration of the sum of One Dollar (\$1.00) and other good and valuable consideration paid to each of the undersigned, the undersigned hereby sell(s) and assign(s) to

**Samsung Electronics Co., Ltd.**

having an address at 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do 443-742, Republic of Korea (hereinafter designated as the Assignee), the entire (100%) right, title and interest for the United States as defined in 35 USC §100, in the invention described in the application identified in Section I of this document.

Assignor hereby confirms any prior assignment to Assignee, and to the extent that Assignor has not already done so, agrees to assign, and hereby does, sell, assign and transfer unto Assignee and its successors in interest, the full and exclusive right, title and interest in the United States of America and throughout the world, including the right to claim priority under the laws of the United States, the Paris Convention, and any foreign countries, to the inventions as described in the aforesaid application, to the aforesaid application itself, and all divisions, continuations, continuations-in-part, or other applications claiming priority directly or indirectly from the aforesaid application, and any United States or foreign Letters Patent, utility model, or other similar rights which may be granted thereon, including reissues, reexaminations and extensions thereof, and all copyright rights throughout the world in the aforesaid application and the subject matter disclosed therein, these rights, title and interest to be held and enjoyed by Assignee to the full end of the term for which the Letters Patent, utility model, or other similar rights, are granted and any extensions thereof as fully and entirely as the same would have been held by Assignor had this assignment and sale not been made, and the right to sue for, and recover for past infringements of, or liabilities for, any of the rights relating to any of the applications, patents, utility models, or other similar rights, resulting therefrom, and the copyright rights;

Assignor hereby covenants and agrees to execute all instruments or documents required or requested for the making and prosecution of any applications of any type for patent, utility model, or other similar rights, and for copyright, in the United States and in all foreign

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SEC Ref No. IE-201412-041-1-US0 Attorney Ref No. 9862-000685-US

SAMSUNG ELECTRONICS CO., LTD.

countries including, but not limited to, any provisional, continuation, continuation-in-part, divisional, renewal or substitute thereof, and as to letters patent any reissue, re-examination, or extension thereof, and for litigation regarding, or for the purpose of protecting title and to the said invention, the United States application for patent, or Letters Patent therefor, and to testify in support thereof, for the benefit of Assignee without further or other compensation than that above set forth;

Assignor hereby covenants that no assignment, sale, license, agreement or encumbrance has been or will be entered into which would conflict with this Assignment; and

Assignor hereby requests the United States Patent and Trademark Office to issue the Letters Patent of the United States of America to Assignee, and requests that any official of any country or countries foreign to the United States, whose duty it is to issue or grant patents and applications as aforesaid, to issue the Letters Patent, Utility Model Registration or other similar right to Assignee.

The undersigned hereby grant(s) the law firm of **Harness, Dickey & Pierce, P.L.C.** the power to insert on this Declaration and Assignment any further identification which may be necessary or desirable in order to comply with the rules of the U.S. Patent and Trademark Office for recordation of this document.

**Section III. Inventor(s)/Assignor(s) Signature(s)**

LEGAL NAME OF FIRST INVENTOR/ASSIGNOR	Family Name	First Given Name	Second Given Name
	LEE	Jong-Jin	
SIGNATURE <u><i>BH/00</i> <i>1/16</i></u>		DATE <u>2015. 11. 3</u>	

SEC Ref No. IE-201412-041-1-US0


Attorney Ref No. 9862-000685-US

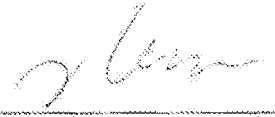
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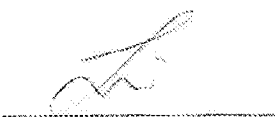
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**PATENT**  
**REEL: 037889 FRAME: 0848**



LEGAL NAME OF SECOND INVENTOR/ASSIGNOR	Family Name	First Given Name	Second Given Name
		KIM	Rak-Hwan
SIGNATURE 		DATE 2015. 11. 03	

LEGAL NAME OF THIRD INVENTOR/ASSIGNOR	Family Name	First Given Name	Second Given Name
		KIM	Byung-Hee
SIGNATURE 		DATE 2015. 11. 3	

LEGAL NAME OF FOURTH INVENTOR/ASSIGNOR	Family Name	First Given Name	Second Given Name
		KIM	Jin-Nam
SIGNATURE 		DATE 2015. 11. 3	

SEC Ref No. IE-201412-041-1-US0 Attorney Ref No. 9862-000685-US

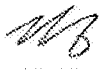
LEGAL NAME OF FIFTH INVENTOR/ASSIGNOR	Family Name	First Given Name	Second Given Name
	MATSUDA	Tsukasa	
SIGNATURE _____		DATE _____	

LEGAL NAME OF SIXTH INVENTOR/ASSIGNOR	Family Name	First Given Name	Second Given Name
	PARK	Wan-Soo	
SIGNATURE <u>Park Wan-Soo</u>		DATE <u>2015. 11. 13</u>	


LEGAL NAME OF SEVENTH INVENTOR/ASSIGNOR	Family Name	First Given Name	Second Given Name
	LEE	Nae-In	
SIGNATURE <u>[Signature]</u>		DATE <u>11/3/2015</u>	

SEC Ref No. IE-201412-041-1-US0 Attorney Ref No. 9862-000685-US

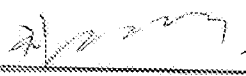
LEGAL NAME OF EIGHTH INVENTOR/ASSIGNOR	Family Name	First Given Name	Second Given Name
		CHANG	Jae-Won

SIGNATURE  DATE 2015.11.3

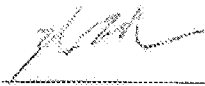
LEGAL NAME OF NINTH INVENTOR/ASSIGNOR	Family Name	First Given Name	Second Given Name
		JUNG	Eun-Ji

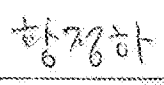
SIGNATURE  DATE 2015/11/3

LEGAL NAME OF TENTH INVENTOR/ASSIGNOR	Family Name	First Given Name	Second Given Name
		CHA	Jeong-Ok

SIGNATURE  DATE 12.17.2015

SEC Ref No. IE-201412-041-1-US0 Attorney Ref No. 9862-000685-US

LEGAL NAME OF ELEVENTH INVENTOR/ASSIGNOR	Family Name	First Given Name	Second Given Name
	HWANG	Jae-Won	
SIGNATURE 		DATE 2015.11.3	

LEGAL NAME OF TWELFTH INVENTOR/ASSIGNOR	Family Name	First Given Name	Second Given Name
	HWANG	Jung-Ha	
SIGNATURE 		DATE 2015.11.3	

SEC Ref No. IE-201412-041-1-US0

Attorney Ref No. 9862-000685-US