502611215 12/20/2013

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2

EPAS ID: PAT2657679

| SUBMISSION TYPE: | NEW ASSIGNMENT |
|-----------------------|----------------|
| NATURE OF CONVEYANCE: | ASSIGNMENT |

CONVEYING PARTY DATA

| Name | Execution Date |
|----------------|----------------|
| JONG-KOOK PARK | 12/19/2013 |
| HAN-SANG SONG | 12/19/2013 |
| JIN-YUL LEE | 12/19/2013 |
| CHANG-KI LEE | 12/19/2013 |

RECEIVING PARTY DATA

| Name: | SK HYNIX INC. |
|-----------------|---|
| Street Address: | 2091, GYEONGCHUNG-DAERO, BUBAL-EUB, ICHEON-SI |
| City: | GYEONGGI-DO |
| State/Country: | KOREA, REPUBLIC OF |

PROPERTY NUMBERS Total: 1

| Property Type | Number |
|---------------------|----------|
| Application Number: | 14137339 |

CORRESPONDENCE DATA

502611215

 Fax Number:
 (571)327-5452

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 571-327-5450

 Email:
 ipntlaw@ipntlaw.com

Correspondence will be sent via US Mail when the email attempt is unsuccessful.

Correspondent Name: IP & T GROUP LLP
Address Line 1: 8230 LEESBURG PIKE

Address Line 2: SUITE 650

Address Line 4: VIENNA, VIRGINIA 22182

| | PATENT |
|-------------------------|------------------|
| Signature: | /Jun Jeong PARK/ |
| NAME OF SUBMITTER: | JUN JEONG PARK |
| ATTORNEY DOCKET NUMBER: | P13H0207/US |

REEL: 031833 FRAME: 0528

OP \$40.00 14137339

| Date: | 12/20/2013 |
|--|--|
| | This document serves as an Oath/Declaration (37 CFR 1.63). |
| Total Attachments: 4 source=IVX000133753_P13H0207US_ASS source=IVX000133753_P13H0207US_ASS source=IVX000133753_P13H0207US_ASS source=IVX000133753_P13H0207US_ASS | GIGNMENT&DECLARATION#page2.tif |

PATENT REEL: 031833 FRAME: 0529

SHINSUNG: IVX000133753
Attorney Docket No.:

ASSIGNMENT OF AND DECLARATION FOR APPLICATION FOR UNITED STATES LETTERS PATENT

| FOR UNITED STATES LETTERS PATENT | |
|--|---|
| WHEREAS PARK Jong-Kook , hereinafter | ſ |
| referred to collectively as the assignor and inventor, has invented a certain improvement relating to SEMICONDUCTOR DEVICE WITH AIR GAP | |
| | |
| [X] said application being attached hereto; [] said application having been filed in the United States Patent and Trademark Office on, as Application Serial No, and, and, and | ided |
| on | |
| AND WHEREAS SK hynix Inc. | |
| hereinafter referred to as the assignee or applicant, is desirous of acquiring the entire right, title and interest in and to said application, including any and all divisions and continuations thereof, and in and to said invention and any and all patents which may be granted therefor, including any and all renewals, reissues and prolongations thereof; | S |
| NOW THIS WITNESSETH, that for and in consideration of One Dollar (\$1.00), and other good and value consideration paid by said assignee to said assignor, the receipt of which is hereby acknowledged, said assignor assigns, sells and transfers to said assignee, and said assignee's successors and assigns, the full and exclusive right, title interest in and to said application, including any and all divisions and continuations thereof, and in and to said invention any and all patents which may be granted therefor, including any and all renewals, reissues and prolongations thereof; assignee, and said assignee's successors and assigns, to have, hold, exercise and enjoy the said application, including and all divisions and continuations thereof, and the said invention any and all patents which may be granted there including any and all renewals, reissues and prolongations thereof, with all the rights, powers, privileges and advantage anywise arising from or appertaining thereto, for and during the term or terms of any and all such patents when gran including any and all renewals, reissues and prolongations thereof, for the use and benefit of said assignee, and assignee's successors and assigns, in as ample and beneficial a manner as the said assignor might or could have held enjoyed the same, if this assignment had not been made. | reby and and said any for, s in ted, |
| AND said assignor hereby agrees to perform, upon the request of said assignee, or said assignee's successors assigns, any and all acts relating to the obtaining or to the asserting of said patents, including any and all renewals, reiss and prolongations thereof. | s or iues |
| AND said assignor authorizes and requests the Commissioner of Patents and Trademarks to issue Letters Patent said application, and on any and all divisions and continuations thereof, to said assignee, and said assignee's successors assigns, in accordance herewith. | t on and |
| As an above-named inventor, I hereby declare that the above-identified application was made or authorized to made by me, and that I am the original inventor or an original joint inventor of a claimed invention in the application. | be be |
| I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 10 by fine or imprisonment of not more than five (5) years, or both. | 100 |
| ASSIGNOR (INVENTOR): | |
| Signature: PARK Jong-kook Date: December 19,2013 | |
| Printed or Typed Name: PARK, Jong-Kook | |

Page 1 of 1

SHINSUNG: IVX000133753

Attorney Docket No.:

| ASSIGNMENT OF AND DECLARATION FOR APPLICATION FOR UNITED STATES LETTERS PATENT | |
|--|--|
| WHEREAS SONG, Han-Sang | , hereinalter |
| referred to collectively as the assignor and inventor, has invented a certain improvement relating to SEMICONDUCTOR DEVICE WITH AIR GAP | |
| X said application being attached hereto; [] said application having been filed in the United States Patent and Trademark Office on | was amended |
| on (if applicable);] the specification of which was filed under the Patent Cooperation Treaty on Scrial No, the United States of America being designated. | |
| AND WHEREAS SK hynix Inc. hereinafter referred to as the assignee or applicant, is desirous of acquiring the entire right, title and interest application, including any and all divisions and continuations thereof, and in and to said invention and any a which may be granted therefor, including any and all renewals, reissues and prolongations thereof; NOW THIS WITNESSETH, that for and in consideration of One Dollar (\$1.00), and other go consideration paid by said assignee to said assigner, the receipt of which is hereby acknowledged, said assigns, sells and transfers to said assignee, and said assignee's successors and assigns, the full and exclusiniterest in and to said application, including any and all divisions and continuations thereof, and in and to said assignee, and said assignee, and said assignee's successors and assigns, to have, hold, exercise and enjoy the said application and all divisions and continuations thereof, and the said invention and any and all patents which may be including any and all renewals, reissues and prolongations thereof, with all the rights, powers, privileges a anywise arising from or appertaining thereto, for and during the term or terms of any and all such paten including any and all renewals, reissues and prolongations thereof, for the use and benefit of said as assignee's successors and assigns, in as ample and beneficial a manner as the said assignor might or coulenjoyed the same, if this assignment had not been made. | and all patents and and valuable assignor hereby we right, title and aid invention and ions thereof; said on, including any granted therefor, and advantages in ts when granted, sionee, and said |
| AND said assignor hereby agrees to perform, upon the request of said assignee, or said assigne assigns, any and all acts relating to the obtaining or to the asserting of said patents, including any and all reand prolongations thereof. | e's successors or onewals, reissues |
| AND said assignor authorizes and requests the Commissioner of Patents and Trademarks to issue said application, and on any and all divisions and continuations thereof, to said assignee, and said assignce assigns, in accordance herewith. | Letters Patent on 's successors and |
| As an above-named inventor, I hereby declare that the above-identified application was made or made by me, and that I am the original inventor or an original joint inventor of a claimed invention in the ap | authorized to be plication. |
| I hereby acknowledge that any willful false statement made in this declaration is punishable under by fine or imprisonment of not more than five (5) years, or both. | · 18 U.S.C. 1001 |
| ASSIGNOR (INVENTOR): | |
| Signature: SoN4, Han-Sang Date: December 19,2013 | reporting operations of the second second |
| Printed or Typed Name: SONG, Han-Sang | |
| Page 1 of 1 | |

REEL: 031833 FRAME: 0531

SHINSUNG: IVX000133753

| Attorney Docket No.: | gavernous research |
|--|--|
| ASSIGNMENT OF AND DECLARATION FOR APPLICATION FOR UNITED STATES LETTERS PATENT | |
| WHEREAS LEE, Jin-Yul , herein | after |
| referred to collectively as the assignor and inventor, has invented a certain improvement relating to SEMICONDUCTOR DEVICE WITH AIR GAP | Account MANA de |
| | |
| [X] said application being attached hereto; [] said application having been filed in the United States Patent and Trademark Office on | amended |
| on(if applicable); [] the specification of which was filed under the Patent Cooperation Treaty on, Serial No, the United States of America being designated. | |
| AND WHEREAS SK hynix Inc. | |
| hereinafter referred to as the assignee or applicant, is desirous of acquiring the entire right, title and interest in an application, including any and all divisions and continuations thereof, and in and to said invention and any and all which may be granted therefor, including any and all renewals, reissues and prolongations thereof; | d to said l patents |
| NOW THIS WITNESSETH, that for and in consideration of One Dollar (\$1.00), and other good a consideration paid by said assignee to said assigner, the receipt of which is hereby acknowledged, said assigns, sells and transfers to said assignee, and said assignee's successors and assigns, the full and exclusive rig interest in and to said application, including any and all divisions and continuations thereof, and in and to said in any and all patents which may be granted therefor, including any and all renewals, reissues and prolongations t assignee, and said assignee's successors and assigns, to have, hold, exercise and enjoy the said application, in and all divisions and continuations thereof, and the said invention and any and all patents which may be grant including any and all renewals, reissues and prolongations thereof, with all the rights, powers, privileges and accompanyies arising from or appertaining thereto, for and during the term or terms of any and all such patents which including any and all renewals, reissues and prolongations thereof, for the use and benefit of said assignee's successors and assigns, in as ample and beneficial a manner as the said assignor might or could hall enjoyed the same, if this assignment had not been made. | the transport of transport of the transport of tr |
| AND said assignor hereby agrees to perform, upon the request of said assignee, or said assignee's seassigns, any and all acts relating to the obtaining or to the asserting of said patents, including any and all renewland prolongations thereof. | ecessors or als, reissues |
| AND said assignor authorizes and requests the Commissioner of Patents and Trademarks to issue Letter said application, and on any and all divisions and continuations thereof, to said assignee, and said assignee's successigns, in accordance herewith. | rs Patent on cessors and |
| As an above-named inventor, I hereby declare that the above-identified application was made or authomade by me, and that I am the original inventor or an original joint inventor of a claimed invention in the applica | orized to be |
| I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 thby fine or imprisonment of not more than five (5) years, or both. | J.S.C. 1001 |
| ASSIGNOR (INVENTOR): | |
| Signature: Let Jim-Yul Date: December 19,2013 | EMPERIOR AND AN |
| Deinstelland Word Allen and Director and Allendary State of the Control of the Co | |
| Printed or Typed Name: LEE, Jin-Yul | in-mini ditempo pilonglipa |
| Page 1 of 1 | |

PATENT REEL: 031833 FRAME: 0532

SHINSUNG: IVX000133753

| Attorney Docket No.: |
|--|
| ASSIGNMENT OF AND DECLARATION FOR APPLICATION FOR UNITED STATES LETTERS PATENT |
| WHEREAS LEE, Chang-Ki , hereinafter |
| referred to collectively as the assignor and inventor, has invented a certain improvement relating to SEMICONDUCTOR DEVICE WITH AIR GAP |
| |
| [X] said application being attached hereto; [] said application having been filed in the United States Patent and Trademark Office on, as Application Serial No, and was amended on |
| |
| AND WHEREAS SK hynix Inc. |
| hereinafter referred to as the assignee or applicant, is desirous of acquiring the entire right, title and interest in and to said application, including any and all divisions and continuations thereof, and in and to said invention and any and all patents which may be granted therefor, including any and all renewals, reissues and prolongations thereof; |
| NOW THIS WITNESSETH, that for and in consideration of One Dollar (\$1.00), and other good and valuable consideration paid by said assignee to said assigner, the receipt of which is hereby acknowledged, said assigner hereby assigns, sells and transfers to said assignee, and said assignee's successors and assigns, the full and exclusive right, title and interest in and to said application, including any and all divisions and continuations thereof, and in and to said invention and any and all patents which may be granted therefor, including any and all renewals, reissues and prolongations thereof; said assignee, and said assignee's successors and assigns, to have, hold, exercise and enjoy the said application, including any and all divisions and continuations thereof, and the said invention and any and all patents which may be granted therefor, including any and all renewals, reissues and prolongations thereof, with all the rights, powers, privileges and advantages in anywise arising from or appertaining thereto, for and during the term or terms of any and all such patents when granted, including any and all renewals, reissues and prolongations thereof, for the use and benefit of said assignee, and said assignee's successors and assigns, in as ample and beneficial a manner as the said assignor might or could have held and enjoyed the same, if this assignment had not been made. |
| AND said assignor hereby agrees to perform, upon the request of said assignee, or said assignee's successors or assigns, any and all acts relating to the obtaining or to the asserting of said patents, including any and all renewals, reissues and prolongations thereof. |
| AND said assignor authorizes and requests the Commissioner of Patents and Trademarks to issue Letters Patent on said application, and on any and all divisions and continuations thereof, to said assignee, and said assignee's successors and assigns, in accordance herewith. |
| As an above-named inventor, I hereby declare that the above-identified application was made or authorized to be made by me, and that I am the original inventor or an original joint inventor of a claimed invention in the application. |
| I 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, |
| ASSIGNOR (INVENTOR): |
| Signature: Date: December 19,2013 |
| Printed or Typed Name: LEE, Chang-Ki |
| Page 1of 1 |

PATENT REEL: 031833 FRAME: 0533

RECORDED: 12/20/2013