502818562 05/21/2014

PATENT ASSIGNMENT COVER SHEET

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

CONVEYING PARTY DATA

| Name | Execution Date |
|---------------------|----------------|
| NITESH KATTA | 03/27/2014 |
| JERRY CHANG-JUI KAO | 04/09/2014 |
| CHIN-SHEN LIN | 03/27/2014 |
| YI-CHUIN TSAI | 03/19/2014 |
| CHOU-KUO LIN | 03/27/2014 |
| KUO-NAN YANG | 05/05/2014 |
| CHUNG-HSING WANG | 04/10/2014 |

RECEIVING PARTY DATA

| Name: | TAIWAN SEMICONDUCTOR MANUFACTURING COMPANY LTD. | |
|-----------------|---|--|
| Street Address: | NO.8, LI-HSIN RD. 6, HSINCHU SCIENCE PARK | |
| City: | HSINCHU | |
| State/Country: | TAIWAN | |

PROPERTY NUMBERS Total: 1

| Property Type | Number |
|---------------------|----------|
| Application Number: | 14255325 |

CORRESPONDENCE DATA

Fax Number:

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| ATTORNEY DOCKET NUMBER: | 18506-710 |
|-------------------------|----------------|
| NAME OF SUBMITTER: | ANTHONY KING |
| SIGNATURE: | /Anthony King/ |
| DATE SIGNED: | 05/21/2014 |

Total Attachments: 3

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PATENT REEL: 032940 FRAME: 0918

ASSIGNMENT

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WHEREAS, I(we), <u>KATTA</u>, <u>NITESH</u>, <u>KAO</u>, <u>JERRY CHANG-JUI</u>, <u>LIN</u>, <u>CHIN-SHEN</u>, <u>TSAI</u>, <u>YI-CHUIN</u>, <u>LIN</u>, <u>CHOU-KUN</u>, <u>YANG KUO-NAN</u> and <u>WANG CHUNG-HSING</u>, whose post office address(es) appear(s) below, hereinafter referred to as ASSIGNOR, have invented certain new and useful invention entitled

ELECTROMIGRATION-AWARE LAYOUT GENERATION

| ☐ United States Design Pater | at was | | |
|------------------------------------|---------------------------------|------------|-----------------|
| ☐ executed on: | | | |
| ☑ filed on: 17 April 2 | 2014 Serial No.: | 14/255,325 | |
| ☐ established by PCT International | ational Patent Application No.: | filed: | designating the |
| Inited States of America | | | 0 0 |
| issued on | as U.S. Patent No.: | | |

WHEREAS, TAIWAN SEMICONDUCTOR MANUFACTURING COMPANY LTD. whose post office address is NO.8, LI-HSIN RD. 6, HSINCHU SCIENCE PARK, HSINCHU, TAIWAN, R.O.C. hereinafter referred to as ASSIGNEE, is desirous of acquiring the entire right, title and interest in and to the same in the United States and its territorial possessions;

NOW, THEREFORE, for good and valuable consideration, receipt of which is hereby acknowledged, I (we), ASSIGNOR, by these presents do sell, assign and transfer unto said ASSIGNEE, the entire right, title, and interest in and to said INVENTION and application throughout the United States of America, including any and all Letters Patent granted on any division, continuation, continuation-in-part and reissue of said application for the full term or terms for which the same may be granted, including all priority rights under any International Convention.

ASSIGNOR further covenants that no assignments, sale, agreement or encumbrance has been or will be made or entered into which would conflict with this Assignment;

ALSO, ASSIGNOR hereby agrees to execute any documents that legally may be required in connection with the filing, prosecution and maintenance of said application or any other patent application(s) in the United States for said INVENTION, including additional documents that may be required to affirm the rights of ASSIGNEE in and to said INVENTION, all without further consideration. ASSIGNOR also agrees, without further consideration and at ASSIGNEE'S expense, to identify and communicate to ASSIGNEE at ASSIGNEE'S request documents and information concerning the INVENTION that are within ASSIGNOR'S possession or control, and to provide further assurances and testimony on behalf of ASSIGNEE that lawfully may be required of ASSIGNOR in respect of the prosecution, maintenance, litigation and defense of any patent application or patent encompassed within the terms of this instrument. ASSIGNOR'S obligations under this instrument shall extend to ASSIGNOR'S heirs, executors, administrators and other legal representatives.

ALSO, ASSIGNOR hereby authorizes and requests the Commissioner of Patents and Trademarks to issue any and all Letters Patent referred to above to ASSIGNEE, as the ASSIGNEE of the entire right, title and interest in and to the same, for ASSIGNEE'S sole use and behoof; and for the use and behoof of ASSIGNEE'S legal representatives and successors, to the full end of the term for which such Letters Patent may be granted, as fully and entirely as the same would have been held by ASSIGNOR had this assignment and sale not been made.

| Assignor Name KATTA, NITESH | Address 2F-1,6 ,23RD JINSHAN STREET, HSINCHU CITY 300, TAIWAN (R.O.C.) |
|--------------------------------------|--|
| Signature of Assignor (X) K. N. Left | Date of Signature (X) 27/03/2014 |
| Name of Witness (optional) | Name of Witness (optional) |
| Signature of Witness (optional) | Signature of Witness (Optional) |

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PATENT

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| Assignor Name KAO, JERRY CHANG-JUI | Address 8F-1,312, REN-AI RD., SEC. 4, TAIPEI, TAIWAN (R.O.C.) |
|---------------------------------------|---|
| Signature of Assignor (X) | Date of Signature (X) 2014/04/09 |
| Name of Witness (optional) | Name of Witness (optional) |
| Signature of Witness (optional) | Signature of Witness (Optional) |

| Assignor Name LIN, CHIN-SHEN | NO.19, ALY. 6, LN. 63, WUCHENG ST., WANHUA DIST., TAIPEI CITY 108, TAIWAN (R.O.C.) |
|---------------------------------------|--|
| Signature of Assignor (X) Chi Shu Sin | Date of Signature (X) 2014/03/27 |
| Name of Witness (optional) | Name of Witness (optional) |
| Signature of Witness (optional) | Signature of Witness (Optional) |

| Assignor Name TSAI, YI-CHUIN | Address NO.246, FUFANG RD. FUFUNG VILLAGE, SING-YAN TOWNSHIP, PINGTUNG COUNTRY, TAIWAN (R.O.C.) |
|---|---|
| Signature of Assignor (X) Tsai Yi Chuin | Date of Signature (X) 2014 /03 / 19 |
| Name of Witness (optional) | Name of Witness (optional) |
| Signature of Witness (optional) | Signature of Witness (Optional) |

| nkatta | 2014/03/27 | 17:26:18 |
|--------|------------|----------|
| | | |

| Assignor Name LIN, CHOU-KUN | Address 5F, NO. 22, LANE 634, NAN-DA RD., HSIN-CHU CITY, TAIWAN (R.O.C.) |
|--|--|
| Signature of Assignor (X) UW, Chou-Kun | Date of Signature (X) >0(4.03.27) |
| Name of Witness (optional) | Name of Witness (optional) |
| Signature of Witness (optional) | Signature of Witness (Optional) |

| Assignor Name YANG, KUO-NAN | Address 11F., NO.36, LN. 28, SEC. 1, TIEDAO RD., EAST DIST., HSINCHU CITY 300, TAIWAN (R.O.C.) |
|---|--|
| Signature of Assignor (X) Yang, Kup-Nan | Date of Signature (X) 2014. DJ.DJ |
| Name of Wilness (optional) | Name of Witness (optional) |
| Signature of Witness (optional) | Signature of Witness (Optional) |

| Assignor Name WANG, CHUNG-HSING | Address 4F., NO.85, SHUANGFONG RD., BAOSHAN TOWNSHIP, HSINCHU COUNTY 308, TAIWAN (R.O.C.) |
|---------------------------------------|--|
| Signature of Assignor (X) Chy-/Li Way | Date of Signature (X) 4/10/20/4 |
| Name of Witness (optional) | Name of Witness (optional) |
| Signature of Witness (optional) | Signature of Witness (Optional) |

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