

PATENT ASSIGNMENT

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| SUBMISSION TYPE: | NEW ASSIGNMENT | | | | | | | | | | | | | | | | |
|---|--|---------------|--|---------------------|-----------------------|-------------------|----------------------|------------------|------------|-----------------|------------|--------------|------------|----------------|------------|------------|------------|
| NATURE OF CONVEYANCE: | ASSIGNMENT | | | | | | | | | | | | | | | | |
| CONVEYING PARTY DATA | | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th>Name</th> <th>Execution Date</th> </tr> </thead> <tbody> <tr> <td>Wen-Li CHENG</td> <td>07/23/2013</td> </tr> <tr> <td>Ming-Hui CHIH</td> <td>07/23/2013</td> </tr> <tr> <td>Chia-Ping CHIANG</td> <td>07/23/2013</td> </tr> <tr> <td>Ken-Hsien HSIEH</td> <td>07/23/2013</td> </tr> <tr> <td>Tsong-Hua OU</td> <td>07/23/2013</td> </tr> <tr> <td>Wen-Chun HUANG</td> <td>07/23/2013</td> </tr> <tr> <td>Ru-Gun LIU</td> <td>07/23/2013</td> </tr> </tbody> </table> | | Name | Execution Date | Wen-Li CHENG | 07/23/2013 | Ming-Hui CHIH | 07/23/2013 | Chia-Ping CHIANG | 07/23/2013 | Ken-Hsien HSIEH | 07/23/2013 | Tsong-Hua OU | 07/23/2013 | Wen-Chun HUANG | 07/23/2013 | Ru-Gun LIU | 07/23/2013 |
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| Wen-Li CHENG | 07/23/2013 | | | | | | | | | | | | | | | | |
| Ming-Hui CHIH | 07/23/2013 | | | | | | | | | | | | | | | | |
| Chia-Ping CHIANG | 07/23/2013 | | | | | | | | | | | | | | | | |
| Ken-Hsien HSIEH | 07/23/2013 | | | | | | | | | | | | | | | | |
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| Wen-Chun HUANG | 07/23/2013 | | | | | | | | | | | | | | | | |
| Ru-Gun LIU | 07/23/2013 | | | | | | | | | | | | | | | | |
| RECEIVING PARTY DATA | | | | | | | | | | | | | | | | | |
| <table border="1"> <tr> <td>Name:</td> <td>TAIWAN SEMICONDUCTOR MANUFACTURING COMPANY, LTD.</td> </tr> <tr> <td>Street Address:</td> <td>No. 8, Li-Hsin Rd. VI</td> </tr> <tr> <td>Internal Address:</td> <td>Hsinchu Science Park</td> </tr> <tr> <td>City:</td> <td>Hsinchu</td> </tr> <tr> <td>State/Country:</td> <td>TAIWAN</td> </tr> <tr> <td>Postal Code:</td> <td>300</td> </tr> </table> | | Name: | TAIWAN SEMICONDUCTOR MANUFACTURING COMPANY, LTD. | Street Address: | No. 8, Li-Hsin Rd. VI | Internal Address: | Hsinchu Science Park | City: | Hsinchu | State/Country: | TAIWAN | Postal Code: | 300 | | | | |
| Name: | TAIWAN SEMICONDUCTOR MANUFACTURING COMPANY, LTD. | | | | | | | | | | | | | | | | |
| Street Address: | No. 8, Li-Hsin Rd. VI | | | | | | | | | | | | | | | | |
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| State/Country: | TAIWAN | | | | | | | | | | | | | | | | |
| Postal Code: | 300 | | | | | | | | | | | | | | | | |
| PROPERTY NUMBERS Total: 1 | | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th>Property Type</th> <th>Number</th> </tr> </thead> <tbody> <tr> <td>Application Number:</td> <td>13955780</td> </tr> </tbody> </table> | | Property Type | Number | Application Number: | 13955780 | | | | | | | | | | | | |
| Property Type | Number | | | | | | | | | | | | | | | | |
| Application Number: | 13955780 | | | | | | | | | | | | | | | | |
| CORRESPONDENCE DATA | | | | | | | | | | | | | | | | | |
| <p>Fax Number: <i>Correspondence will be sent via US Mail when the fax attempt is unsuccessful.</i></p> <p>Phone: 7036841111 Email: tsmc@ipfirm.com Correspondent Name: Lowe Hauptman & Ham, LLP (TSMC) Address Line 1: 2318 Mill Road Address Line 2: Suite 1400 Address Line 4: Alexandria, VIRGINIA 22314</p> | | | | | | | | | | | | | | | | | |

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| ATTORNEY DOCKET NUMBER: | T5057-893 |
| NAME OF SUBMITTER: | Randy A. Noranbrock |
| Signature: | /Randy A. Noranbrock/ |
| Date: | 08/06/2013 |
| Total Attachments: 2 source=AsFiled_Assignment#page1.tif source=AsFiled_Assignment#page2.tif | |

ASSIGNMENT

In consideration of the premises and other good and valuable consideration in hand paid, the receipt and sufficiency of which is hereby acknowledged, the undersigned,

- 1) Wen-Li CHENG
- 2) Ming-Hui CHIH
- 3) Chia-Ping CHIANG
- 4) Ken-Hsien HSIEH
- 5) Tsong-Hua OU
- 6) Wen-Chun HUANG
- 7) Ru-Gun LIU

who has made a certain new and useful invention, hereby sells, assigns and transfers unto TAIWAN SEMICONDUCTOR MANUFACTURING COMPANY, LTD., having a place of business at No. 8, Li-Hsiin Rd. VI, Hsinchu Science Park, Hsinchu 300, Taiwan R.O.C.

its successors and assigns (hereinafter designated "ASSIGNEE") the entire right, title and interest for the United States of America as defined in 35 U.S.C. 100 in the invention entitled

SYSTEM AND METHOD FOR DECOMPOSITION OF A SINGLE PHOTORESIST MASK PATTERN INTO 3 PHOTORESIST MASK PATTERNS

- (a) for which an application for United States Letters Patent was filed on JULY 31, 2013, and identified by United States Patent Application No. 13955,780; or
- (b) for which an application for United States Letters Patent was executed on _____,

and the undersigned hereby authorizes and requests the United States Commissioner of Patents and Trademarks to issue any and all United States Letters Patent which may be granted therefore and any and all extensions, divisions, reissues, continuations, or continuations-in-part thereof, and the right to all benefits under the International Convention for the Protection of Industrial Property to the said ASSIGNEE, for its interest as ASSIGNEE, its successors, assigns and legal representatives; the undersigned agrees that the attorneys of record in said application shall hereafter act on behalf of said ASSIGNEE;

AND the undersigned hereby agrees to transfer a like interest, and to render all necessary assistance in making application for and obtaining original, divisional, reissued or extended Letters Patent of the United States, upon request of the said ASSIGNEE, its successors, assigns and legal representatives, and without further remuneration, in and to any improvements, and applications for patent based thereon, growing out of or related to the said invention; and to execute any papers by the said ASSIGNEE, its successors, assigns and legal representatives, deemed essential to ASSIGNEE's full protection and title in and to the invention hereby transferred.

SIGNED on the date indicated aside my signature:

- 1) Wen-Li Cheng
Name: Wen-Li CHENG
Date: 2013.07.23
- 2) Ming-Hui Chih
Name: Ming-Hui CHIH
Date: 2013.07.23
- 3) CHIA-PING CHIANG
Name: Chia-Ping CHIANG
Date: 2013.7.23
- 4) Ken-Hsien Hsieh
Name: Ken-Hsien HSIEH
Date: 2013.7.23

5) Tsong-Hua Ou
Name: Tsong-Hua OU

2013.07.23
Date:

6) Wen-Chun Huang
Name: Wen-Chun HUANG

2013.07.23
Date:

7) Ru-Gun Liu
Name: Ru-Gun LIU

2013.7.23
Date: