

PATENT ASSIGNMENT

Electronic Version v1.1

Stylesheet Version v1.1

| SUBMISSION TYPE: | NEW ASSIGNMENT | | | | | | | | | | | | | | | | |
|--|--|---------------|--|----------------------------|-----------------------|--------------------------|-------------------------------|----------------|------------|-----------------------|------------|---------------------|------------|--------------|------------|--------------|------------|
| NATURE OF CONVEYANCE: | ASSIGNMENT | | | | | | | | | | | | | | | | |
| CONVEYING PARTY DATA | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 70%;">Name</th> <th>Execution Date</th> </tr> </thead> <tbody> <tr> <td>Huan-Yu CHEN</td> <td>12/21/2009</td> </tr> <tr> <td>Yuan-Te HOU</td> <td>12/21/2009</td> </tr> <tr> <td>Gwan-Sin CHANG</td> <td>12/24/2009</td> </tr> <tr> <td>Wen-Ju YANG</td> <td>12/23/2009</td> </tr> <tr> <td>Zhe-Wei JIANG</td> <td>12/21/2009</td> </tr> <tr> <td>Yi-Kan CHENG</td> <td>12/26/2009</td> </tr> <tr> <td>Lee-Chung LU</td> <td>12/21/2009</td> </tr> </tbody> </table> | | Name | Execution Date | Huan-Yu CHEN | 12/21/2009 | Yuan-Te HOU | 12/21/2009 | Gwan-Sin CHANG | 12/24/2009 | Wen-Ju YANG | 12/23/2009 | Zhe-Wei JIANG | 12/21/2009 | Yi-Kan CHENG | 12/26/2009 | Lee-Chung LU | 12/21/2009 |
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| RECEIVING PARTY DATA | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">Name:</td> <td>Taiwan Semiconductor Manufacturing Co., Ltd.</td> </tr> <tr> <td>Street Address:</td> <td>No. 8, Li-Hsin Road 6</td> </tr> <tr> <td>Internal Address:</td> <td>Science-Based Industrial Park</td> </tr> <tr> <td>City:</td> <td>Hsin-Chu</td> </tr> <tr> <td>State/Country:</td> <td>TAIWAN</td> </tr> <tr> <td>Postal Code:</td> <td>300-77</td> </tr> </table> | | Name: | Taiwan Semiconductor Manufacturing Co., Ltd. | Street Address: | No. 8, Li-Hsin Road 6 | Internal Address: | Science-Based Industrial Park | City: | Hsin-Chu | State/Country: | TAIWAN | Postal Code: | 300-77 | | | | |
| Name: | Taiwan Semiconductor Manufacturing Co., Ltd. | | | | | | | | | | | | | | | | |
| Street Address: | No. 8, Li-Hsin Road 6 | | | | | | | | | | | | | | | | |
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| Postal Code: | 300-77 | | | | | | | | | | | | | | | | |
| PROPERTY NUMBERS Total: 1 | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Property Type</th> <th>Number</th> </tr> </thead> <tbody> <tr> <td>Application Number:</td> <td>12649979</td> </tr> </tbody> </table> | | Property Type | Number | Application Number: | 12649979 | | | | | | | | | | | | |
| Property Type | Number | | | | | | | | | | | | | | | | |
| Application Number: | 12649979 | | | | | | | | | | | | | | | | |
| CORRESPONDENCE DATA | | | | | | | | | | | | | | | | | |
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| ATTORNEY DOCKET NUMBER: | N1085-00642 | | | | | | | | | | | | | | | | |

CH \$40.00 12649979

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REEL: 024094 FRAME: 0589

PATENT

NAME OF SUBMITTER:

Steven E. Koffs

Total Attachments: 3

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ATTORNEY DOCKET NO.: 2009.0639/1085.642

ASSIGNMENT AND AGREEMENT

For value received, I, **Huang-Yu Chen, Yuan-Te Hou, Gwan Sin Chang, Wen-Ju Yang, Zhe-Wei Jiang, Yi-Kan Cheng, and Lee-Chung Lu**, hereby transfer to **Taiwan Semiconductor Manufacturing Co., Ltd.**, with its principal place of business located at No. 8, Li-Hsin Road 6, Science-Based Industrial Park, Hsin-Chu, Taiwan 300-77, Republic of China, and its successors, assigns and legal representatives, the entire right, title and interest, for the United States of America, in and to certain inventions related to **ROUTING SYSTEM AND METHOD FOR DOUBLE PATTERNING TECHNOLOGY** described in provisional Application Serial No. 61/261,852 filed November 17, 2009 and a non-provisional application and under any and all Letters Patent and any divisions, continuations, continuations-in-part, reexamination certificates, reissues, and extensions thereof, or claiming priority therefrom that may be granted in the United States for said inventions; and we also concurrently hereby sell, assign and transfer to Taiwan Semiconductor Manufacturing Co., Ltd. the entire right, title and interest in and to said inventions for all countries foreign to the United States, including all rights of priority arising from the application aforesaid, and all the rights and privileges under any and all forms of protection, including Letters Patent, that may be granted in said countries foreign to the United States for said inventions.

I authorize Taiwan Semiconductor Manufacturing Co., Ltd. to make application for such protection in its own name and maintain such protection in any and all countries foreign to the United States, and to invoke and claim for any application for patent or other form of protection for said inventions, without further authorization from me, any and all benefits, including the right of priority provided by any and all treaties, conventions, or agreements.

I hereby consent that a copy of this assignment shall be deemed a full legal and formal equivalent of any document which may be required in any country in proof of the right of Taiwan Semiconductor Manufacturing Co., Ltd. to apply for patent or other form of protection for said inventions and to claim the aforesaid benefit of the right of priority.

I request that any and all patents for said inventions be issued to Taiwan Semiconductor Manufacturing Co., Ltd. in the United States and in all countries foreign to the United States, or to such nominees as Taiwan Semiconductor Manufacturing Co., Ltd. may designate.

I agree that, when requested, I shall, without charge to Taiwan Semiconductor Manufacturing Co., Ltd. but at its expense, sign all papers, and do all acts which may be necessary, desirable or convenient in connection with said applications, patents, or other forms of protection.

Inventor No. 1

Dated: 2009 / 12 / 21

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Dated: 2009.12.21

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Dated: 12/21/2009

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