

## PATENT ASSIGNMENT

Electronic Version v1.1  
 Stylesheet Version v1.1

| 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>Ching-Min FU</td> <td>11/19/2012</td> </tr> <tr> <td>William-Wu SHEN</td> <td>11/19/2012</td> </tr> <tr> <td>Po-Hsiang HUANG</td> <td>11/19/2012</td> </tr> <tr> <td>Meng-Fu YOU</td> <td>11/19/2012</td> </tr> <tr> <td>Chi-Yeh YU</td> <td>11/19/2012</td> </tr> </tbody> </table>                  |                                              | Name          | Execution Date                               | Ching-Min FU        | 11/19/2012            | William-Wu SHEN   | 11/19/2012                    | Po-Hsiang HUANG | 11/19/2012 | Meng-Fu YOU    | 11/19/2012 | Chi-Yeh YU   | 11/19/2012 |
| Name                                                                                                                                                                                                                                                                                                                                                                                                        | Execution Date                               |               |                                              |                     |                       |                   |                               |                 |            |                |            |              |            |
| Ching-Min FU                                                                                                                                                                                                                                                                                                                                                                                                | 11/19/2012                                   |               |                                              |                     |                       |                   |                               |                 |            |                |            |              |            |
| William-Wu SHEN                                                                                                                                                                                                                                                                                                                                                                                             | 11/19/2012                                   |               |                                              |                     |                       |                   |                               |                 |            |                |            |              |            |
| Po-Hsiang HUANG                                                                                                                                                                                                                                                                                                                                                                                             | 11/19/2012                                   |               |                                              |                     |                       |                   |                               |                 |            |                |            |              |            |
| Meng-Fu YOU                                                                                                                                                                                                                                                                                                                                                                                                 | 11/19/2012                                   |               |                                              |                     |                       |                   |                               |                 |            |                |            |              |            |
| Chi-Yeh YU                                                                                                                                                                                                                                                                                                                                                                                                  | 11/19/2012                                   |               |                                              |                     |                       |                   |                               |                 |            |                |            |              |            |
| RECEIVING PARTY DATA                                                                                                                                                                                                                                                                                                                                                                                        |                                              |               |                                              |                     |                       |                   |                               |                 |            |                |            |              |            |
| <table border="1"> <tr> <td>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                        |               |                                              |                     |                       |                   |                               |                 |            |                |            |              |            |
| Internal Address:                                                                                                                                                                                                                                                                                                                                                                                           | Science-Based Industrial Park                |               |                                              |                     |                       |                   |                               |                 |            |                |            |              |            |
| City:                                                                                                                                                                                                                                                                                                                                                                                                       | Hsin-Chu                                     |               |                                              |                     |                       |                   |                               |                 |            |                |            |              |            |
| State/Country:                                                                                                                                                                                                                                                                                                                                                                                              | TAIWAN                                       |               |                                              |                     |                       |                   |                               |                 |            |                |            |              |            |
| Postal Code:                                                                                                                                                                                                                                                                                                                                                                                                | 300-77                                       |               |                                              |                     |                       |                   |                               |                 |            |                |            |              |            |
| 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>13683901</td> </tr> </tbody> </table>                                                                                                                                                                                                                                   |                                              | Property Type | Number                                       | Application Number: | 13683901              |                   |                               |                 |            |                |            |              |            |
| Property Type                                                                                                                                                                                                                                                                                                                                                                                               | Number                                       |               |                                              |                     |                       |                   |                               |                 |            |                |            |              |            |
| Application Number:                                                                                                                                                                                                                                                                                                                                                                                         | 13683901                                     |               |                                              |                     |                       |                   |                               |                 |            |                |            |              |            |
| CORRESPONDENCE DATA                                                                                                                                                                                                                                                                                                                                                                                         |                                              |               |                                              |                     |                       |                   |                               |                 |            |                |            |              |            |
| Fax Number: 2156894905<br><i>Correspondence will be sent via US Mail when the fax attempt is unsuccessful.</i><br>Phone: 215-979-1000<br>Email: jsjiulianti@duanemorris.com<br>Correspondent Name: DUANE MORRIS LLP<br>Address Line 1: 30 SOUTH 17TH STREET<br>Address Line 4: PHILADELPHIA, PENNSYLVANIA 19103                                                                                             |                                              |               |                                              |                     |                       |                   |                               |                 |            |                |            |              |            |
| ATTORNEY DOCKET NUMBER:                                                                                                                                                                                                                                                                                                                                                                                     | 2012.0924/1085.01113                         |               |                                              |                     |                       |                   |                               |                 |            |                |            |              |            |
| NAME OF SUBMITTER:                                                                                                                                                                                                                                                                                                                                                                                          | Steven E. Koffs                              |               |                                              |                     |                       |                   |                               |                 |            |                |            |              |            |
| Total Attachments: 3<br>source=ExecutedAssign#page1.tif<br>source=ExecutedAssign#page2.tif<br>source=ExecutedAssign#page3.tif                                                                                                                                                                                                                                                                               |                                              |               |                                              |                     |                       |                   |                               |                 |            |                |            |              |            |

CH \$40.00 13683901

Serial No. 13/683,901  
filed November 21, 2012

**ATTORNEY DOCKET NO.: 2012.0924/1085.01113**

**ASSIGNMENT AND AGREEMENT**

For value received, we, **Chung-min FU, William Wu SHEN, Po-Hsiang HUANG, Meng-Fu YOU and Chi-Yeh YU**, 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 **SYSTEM AND METHOD FOR ACROSS-CHIP THERMAL AND POWER MANAGEMENT IN STACKED IC DESIGNS**, claiming priority to U.S. Provisional Patent Application S.N. 61/707,086, filed September 28, 2012, and described in 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.

We 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 us, any and all benefits, including the right of priority provided by any and all treaties, conventions, or agreements.

We 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.

We 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.

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We agree that, when requested, we 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: Nov. 19, 2012

Chung-min Fu  
Chung-min FU

Residence:

No. 26, Lane 9, Section 2, Min-chuan Road, Chungli, Taoyuan County 320, Taiwan, R.O.C.

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Dated: 11/19/2012

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Inventor No. 3

Dated: 2012.11.19

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Inventor No. 4

Dated: 2012-11-19

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Inventor No. 5

Dated: Nov. 19th. 2012

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