

<b>PATENT ASSIGNMENT COVER SHEET</b>
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<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
WEN-CHUAN WANG	10/31/2012
BURN JENG LIN	10/31/2012
JAW-JUNG SHIN	10/31/2012
PEI-YI LIU	10/31/2012
SHY-JAY LIN	10/31/2012
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	TAIWAN SEMICONDUCTOR MANUFACTURING COMPANY, LTD
<b>Street Address:</b>	NO. 8, LI-HSIN RD. 6, SCIENCE-BASED INDUSTRIAL PARK
<b>Internal Address:</b>	SCIENCE-BASED INDUSTRIAL PARK
<b>City:</b>	HSIN-CHU
<b>State/Country:</b>	TAIWAN
<b>Postal Code:</b>	300-77
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
<b>Application Number:</b>	15389145
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	(214)200-0853
<i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.</i>	
<b>Phone:</b>	214-651-5000
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<b>Correspondent Name:</b>	HAYNES AND BOONE, LLP IP SECTION
<b>Address Line 1:</b>	2323 VICTORY AVENUE
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<b>ATTORNEY DOCKET NUMBER:</b>	24061.2964US05
<b>NAME OF SUBMITTER:</b>	LINDA INGRAM
<b>SIGNATURE:</b>	/Linda Ingram/
<b>DATE SIGNED:</b>	12/22/2016

**Total Attachments: 3**

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**ASSIGNMENT**

WHEREAS, we,

- |     |                |    |   |
|-----|----------------|----|---|
| (1) | Wen-Chuan Wang | of | 3F.-2, No. 133, Jiagong 1st Road, East District<br>Hsinchu City 300, Taiwan R.O.C.                  |
| (2) | Shy-Jay Lin    | of | No. 15, Alley 36, Lane 134, Yuanshan Road<br>Jhudong Township, Hsinchu County 310<br>Taiwan R.O.C.  |
| (3) | Pei-Yi Liu     | of | No.62, Ln. 200, Zhuhe Road<br>Changhua City, Changhua County 500, Taiwan R.O.C.                     |
| (4) | Jaw-Jung Shin  | of | 10F., No. 72-11, Lane 531, Sec. 1, Guangfu Road<br>East District<br>Hsinchu City 300, Taiwan R.O.C. |
| (5) | Burn Jeng Lin  | of | 153 Guang Fu Road Section 1, Lane 89, 1st Floor<br>Hsinchu City, Taiwan R.O.C.                      |

have invented certain improvements in

**GRID REFINEMENT METHOD**

for which we have filed a provisional application for Letters Patent of the United States of America, filed on \_\_\_\_\_, and assigned U.S. Serial No. \_\_\_\_\_; and

WHEREAS, Taiwan Semiconductor Manufacturing Company, Ltd., ("TSMC"), No. 8, Li-Hsin Rd. 6, Science-Based Industrial Park Hsin-Chu, Taiwan 300-77, Republic of China. is desirous of obtaining the entire right, title, and interest in, to and under the said invention and the said application in the United States of America and in any and all countries foreign thereto;

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, and other good and valuable consideration, we have sold, assigned, transferred and set over, and by these presents do hereby sell, assign, transfer and set over, unto the said TSMC, its successors, legal representatives, and assigns, the entire right, title, and interest in, to and under the said invention, and the said application, and all divisional, renewal, substitutional, and continuing applications thereof, and all Letters Patent of the United States of America which may be granted thereon and all reissues and extensions thereof, and all applications for Letters Patent which may be filed for said invention in any country or countries foreign to the United States of America, and all extensions, renewals, and reissues thereof, and all prior patents and patent applications from which a filing priority of the above-described patent application may be obtained, including the right to collect past damages; and we hereby authorize and request the Commissioner of Patents of the United States of America, and any official of any country or countries foreign to the United States of America, whose duty it is to issue patents on applications as aforesaid, to issue all Letters Patent for said invention to the said TSMC, its successors, legal representatives and assigns, in accordance with the terms of this instrument.

Docket No.: 2012-0440 / 24061.2197  
Customer No.: 42717

AND WE HEREBY covenant that we have full right to convey the entire interest herein assigned, and that we have not executed, and will not execute, any agreement in conflict herewith.

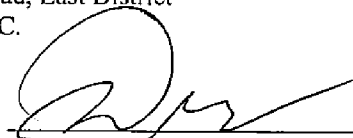
AND WE HEREBY further covenant and agree that we will communicate to said TSMC, its successors, legal representatives and assigns, any facts known to us respecting said invention, and testify in any legal proceedings, sign all lawful papers, execute all divisional, renewal, substitutional, continuing, and reissue applications, make all rightful declarations and/or oaths and generally do everything possible to aid the said TSMC, its successors, legal representatives and assigns, to obtain and enforce proper patent protection for said invention in all countries.

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Inventor Name: Wen-Chuan Wang

Residence Address: 3F.-2, No. 133, Jiagong 1st Road, East District  
Hsinchu City 300, Taiwan R.O.C.

Dated: 10/31/2012

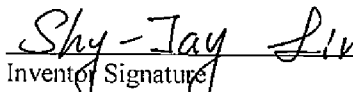
  
Inventor Signature

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Inventor Name: Shy-Jay Lin

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Hsinchu County 310, Taiwan R.O.C.

Dated: 10/31/2012

  
Inventor Signature

Docket No.: 2012-0440 / 24061.2197

Customer No.: 42717

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Inventor Name: Pei-Yi Liu  
Residence Address: No.62, Ln. 200, Zhuhe Road  
Changhua City, Changhua County 500, Taiwan R.O.C.  
Dated: 10/31/2012 Pei-yi Liu  
Inventor Signature

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Inventor Name: Jaw-Jung Shin  
Residence Address: 10F., No. 72-11, Lane 531, Sec. 1, Guangfu Road, East District  
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Dated: 10/31/2012 Shin, Jaw-Jung  
Inventor Signature

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Inventor Name: Burn Jeng Lin  
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Hsinchu City, Taiwan R.O.C.  
Dated: Oct 31, 2012 Burn Jeng Lin  
Inventor Signature

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