PATENT ASSIGNMENT COVER SHEET

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SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
TSONG-HUA OU	04/26/2016
KEN-HSIEN HSIEH	04/21/2016
SHIH-MING CHANG	04/21/2016
WEN-CHUN HUANG	04/21/2016
CHIH-MING LAI	04/25/2016
RU-GUN LIU	04/24/2016
TSAI-SHENG GAU	04/21/2016

RECEIVING PARTY DATA

Name:	TAIWAN SEMICONDUCTOR MANUFACTURING COMPANY, LTD.
Street Address:	NO. 8, LI-HSIN RD. 6
Internal Address:	SCIENCE-BASED INDUSTRIAL PARK
City:	HSIN-CHU
State/Country:	TAIWAN
Postal Code:	300-77

PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	15174131

CORRESPONDENCE DATA

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ATTORNEY DOCKET NUMBER:	2013-0694/24061.2598US02
NAME OF SUBMITTER:	DELL WHITTON
SIGNATURE:	/Dell Whitton/

DATE SIGNED:	03/30/2017

Total Attachments: 6

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Docket No.: 2013-0694/24061.2598
Customer No.: 42717

ASSIGNMENT

WHEREAS, we,

(1) Tsong-Hua Ou of 4F., No. 76, Hualing Street, Shihlin District
Taipei City 111, Taiwan R.O.C.

(2) Ken-Hsien Hsieh of 5F., No. 49, Sec. 2, Roosevelt Road, Da-an District,
Taipei City 106, Taiwan R.O.C.

(3) Shih-Ming Chang of 11F., No. 7, Jiazheng 5th Street, Zhubei City,
Hsinchu County 302, Taiwan R.O.C.

(4) Wen-Chun Huang of No. 58, Zhong-Shan Road, Xi-Gang
Xi-Gang District, Tainan City, Taiwan 723, R.O.C.

(5) Chih-Ming Lai of 3F., No.2, Lane 15, Peiying Street
Hsinchu City 300, Taiwan R.O.C.

(6) Ru-Gun Liu of No.90, Chenggong 5th Street, Zhubei City
Hsinchu County 302, Taiwan R.O.C.

(7) Tsai-Sheng Gau of No. 35, Lane 4, An-Kang Street
Hsinchu City, Taiwan R.O.C.

have invented certain improvements in

METHODS MULTIPLE PATTERNING IN INTEGRATED CIRCUIT DESIGN AND FABRICATION

for which we have executed an application for Letters Patent of the United States of America, filed on April, 25, 2014, and assigned application number 14/262,432; and

WHEREAS, we authorize the attorney of record to update this document to include Patent Office information as deemed necessary (i.e., filing date, serial number, etc.);

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.

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.

Inventor Name: Tsong-Hua Ou

Residence Address: 4F., No.76, Hualing Street, Shihlin District
Taipei City 111, Taiwan R.O.C.

Dated: 2016/04/26

Tsong-Hua Ou
Inventor Signature

Inventor Name: Ken-Hsien Hsieh

Residence Address: 5F., No.49, Sec. 2, Roosevelt Road, Da-an District
Taipei City 106, Taiwan R.O.C.

Dated: ______________________

Inventor Signature

Inventor Name: Shih-Ming Chang

Residence Address: 11F., No.7, Jiazheng 5th Street
Zhubei City, Hsinchu County 302, Taiwan R.O.C.

Dated: ______________________

Inventor Signature

Inventor Name: Wen-Chun Huang

Residence Address: No. 58, Zhong-Shan Road, Xi-Gang, Xi-Gang District
Tainan City, Taiwan 723, R.O.C.

Dated: 2016. 4. 21

Wen-Chun Huang
Inventor Signature

Inventor Name: Chih-Ming Lai

Residence Address: No.90, Chenggong 5th Street
Zhubei City, Hsinchu County 302, Taiwan R.O.C.

Dated: 2016.04.25

Chih-Ming Lai
Inventor Signature

Inventor Name: Ru-Gun Liu

Residence Address: No.90, Chenggong 5th Street, Zhubei City, Hsinchu County 302, Taiwan R.O.C.

Dated: 2016 . 4/24

Ru-Gun Liu
Inventor Signature

Inventor Name: Tsai-Sheng Gau

Residence Address: No. 35, Lane 4, An-Kang Street, Hsinchu City, Taiwan R.O.C.

Dated: 2016 4 21

Tsai Sheng Gau
Inventor Signature

Docket No.: 2013-0694/24061.2598
Customer No.: 42717

ASSIGNMENT

WHEREAS, we,

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(3)	Shih-Ming Chang	of	11F., No. 7, Jiazheng 5th Street, Zhubei City, Hsinchu County 302, Taiwan R.O.C.
(4)	Wen-Chun Huang	of	No. 58, Zhong-Shan Road, Xi-Gang Xi-Gang District, Tainan City, Taiwan 723, R.O.C.
(5)	Chih-Ming Lai	of	3F., No.2, Lane 15, Peiying Street Hsinchu City 300, Taiwan R.O.C.
(6)	Ru-Gun Liu	of	No.90, Chenggong 5th Street, Zhubei City Hsinchu County 302, Taiwan R.O.C.
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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.

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.

Inventor Name: Tsong-Hua Ou

Residence Address: 4F., No.76, Hualing Street, Shihlin District
Taipei City 111, Taiwan R.O.C.

Dated:______________________

____
Inventor Signature

Inventor Name: Ken-Hsien Hsieh

Residence Address: 5F., No.49, Sec. 2, Roosevelt Road, Da-an District
Taipei City 106, Taiwan R.O.C.

Dated: 2016. 04. 21

Ken-Hsien Hsieh
Inventor Signature

Inventor Name: Shih-Ming Chang

Residence Address: 11F., No.7, Jiazheng 5th Street
Zhubei City, Hsinchu County 302, Taiwan R.O.C.

Dated: 2016-04-21

Shih-Ming Chang
Inventor Signature

Inventor Name: Wen-Chun Huang

Residence Address: No. 58, Zhong-Shan Road, Xi-Gang, Xi-Gang District
Tainan City, Taiwan 723, R.O.C.

Dated:__________________________ _________________________________
Inventor Signature

Inventor Name: Chih-Ming Lai

Residence Address: No.90, Chenggong 5th Street
Zhubei City, Hsinchu County 302, Taiwan R.O.C.

Dated:__________________________ _________________________________
Inventor Signature

Inventor Name: Ru-Gun Liu

Residence Address: No.90, Chenggong 5th Street, Zhubei City, Hsinchu County 302, Taiwan R.O.C.

Dated:__________________________ _________________________________
Inventor Signature

Inventor Name: Tsai-Sheng Gau

Residence Address: No. 35, Lane 4, An-Kang Street, Hsinchu City, Taiwan R.O.C.

Dated:__________________________ _________________________________
Inventor Signature