

## PATENT ASSIGNMENT COVER SHEET

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EPAS ID: PAT5559369

<b>SUBMISSION TYPE:</b>	CORRECTIVE ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	Corrective Assignment to correct the NAME OF THE THIRD INVENTOR previously recorded on Reel 045394 Frame 0562. Assignor(s) hereby confirms the ASSIGNMENT.
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
SHIH-CHUN HUANG	05/27/2019
CHIN-HSIANG LIN	05/27/2019
CHIEN-WEN LAI	05/27/2019
RU-GUN LIU	05/27/2019
WEI-LIANG LIN	05/27/2019
YA HUI CHANG	05/27/2019
YUNG-SUNG YEN	05/27/2019
YU-TIEN SHEN	05/27/2019
YA-WEN YEH	05/27/2019
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	TAIWAN SEMICONDUCTOR MANUFACTURING CO., LTD.
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<b>City:</b>	HSINCHU
<b>State/Country:</b>	TAIWAN
<b>Postal Code:</b>	300
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
<b>Application Number:</b>	15812750
<b>CORRESPONDENCE DATA</b>	
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<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>	
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PATENT

<b>ATTORNEY DOCKET NUMBER:</b>	095714-0677
<b>NAME OF SUBMITTER:</b>	BRENDA PUGH
<b>SIGNATURE:</b>	/Brenda Pugh/
<b>DATE SIGNED:</b>	06/04/2019
<b>Total Attachments: 6</b> source=CombinDecAssign_095714-0677#page1.tif source=CombinDecAssign_095714-0677#page2.tif source=CombinDecAssign_095714-0677#page3.tif source=CombinDecAssign_095714-0677#page4.tif source=CombinDecAssign_095714-0677#page5.tif source=CombinDecAssign_095714-0677#page6.tif	



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## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1

Stylesheet Version v1.2

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT																				
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT																				
<b>CONVEYING PARTY DATA</b>																					
<table border="1"><thead><tr><th>Name</th><th>Execution Date</th></tr></thead><tbody><tr><td>SHIH-CHUN HUANG</td><td>03/08/2018</td></tr><tr><td>CHIN-HSIANG LIN</td><td>03/15/2018</td></tr><tr><td><del>LAI CHIEN WEN</del> CHIEN-WEN LAI</td><td>03/12/2018</td></tr><tr><td>RU-GUN LIU</td><td>03/13/2018</td></tr><tr><td>WEI-LIANG LIN</td><td>03/14/2018</td></tr><tr><td>YA HUI CHANG</td><td>03/14/2018</td></tr><tr><td>YUNG-SUNG YEN</td><td>03/08/2018</td></tr><tr><td>YU-TIEN SHEN</td><td>03/08/2018</td></tr><tr><td>YA-WEN YEH</td><td>03/08/2018</td></tr></tbody></table>		Name	Execution Date	SHIH-CHUN HUANG	03/08/2018	CHIN-HSIANG LIN	03/15/2018	<del>LAI CHIEN WEN</del> CHIEN-WEN LAI	03/12/2018	RU-GUN LIU	03/13/2018	WEI-LIANG LIN	03/14/2018	YA HUI CHANG	03/14/2018	YUNG-SUNG YEN	03/08/2018	YU-TIEN SHEN	03/08/2018	YA-WEN YEH	03/08/2018
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<b>State/Country:</b>	TAIWAN																				
<b>PROPERTY NUMBERS Total: 1</b>																					

Property Type	Number
Application Number:	15812750
<b>CORRESPONDENCE DATA</b>  Fax Number: Email: cthomas@pattersonsheridan.com, psdocketing@pattersonsheridan.com <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> Correspondent Name: PATTERSON & SHERIDAN, LLP Address Line 1: 24 GREENWAY PLAZA Address Line 2: SUITE 1600 Address Line 4: HOUSTON, TEXAS 77046	
ATTORNEY DOCKET NUMBER:	TSMC/P20171243US
NAME OF SUBMITTER:	JASON C. HUANG
Signature:	/Jason C. Huang/
Date:	03/30/2018
Total Attachments: 3 source=P20171243US00 ASG#page1.tif source=P20171243US00 ASG#page2.tif source=P20171243US00 ASG#page3.tif	
<b>RECEIPT INFORMATION</b>  EPAS ID: PAT4892342 Receipt Date: 03/30/2018	

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77 (S)

Attorney Docket No. 095714-0677 (P20171243US00)

**COMBINED DECLARATION AND ASSIGNMENT FOR PATENT APPLICATION**

As a below named inventor, I hereby declare that:

I believe I am the original or an original joint inventor of a claimed invention in the application for which a patent is sought on the invention entitled:

**DIRECTIONAL PROCESSING TO REMOVE A LAYER OR A MATERIAL FORMED OVER A SUBSTRATE**

which application is:

☐ attached, or

☒ United States application number or PCT international application number  
15/812,750 filed on November 14, 2017

The above-identified application was made or authorized to be made by me.

In the event that the filing date and/or application number are not entered above at the time I execute this document, and if such information is deemed necessary, I hereby authorize and request the registered practitioners of **McDermott Will & Emery LLP**, associated with the Customer Number **20277**, to insert above the filing date and/or application number of the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

ASSIGNMENT

For good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, I hereby assign to

**TAIWAN SEMICONDUCTOR MANUFACTURING CO., LTD.  
No. 8, Li-Hsin Rd. 6, Science Based Industrial Park, Hsinchu, Taiwan 300**

(hereinafter designated as the Assignee), the entire (100%) right, title and interest for the United States as defined in 35 USC §100, in the invention described in the application identified in this document.

I hereby confirm any prior assignment to Assignee, and to the extent that I have not already done so, agree to assign, and hereby do, sell, assign and transfer unto Assignee and its successors in interest, the full and exclusive right, title and interest in the United States of America and throughout the world, including the right to claim priority under the laws of the United States, the Paris Convention, and any foreign countries, to the inventions as described in the aforesaid application, to the aforesaid application itself, and all divisions, continuations, continuations-in-part, or other applications claiming priority directly or indirectly from the aforesaid application, and any United States or foreign Letters Patent, utility model, or other similar rights which may be granted thereon, including reissues, reexaminations and extensions thereof, and all copyright rights throughout the world in the aforesaid application and the subject matter disclosed therein, these rights, title and interest to be held and enjoyed by Assignee to the full end of the term for which the Letters Patent, utility model, or other similar rights, are granted and any extensions thereof as fully and entirely as the same would have been held by the undersigned had this assignment and sale not been made, and the right to sue for, and recover for past infringements of, or liabilities for, any of the rights relating to any of the applications, patents, utility models, or other similar rights, resulting therefrom, and the copyright rights;

I hereby covenant and agree to execute all instruments or documents required or requested for the making and prosecution of any applications of any type for patent, utility model, or other similar rights, and for copyright, in the United States and in all foreign countries including, but not limited to, any provisional, continuation, continuation-in-part, divisional, renewal or substitute thereof, and as to letters patent any reissue, re-examination, or extension thereof, and for litigation regarding, or for the purpose of protecting title and to the said invention, the United States application for patent, or Letters Patent therefor, and to testify in support thereof, for the benefit of Assignee without further or other compensation than that above set forth;

I hereby covenant that no assignment, sale, license, agreement or encumbrance has been or will be entered into which would conflict with this Assignment.

Legal name of inventor <b>Shih-Chun HUANG</b>	
Inventor's signature <i>Shih-Chun Huang</i>	Date 2019/5/27

Legal name of inventor <b>Chin-Hsiang LIN</b>	
Inventor's signature <i>Chin-Hsiang Lin</i>	Date 2019/5/27

Legal name of inventor <b>Chien-Wen LAI</b>	
Inventor's signature <i>Chien-Wen Lai</i>	Date 2019/5/27

Legal name of inventor <b>Ru-Gun LIU</b>	
Inventor's signature <i>Ru-Gun Liu</i>	Date 2019/5/27

Legal name of inventor <b>Wei-Liang LIN</b>	
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Legal name of inventor <b>Ya Hui CHANG</b>	
Inventor's signature <i>Ya Hui Chang</i>	Date 2019/5/27

Legal name of inventor <b>Yung-Sung YEN</b>	
Inventor's signature <i>Yung-Sung Yen</i>	Date 2019/5/27

Attorney Docket No. 095714-0677 (P20171243US00)

Legal name of inventor <b>Yu-Tien SHEN</b>	
Inventor's signature Yu - Tien Shen	Date 2019.05.27

Legal name of inventor <b>Ya-Wen YEH</b>	
Inventor's signature Ya - Wen Yeh	Date 2019.05.27