

## PATENT ASSIGNMENT COVER SHEET

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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>
JIA-MING LIN	07/30/2015
SHIU-KO JANGJIAN	07/30/2015
CHUN-CHE LIN	07/30/2015
YING-LANG WANG	07/30/2015
WEI-KEN LIN	07/30/2015
CHUAN-PU LIU	07/30/2015
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	TAIWAN SEMICONDUCTOR MANUFACTURING CO., LTD.
<b>Street Address:</b>	NO.8, LI-HSIN RD.6
<b>Internal Address:</b>	SCIENCE-BASED INDUSTRIAL PARK
<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>	15865072
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	
<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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<b>Correspondent Name:</b>	R. BURNS ISRAELSEN
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<b>ATTORNEY DOCKET NUMBER:</b>	T1516.10147US02
<b>NAME OF SUBMITTER:</b>	R. BURNS ISRAELSEN
<b>SIGNATURE:</b>	/R. Burns Israelsen, Reg. No. 42685/
<b>DATE SIGNED:</b>	01/11/2018

PATENT

**Total Attachments: 2**

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**ASSIGNMENT**

This assignment agreement is applicable to an invention entitled (Invention Title) \_\_\_\_\_  
Trench Structure of Semiconductor Device and Manufacturing Method Thereof

The PATENT RIGHTS referred to in this agreement are:

- (check one)  a patent application for this invention, executed by the ASSIGNOR(S) concurrently with this assignment.
- U.S. patent application Serial No. 14/812,864, filed July 29, 2015
- a U.S. patent application based on PCT International Application No. \_\_\_\_\_ filed on (date) \_\_\_\_\_ (U.S. patent application Serial No. \_\_\_\_\_, if known).
- U.S. patent No. \_\_\_\_\_, issued \_\_\_\_\_.

The PATENT RIGHTS also include all divisions, reissues, continuations and extensions of the patents and patent applications identified above.

The PATENT RIGHTS assigned under this agreement are:

- (check one)  U.S. patent rights only.
- Worldwide patent rights. In this case, the assignee shall have the right to claim the benefit of the filing date of any U.S. or foreign patent application for this invention.

The ASSIGNOR(S) referred to in this agreement is (or are) the inventor(s) whose signatures appear on page 2 of this Assignment and any Supplemental Sheet(s).

The ASSIGNEE referred to in this agreement is:

(Name of Assignee) TAIWAN SEMICONDUCTOR MANUFACTURING CO., LTD.  
 (Address) NO.8, LI-HSIN RD.6, SCIENCE-BASED INDUSTRIAL PARK, HSINCHU, TAIWAN 300, R.O.C.

The ASSIGNEE is:

- (check one)  An individual.
- A Partnership.
- A Corporation of TAIWAN, R.O.C. (specify state or country)
- (other) \_\_\_\_\_

The ASSIGNOR(S), in consideration of \$10.00 paid by the ASSIGNEE, and other good and valuable consideration, receipt of which is acknowledged, hereby assign(s) the following rights to the ASSIGNEE, its successors and assigns:

- the full and exclusive right to the invention;
- the entire right, title and interest in and to the PATENT RIGHTS;
- the right to sue and recover for any past infringement; and
- the right to claim priority under 35 USC 119, 35 USC 120, or any other applicable provisions, based on any earlier patent applications for this invention.

P20150474US00/NP-17253-US

THIS IS PAGE 2 OF AN ASSIGNMENT FROM THE INVENTOR(S) TO  
 ASSIGNEE: TAIWAN SEMICONDUCTOR MANUFACTURING CO., LTD.  
 INVENTION TITLE: Trench Structure of Semiconductor Device and Manufacturing  
 Method Thereof

As to all U.S. patent applications assigned under this agreement, the ASSIGNOR(S) hereby authorize(s) and request(s) the Commissioner of Patents and Trademark to issue all Letters Patent to the ASSIGNEE as the assignee of the entire right, title and interest, for the sole use and enjoyment of said ASSIGNEE, its successors and assigns.

Further, the ASSIGNOR(S) agree(s) to communicate to said ASSIGNEE, or its representatives, any fact known to the ASSIGNOR(S) with respect to said invention, and testify in any legal proceeding, sign all lawful papers, execute all divisional, continuation, substitute, renewal, reexamination and reissue applications, execute all necessary assignment papers to cause and all Letter Patent to be issued to said ASSIGNEE, make all rightful oaths and generally do everything necessary or desirable to aid said ASSIGNEE, its successors and assigns, to obtain and enforce proper protection for said invention.

The ASSIGNOR(S) authorize(s) the attorneys and agents who have the power of attorney in this application to check any appropriate boxes and to insert the Serial Number and filing date in this document after it has been executed.

<u>Jia-Ming LIN</u> Name of sole or first inventor	<u>Jia-Ming Lin</u> Signature	<u>2015/07/30</u> Date
<u>Shiu-Ko JANGJIAN</u> Name of second inventor, if any	<u>Shiu-Ko Jangjian</u> Signature	<u>July. 30, 2015</u> Date
<u>Chun-Che LIN</u> Name of third inventor, if any	<u>Chun-Che Lin</u> Signature	<u>7/30/15</u> Date
<u>Ying-Lang WANG</u> Name of fourth inventor, if any	<u>Ying-Lang Wang</u> Signature	<u>7/30/15</u> Date
<u>Wei-Ken LIN</u> Name of fifth inventor, if any	<u>Wei-Ken LIN</u> Signature	<u>2015/07/30</u> Date
<u>Chuan-Pu LIU</u> Name of sixth inventor, if any	<u>Chuan-Pu Liu</u> Signature	<u>2015/07/30</u> Date