

<b>PATENT ASSIGNMENT COVER SHEET</b>
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Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT4540560

<b>SUBMISSION TYPE:</b>	CORRECTIVE ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	Corrective Assignment to correct the TYPOGRAPHICAL ERROR IN THE 8TH ASSIGNOR'S FIRST NAME previously recorded on Reel 037726 Frame 0190. Assignor(s) hereby confirms the ASSIGNMENT OF ASSIGNOR'S INTEREST.

**CONVEYING PARTY DATA**

Name	Execution Date
YEN-RU LEE	12/28/2015
CHIEN-CHANG SU	12/28/2015
CHII-HORNG LI	01/05/2016
CHIEN-I KUO	12/28/2015
HENG-WEN TING	12/28/2015
JUNG-CHI TAI	12/28/2015
CHE-HUI LEE	01/08/2016
LI-LI SU	07/27/2017
YING-WEI LI	01/29/2016

**RECEIVING PARTY DATA**

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

**PROPERTY NUMBERS Total: 1**

Property Type	Number
<b>Application Number:</b>	15002077

**CORRESPONDENCE DATA**

**Fax Number:** (972)732-9218

*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.*

**Phone:** 972-732-1001

**Email:** docketing@slatermatsil.com

**Correspondent Name:** SLATER MATSIL, LLP/TSMC

**Address Line 1:** 17950 PRESTON ROAD, SUITE 1000

**Address Line 4:** DALLAS, TEXAS 75252

**PATENT**

<b>ATTORNEY DOCKET NUMBER:</b>	TSM15-0947
<b>NAME OF SUBMITTER:</b>	SHANDY L. SARCHET
<b>SIGNATURE:</b>	/Shandy L. Sarchet/
<b>DATE SIGNED:</b>	08/08/2017

**Total Attachments: 10**

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## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
Stylesheet Version v1.2

EPAS ID: PAT3737547

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
YEN-RU LEE	12/28/2015
CHIEN-CHANG SU	12/28/2015
CHII-HORNG LI	01/05/2016
CHIEN-I KUO	12/28/2015
HENG-WEN TING	12/28/2015
JUNG-CHI TAI	12/28/2015
CHE-HUI LEE	01/08/2016
LILLY SU	12/28/2015
YING-WEI LI	01/29/2016
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	TAIWAN SEMICONDUCTOR MANUFACTURING COMPANY, LTD.
<b>Street Address:</b>	NO. 8, LI-HSIN RD. 6
<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>
Application Number:	15002077
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	(972)732-9218
<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>	972-732-1001
<b>Email:</b>	docketing@slater-matsil.com
<b>Correspondent Name:</b>	SLATER & MATSIL, L.L.P.
<b>Address Line 1:</b>	17950 PRESTON ROAD, SUITE 1000
<b>Address Line 4:</b>	DALLAS, TEXAS 75252
<b>ATTORNEY DOCKET NUMBER:</b>	TSM15-0947

ATTORNEY DOCKET NO.  
TSM15-0947

ASSIGNMENT

WHEREAS, I, the undersigned inventor (or one of the undersigned joint inventors), of residence as listed, having invented certain new and useful improvements as below entitled, for which application for United States Letters Patent is made; and


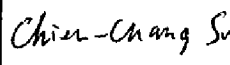
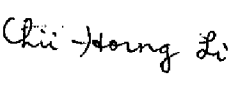
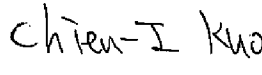
WHEREAS, Taiwan Semiconductor Manufacturing Company, Ltd. ("Assignee"), a corporation organized and existing under the laws of Taiwan, the Republic of China, with its principal office at No. 8, Li-Hsin Rd. 6 Science-Based Industrial Park, Hsin-Chu 300-77 Taiwan, R.O.C., is desirous of acquiring my entire right, title and interest in and to said invention, and to said application and any Letters Patent that may issue thereon in the United States and all other countries throughout the world;

NOW, THEREFORE, for good and valuable consideration, the receipt of which is hereby acknowledged, I hereby sell and assign to said Assignee, its successors and assigns, my entire right, title and interest in and to said invention and in and to said application and all patents which may be granted therefor, and all future non-provisional applications including divisions, reissues, substitutions, continuations, and extensions thereof; and I hereby authorize and request the Commissioner for Patents to issue all patents for said invention, or patent resulting therefrom, insofar as my interest is concerned, to said Assignee, as assignee of my entire right, title and interest. I declare that I have not executed and will not execute any agreement in conflict herewith.

I also hereby sell and assign to Assignee, its successors and assigns, my foreign rights to the invention disclosed in said application, in all countries of the world, including, but not limited to, the right to file applications and obtain patents under the terms of the International Convention for the Protection of Industrial Property, and of the European Patent Convention, and further agree to execute any and all patent applications, assignments, affidavits, and any other papers in connection therewith necessary to perfect such patent rights.

I hereby further agree that I will communicate to said Assignee, or to its successors, assigns, and legal representatives, any facts known to me respecting said invention or the file history thereof, and at the expense of said Assignee, its legal representatives, successors, or assigns, will testify in any legal proceedings, sign all lawful papers, execute all divisional, continuation, reissue and substitute applications, make all lawful oaths, and generally do everything possible to aid said Assignee, its legal representatives, successors, and assigns, to obtain and enforce proper patent protection for said invention in all countries.

IN WITNESS WHEREOF, I hereunto set my hand and seal this day and year;

TITLE OF INVENTION	FETS AND METHODS OF FORMING FETS			
SIGNATURE OF INVENTOR AND NAME	 Yen-Ru Lee	 Chien-Chang Su	 Chii-Hong Li	 Chien-I Kuo
DATE	12/28/2015	12/28/2015	2016/1/5 Chii-Hong Li	12/28/2015
RESIDENCE	Hsin-Chu, Taiwan	Kaohsiung, Taiwan	Zhubei, Taiwan	Hsin-Chu, Taiwan

ATTORNEY DOCKET NO.  
TSM15-0947

**ASSIGNMENT**

WHEREAS, I, the undersigned inventor (or one of the undersigned joint inventors), of residence as listed, having invented certain new and useful improvements as below entitled, for which application for United States Letters Patent is made; and

WHEREAS, Taiwan Semiconductor Manufacturing Company, Ltd. ("Assignee"), a corporation organized and existing under the laws of Taiwan, the Republic of China, with its principal office at No. 8, Li-Hsin Rd. 6 Science-Based Industrial Park, Hsin-Chu 300-77 Taiwan, R.O.C., is desirous of acquiring my entire right, title and interest in and to said invention, and to said application and any Letters Patent that may issue thereon in the United States and all other countries throughout the world;

NOW, THEREFORE, for good and valuable consideration, the receipt of which is hereby acknowledged, I hereby sell and assign to said Assignee, its successors and assigns, my entire right, title and interest in and to said invention and in and to said application and all patents which may be granted therefor, and all future non-provisional applications including divisions, reissues, substitutions, continuations, and extensions thereof; and I hereby authorize and request the Commissioner for Patents to issue all patents for said invention, or patent resulting therefrom, insofar as my interest is concerned, to said Assignee, as assignee of my entire right, title and interest. I declare that I have not executed and will not execute any agreement in conflict herewith.

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IN WITNESS WHEREOF, I hereunto set my hand and seal this day and year;

TITLE OF INVENTION	FETS AND METHODS OF FORMING FETS			
SIGNATURE OF INVENTOR AND NAME	<i>Heng-Wen Ting</i> Heng-Wen Ting	<i>Jung-Chi Tai</i> Jung-Chi Tai	<i>Chehui Lee</i> Che-Hui Lee	<i>Lilly Su</i> Lilly Su
DATE	2015/12/28	2015/12/28	2016/1/8	2015/12/28
RESIDENCE	Hsin-Chu, Taiwan	Hsin-Chu, Taiwan	Hsin-Chu, Taiwan	ChuBei, Taiwan

**ASSIGNMENT**

WHEREAS, I, the undersigned inventor (or one of the undersigned joint inventors), of residence as listed, having invented certain new and useful improvements as below entitled, for which application for United States Letters Patent is made; and

WHEREAS, Taiwan Semiconductor Manufacturing Company, Ltd. ("Assignee"), a corporation organized and existing under the laws of Taiwan, the Republic of China, with its principal office at No. 8, Li-Hsin Rd. 6 Science-Based Industrial Park, Hsin-Chu 300-77 Taiwan, R.O.C., is desirous of acquiring my entire right, title and interest in and to said invention, and to said application and any Letters Patent that may issue thereon in the United States and all other countries throughout the world;

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IN WITNESS WHEREOF, I hereunto set my hand and seal this day and year;

TITLE OF INVENTION	FETS AND METHODS OF FORMING FETS			
SIGNATURE OF INVENTOR AND NAME	✓ Ying-Wei Li Ying-Wei Li			
DATE	✓ 2016/01/29			
RESIDENCE	Hsin-Chu, Taiwan			

ATTORNEY DOCKET NO.  
TSM15-0947

ASSIGNMENT

WHEREAS, I, the undersigned inventor (or one of the undersigned joint inventors), of residence as listed, having invented certain new and useful improvements as below entitled, for which application for United States Letters Patent is made; and


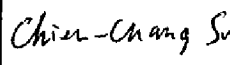
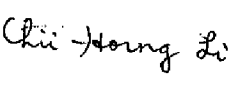
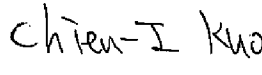
WHEREAS, Taiwan Semiconductor Manufacturing Company, Ltd. ("Assignee"), a corporation organized and existing under the laws of Taiwan, the Republic of China, with its principal office at No. 8, Li-Hsin Rd. 6 Science-Based Industrial Park, Hsin-Chu 300-77 Taiwan, R.O.C., is desirous of acquiring my entire right, title and interest in and to said invention, and to said application and any Letters Patent that may issue thereon in the United States and all other countries throughout the world;

NOW, THEREFORE, for good and valuable consideration, the receipt of which is hereby acknowledged, I hereby sell and assign to said Assignee, its successors and assigns, my entire right, title and interest in and to said invention and in and to said application and all patents which may be granted therefor, and all future non-provisional applications including divisions, reissues, substitutions, continuations, and extensions thereof; and I hereby authorize and request the Commissioner for Patents to issue all patents for said invention, or patent resulting therefrom, insofar as my interest is concerned, to said Assignee, as assignee of my entire right, title and interest. I declare that I have not executed and will not execute any agreement in conflict herewith.

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IN WITNESS WHEREOF, I hereunto set my hand and seal this day and year;

TITLE OF INVENTION	FETS AND METHODS OF FORMING FETS			
SIGNATURE OF INVENTOR AND NAME	 Yen-Ru Lee	 Chien-Chang Su	 Chii-Hong Li	 Chien-I Kuo
DATE	12/28/2015	12/28/2015	2016/1/5 Chii-Hong Li	12/28/2015
RESIDENCE	Hsin-Chu, Taiwan	Kaohsiung, Taiwan	Zhubei, Taiwan	Hsin-Chu, Taiwan

ATTORNEY DOCKET NO.  
TSM15-0947

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WHEREAS, Taiwan Semiconductor Manufacturing Company, Ltd. ("Assignee"), a corporation organized and existing under the laws of Taiwan, the Republic of China, with its principal office at No. 8, Li-Hsin Rd. 6 Science-Based Industrial Park, Hsin-Chu 300-77 Taiwan, R.O.C., is desirous of acquiring my entire right, title and interest in and to said invention, and to said application and any Letters Patent that may issue thereon in the United States and all other countries throughout the world;

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IN WITNESS WHEREOF, I hereunto set my hand and seal this day and year;

TITLE OF INVENTION	FETS AND METHODS OF FORMING FETS			
SIGNATURE OF INVENTOR AND NAME	<i>Heng-Wen Ting</i> Heng-Wen Ting	<i>Jung-Chi Tai</i> Jung-Chi Tai	<i>Chehui Lee</i> Che-Hui Lee	<i>Lilly Su</i> Lilly Su
DATE	<i>2015/12/28</i>	<i>2015/12/28</i>	<i>2016/1/8</i>	<i>2015/12/28</i>
RESIDENCE	Hsin-Chu, Taiwan	Hsin-Chu, Taiwan	Hsin-Chu, Taiwan	ChuBei, Taiwan



ATTORNEY DOCKET NO. TSM15-0947
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**ASSIGNMENT**

WHEREAS, I, the undersigned inventor (or one of the undersigned joint inventors), of residence as listed, having invented certain new and useful improvements as below entitled, for which application for United States Letters Patent is made; and

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IN WITNESS WHEREOF, I hereunto set my hand and seal this day and year;

TITLE OF INVENTION	FETS AND METHODS OF FORMING FETS			
SIGNATURE OF INVENTOR AND NAME	<i>Li-Li Su</i> Li-Li Su			
DATE	<i>7/27/2017</i>			
RESIDENCE	ChuBei, Taiwan			

**ASSIGNMENT**

WHEREAS, I, the undersigned inventor (or one of the undersigned joint inventors), of residence as listed, having invented certain new and useful improvements as below entitled, for which application for United States Letters Patent is made; and

WHEREAS, Taiwan Semiconductor Manufacturing Company, Ltd. ("Assignee"), a corporation organized and existing under the laws of Taiwan, the Republic of China, with its principal office at No. 8, Li-Hsin Rd. 6 Science-Based Industrial Park, Hsin-Chu 300-77 Taiwan, R.O.C., is desirous of acquiring my entire right, title and interest in and to said invention, and to said application and any Letters Patent that may issue thereon in the United States and all other countries throughout the world;

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TITLE OF INVENTION	FETS AND METHODS OF FORMING FETS			
SIGNATURE OF INVENTOR AND NAME	✓ Ying-Wei Li Ying-Wei Li			
DATE	✓ 2016/01/29			
RESIDENCE	Hsin-Chu, Taiwan			