## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT5503573

SUBMISSION TYPE:		CORRECTIVE ASSIGNMENT	
NATURE OF CONVEY	ANCE:	TAIWAN SEMICONDUCTOR MAN previously recorded on Reel 04412	
CONVEYING PARTY	ΔΑΤΑ		
		Name	Execution Date
ARYAN AFZALIAN			08/29/2014
RECEIVING PARTY D	ΑΤΑ		
Name:	TAIWAN	N SEMICONDUCTOR MANUFACTURIN	G COMPANY, LTD.
Street Address:	NO. 8, L	I-HSIN RD. 6, SCIENCE-BASED INDUS	STRIAL PARK
City:	HSIN-C	HU	
State/Country:	TAIWAN	L L L L L L L L L L L L L L L L L L L	
Postal Code:	300-77		
PROPERTY NUMBER	S Total: 1		
Property Type	•	Number	
Application Number:	1	15809738	
CORRESPONDENCE	DATA		
Fax Number:		214)200-0853	
	be sent to	the e-mail address first; if that is unsu; ; if that is unsuccessful, it will be sent	
Phone:	2	2146515000	
Email:		pdocketing@haynesboone.com	
Correspondent Name			
Address Line 1:	2	2323 VICTORY AVENUE	
Address Line 1: Address Line 4:	2	2323 VICTORY AVENUE DALLAS, TEXAS 75219	
Address Line 1: Address Line 4: ATTORNEY DOCKET N	2 [ IUMBER:	2323 VICTORY AVENUE DALLAS, TEXAS 75219 24061.2933US02	
Address Line 1: Address Line 4: ATTORNEY DOCKET N NAME OF SUBMITTER	2 [ IUMBER:	2323 VICTORY AVENUE DALLAS, TEXAS 75219 24061.2933US02 JO EL MERCER	
Address Line 1: Address Line 4: ATTORNEY DOCKET N NAME OF SUBMITTER SIGNATURE:	2 [ IUMBER:	2323 VICTORY AVENUE DALLAS, TEXAS 75219 24061.2933US02 JO EL MERCER /Jo El Mercer/	
Address Line 1: Address Line 4: ATTORNEY DOCKET N NAME OF SUBMITTER SIGNATURE: DATE SIGNED:	2 [ IUMBER:	2323 VICTORY AVENUE DALLAS, TEXAS 75219 24061.2933US02 JO EL MERCER	
Address Line 1: Address Line 4: ATTORNEY DOCKET N NAME OF SUBMITTER SIGNATURE: DATE SIGNED: Total Attachments: 6	2 IUMBER: :	2323 VICTORY AVENUE DALLAS, TEXAS 75219 24061.2933US02 JO EL MERCER /Jo El Mercer/ 05/02/2019	
Address Line 1: Address Line 4: ATTORNEY DOCKET N NAME OF SUBMITTER SIGNATURE: DATE SIGNED: Total Attachments: 6 source=24061.2933USC	2 IUMBER: : 2 - Notice o	2323 VICTORY AVENUE DALLAS, TEXAS 75219 24061.2933US02 JO EL MERCER /Jo El Mercer/ 05/02/2019 of Recordation & Assignment, 4852-6948	
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PATENT REEL: 049059 FRAME: 0484

Docket No.: 2014-0709/24061.2933 Customer No.: 42717

#### ASSIGNMENT

WHEREAS, I,

(1) Aryan Afzalian of Rue de la Chapelle 33, 1450 Chastre, Belgium

have invented certain improvements in

### LEAKAGE CURRENT SUPPRESSION METHODS AND RELATED STRUCTURES

for which I have executed an application for Letters Patent of the United States of America,

X of even date filed herewith; and filed on \_\_\_\_\_\_ and assigned application number \_\_\_\_\_\_; and

WHEREAS, I 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, 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.

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-1-

Docket No.: 2014-0709/24061.2933 Customer No.: 42717

Inventor Name:	Aryan Afzalian
Residence Address:	Rue de la Chapelle 33, 1450 Chastre, Belgium
Dated: <u>2014/C</u>	4
	Inventor Signature ()
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## PATENT REEL: 049059 FRAME: 0486



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### PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2

SUBMISSION TY	PE:	NEW ASSIGNMENT	
NATURE OF CON	NVEYANCE:	ASSIGNMENT	
CONVEYING PA	RTY DATA		
Name			<b>Execution Date</b>
ARYAN AFZALI	AN		08/29/2014
RECEIVING PAR			
Name:		CONDCUTOR MANUFACTURI	
Street Address:	NO. 8, LI-HSIN	RD. 6, SCIENCE-BASED INDUS	TRIAL PARK
City:	HSIN-CHU		
State/Country:	TAIWAN		
Postal Code:	300-77		
PROPERTY NUM		Number	
Application Number: 15809		9738	
CORRESPONDEN Fax Number: Phone:	NCE DATA (214)200-08 214-651-500		

PATENT

https://epas.uspto.gov/com/receipt.jsp?iname=U6X2OMWM40RD\_**REEL: 049059 FRAME**/1**Q4267**7

Correspondence will be sent to the e-mail address provided; if that is unsuccessful, it will be sent via Correspondent Name:HAYNES A Address Line 1:2323 VICTO	@haynesboone.com first; if that is unsuccessful, it will be sent using a fax number, if US Mail. ND BOONE, LLP RY. SUITE 700 EXAS 75219
ATTORNEY DOCKET NUMBER:	24061.2933US02
NAME OF SUBMITTER:	JO EL MERCER
Signature:	/Jo El Mercer/
Date:	11/14/2017
	t (Parent), 4828-5151-2660_1#page1.tif t (Parent), 4828-5151-2660_1#page2.tif
RECEIPT INFORMATION	
EPAS ID:         PAT468884           Receipt Date:         11/14/2017	

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# 504642121 11/14/2017

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT4688841

SUBMISSION TYPE:		NEW A	ASSIGNMENT		
NATURE OF CONVEYANCE:		ASSIG	ASSIGNMENT		
CONVEYING PARTY D	ΑΤΑ				
		Name			Execution Da
ARYAN AFZALIAN					08/29/2014
RECEIVING PARTY DA	ΑΤΑ				
Name:	TAIWAN	SEMICON	DCUTOR MANUFACTU	RING CC	MPANY, LTD.
Street Address:	NO. 8, L	I-HSIN RD.	6, SCIENCE-BASED IN	DUSTRIA	AL PARK
City:	HSIN-CI	HU			
State/Country:	TAIWAN	١			
Postal Code:	300-77				
Property Type			Number		
		15809738	Number		
Application Number:		15809738	Number		
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**UNITED STATES PATENT AND TRADEMARK OFFICE** 

UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE

NOVEMBER 15, 2017

PTAS

HAYNES AND BOONE, LLP 2323 VICTORY. SUITE 700 DALLAS, TX 75219

# 504642121

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RECORDATION DATE: 11/14/2017

REEL/FRAME: 044124/0226 NUMBER OF PAGES: 3

BRIEF: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).

DOCKET NUMBER: 24061.2933US02

ASSIGNOR: AFZALIAN, ARYAN

DOC DATE: 08/29/2014

ASSIGNEE: TAIWAN SEMICONDCUTOR MANUFACTURING COMPANY, LTD. NO. 8, LI-HSIN RD. 6, SCIENCE-BASED INDUSTRIAL PARK HSIN-CHU, TAIWAN 300-77

APPLICATION NUMBER: 15809738 FILING DATE: PATENT NUMBER: ISSUE DATE: TITLE: LEAKAGE CURRENT SUPPRESSION METHODS AND RELATED STRUCTURES

ASSIGNMENT RECORDATION BRANCH PUBLIC RECORDS DIVISION

RECORDED: 05/02/2019