

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
Stylesheet Version v1.2

EPAS ID: PAT6432587

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
MRUNAL A. KHADERBAD	11/28/2019
ZIWEI FANG	02/07/2020
KENG-CHU LIN	11/28/2019
HSUEH WEN TSAU	11/28/2019
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	TAIWAN SEMICONDUCTOR MANUFACTURING CO., LTD.
<b>Street Address:</b>	8, LI-HSIN RD. 6
<b>Internal Address:</b>	HSINCHU SCIENCE PARK
<b>City:</b>	HSINCHU
<b>State/Country:</b>	TAIWAN
<b>Postal Code:</b>	300-78
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
Application Number:	16717433
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	(214)200-0853
<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>	214-651-5000
<b>Email:</b>	ipdocketing@haynesboone.com
<b>Correspondent Name:</b>	HAYNES AND BOONE, LLP (24061) IP SECTION
<b>Address Line 1:</b>	2323 VICTORY AVENUE
<b>Address Line 2:</b>	SUITE 700
<b>Address Line 4:</b>	DALLAS, TEXAS 75219
<b>ATTORNEY DOCKET NUMBER:</b>	2018-3188/24061.3866US01
<b>NAME OF SUBMITTER:</b>	CATHERINE HUDSON
<b>SIGNATURE:</b>	/Catherine Hudson/
<b>DATE SIGNED:</b>	12/04/2020
<b>Total Attachments: 4</b>	

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source=3866US01 CompletedAssignmentcutepdf#page4.tif

**ASSIGNMENT**

WHEREAS, we,

- (1) Mrunal A. Khaderbad of Hsinchu City, Taiwan (R.O.C.)
- (2) Ziwei Fang of Hsinchu, Taiwan (R.O.C.)
- (3) Keng-Chu Lin of Ping-Tung, Taiwan (R.O.C.)
- (4) Hsueh Wen Tsau of Miaoli County, Taiwan (R.O.C.)

have invented certain improvements in

**LOW RESISTANCE FILL METAL LAYER MATERIAL  
AS STRESSOR IN METAL GATES**

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

  X   of even date filed herewith; and  
  X   filed on December 17, 2019 and assigned application number 16/717,433; 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 Co., Ltd., (“TSMC”), 8, Li-Hsin Rd. 6, Hsinchu Science Park, Hsinchu, Taiwan 300-78, 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

Docket No.: P20183188US00/24061.3866US01

Customer No.: 000042717

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: Mrunal A. Khaderbad

Residence Address: Hsinchu City, Taiwan (R.O.C.)

Dated: 23<sup>th</sup> NOV 2019

  
Inventor Signature

Inventor Name: Ziwei Fang

Residence Address: Hsinchu, Taiwan (R.O.C.)


Dated: \_\_\_\_\_

\_\_\_\_\_  
Inventor Signature

Inventor Name: Keng-Chu Lin

Residence Address: Ping-Tung, Taiwan (R.O.C.)

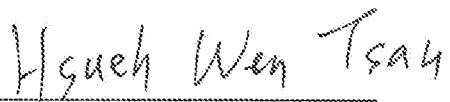
Dated: 2019.11.28

  
Inventor Signature

Inventor Name: Hsueh Wen Tsau

Residence Address: Miaoli County, Taiwan (R.O.C.)

Dated: 2019.11.28

  
Inventor Signature

**ASSIGNMENT**

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- (1) Mrunal A. Khaderbad of Hsinchu City, Taiwan (R.O.C.)
- (2) Ziwei Fang of Hsinchu, 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: Mrunjal A. Khaderbad

Residence Address: Hsinchu City, Taiwan (R.O.C.)

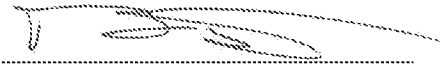
Dated: \_\_\_\_\_

\_\_\_\_\_  
Inventor Signature

Inventor Name: Zawei Fang

Residence Address: Hsinchu, Taiwan (R.O.C.)

Dated: 2/7/2020

  
\_\_\_\_\_  
Inventor Signature

Inventor Name: Keng-Chu Lin

Residence Address: Ping-Tung, Taiwan (R.O.C.)

Dated: \_\_\_\_\_

\_\_\_\_\_  
Inventor Signature

Inventor Name: Hsueh Wen Tsau

Residence Address: Miaoli County, Taiwan (R.O.C.)

Dated: \_\_\_\_\_

\_\_\_\_\_  
Inventor Signature