

PATENT ASSIGNMENT COVER SHEET

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SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT
CONVEYING PARTY DATA	
Name	Execution Date
HSIN-WEN SU	05/28/2021
KIAN-LONG LIM	05/18/2021
WEN-CHUN KENG	05/18/2021
SHIH-HAO LIN	05/20/2021
CHANG-TA YANG	05/12/2021
RECEIVING PARTY DATA	
Name:	TAIWAN SEMICONDUCTOR MANUFACTURING CO., LTD.
Street Address:	8, LI-HSIN RD. 6
Internal Address:	HSINCHU SCIENCE PARK
City:	HSINCHU
State/Country:	TAIWAN
Postal Code:	300-78
PROPERTY NUMBERS Total: 1	
Property Type	Number
Application Number:	17813891
CORRESPONDENCE DATA	
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ATTORNEY DOCKET NUMBER:	20183081/24061.3885US02
NAME OF SUBMITTER:	MARTHA ROBINSON
SIGNATURE:	/MARTHA ROBINSON/
DATE SIGNED:	08/25/2022

Total Attachments: 5

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DECLARATION AND ASSIGNMENT

Title of Invention: **SEMICONDUCTOR MEMORY STRUCTURE**

As a below named inventor, or one of the below named joint inventors, I hereby declare that:

This declaration and assignment is directed to the application attached hereto. If the application is not attached hereto, the application is as identified by the attorney docket number as set forth above and/or the following:

United States Application No. or PCT International Application No.: 16/837,227 , filed on 04/01/2020 .

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

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I have reviewed and understand the contents of the above-identified application, including the claims.

I am aware of the duty to disclose to the U.S. Patent and Trademark Office all information known to me to be material to patentability as defined in 37 C.F.R. §1.56.

All statements made of my own knowledge are true and all statements made on information and belief are believed to be true.

I hereby acknowledge that any willful false statement made in this declaration may jeopardize the validity of the application or any patent issuing thereon and is punishable under 18 U.S.C. §1001 by fine or imprisonment of not more than five (5) years, or both.

The above-identified invention shall henceforth be referred to herein as the "INVENTION" and the above-identified application shall henceforth be referred to herein as the "APPLICATION."

Taiwan Semiconductor Manufacturing Co., Ltd., a corporation organized and existing under the laws of Taiwan, with its principal office at 8, Li-Hsin Rd. 6, Hsinchu Science Park, Hsinchu, 300-78, Taiwan and its heirs, successors, legal representatives and assigns shall henceforth be referred to collectively herein as ASSIGNEE.

For good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, I have assigned and do hereby assign to 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, but not limited to, 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 patents resulting therefrom, insofar as my interest is concerned, to 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.

Additionally, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, I have also assigned and hereby assign to ASSIGNEE, its successors and assigns, all of my 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 I further agree to execute any and all patent applications, assignments, affidavits, and any other papers in connection therewith necessary to perfect such rights.

I hereby further agree that I will communicate to 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 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 ASSIGNEE, its legal representatives, successors, and assigns, to obtain and enforce proper patent protection for said invention in all countries.

I hereby grant the attorney of record the power to insert on this document any further identification that may be necessary or desirable in order to comply with the rules of the United States Patent and Trademark Office or other authority for recordation of this document.

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

1.	NAME OF INVENTOR (Full Legal Name) : <u>Hsin-wen Su</u>
Signature: <u>/ Hsin-wen Su /</u>	Date: <u>5/28/2021</u>
2.	NAME OF INVENTOR (Full Legal Name) : <u>Kian-Long Lim</u>
Signature: <u>/ Kian-Long Lim /</u>	Date: <u>5/18/2021</u>
3.	NAME OF INVENTOR (Full Legal Name) : <u>Wen-Chun Keng</u>
Signature: <u>/ Wen-Chun Keng /</u>	Date: <u>5/18/2021</u>
4.	NAME OF INVENTOR (Full Legal Name) : _____
Signature: <u>/ _____ /</u>	Date: _____
5.	NAME OF INVENTOR (Full Legal Name) : <u>Shih-Hao Lin</u>
Signature: <u>/ Shih-Hao Lin /</u>	Date: <u>5/20/2021</u>

**INVENTOR'S DECLARATION FOR
PATENT APPLICATION**

As below named Inventor, I hereby declare that:

The below-mentioned application was made or authorized to be made by me.

I believe that I am the original Inventor or an original joint Inventor of a claimed invention in the below-mentioned application.

SEMICONDUCTOR MEMORY STRUCTURE

the specification of which (check one):

_____ is attached hereto.

X was filed on 04-01-2020
under Attorney's Docket Number P20183081US00 / 24061.3885US01
as Application Serial No. 16/837,227
and was amended on _____ (if applicable).

I hereby authorize the attorney of record to update this document to include Patent Office information as deemed necessary (i.e., filing date, serial number, etc.).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability of this application in accordance with 37 CFR 1.56, material information which became available between the filing date of the application and issuance thereof, including any continuation, divisional and/or continuation-in-part.

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.

FULL NAME OF INVENTOR: Chang-Ta YANG

INVENTOR'S SIGNATURE: Chang-Ta Yang DATED: 5, 12, 2021

ASSIGNMENT

WHEREAS, we,

- (1) Hsin-Wen SU of Hsinchu, Taiwan (R.O.C.)
- (2) Kian-Long LIM of Hsinchu City, Taiwan (R.O.C.)
- (3) Wen-Chun KENG of Hsinchu County, Taiwan (R.O.C.)
- (4) Chang-Ta YANG of Hsinchu City, Taiwan (R.O.C.)
- (5) Shih-Hao LIN of Hsinchu, Taiwan (R.O.C.)

have invented certain improvements in

SEMICONDUCTOR MEMORY STRUCTURE

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

_____ of even date filed herewith; and
XX filed on 04-01-2020 and assigned application number 16/837,227; 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 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: Hsin-Wen SU

Residence Address: No. 8, Li-Hsin Rd. 6, Hsinchu Science Park, Hsinchu, Taiwan 300-78 (R.O.C.)

Dated: _____

Inventor Signature

Inventor Name: Kian-Long LIM

Residence Address: No. 47, Jinshan 27th St., East Dist., Hsinchu City 300, Taiwan (R.O.C.)

Dated: _____

Inventor Signature

Inventor Name: Wen-Chun KENG

Residence Address: No. 8, Li-Hsin Rd. 6, Hsinchu Science Park, Hsinchu, Taiwan 300-78 (R.O.C.)

Dated: _____

Inventor Signature

Inventor Name: Chang-Ta YANG

Residence Address: No. 28, Ln. 443, Minghu Rd., East Dist., Hsinchu City 300, Taiwan (R.O.C.)

Dated: 5.12, 2021

Chang-Ta Yang

Inventor Signature