PATENT ASSIGNMENT COVER SHEET

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SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
HARRY-HAK-LAY CHUANG	11/27/2018
CHANG-HUNG CHEN	11/27/2018
KUEI-HUNG SHEN	11/27/2018
WEN-CHUN YOU	12/03/2018
TIEN-WEI CHIANG	11/27/2018

RECEIVING PARTY DATA

Name:	TAIWAN SEMICONDUCTOR MANUFACTURING COMPANY LTD.
Street Address:	NO.8, LI-HSIN RD. 6, HSINCHU SCIENCE PARK
City:	HSINCHU
State/Country:	TAIWAN

PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	16217681

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DATE SIGNED:	12/12/2018

Total Attachments: 2

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PATENT 505232869 REEL: 047756 FRAME: 0149

Your Ref. P20182243US00

US ONLY

ASSIGNMENT

WHEREAS, I(we), <u>CHUANG</u>, <u>HARRY-HAK-LAY</u>, <u>CHEN</u>, <u>CHANG-HUNG</u>, <u>SHEN</u>, <u>KUEI-HUNG</u>, <u>YOU</u>, <u>WEN-CHUN</u> and <u>CHIANG</u>, <u>TIEN-WEI</u> whose post office address(es) appear(s) below, hereinafter referred to as ASSIGNOR, have invented certain new and useful invention entitled

STORAGE DEVICE AND METHOD OF FORMING STORAGE DEVICE

	INVENTION) for which an application for with unless at least one of the following i		tters Patent /Utility Patent
☐ United States Design	E		
☐ executed on:			
☐ filed on:	Serial No.:		
☐ established by PCT International Patent Application No.: filed: designating		designating the	
United States of America			
☐ issued on	as U.S. Patent No.:		
		_	
WHEREAS, TAIWAN SE	MICONDUCTOR MANUFACTUR	ING COMPAN	Y LTD. whose post office
address is NO.8, LI-HSII	N RD. 6. HSINCHII SCIENCE I	PARK HSINC	HIL TAIWAN ROC

NOW, THEREFORE, for good and valuable consideration, receipt of which is hereby acknowledged, I (we), ASSIGNOR, by these presents do sell, assign and transfer unto said ASSIGNEE, the entire right, title, and interest in and to said INVENTION and application throughout the United States of America, including any and all Letters Patent granted on any division, continuation, continuation-in-part and reissue of said application for the full term or terms for which the same may be granted, including all priority rights under any International Convention.

hereinafter referred to as ASSIGNEE, is desirous of acquiring the entire right, title and interest in and to the same in

the United States and its territorial possessions;

ASSIGNOR further covenants that no assignments, sale, agreement or encumbrance has been or will be made or entered into which would conflict with this Assignment;

ALSO, ASSIGNOR hereby agrees to execute any documents that legally may be required in connection with the filing, prosecution and maintenance of said application or any other patent application(s) in the United States for said INVENTION, including additional documents that may be required to affirm the rights of ASSIGNEE in and to said INVENTION, all without further consideration. ASSIGNOR also agrees, without further consideration and at ASSIGNEE'S expense, to identify and communicate to ASSIGNEE at ASSIGNEE'S request documents and information concerning the INVENTION that are within ASSIGNOR'S possession or control, and to provide further assurances and testimony on behalf of ASSIGNEE that lawfully may be required of ASSIGNOR in respect of the prosecution, maintenance, litigation and defense of any patent application or patent encompassed within the terms of this instrument. ASSIGNOR'S obligations under this instrument shall extend to ASSIGNOR'S heirs, executors, administrators and other legal representatives.

ALSO, ASSIGNOR hereby authorizes and requests the Commissioner of Patents and Trademarks to issue any and all Letters Patent referred to above to ASSIGNEE, as the ASSIGNEE of the entire right, title and interest in and to the same, for ASSIGNEE'S sole use and behoof; and for the use and behoof of ASSIGNEE'S legal representatives and successors, to the full end of the term for which such Letters Patent may be granted, as fully and entirely as the same would have been held by ASSIGNOR had this assignment and sale not been made.

Assignor Name CHUANG, HARRY-HAK-LAY	Address NO.8, LI-HSIN RD. 6, HSINCHU SCIENCE PARK, HSINCHU, TAIWAN (R.O.C.)
Signature of Assignor (X)	Date of Signature Zo 8, 1, 27
Name of Witness (optional)	Name of Witness (optional)
Signature of Witness (optional)	Signature of Witness (Optional)

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Assignor Name CHEN, CHANG-HUNG	Address NO.8, LI-HSIN RD. 6, HSINCHU SCIENCE PARK, HSINCHU, TAIWAN (R.O.C.)
Signature of Assignor (X) CHEN, CHANG-HUNG	Date of Signature (X) 20 18.11.27
Name of Witness (optional)	Name of Witness (optional)
Signature of Witness (optional)	Signature of Witness (Optional)
Assigner Name SHEN, KUEI-HUNG	4F4, NO.82, DAXUE RD., HSINCHU CITY 30080, TAIWAN (R.O.C.)
Signature of Assignor (X) Shen, Eneil Hay	Date of Signature (X) >0/6, 11, 27
Name of Witness (optional)	Name of Witness (optional)
Signature of Witness (optional)	Signature of Witness (Optional)
Assignor Name YOU, WEN-CHUN	Address NO.206, CHENGXING RD., DONGSHAN TOWNSHIP, YILAN COUNTY 269, TAIWAN (R.O.C.)
Signature of Assignor	Date of Signature
(X) Yos Was — (Jasses Name of Witness (optional)	(X) \(\sum_{\ell}\)\(8, \chi_{\ell}\)\(3\) Name of Witness (optional)
Signature of Witness (optional)	Signature of Witness (Optional)
Assignor Name CHIANG, TIEN-WEI	Address NO.24, ALY. 1, LN. 340, SEC. 2, DONGHUA ST., BEITOU DIST., TAIPEI CITY 112, TAIWAN (R.O.C.)
Signature of Assignor 1/5-7 /1/TA	Date of Signature

Assignor Name CHIANG, TIEN-WEI	Address NO.24, ALY. 1, LN. 340, SEC. 2, DONGHUA ST., BEITOU DIST., TAIPEI CITY 112, TAIWAN (R.O.C.)
Signature of Assignor (X) Tien VEI CHIAVG	Date of Signature (X) $\rightarrow 0$ $\begin{pmatrix} & & & & \\ & & & & & \\ & & & & & \end{pmatrix}$
Name of Witness (optional)	Name of Witness (opiional)
Signature of Witness (optional)	Signature of Witness (Optional)

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