PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT6182796

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date	
SEUNGHEON LEE	05/06/2020	
JAEKANG KOH	05/06/2020	
HYUKWOO KWON	05/06/2020	
MUNJUN KIM	05/06/2020	
TAEJONG HAN	05/06/2020	

RECEIVING PARTY DATA

Name:	SAMSUNG ELECTRONICS CO., LTD.
Street Address: 129, SAMSUNG-RO, YEONGTONG-GU	
City:	SUWON-SI, GYEONGGI-DO
State/Country:	KOREA, REPUBLIC OF
Postal Code:	16677

PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	16919307

CORRESPONDENCE DATA

Fax Number: (703)207-0003

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: 703-207-0008

Email: eoa@lee-iplaw.com

Correspondent Name: LEE IP LAW, P.C.

Address Line 1: 3141 FAIRVIEW PARK DRIVE

Address Line 2: SUITE 500

Address Line 4: FALLS CHURCH, VIRGINIA 22042

ATTORNEY DOCKET NUMBER:	249/1259_00
NAME OF SUBMITTER:	EUGENE M. LEE
SIGNATURE:	/Eugene M. Lee/
DATE SIGNED:	07/02/2020
	This document serves as an Oath/Declaration (37 CFR 1.63).

PATENT REEL: 053106 FRAME: 0911

506136069

Total Attachments: 4 source=Assignment_249_1259_00#page1.tif source=Assignment_249_1259_00#page2.tif

source=Assignment_249_1259_00#page3.tif

source=Assignment_249_1259_00#page4.tif

Source=Assignment_249_1239_00#page4.ti

PATENT REEL: 053106 FRAME: 0912

메모리공정개발팀(반도체연)/배병주/byeongju.bae/2020-05-06 1^원*8^{e 1} of 4

COMBINED DECLARATION (37 CFR §1.63) FOR UTILITY PATENT APPLICATION AND ASSIGNMENT FORM¹

The undersigned acknowledges that this document is being used both as an assignment of the invention and as the declaration (37 CFR 1.63) for a Utility of Design Application.

WHEREAS, the undersigned, hereinafter referred to collectively as Assignor, has invented:

	INTEGRATED CIRCUIT DEVICES AND MANUFACTURING METHODS FOR THE SAME
for which patent.	Assignor is about to make or has made United States or International application for
WHERE	AS, as a below named inventor(s), I/(we) hereby declare that:
Section 1.	. Declaration
	aration is directed to the attached U.S. non-provisional patent application, unless the is marked:
	U.S. non-provisional patent application number, filed on, or
	PCT international patent application number, filed on
	as amended by the Preliminary Amendment attached hereto.
	as amended by the Preliminary Amendment filed on
The above	e-identified application was made or authorized to be made by me (us).
	ieve that I am (we are) the original inventor (original joint inventors) of a claimed in the above-identified application.
	eby acknowledge that any willful false statement made in this declaration is punishable U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.
•	tate that I have reviewed and understand the contents of the above identified n, including the claims (as amended by any amendment referred to above).
	edge that I am aware of the duty to disclose information which is material to ity as defined in 37 CFR § 1.56.
¹ This form	requires the use of an Application Data Sheet.
SEC Ref	No. IE-201906-104-1-US0 Attorney Ref No. 249/1259_00
СОМІ	BINED DECLARATION (37 CFR. 1.63) FOR UTILITY PATENT APPLICATION AND

PATENT REEL: 053106 FRAME: 0913

Section II. Assignment

In consideration of the sum of One Dollar (\$1.00) and other good and valuable consideration paid to each of the undersigned, the undersigned hereby sell(s) and assign(s) to

Samsung Electronics Co., Ltd.

having an address at 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do 16677, Republic of Korea (hereinafter designated as the Assignee), the entire (100%) right, title and interest for the United States as defined in 35 USC §100, in the invention described in the application identified in Section Lof this document.

Assignor hereby confirms any prior assignment to Assignee, and to the extent that Assignor has not already done so, agrees to assign, and hereby does, sell, assign and transfer unto Assignee and its successors in interest, the full and exclusive right, title and interest in the United States of America and throughout the world, including the right to claim priority under the laws of the United States, the Paris Convention, and any foreign countries, to the inventions as described in the aforesaid application, to the aforesaid application itself, and all divisions, continuations, continuations-in-part, or other applications claiming priority directly or indirectly from the aforesaid application, and any United States or foreign Letters Patent, utility model, or other similar rights which may be granted thereon, including reissues, reexaminations and extensions thereof, and all copyright rights throughout the world in the aforesaid application and the subject matter disclosed therein, these rights, title and interest to be held and enjoyed by Assignee to the full end of the term for which the Letters Patent, utility model, or other similar rights, are granted and any extensions thereof as fully and entirely as the same would have been held by Assignor had this assignment and sale not been made, and the right to sue for, and recover for past infringements of, or liabilities for, any of the rights relating to any of the applications. patents, utility models, or other similar rights, resulting therefrom, and the copyright rights;

Assignor hereby covenants and agrees to execute all instruments or documents required or requested for the making and prosecution of any applications of any type for patent, utility model, or other similar rights, and for copyright, in the United States and in all foreign countries including, but not limited to, any provisional, continuation, continuation-in-part, divisional, renewal or substitute thereof, and as to letters patent any reissue, re-examination, or extension thereof, and for litigation regarding, or for the purpose of protecting title and to the said invention, the United States application for patent, or Letters Patent therefor, and to testify in support thereof, for the benefit of Assignee without further or other compensation than that above set forth;

Assignor hereby covenants that no assignment, sale, license, agreement or encumbrance has been or will be entered into which would conflict with this Assignment; and

SEC Ref No.	TE-201906-104-1-US0	Attorney Ref No.	249/1259_00
-------------	---------------------	------------------	-------------

COMBINED DECLARATION (37 CFR 1.63) FOR UTILITY PATENT APPLICATION AND ASSIGNMENT FORM

메모리공정개발팀(반도체연)/베병주/byeongju.bae/2020-05-06 1원#8c 2 of 4

PATENT REEL: 053106 FRAME: 0914

SAMSUNG ELECTRONICS CO., LTD.

Assignor hereby requests the United States Patent and Trademark Office to issue the Letters Patent of the United States of America to Assignee, and requests that any official of any country or countries foreign to the United States, whose duty it is to issue or grant patents and applications as aforesaid, to issue the Letters Patent, Utility Model Registration or other similar right to Assignee.

The undersigned hereby grant(s) the law firm of LEE IP LAW, P.C. the power to insert on this Declaration and Assignment any further identification which may be necessary or desirable in order to comply with the rules of the U.S. Patent and Trademark Office for recordation of this document.

Section III. Inventor(s)/Assignor(s) Signature(s)

LEGAL NAME OF FIRST	Family Name	First Given Name	Second Given Name
INVENTOR/ASSIGNOR	ree	Seungheon	
	•••••		i.
	a prof		
SIGNATURE	//4/2	DATE	- 20 May 6

LEGAL NAME OF FIRST	Family Name First Given Name KOH Jaekang		Second Given Name
INVENTOR/ASSIGNOR			
SIGNATURE	/24/h	DATE	20/ 5/6

SEC Ref No.	TE-201906-104-1-US0	Attorney Ref No.	249/1259_00
-------------	---------------------	------------------	-------------

COMBINED DECLARATION (37 CFR 1.63) FOR UTILITY PATENT APPLICATION AND ASSIGNMENT FORM

LEGAL NAME OF FIRST	Family Name	First Given Name	Second Given Name	
INVENTOR/ASSIGNOR	KWON	Hyukwaa		
SIGNATURE -	3) H †	DATE	20.05.06	

LEGAL NAME OF	Family Name	e First Given Name		Name	Second Given Nam	
FIRST INVENTOR/ASSIGNOR	KIM		Munjun			
SIGNATURE	Mari			DATE	3.00 }.	
	18314 11.15		##7/bys	rongju b		

Family Name	First Given Name	Second Given Name	
HAN	Taejong		
ws	DATE	20.05,06	
	HAN	HAN Taejong DATE	

SEC Ref No.	IE-201906-104-1-US0	Attorney Ref No.	249/1259_00
-------------	---------------------	------------------	-------------

COMBINED DECLARATION (37 CFR 1.63) FOR UTILITY PATENT APPLICATION AND ASSIGNMENT FORM

메모리공정개발팀(반도체연)/배병주/byeongju.bae/2020-05-06 1원**48**¢ 4 of 4

PATENT REEL: 053106 FRAME: 0916

RECORDED: 07/02/2020