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PATENT ASSIGNMENT COVER SHEET

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SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
KUO-CHI TU	12/13/2012
CHIH-YANG CHANG	12/13/2012
HSIA-WEI CHEN	12/13/2012
YU-WEN LIAO	12/17/2012
CHIN-CHIEH YANG	12/13/2012
WEN-TING CHU	12/13/2012

RECEIVING PARTY DATA

Name:	TAIWAN SEMICONDUCTOR MANUFACTURING COMPANY, LTD.
Street Address:	NO. 8, LI-HSIN RD.,VI HSINCHU SCIENCE PARK
City:	HSINCHU
State/Country:	TAIWAN
Postal Code:	300-77

PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	15811249

CORRESPONDENCE DATA

Fax Number: (214)200-0853

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: 214-651-5000

Email: ipdocketing@haynesboone.com **Correspondent Name:** HAYNES AND BOONE, LP Address Line 1: 2323 VICTORY, SUITE 700

Address Line 4: DALLAS, TEXAS 75219

ATTORNEY DOCKET NUMBER:	24061.3295US03
NAME OF SUBMITTER:	JO EL MERCER
SIGNATURE:	/Jo El Mercer/
DATE SIGNED:	11/14/2017

Total Attachments: 1

PATENT REEL: 044122 FRAME: 0890 source=24061.3295US03 - Assignment (Parent), 4847-9423-8805_1#page1.tif

PATENT REEL: 044122 FRAME: 0891

Docket No. T5057-845 TSMC2012-1050

ASSIGNMENT

In consideration of the premises and oth	er good and valuable	e consideration in	hand paid, th	ne receipt and :	sufficiency of
which is hereby acknowledged, the undersigned,					

1) Kuo-Chi TU

4) Yu-Wen LIAO

2) Chih-Yang CHANG

5) Chin-Chieh Yang

3) Hsia-Wei CHEN

Wen-Ting CHU

who has made a certain new and useful invention, hereby sells, assigns and transfers unto TAIWAN SEMICONDUCTOR MANUFACTURING COMPANY, LTD., <u>having a place of business at No. 8, Li-Hsin Rd. VI, Hsinchu Science Park, Hsinchu 300, Taiwan R.O.C.</u>

its successors and assigns (hereinafter designated "ASSIGNEE") the entire right, title and interest for the United States of America as defined in 35 U.S.C. 100 in the invention entitled

<u>RESI</u>	STANCE VARIABLE MEMORY STRUCTURE AND METHOD OF FORMING THE
<u>SAM</u>	<u>E</u> .
(a)	for which an application for United States Letters Patent was filed on $2012-12-20$, and identified by United States Patent Application No. $13/722$, 466 ; or
(b)	for which an application for United States Letters Patent was executed on,
all Uni continu Proper	e undersigned hereby authorizes and requests the United States Commissioner of Patents and Trademarks to issue any and ited States Letters Patent which may be granted therefore and any and all extensions, divisions, reissues, continuations, or nations-in-part thereof, and the right to all benefits under the International Convention for the Protection of Industrial ty to the said ASSIGNEE, for its interest as ASSIGNEE, its successors, assigns and legal representatives; the undersigned that the attorneys of record in said application shall hereafter act on behalf of said ASSIGNEE;
	AND the undersigned hereby sorges to transfer a like interest, and to render all necessary assistance in making

AND the undersigned hereby agrees to transfer a like interest, and to render all necessary assistance in making application for and obtaining original, divisional, reissued or extended Letters Patent of the United States, upon request of the said ASSIGNEE, its successors, assigns and legal representatives, and without further remuneration, in and to any improvements, and applications for patent based thereon, growing out of or related to the said invention; and to execute any papers by the said ASSIGNEE, its successors, assigns and legal representatives, deemed essential to ASSIGNEE's full protection and title in and to the invention hereby transferred.

SIGNED on the date indicated aside my signature:

1) Kuo-Chi Zu	Dec. 13, 2012
Name: Kuo-Chi TU	Date:
2) Chih - lang Chang Name: Chih-Yang CHANG	Dec. 13, 2012
	Date:
3) Chih. Hista-Wei-Chen	Dec. 13.2012
Name: Hsia-Wei CHEN	Date:
4) Yu- Wey Liad	Dec, 17, 2012
Name: Yu-Wen LIAO	Date:
5) Chin-Chieh Tang	Dec (13.2012
Name: Chin-Chieh YANG	Date:
6) W. en - Trug Uhm	Dec. 17 7012
Name: Wen-Ting CHU	Date:

PATENT REEL: 0**364**88 FRAME: 0**8**92

RECORDED: 09/03/2013