

PATENT ASSIGNMENT

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SUBMISSION TYPE:	NEW ASSIGNMENT								
NATURE OF CONVEYANCE:	ASSIGNMENT								
CONVEYING PARTY DATA									
<table border="1"> <thead> <tr> <th>Name</th> <th>Execution Date</th> </tr> </thead> <tbody> <tr> <td>Bing WANG</td> <td>03/02/2012</td> </tr> <tr> <td>Kuoyuan (Peter) HSU</td> <td>03/02/2012</td> </tr> <tr> <td>Young Suk KIM</td> <td>03/02/2012</td> </tr> </tbody> </table>		Name	Execution Date	Bing WANG	03/02/2012	Kuoyuan (Peter) HSU	03/02/2012	Young Suk KIM	03/02/2012
Name	Execution Date								
Bing WANG	03/02/2012								
Kuoyuan (Peter) HSU	03/02/2012								
Young Suk KIM	03/02/2012								
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								
PROPERTY NUMBERS Total: 1									
<table border="1"> <thead> <tr> <th>Property Type</th> <th>Number</th> </tr> </thead> <tbody> <tr> <td>Application Number:</td> <td>13418968</td> </tr> </tbody> </table>		Property Type	Number	Application Number:	13418968				
Property Type	Number								
Application Number:	13418968								
CORRESPONDENCE DATA									
Fax Number:	(703)518-5499								
Phone:	7036841111								
Email:	tsmc@ipfirm.com								
<i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent via US Mail.</i>									
Correspondent Name:	Lowe Hauptman Ham & Berner, LLP (TSMC)								
Address Line 1:	1700 Diagonal Road, Suite 300								
Address Line 4:	Alexandria, VIRGINIA 22314								
ATTORNEY DOCKET NUMBER:	T5057-712								
NAME OF SUBMITTER:	Randy A. Noranbrock								
Total Attachments: 1 source=efiledassgn#page1.tif									

OP \$40.00 13418968

PATENT

ASSIGNMENT

In consideration of the premises and other good and valuable consideration in hand paid, the receipt and sufficiency of which is hereby acknowledged, the undersigned,

- 1) **Bing WANG**
- 2) **Kuoyuan (Peter) HSU**
- 3) **Young Suk KIM**

who has made a certain new and useful invention, hereby sells, assigns and transfers unto

TAIWAN SEMICONDUCTOR MANUFACTURING COMPANY, LTD. having a place of business at
No. 8, Li-Hsin Rd. VI, Hsinchu Science Park, Hsinchu 300, Taiwan R.O.C.

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


SIGNAL TRACKING IN WRITE OPERATIONS OF MEMORY CELLS

- (a) for which an application for United States Letters Patent was filed on 2012-03-13, and identified by United States Patent Application No. 13/418,968; or
- (b) for which an application for United States Letters Patent was executed on _____.

and the undersigned hereby authorizes and requests the United States Commissioner of Patents and Trademarks to issue any and all United States Letters Patent which may be granted therefore and any and all extensions, divisions, reissues, continuations, or continuations-in-part thereof, and the right to all benefits under the International Convention for the Protection of Industrial Property to the said ASSIGNEE, for its interest as ASSIGNEE, its successors, assigns and legal representatives; the undersigned agrees that the attorneys of record in said application shall hereafter act on behalf of said ASSIGNEE;

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) 
Name: **Bing WANG**

3/2/2012
Date:

2) 
Name: **Kuoyuan (Peter) HSU**

3/2/2012
Date:

3) 
Name: **Young Suk KIM**

3/2/2012
Date: