

PATENT ASSIGNMENT COVER SHEET

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| SUBMISSION TYPE: | NEW ASSIGNMENT |
| NATURE OF CONVEYANCE: | ASSIGNMENT |
| CONVEYING PARTY DATA | |
| Name | Execution Date |
| CHUNG-CHENG CHOU | 04/08/2013 |
| YA-CHEN KAO | 04/10/2013 |
| TIEN-WEI CHIANG | 04/10/2013 |
| RECEIVING PARTY DATA | |
| Name: | TAIWAN SEMICONDUCTOR MANUFACTURING COMPANY, LTD |
| Street Address: | NO 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: | 16045237 |
| CORRESPONDENCE DATA | |
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| NAME OF SUBMITTER: | LINDA INGRAM |
| SIGNATURE: | /Linda Ingram/ |
| DATE SIGNED: | 07/25/2018 |
| Total Attachments: 2 | |
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| source=2491US02_Assignment#page2.tif | |

Docket No.: 2013-0106 / 24061.2491
Customer No.: 000042717

ASSIGNMENT

WHEREAS, we,

- (1) Chung-Cheng Chou of Unit 1, 4th Floor No. 300
Chung-Zheng Road
Hsin-Chu Taiwan 300 R.O.C.
- (2) Ya-Chen Kao of No. 73-1, Xikoutai, Fuxing Township
Taoyuan County 336, Taiwan R.O.C.
- (3) Tien-Wei Chiang of No. 24, Aly. 1, Ln. 340, Sec. 2
Donghua Street, Beitou District
Taipei City 112, Taiwan R.O.C.

have invented certain improvements in

**INTEGRATION OF MAGNETO-RESISTIVE RANDOM ACCESS MEMORY
AND CAPACITOR**

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

 X of even date filed herewith; and
 filed on and assigned application number ; 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 Company, Ltd., ("TSMC"), No. 8, Li-Hsin Rd. 6, Science-Based Industrial Park Hsin-Chu, Taiwan 300-77, 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.

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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: Chung-Cheng Chou

Residence Address: Unit 1, 4th Floor No. 300, Chung-Zheng Road
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Dated: April 8, 2013

Chung-Cheng Chou
Inventor Signature

Inventor Name: Ya-Chen Kao

Residence Address: No. 73-1, Xikoutai, Fuxing Township, Taoyuan County 336
Taiwan R.O.C.

Dated: April 10, 2013

Ya-Chen Kao
Inventor Signature

Inventor Name: Tien-Wei Chiang

Residence Address: No. 24, Aly. 1, Ln. 340, Sec. 2, Donghua Street
Beitou District, Taipei City 112, Taiwan R.O.C.

Dated: April 10, 2013

Tien Wei Chiang
Inventor Signature