

## PATENT ASSIGNMENT

Electronic Version v1.1  
Stylesheet Version v1.1

| 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>Yong Hoon Kang</td><td>10/21/2011</td></tr><tr><td>Joo Young Hwang</td><td>10/21/2011</td></tr><tr><td>Jae Young Choi</td><td>10/21/2011</td></tr><tr><td>Young Joon Choi</td><td>10/21/2011</td></tr></tbody></table>                              |   | Name          | Execution Date               | Yong Hoon Kang      | 10/21/2011                              | Joo Young Hwang | 10/21/2011  | Jae Young Choi | 10/21/2011        | Young Joon Choi | 10/21/2011 |
| Name   | Execution Date                          |               |                              |                     |   |                 |             |                |                   |                 |            |
| Yong Hoon Kang   | 10/21/2011                              |               |                              |                     |   |                 |             |                |                   |                 |            |
| Joo Young Hwang  | 10/21/2011                              |               |                              |                     |   |                 |             |                |                   |                 |            |
| Jae Young Choi   | 10/21/2011                              |               |                              |                     |   |                 |             |                |                   |                 |            |
| Young Joon Choi  | 10/21/2011                              |               |                              |                     |   |                 |             |                |                   |                 |            |
| RECEIVING PARTY DATA   |   |               |                              |                     |   |                 |             |                |                   |                 |            |
| <table border="1"><tr><td>Name:</td><td>Samsung Electronics Co., Ltd</td></tr><tr><td>Street Address:</td><td>416 Maetan-dong, Yeongtong-gu, Suwon-si</td></tr><tr><td>City:</td><td>Gyeonggi-do</td></tr><tr><td>State/Country:</td><td>REPUBLIC OF KOREA</td></tr></table>   |   | Name:         | Samsung Electronics Co., Ltd | Street Address:     | 416 Maetan-dong, Yeongtong-gu, Suwon-si | City:           | Gyeonggi-do | State/Country: | REPUBLIC OF KOREA |                 |            |
| Name:  | Samsung Electronics Co., Ltd            |               |                              |                     |   |                 |             |                |                   |                 |            |
| Street Address:  | 416 Maetan-dong, Yeongtong-gu, Suwon-si |               |                              |                     |   |                 |             |                |                   |                 |            |
| City:  | Gyeonggi-do                             |               |                              |                     |   |                 |             |                |                   |                 |            |
| State/Country:   | REPUBLIC OF KOREA                       |               |                              |                     |   |                 |             |                |                   |                 |            |
| 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>13241977</td></tr></tbody></table>   |   | Property Type | Number                       | Application Number: | 13241977                                |                 |             |                |                   |                 |            |
| Property Type  | Number                                  |               |                              |                     |   |                 |             |                |                   |                 |            |
| Application Number:  | 13241977                                |               |                              |                     |   |                 |             |                |                   |                 |            |
| CORRESPONDENCE DATA  |   |               |                              |                     |   |                 |             |                |                   |                 |            |
| Fax Number: (919)854-1400<br>Phone: 919-854-1400<br>Email: cgregory@myersbigel.com<br><i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent via US Mail.</i><br>Correspondent Name: MYERS BIGEL SIBLEY & SAJOVEC<br>Address Line 1: PO BOX 37428<br>Address Line 4: RALEIGH, NORTH CAROLINA 27627 |   |               |                              |                     |   |                 |             |                |                   |                 |            |
| ATTORNEY DOCKET NUMBER:  | 5649-3354                               |               |                              |                     |   |                 |             |                |                   |                 |            |
| NAME OF SUBMITTER:   | Carey Gregory                           |               |                              |                     |   |                 |             |                |                   |                 |            |
| Total Attachments: 5<br>source=3354assignment#page1.tif<br>source=3354assignment#page2.tif<br>source=3354assignment#page3.tif<br>source=3354assignment#page4.tif<br>source=3354assignment#page5.tif  |   |               |                              |                     |   |                 |             |                |                   |                 |            |

CH \$40.00 13241977

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PATENT  
REEL: 027237 FRAME: 0794

**ASSIGNMENT**

THIS ASSIGNMENT, made by us, **Yong Hoon Kang**, a citizen of the Republic of Korea, **Joo Young Hwang**, a citizen of the Republic of Korea; **Jae Young Choi**, a citizen of the Republic of Korea; and **Young Joon Choi**, a citizen of the Republic of Korea; each having a mailing address of Intellectual Property Team, Samsung Semiconductor, Samsung Electronics Co., Ltd., San #16, Banwol-Dong, Hwasung-si, Gyeonggi-do, Republic of Korea, #445-701;

WITNESSETH: That,

WHEREAS, we are the joint inventors of certain new and useful improvements in **SEMICONDUCTOR MEMORY DEVICES HAVING SELF-REFRESH CAPABILITY** for which an application for United States Letters Patent has been filed, or is being filed concurrently, in the United States Patent and Trademark Office. We hereby authorize and request Myers Bigel Sibley & Sajovec, P.A., to insert here in parentheses (Application No. 13/241,977, filed September 23, 2011) the filing date and application number of said application when known or to file this Assignment concurrently with the application, and

WHEREAS, **Samsung Electronics Co., Ltd.**, a Korean corporation having a principal place of business at 416 Maetan-dong, Yeongtong-gu, Suwon-si, Gyeonggi-do, Republic of Korea, hereinafter referred to as assignee, is desirous of acquiring the entire right, title and interest in and to said invention as described in said application, and in and to any and all Letters Patent which shall be granted therefor in the United States of America and all foreign countries;

NOW, THEREFORE, To Whom It May Concern, be it known that for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, we have sold and by these presents do hereby sell, assign, transfer and convey unto the said assignee, its successors and assigns, the entire right, title and interest in and to the said invention and application, and in and to any and all continuations, continuations-in-part, or divisions thereof, and in and to any and all Letters Patent of the United States of America and all foreign countries or reissues thereof which may be granted therefor or thereon, for the full end of the term for which said Letters Patent may be granted, together with the right to claim the priority of said application in all foreign countries in accordance with the International Convention, the same to be held and enjoyed by said assignee, its successors and assigns, as fully and entirely as the same would have been held and enjoyed by us if this assignment and sale had not been made.

**ASSIGNMENT – CONTINUED**

We hereby request that said Letters Patent be issued in accordance with this assignment.

We further covenant and agree that, at the time of the execution and delivery of these presents, we possess full title to the invention and application above-mentioned, and that we have the unencumbered right and authority to make this assignment.

We further covenant and agree to bind our heirs, legal representatives and assigns, promptly to communicate to said assignee or its representatives any facts known to us relating to said invention, to testify in any interference or legal proceedings involving said invention, to execute any additional papers which may be requested to confirm the right of the assignee, its representatives, successors or assigns to secure patent or similar protection for the said invention in all countries and to vest in the assignee complete title to the said invention and Letters Patent, without further compensation, but at the expense of said assignee, its successors, assigns and other legal representatives.

IN WITNESS WHEREOF, I have hereunto set my hand and seal on this 21 day of 10, 2011.

  
\_\_\_\_\_  
**Yong Hoon Kang** (SEAL)

Witnessed by:

\_\_\_\_\_

Date: \_\_\_\_\_

**ASSIGNMENT - CONTINUED**

IN WITNESS WHEREOF, I have hereunto set my hand and seal on this 21 day  
of 10, 2011.

Joo Young Hwang (SEAL)  
Joo Young Hwang

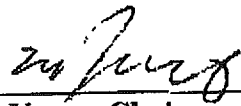
Witnessed by:

\_\_\_\_\_

Date: \_\_\_\_\_

**ASSIGNMENT – CONTINUED**

IN WITNESS WHEREOF, I have hereunto set my hand and seal on this 21 day  
of 10, 2011.

  
\_\_\_\_\_  
**Jae Young Choi** (SEAL)

Witnessed by:

\_\_\_\_\_

Date: \_\_\_\_\_

## ASSIGNMENT - CONTINUED

IN WITNESS WHEREOF, I have hereunto set my hand and seal on this 21 day  
of 10, 2011.

  
\_\_\_\_\_  
Young Joon Choi (SEAL)

Witnessed by:

\_\_\_\_\_

Date: \_\_\_\_\_