

2/18/06

Packet No.: SEC.1327

FORM PTO-1595 (Modified)  
(Rev. 03-01)  
OMB No. 0651-0027 (exp.5/31/2002)  
P08A/REV03

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02-15-2006

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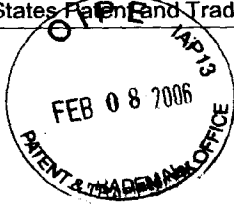
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To the Director of the United States Patent and Trademark Office: Please record the attached original documents or copy thereof.

1. Name of conveying party(ies):

Sung-Soo LEE  
Young-Ho LIM  
Hyun-Chul CHO  
Dong-Hyuk CHAE



2. Name and address of receiving party(ies):

Name: SAMSUNG ELECTRONICS CO., LTD.  
Address: 416, Maetan-dong, Yeongtong-gu, Suwon-si,

Additional names(s) of conveying party(ies)  Yes  No

3. Nature of conveyance:

- Assignment  Merger
- Security Agreement  Change of Name
- Other

City: Gyeonggi-do State/Prov.: \_\_\_\_\_

Country: Republic of Korea ZIP: \_\_\_\_\_

Execution Date: 01/24/06, 01/24/06, 02/02/06, 01/24/06

Additional name(s) & address(es)  Yes  No

4. Application number(s) or patent numbers(s):

If this document is being filed together with a new application, the execution date of the application is: \_\_\_\_\_

Patent Application No.	Filing date
11/228,194	09/19/2005

B. Patent No.(s)

Additional numbers  Yes  No

5. Name and address of party to whom correspondence concerning document should be mailed:

Name: ADAM C. VOLENTINE  
Registration No. 33289  
Address: VOLENTINE FRANCOS & WHITT, PLLC  
11951 FREEDOM DRIVE, SUITE 1260

City: RESTON State/Prov.: VA  
Country: USA ZIP: 20190

6. Total number of applications and patents involved: **1**

7. Total fee (37 CFR 3.41):.....\$ 40.00

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9. Statement and signature.

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

ADAM C. VOLENTINE  
Name of Person Signing

Signature

FEBRUARY 8, 2006  
Date

Total number of pages including cover sheet, attachments, and document: **5**

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PATENT  
REEL: 017553 FRAME: 0504

### ASSIGNMENT

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

**Insert  
Name(s) of  
Inventor(s)**

- 1. Sung-Soo LEE 5. \_\_\_\_\_
- 2. Young-Ho LIM 6. \_\_\_\_\_
- 3. Hyun-Chul CHO 7. \_\_\_\_\_
- 4. Dong-Hyuk CHAE 8. \_\_\_\_\_

**Insert  
Name(s) of  
Assignee(s) &**

the undersigned hereby sell(s) and assign(s) to

SAMSUNG ELECTRONICS CO., LTD.  
416, Maetan-dong, Yeongtong-gu,  
Suwon-si, Gyeonggi-do, Republic of Korea

**Address(es)**

(hereinafter designated as the Assignee) the entire right, title and interest for the United States as defined in 35 USC 100, in the invention known as

**Title of  
Invention**

PAGE BUFFER AND MULTI-STATE NONVOLATILE MEMORY DEVICE  
INCLUDING THE SAME

**Date of  
Signing of  
Application**

for which an application for patent in the United States of America has been executed by the undersigned on January 24, 2006

The undersigned agree(s) to execute all papers necessary in connection with this application and any continuing, divisional or reissue applications thereof and also to execute separate assignments in connection with such applications as the Assignee may deem necessary or expedient.

The undersigned agree(s) to execute all papers necessary in connection with any interference which may be declared concerning this application or continuing, division or reissue thereof and to cooperate with the Assignee in every way possible in obtaining evidence and going forward with such interference.

The undersigned agree(s) to execute all papers and documents and perform any act which may be necessary in connection with claims or provisions of the International Convention for Protection of Industrial Property or similar agreements.

The undersigned agree(s) to perform all affirmative acts which may be necessary to obtain a grant of a valid United States patent to the Assignee.

The undersigned hereby authorize(s) and request(s) the Commissioner of Patents to issue any and all Letters Patents of the United States resulting from said application or any division or divisions or continuing or reissue applications thereof to the said Assignee, as Assignee of the entire interest, and hereby covenants that he has (they have) full right to convey the entire interest herein assigned, and that he has (they have) not executed, and will not execute, any agreement in conflict herewith.

The undersigned hereby grant(s) the practitioners associated with the **CUSTOMER NUMBER 20987** the power to insert on this assignment any further identification which may be necessary or desirable in order to comply with the rules of the United States Patent Office for recordation of this document.

In witness whereof, executed by the undersigned on the date(s) opposite the undersigned name(s).

Date Jan 24, 2006 Signature of Inventor Gung Soo Lee  
Sung-Boo LEE

Date Jan 24, 2006 Signature of Inventor Young-ho Lim  
Young-Ho LIM

Date \_\_\_\_\_ Signature of Inventor \_\_\_\_\_  
Hyun-Chul CHO

Date Jan 24, 2006 Signature of Inventor Dong-Hyuk Chae  
Dong-Hyuk CHAE

Date \_\_\_\_\_ Signature of Inventor \_\_\_\_\_

Date \_\_\_\_\_ Signature of Inventor \_\_\_\_\_

Date \_\_\_\_\_ Signature of Inventor \_\_\_\_\_

Date \_\_\_\_\_ Signature of Inventor \_\_\_\_\_

(Note regarding Witnessing: It is recommended that the execution by the Inventor(s) be witnessed by at least two witnesses who sign here. However, the current practice of the U.S. Patent and Trademark Office is to record an Assignment even it has not been witnessed.)

Witness \_\_\_\_\_

Witness \_\_\_\_\_

.....  
Applicant Reference No. S04SS059-US

### ASSIGNMENT

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

**Insert  
Name(s) of  
Inventor(s)**

- |                          |          |
|--------------------------|----------|
| 1. <u>Sung-Soo LEE</u>   | 5. _____ |
| 2. <u>Young-Ho LIM</u>   | 6. _____ |
| 3. <u>Hyun-Chul CHO</u>  | 7. _____ |
| 4. <u>Dong-Hyuk CHAE</u> | 8. _____ |

**Insert  
Name(s) of  
Assignee(s) &**

the undersigned hereby sell(s) and assign(s) to

**Address(es)**

SAMSUNG ELECTRONICS CO., LTD.  
416, Maetan-dong, Yeongtong-gu,  
Suwon-si, Gyeonggi-do, Republic of Korea

**Title of  
Invention**

(hereinafter designated as the Assignee) the entire right, title and interest for the United States as defined in 35 USC 100, in the invention known as

PAGE BUFFER AND MULTI-STATE NONVOLATILE MEMORY DEVICE  
INCLUDING THE SAME

**Date of  
Signing of  
Application**

for which an application for patent in the United States of America has been executed by

the undersigned on February 2, 2006

The undersigned agree(s) to execute all papers necessary in connection with this application and any continuing, divisional or reissue applications thereof and also to execute separate assignments in connection with such applications as the Assignee may deem necessary or expedient.

The undersigned agree(s) to execute all papers necessary in connection with any interference which may be declared concerning this application or continuing, division or reissue thereof and to cooperate with the Assignee in every way possible in obtaining evidence and going forward with such interference.

The undersigned agree(s) to execute all papers and documents and perform any act which may be necessary in connection with claims or provisions of the International Convention for Protection of Industrial Property or similar agreements.

The undersigned agree(s) to perform all affirmative acts which may be necessary to obtain a grant of a valid United States patent to the Assignee.

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The undersigned hereby grant(s) the practitioners associated with the CUSTOMER NUMBER 20987 the power to insert on this assignment any further identification which may be necessary or desirable in order to comply with the rules of the United States Patent Office for recordation of this document.

In witness whereof, executed by the undersigned on the date(s) opposite the undersigned name(s).

Date \_\_\_\_\_ Signature of Inventor Sung-Soo LEE

Date \_\_\_\_\_ Signature of Inventor Young-Ho LIM

Date 2nd. Feb 2006 ✓ Signature of Inventor Hyun-Chul CHO

Date \_\_\_\_\_ Signature of Inventor Dong-Hyuk CHAE

Date \_\_\_\_\_ Signature of Inventor \_\_\_\_\_

Date \_\_\_\_\_ Signature of Inventor \_\_\_\_\_

Date \_\_\_\_\_ Signature of Inventor \_\_\_\_\_

Date \_\_\_\_\_ Signature of Inventor \_\_\_\_\_

(Note regarding Witnessing: It is recommended that the execution by the Inventor(s) be witnessed by at least two witnesses who sign here. However, the current practice of the U.S. Patent and Trademark Office is to record an Assignment even it has not been witnessed.)

Witness \_\_\_\_\_

Witness \_\_\_\_\_

.....  
Applicant Reference No. S04SS059-US