To the Honorable Commissioner of Paten 1. Name of conveying party(ies): Jung-bae Lee Woo-pyo Jeong 3. Nature of conveying purty(ies) attached? 3. Nature of conveying purty(ies) attached? 3. Nature of conveying purty(ies) attached? 3. Nature of conveyance: Street Address: 416, Maetan-dong, Paldal-gu, Suwon-city, Kyungki-do, Republic of Korea City: State ZIP Other Execution Date: April 21, 2000 & May 3, 2000 Additional number(s) or patent number(s): If this document is being filed together with a new application, the execution date of the application is: A. Patent Application No.(s) 99/498,858, filed February 7, 2000 Additional numbers attached? Yes No Additional number of applications and registrations involved Additional number of applications and registrations involved T. Total fee (37 CFR 3.41)	FORM PTO-1595 (Rev. 6-93) OMB No. 0651-0011 (exp. 4/94)	OF 06-21	-2000	U.S. DEPARTMENT OF COMMERCE Patent and Trademark Office	
1. Name of conveying parry(ies): Jung-bac Lec Woo-pyo Jeong 3. O. O. Additional aame(s) of conveying parry(ies) attached? 3. Nature of conveyance: Street Address: Assignment Security Agreement Other Execution Date: Appli 21, 2000 & May 3, 2000 Additional name(s) & address attached? Yes & No. 4. Application number(s) or patent number(s): If this document is being filed together with a new application, the execution date of the application is: A. Patent Application No.(s) B. Patent No.(s) Additional numbers attached? Yes & No. Additional numbers attached? Yes & No. Additional number of applications and registrations involved Additional numbers attached? To total fee (37 CFR 3.41)					
Jung-bae Lee Woo-pyo Jeong MAY 3 0 200 Manne: Samsung Electronics, Co., Ltd.	To the Honorable Commissioner of Pa	-F 10136	- 0440		
MAY 3 0 200: Internal Address: Additional name(s) of conveying party(tes) attached? Yes 8 No. Street Address: 416, Maetan-dong, Paldal-gu, Suwon-city, Kyungki-do, Republic of Korea Street Address: Additional name(s) of conveyance: Street Address: 416, Maetan-dong, Paldal-gu, Suwon-city, Kyungki-do, Republic of Korea Street Address: 21P City: State ZIP City: City: State ZIP City: State ZIP City: City:	1. Name of conveying party(ies):		1 ame and addres	s of receiving party(ies):	
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Suwon-city, Kyungki-do, Republic of Korea Security Agreement	Additional name(s) of conveying party(ies) attached?	□ Yes ⊠ No			
Assignment	3. Nature of conveyance:		Street Address:	416, Maetan-dong, Paldal-gu,	
City: State ZIP Other			Suwon-city, K	yungki-do, Republic of Korea	
Other Execution Date: April 21, 2000 & May 3, 2000 Additional name(s) & address attached? Yes ⊠ No		□ Merger			
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4. Application number(s) or patent number(s): If this document is being filed together with a new application, the execution date of the application is: A. Patent Application No.(s) B. Patent No.(s) 8. Patent No.(s) 9/498,858, filed February 7, 2000 5. Name and address of party to whom correspondence concerning document should be mailed: Name: Steven M. Mills, Esq. Internal Address: Samuels, Gauthier & Stevens LLP Street Address: 225 Franklin Street, Suite 3300 State NA ZIP 02110 Authorized to be charged to deposit account 8. Deposit Account Number: (City: Boston State NA ZIP 02110 (Attach duplicate copy of this page if paying by deposit account) **K/CO/COO MEUTEN 0000302 09498858 DO NOT USE THIS SPACE **HFE1581 10 10 10 10 10 10 10 10 10 10 10 10 10 1	□ Other	-			
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5. Name and address of party to whom correspondence concerning document should be mailed: Name: Steven M. Mills, Esq. Internal Address: Samuels, Gauthier & Stevens LLP Street Address: 225 Franklin Street, Suite 3300 8. Deposit Account Number: (City: Boston State MA ZIP 02110 (Attach duplicate copy of this page if paying by deposit account) (City: Boston State MA ZIP 02110 (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account)	A. Patent Application No.(s)	a new application, the exec		ication is:	
Steven M. Mills, Esq. Steven M. Mills, Esq. Total fee (37 CFR 3.41)	Additional numbers attached? □ Yes ⊠ No				
Internal Address: Samuels, Gauthier & Stevens LLP Street Address: 225 Franklin Street, Suite 3300 State NA ZIP 02110 Attach duplicate copy of this page if paying by deposit account) NA/20/2000 DNGIVEN 0000302 09498858 DO NOT USE THIS SPACE P. FC:581 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. Steven M. Mills, Reg. No. 36,610 Name of Person Signing 7. Total fee (37 CFR 3.41) \$40.00 Authorized to be charged to deposit account 8. Deposit Account Number: (Attach duplicate copy of this page if paying by deposit account) Attach duplicate copy of this page if paying by deposit account) May 4 1 7. Total fee (37 CFR 3.41)	• •			1 1	
Internal Address: Samuels, Gauthier & Stevens LLP Street Address: 225 Franklin Street, Suite 3300 8. Deposit Account Number: (City: Boston State NA ZIP 02110 (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account) (Attach duplicate copy of this page if paying by deposit account)	Name: Steven M. Mills, Esq.				
Samuels, Gauthier & Stevens LLP Street Address: 225 Franklin Street, Suite 3300			7. Total fee (37 CF	R 3.41) \$40.00	
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MA/20/2000 DNGLYEN 00000302 09498858 DO NOT USE THIS SPACE 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. Steven M. Mills, Reg. No. 36,610 Name of Person Signing Date Date	Street Address: 225 Franklin Street, Suite 3300				
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ASSIGNMENT

We, Jung-bae Lee of 407-1001, Jugong Apt., Chungmyung Maeul, Youngtong-dong, Paldal-gu, Suwon-city, Kyungki-do, Republic of Korea and Woo-pyo Jeong of 201-203, Dongshin Apt., Jeongiadong, Jangan-gu, Suwon-city, Kyungki-do, Republic of Korea, having invented improvements in SEMICONDUCTOR MEMORY DEVICE COLUMN SELECT CIRCUIT AND METHOD FOR MINIMIZING LOAD TO DATA INPUT/OUTPUT LINES described in an application for Letters Patent of the United States, Serial No. 09/498,858, filed on February 7, 2000, for good and valuable consideration, receipt of which is hereby acknowledged from Samsung Electronics Co., Ltd., a Korean corporation having a place of business at 416, Maetan-dong, Paldal-gu, Suwon-city, Kyungki-do, Republic of Korea (and hereinafter called the Assignee, which term shall include its successors and assigns), do hereby sell, assign and transfer unto the Assignee our entire right, title, and interest in and throughout the United States of America (including its territories and dependencies) and all countries foreign thereto, in and to and under said application (which term shall include hereinafter where the context so admits all divisional, continuing, reissue and other patent applications based thereon) and the inventions (which term shall include each and every such invention, or part thereof) therein described, and any and all patents and like rights of exclusion (including extensions thereof) of any country which may be granted on or for said inventions or on said application;

And for the same consideration We do also hereby sell, assign, and transfer unto the Assignee, all our rights under the International Convention for the Protection of Industrial Property, the Patent Cooperation Treaty, and all other treaties of like purpose in respect of said inventions and said application, and We do hereby authorize the Assignee to apply in our name or its own name or its designee for patents and like rights of exclusion on or for said inventions in all countries, claiming (if the Assignee so desires) the priority of the filing date of said application under the provisions of said Convention, Treaty or any such other Convention or Treaty;

And for the same consideration, We do hereby agree for ourselves and for our heirs, executors, and administrators, promptly upon request of the Assignee to execute and deliver without further compensation any power of attorney, assignment, original, divisional, continuing, reissue or other application or applications for patent or patents or like rights of exclusion of any country, or other lawful documents and any further assurances that may be deemed necessary or desirable by the Assignee, fully to secure to it said right, title, and interest as aforesaid in and to said inventions, applications, and said several patents and like rights of exclusion (including extensions thereof) or any of them, all, however, at the expense of the Assignee, its successors, or assigns;

And We do hereby authorize and request the Commissioner of Patents and Trademarks of the United States of America and the corresponding Official of each country foreign thereto to issue to the Assignee, any and all patents and like rights of exclusion which may be granted in any country upon said United States application on or for said inventions;

And We do hereby covenant for ourselves and our legal representatives and agree with the Assignee, that We have granted no right or license to make, use, or sell said inventions to anyone except the Assignee, that prior to the execution of this deed our right, title, and interest in and to said inventions has not been otherwise encumbered by us, and that We have not executed and will not execute any instruments in conflict herewith.

- 1 -

First or Sole Inventor:

Signature:

Jung-bae Lee

Jung-bae Lee

Date: Apr. 21, 2000

Second Joint Inventor:

Signature: Woopyo Jeong Woo-pyo Jeong

Date: May, 3, 2000

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