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U.S. Department of Commerce  
Patent and Trademark Office

5-22-98



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To the Honorable Commissioner of Patents and Trademarks, U.S. Patent and Trademark Office, Washington, D.C. 20503

## 1. Name of Conveying Party:

Hung-Jen LIAO

☐ Additional names of conveying parties attached.

## 2. Name and Address of Receiving Party(ies):

Name: Taiwan Semiconductor Manufacturing Co., Ltd.

Street Address: No.9, Creation Rd. 1, Science-Based Industrial Park

City, State, Zip: Hsinchu, Taiwan, R. O. C.

☐ Additional name(s) and address(es) attached.

## 3. Nature of Conveyance

☒ Assignment☐ Merger☐ Security Agreement☐ Change of Name☐ Other:

Execution Date: April 3, 1998

## 4. (A) Patent Application Number(s):

If this document is being filed together with a new application, the execution date of the application is:  
April 3, 1998☐ Additional Numbers Attached.

## 4. (B) Patent Number(s):

## 5. Name and Address of Party to whom Correspondence Concerning this Document Should be Mailed:

Name: Harold L. Novick  
Address: NATH & ASSOCIATES  
1835 K Street, N.W. -- Suite 750  
Washington, D.C. 20006-1203

## 6. Total Number of Applications and Patents Involved:

1

## 7. Total Fee:

(37 CFR 3.41)

\$ 40.00

☒ Enclosed.☐ Authorized to be charged to deposit account.

## 8. Deposit Account Number:

14-0112

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DO NOT USE THIS SPACE

## 9. Statement and Signature:

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

Name of Person Signing

Harold L. Novick Reg. No. 26,011

May 22, 1998

Date

Attorney Docket No.: 82085

Total number of pages comprising cover sheet: 1

PATENT  
REEL: 9190 FRAME: 0585

## ASSIGNMENT

This assignment agreement is applicable to an invention entitled (Invention Title) \_\_\_\_\_  
THREE-TRANSISTOR TYPE DRAM WITH A REFRESH CIRCUIT

The PATENT RIGHTS referred to in this agreement are:

(check one) ☒ a patent application for this invention, executed by the ASSIGNOR(S)  
concurrently with this assignment.

☐ U.S. patent application Serial No. \_\_\_\_\_, filed \_\_\_\_\_

☐ a U.S. patent application based on PCT International Application  
No. \_\_\_\_\_ filed on (date) \_\_\_\_\_ (U.S. patent application  
Serial No. \_\_\_\_\_, if known).

☐ U.S. patent No. \_\_\_\_\_, issued \_\_\_\_\_.

The PATENT RIGHTS also include all divisions reissues, continuations and extensions of  
the patents and patent applications identified above.

The PATENT RIGHTS assigned under this agreement are:

(check one) ☒ U.S. patent rights only.

☐ Worldwide patent rights. In this case, the assignee shall have the right to  
claim the benefit of the filing date of any U.S. or foreign patent application  
for this invention.

The ASSIGNOR(S) referred to in this agreement is (or are) the inventor(s) whose signatures  
appear on page 2 of this Assignment and any Supplemental Sheet(s).

The ASSIGNEE referred to in this agreement is:

(Name of Assignee) TAIWAN SEMICONDUCTOR MANUFACTURING CO., LTD.

(Address) NO.9, CREATION RD.1, SCIENCE-BASED INDUSTRIAL PARK, HSTINCHU,  
TAIWAN, R.O.C.

The ASSIGNEE is:

(check one) ☐ An individual.

☐ A Partnership.

☒ A Corporation of TAIWAN, R.O.C. (specify state or country)

☐ (other) \_\_\_\_\_

The ASSIGNOR(S), in consideration of \$10.00 paid by the ASSIGNEE, and other good and  
valuable consideration, receipt of which is acknowledged, hereby assign(s) the following  
rights to the ASSIGNEE, its successors and assigns:

the full and exclusive right to the invention;

the entire right, title and interest in and to the PATENT RIGHTS;

the right to sue and recover for any past infringement; and

the right to claim priority under 35 USC 119, 35 USC 120, or any other applicable  
provisions, based on any earlier patent applications for this invention.

THIS IS PAGE 2 OF AN ASSIGNMENT FROM THE INVENTOR(S) TO

ASSIGNEE: TAIWAN SEMICONDUCTOR MANUFACTURING CO., LTD.INVENTION TITLE: THREE-TRANSISTOR TYPE DRAM WITH A REFRESH CIRCUIT

As to all U.S. patent applications assigned under this agreement, the ASSIGNOR(S) hereby authorize(s) and request(s) the Commissioner of Patents and Trademark to issue all Letters Patent to the ASSIGNEE as the assignee of the entire right, title and interest, for the sole use and enjoyment of said ASSIGNEE, its successors and assigns.

Further, the ASSIGNOR(S) agree(s) to communicate to said ASSIGNEE, or its representatives, any fact known to the ASSIGNOR(S) with respect to said invention, and testify in any legal proceeding, sign all lawful papers, execute all divisional, continuation, substitute, renewal, reexamination and reissue applications, execute all necessary assignment papers to cause and all Letter Patent to be issued to said ASSIGNEE, make all rightful oaths and generally do everything necessary or desirable to aid said ASSIGNEE, its successors and assigns, to obtain and enforce proper protection for said invention.

The ASSIGNOR(S) authorize(s) the attorneys and agents who have the power of attorney in this application to check any appropriate boxes and to insert the Serial Number and filing date in this document after it has been executed.

<u>Hung-Jen LIAO</u>	<u>Hung-jen Liao</u>	<u>3/4/98</u>
Name of sole or first inventor	Signature	Date
<u></u>	<u></u>	<u></u>
Name of second inventor, if any	Signature	Date
<u></u>	<u></u>	<u></u>
Name of third inventor, if any	Signature	Date
<u></u>	<u></u>	<u></u>
Name of fourth inventor, if any	Signature	Date
<u></u>	<u></u>	<u></u>
Name of fifth inventor, if any	Signature	Date
<u></u>	<u></u>	<u></u>
Name of sixth inventor, if any	Signature	Date
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Name of seventh inventor, if any	Signature	Date
<u></u>	<u></u>	<u></u>
Name of eighth inventor, if any	Signature	Date

RECORDED: 05/22/1998

 PATENT  
 REEL: 9190 FRAME: 0587