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PATENT ASSIGNMENT

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SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
Tsung-Hsien Tsai	07/17/2012

RECEIVING PARTY DATA

Name:	Taiwan Semiconductor Manufacturing Co., Ltd.
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PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	13554043

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ATTORNEY DOCKET NUMBER: TSMCP153US

NAME OF SUBMITTER: Thomas G. Eschweiler

Total Attachments: 2

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> PATENT REEL: 028596 FRAME: 0546

OF \$40.00 13554043

U.S. Patent Appln. No. Filing Date:

PATENT ASSIGNMENT

PARTIES TO THE ASSIGNMENT

Assignor(s):

Tsung-Hsien Tsai No. 7, Ln. 172, Yumin St. Gushan District, Kaohsiung City 804, Taiwan (R.O.C.)

Assignee:

Taiwan Semiconductor Manufacturing Co., Ltd. No. 8, Li-Hsin Rd. 6, Hsin-Chu Science Park Hsin-Chu, Taiwan 300-77 Republic of China

AGREEMENT

WHEREAS, ASSIGNOR(S) (listed above) are inventor(s) of an invention entitled "OPTIMIZATION METHODOLOGY AND APPARATUS FOR WIDE-SWING CURRENT MIRROR WITH WIDE CURRENT RANGE" for which:

a non-provisional application for United States Letters Patent:

\boxtimes	was executed on even date preparatory to filing (each inventor should sign this
	Assignment on the same day as he/she signs the Declaration and Power of
	Attorney); or
	was filed on and accorded U.S. Serial No; or
	will be filed without this executed PATENT ASSIGNMENT. ASSIGNOR hereby
	authorizes and requests ASSIGNEE'S legal representatives, the attorneys
	associated with Customer No, to insert below in this document this
	APPLICATION's U.S. Serial Number and filing date, when known:
	U.S. Serial No.
	filed on

PATENT REEL: 028596 FRAME: 0547

TSMC Docket No. TSMC2012-0249

Docket No. TSMCP153US

U.S. Patent Appln. No.

Filing Date:

WHEREAS, ASSIGNEE (listed above), a corporation of the Republic of China is

desirous of acquiring the entire right, title and interest in and to the invention and in and to

any letters patent that may be granted therefore in the United States and in any and all

foreign countries;

NOW, THEREFORE, in exchange for good and valuable consideration, the receipt of

which is hereby acknowledged, ASSIGNOR(S) hereby sell, assign and transfer unto

ASSIGNEE its successors and assigns, the entire right, title and interest in and to said

invention and improvements, said application and any and all letters patent which may be

granted for said invention in the United States of America and its territorial possessions and

in any and all foreign countries, and in any and all divisions, reissues, re-examinations and

continuations thereof, including the right to file foreign applications directly in the name of

ASSIGNEE and to claim priority rights deriving from said United States application to which

said foreign applications are entitled by virtue of international convention, treaty or otherwise,

said invention, application and all letters patent on said invention to be held and enjoyed by

ASSIGNEE and its successors and assigns for their use and benefit and of their successors

and assigns as fully and entirely as the same would have been held and enjoyed by

ASSIGNOR(S) had this assignment, transfer and sale not been made. ASSIGNOR(S)

hereby authorize and request the Commissioner of Patents and Trademarks to issue all

letters patent on said invention to ASSIGNEE. ASSIGNOR(S) agree to execute all

instruments and documents required for the making and prosecution of applications for

United States and foreign letters patent on said invention, for litigation regarding said letters

patent, or for the purpose of protecting title to said invention or letters patent therefore.

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Name 1st Inventor Tsung-Heigh Tsai