506322158 10/26/2020

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT6368908

| SUBMISSION TYPE: | NEW ASSIGNMENT |
|-----------------------|----------------|
| NATURE OF CONVEYANCE: | ASSIGNMENT |

CONVEYING PARTY DATA

| Name | Execution Date |
|------------------|----------------|
| CHIEN-CHENG CHEN | 05/03/2018 |
| CHIA-JEN CHEN | 05/03/2018 |
| HSIN-CHANG LEE | 05/03/2018 |
| SHIH-MING CHANG | 05/04/2018 |
| TRAN-HUI SHEN | 05/03/2018 |
| YEN-CHENG HO | 05/03/2018 |
| CHEN-SHAO HSU | 05/19/2018 |

RECEIVING PARTY DATA

| Name: | me: TAIWAN SEMICONDUCTOR MANUFACTURING CO., LTD. | |
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| Street Address: NO.8, LI-HSIN RD. 6, SCIENCE BASED INDUSTRIAL PARK | | |
| City: | HSINCHU | |
| State/Country: | TAIWAN | |
| Postal Code: | 300 | |

PROPERTY NUMBERS Total: 1

| Property Type | Number |
|---------------------|----------|
| Application Number: | 17080652 |

CORRESPONDENCE DATA

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| ATTORNEY DOCKET NUMBER: | 095714-1347 |
|-------------------------|-------------|
| NAME OF SUBMITTER: | LYNN CRUZ |
| SIGNATURE: | /Lynn Cruz/ |

PATENT 506322158 REEL: 054170 FRAME: 0200

| DATE SIGNED: | 10/26/2020 | | |
|--|----------------------------------|--|--|
| Total Attachments: 6 | Total Attachments: 6 | | |
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| source=4_095714-1347_COMBINED_D | DECLARATION_ASSIGNMENT#page4.tif | | |
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PATENT REEL: 054170 FRAME: 0201 Attorney Docket No. 095714-0398 (P20171002US00)

COMBINED DECLARATION AND ASSIGNMENT FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

I believe I am the original or an original joint inventor of a claimed invention in the application for which a patent is sought on the invention entitled:

METHOD OF MANUFACTURING PHOTO MASKS

| whic | h application is: |
|----------------------|---|
| \boxtimes | attached, or |
| | United States application number or PCT international application numberfiled on |
| The a | above-identified application was made or authorized to be made by me. |
| time auth asso | e event that the filing date and/or application number are not entered above at the I execute this document, and if such information is deemed necessary, I hereby orize and request the registered practitioners of McDermott Will & Emery LLP, ciated with the Customer Number 20277, to insert above the filing date and/or ication number of the application. |
| | reby acknowledge that any willful false statement made in this declaration is shable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years oth. |

ASSIGNMENT

For good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, I hereby assign to

TAIWAN SEMICONDUCTOR MANUFACTURING CO., LTD. No. 8, Li-Hsin Rd. 6, Science Based Industrial Park, Hsinchu, Taiwan 300

(hereinafter designated as the Assignee), the entire (100%) right, title and interest for the United States as defined in 35 USC §100, in the invention described in the application identified in this document.

I hereby confirm any prior assignment to Assignee, and to the extent that I have not already done so, agree to assign, and hereby do, sell, assign and transfer unto Assignee and its successors in interest, the full and exclusive right, title and interest in the United States of America and throughout the world, including the right to claim priority under the laws of the United States, the Paris Convention, and any foreign countries, to the inventions as described in the aforesaid application, to the aforesaid application itself, and all divisions, continuations, continuations-in-part, or other applications claiming priority directly or indirectly from the aforesaid application, and any United States or foreign Letters Patent, utility model, or other similar rights which may be granted thereon, including reissues, reexaminations and extensions thereof, and all copyright rights throughout the world in the aforesaid application and the subject matter disclosed therein, these rights, title and interest to be held and enjoyed by Assignee to the full end of the term for which the Letters Patent, utility model, or other similar rights, are granted and any extensions thereof as fully and entirely as the same would have been held by the undersigned had this assignment and sale not been made, and the right to sue for, and recover for past infringements of, or liabilities for, any of the rights relating to any of the applications, patents, utility models, or other similar rights, resulting therefrom, and the copyright rights;

I hereby covenant and agree to execute all instruments or documents required or requested for the making and prosecution of any applications of any type for patent, utility model, or other similar rights, and for copyright, in the United States and in all foreign countries including, but not limited to, any provisional, continuation, continuation-in-part, divisional, renewal or substitute thereof, and as to letters patent any reissue, re-examination, or extension thereof, and for litigation regarding, or for the purpose of protecting title and to the said invention, the United States application for patent, or Letters Patent therefor, and to testify in support thereof, for the benefit of Assignee without further or other compensation than that above set forth;

I hereby covenant that no assignment, sale, license, agreement or encumbrance has been or will be entered into which would conflict with this Assignment.

Page 2 of 3

PATENT REEL: 054170 FRAME: 0203

| Legal name of inventor | |
|--|--|
| Chien-Cheng Chen | |
| Inventor's signature | Date |
| Chien-Ching Chen | 7018, 5, 3 |
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| Lagas many 262 | |
| Legal name of inventor Hsin-Chang Lee | |
| Inventor's signature | |
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| an may a | 12011 1513 |
| Legal name of inventor | |
| Chia-Jen Chen | |
| Inventor's signature | Date |
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| Uia-Ilm han | 2018.5.3 |
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| Legal name of inventor | |
| Tran-Hui Shen | |
| Inventor's signature | Date |
| Ton-Hii Shen | |
| <u> </u> | 12018 5 3 |
| Legal name of inventor | |
| Chen-Shao Hsu | |
| Inventor's signature | |
| and a supplied to the supplied | Date |
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| Legal name of inventor | |
| Yen-Cheng Ho | |
| Inventor's signature | Date |
| ×8 | |
| Len-Cheng Ho | |
| 3 | |
| egal name of inventor | |
| Shih-Ming Chang | |
| nventor's signature | Date |
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Page 3 of 3



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I hereby confirm any prior assignment to Assignee, and to the extent that I have not already done so, agree to assign, and hereby do, sell, assign and transfer unto Assignee and its successors in interest, the full and exclusive right, title and interest in the United States of America and throughout the world, including the right to claim priority under the laws of the United States, the Paris Convention, and any foreign countries, to the inventions as described in the aforesaid application, to the aforesaid application itself, and all divisions, continuations, continuations-in-part, or other applications claiming priority directly or indirectly from the aforesaid application, and any United States or foreign Letters Patent, utility model, or other similar rights which may be granted thereon, including reissues, reexaminations and extensions thereof, and all copyright rights throughout the world in the aforesaid application and the subject matter disclosed therein, these rights, title and interest to be held and enjoyed by Assignee to the full end of the term for which the Letters Patent, utility model, or other similar rights, are granted and any extensions thereof as fully and entirely as the same would have been held by the undersigned had this assignment and sale not been made, and the right to sue for, and recover for past infringements of, or liabilities for, any of the rights relating to any of the applications, patents, utility models, or other similar rights, resulting therefrom, and the copyright rights;

I hereby covenant and agree to execute all instruments or documents required or requested for the making and prosecution of any applications of any type for patent, utility model, or other similar rights, and for copyright, in the United States and in all foreign countries including, but not limited to, any provisional, continuation, continuation-in-part, divisional, renewal or substitute thereof, and as to letters patent any reissue, re-examination, or extension thereof, and for litigation regarding, or for the purpose of protecting title and to the said invention, the United States application for patent, or Letters Patent therefor, and to testify in support thereof, for the benefit of Assignee without further or other compensation than that above set forth;

I hereby covenant that no assignment, sale, license, agreement or encumbrance has been or will be entered into which would conflict with this Assignment.

Page 2 of 3

| Legal name of inventor | | |
|---|------------------|--|
| Chien-Cheng Chen | | |
| Inventor's signature | Date | |
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| Legal name of inventor Hsin-Chang Lee | | |
| Inventor's signature | Date | |
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| Legal name of inventor Chia-Jen Chen | | |
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| Inventor's signature | Date | |
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| Inventor's signature Chen – Shao Hgu | Date 2018 /5 /19 | |
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| Legal name of inventor | | |
| Shih-Ming Chang | | |
| Inventor's signature | Date | |

Page 3 of 3