504864624 04/11/2018

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT4911364

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

CONVEYING PARTY DATA

| Name | Execution Date |
|----------------|----------------|
| Chih-Kai Hsu | 04/10/2018 |
| Ssu-I Fu | 04/10/2018 |
| Chun-Ya Chiu | 04/10/2018 |
| Chin-Hung Chen | 04/10/2018 |
| Chi-Ting Wu | 04/10/2018 |
| Yu-Hsiang Lin | 04/10/2018 |

RECEIVING PARTY DATA

| Name: | UNITED MICROELECTRONICS CORP. |
|-----------------|---|
| Street Address: | No.3, Li-Hsin Road 2, Science-Based Industrial Park |
| City: | Hsin-Chu City |
| State/Country: | TAIWAN |

PROPERTY NUMBERS Total: 1

| Property Type | Number |
|---------------------|----------|
| Application Number: | 15951147 |

CORRESPONDENCE DATA

Fax Number: (703)997-4517

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

Phone: 3027291562

Email: Patent.admin.uspto.cr@naipo.com

Correspondent Name: WINSTON HSU

Address Line 1: 5F., NO.389, FUHE RD., YONGHE DIST.,

Address Line 4: NEW TAIPEI CITY, TAIWAN

ATTORNEY DOCKET NUMBER: NAUP3257USA

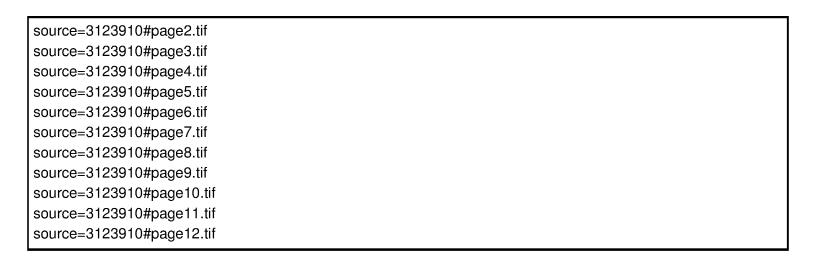
NAME OF SUBMITTER: SIBYL YU

SIGNATURE: /SIBYL YU/

DATE SIGNED: 04/11/2018

Total Attachments: 12 source=3123910#page1.tif

PATENT 504864624 REEL: 045512 FRAME: 0300



PATENT REEL: 045512 FRAME: 0301

Title of Invention: SEMICONDUCTOR DEVICE AND MANUFACTURING METHOD THEREOF

| As the below named inventor, I here This declaration is directed to: | by declare that: | | |
|--|--|--|---------------|
| ☑ The attached application, or | | | |
| ☐ United States application nu | mber | _filed on | , or |
| ☐ PCT international application | ☐ PCT international application number | | |
| The above-identified application was | made or authorized to be made | by me. | |
| I believe that I am the original inventapplication. | or or an original joint inventor of | a claimed invention in the | |
| I hereby acknowledge that any willfu under18 U.S.C. 1001 by fine or impr | I false statement made in this de isonment of not more than five (| eclaration is punishable 5) years, or both. | |
| In consideration of the payment by | UNITED MICROELECTRO | NICS having a postal | address of |
| No.3, Li-Hsin Road 2, Science | e-Based Industrial Park, Hs | sin-Chu City 300, Taiw | /an, R.O.C |
| (referred to as "ASSIGNEE"below) to acknowledged, andfor other good ar | o I of the sum of One Dollar (\$ 1. nd valuable consideration. | .00), the receipt of which is | hereby |
| I hereby sell, assign and transfer to a the entire right, title and interest in a invention as above-identified application of substitutes, or extensions thereof, and | nd to any and all improvements vation and, in and to, all Letters Par r any continuations, continuation | which are disclosed in the atent to be obtained for sai ı-in-part, divisions, renewa | d Is, |
| I hereby covenant that no assignme entered into which would conflict wit | nt, sale, agreement or encumbra h this assignment; | ance has been or will be m | ade or |
| I further covenant that ASSIGNEE wand documents relating to said inversions and accessible to I and will to related thereto and will promptly exercise. | ntion and said Letters Patent and estify as to the same in any inter | d legal equivalents as may ference, litigation proceedi | be |
| representatives any and all papers, maintain, issue and enforce said ap- equivalents thereof which may be no IN WITNESS WHEREOF, I have he | plication, said invention and said ecessary or desirable to carry ou | Letters Patent and said | e of signing) |
| Note: An application data sheet (PT | | | |

Page 1 of 12

LEGAL NAME OF INVENTOR(ASSIGNOR)

Inventor: Chih-Kai Hsu Date:

Date: APR 1 0 2018

Signature: Chih Kai H(y

Page 2 of 12

NPO#NAU-P3257-USA:0 CUST#UMCD-2018-0026

Title of Invention: SEMICONDUCTOR DEVICE AND MANUFACTURING METHOD THEREOF

| As the below named inventor, I here This declaration is directed to: | by declare that: | | |
|--|--|---|-----------------------------|
| ☑ The attached application, or | | | |
| ☐ United States application nu | ımber | _filed on | , or |
| ☐ PCT international applicatio | n number | filed on | |
| The above-identified application was | made or authorized to be made l | by me. | |
| I believe that I am the original invent application. | or or an original joint inventor of a | claimed invention i | n the |
| I hereby acknowledge that any willfu under18 U.S.C. 1001 by fine or impr | | | le |
| In consideration of the payment by | UNITED MICROELECTRON CORP. | IICS having a po | ostal address of |
| No.3, Li-Hsin Road 2, Science | e-Based Industrial Park, Hsi | n-Chu City 300, | Taiwan, R.O.C |
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| I hereby sell, assign and transfer to a the entire right, title and interest in a invention as above-identified applica invention by the above application of substitutes, or extensions thereof, an | nd to any and all improvements w ition and, in and to, all Letters Pat r any continuations, continuation-i | rhich are disclosed in tent to be obtained fo in-part, divisions, ren | n the or said newals, |
| I hereby covenant that no assignmentered into which would conflict with | | ce has been or will | be made or |
| I further covenant that ASSIGNEE wand documents relating to said inverknown and accessible to I and will to related thereto and will promptly exe | ntion and said Letters Patent and estify as to the same in any interfe | legal equivalents as rence, litigation pro- | may be |
| representatives any and all papers, i maintain, issue and enforce said app equivalents thereof which may be no IN WITNESS WHEREOF, I have he | olication, said invention and said Lecessary or desirable to carry out | _etters Patent and s the proposes therec | |
| Note: An application data sheet (PTG inventive entity, must accompany this | | | |

Page 3 of 12

NPO#NAU-P3257-USA:0 CUST#UMCD-2018-0026

LEGAL NAME OF INVENTOR(ASSIGNOR)

Inventor: Ssu-I Fu

Date: APR 1 0 2018

Signature: SSu - I Fu

Page 4 of 12

NPO#NAU-P3257-USA:0 CUST#UMCD-2018-0026

Title of Invention: SEMICONDUCTOR DEVICE AND MANUFACTURING METHOD THEREOF

| As the below named inventor, I here This declaration is directed to: | eby declare that: | | |
|--|---|---|--------------------|
| ☑ The attached application, o | r | | |
| ☐ United States application no | umber | filed on | , or |
| ☐ PCT international application | on number | filed on | |
| The above-identified application was | s made or authorized to be made | by me. | |
| I believe that I am the original inventapplication. | tor or an original joint inventor of | a claimed invention in t | he |
| I hereby acknowledge that any willfu under18 U.S.C. 1001 by fine or impr | al false statement made in this de risonment of not more than five (£ | eclaration is punishable 5) years, or both. | |
| In consideration of the payment by | UNITED MICROELECTRO | NICS having a post | tal address of |
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| I hereby sell, assign and transfer to a the entire right, title and interest in a invention as above-identified applica invention by the above application of substitutes, or extensions thereof, an | nd to any and all improvements v ation and, in and to, all Letters Pa r any continuations, continuation | which are disclosed in that tent to be obtained for stailing for stailing in the stail of the st | he said wals |
| I hereby covenant that no assignment entered into which would conflict with | nt, sale, agreement or encumbral h this assignment; | nce has been or will be | made or |
| I further covenant that ASSIGNEE wand documents relating to said inver known and accessible to I and will te related thereto and will promptly exe | ntion and said Letters Patent and estify as to the same in any interfe | legal equivalents as ma | av he |
| representatives any and all papers, i maintain, issue and enforce said app equivalents thereof which may be ne IN WITNESS WHEREOF, I have he | plication, said invention and said ecessary or desirable to carry out | Letters Patent and said the proposes thereof. | ate of signing) |
| Note: An application data sheet (PT0 inventive entity, must accompany thi | D/SB/14 or equivalent), including s form. Use this form for <u>each</u> ad | naming the entire | |

Page 5 of 12

NPO#NAU-P3257-USA:0 CUST#UMCD-2018-0026

| LEGAL NAI | ME OF INVENTOR(ASSIGNOR) | | | |
|------------|--------------------------|-------|---------------|--|
| Inventor: | Chun-Ya Chiu | Date: | APR 1 0 2018. | |
| Signature: | Chun Ya Chiy | | | |

Page 6 of 12

NPO#NAU-P3257-USA:0 CUST#UMCD-2018-0026

Title of Invention: SEMICONDUCTOR DEVICE AND MANUFACTURING METHOD THEREOF

| As the below named inventor, I here This declaration is directed to: | by declare that: | | | |
|--|---|--|---|-------------|
| ☑ The attached application, or | • | | | |
| ☐ United States application nu | ımber | filed o | n | _, or |
| ☐ PCT international applicatio | n number | file | d on | |
| The above-identified application was | s made or authorized to l | be made by me. | | |
| I believe that I am the original invent application. | or or an original joint inv | entor of a claimed | d invention in the | |
| I hereby acknowledge that any willfu under18 U.S.C. 1001 by fine or impr | I false statement made i isonment of not more the | n this declaration an five (5) years, | is punishable or both. | |
| In consideration of the payment by | UNITED MICROELE CORP. | ECTRONICS | having a postal ad | dress of |
| No.3, Li-Hsin Road 2, Science | -Based Industrial P | ark, Hsin-Chu | City 300, Taiwa | n, R.O.0 |
| (referred to as "ASSIGNEE"below) to acknowledged, andfor other good ar | o I of the sum of One Do nd valuable consideration | llar (\$ 1.00), the เ า. | receipt of which is h | nereby |
| I hereby sell, assign and transfer to a the entire right, title and interest in a invention as above-identified applica invention by the above application of substitutes, or extensions thereof, ar | nd to any and all improve tion and, in and to, all Le r any continuations, cont | ements which are etters Patent to be inuation-in-part. c | disclosed in the obtained for said divisions, renewals. | |
| I hereby covenant that no assignment entered into which would conflict with | nt, sale, agreement or er n this assignment; | ncumbrance has I | oeen or will be mad | le or |
| I further covenant that ASSIGNEE wand documents relating to said inver known and accessible to I and will te related thereto and will promptly exe | ntion and said Letters Pa estify as to the same in a | itent and legal eq ny interference, li | uivalents as may be tigation proceeding | е |
| representatives any and all papers, i maintain, issue and enforce said app equivalents thereof which may be ne IN WITNESS WHEREOF, I have her | olication, said invention a ecessary or desirable to | and said Letters P carry out the prop | atent and said oses thereof | of signing) |
| Note: An application data sheet (PT0 inventive entity, must accompany thi | D/SB/14 or equivalent), i s form. Use this form for | ncluding naming each additional i | the entire nventor. | |

Page 7 of 12

NPO#NAU-P3257-USA:0 CUST#UMCD-2018-0026

| LEGAL NAME OF INVENTOR(ASSIGNOR) | | | | |
|----------------------------------|----------------|-------|--------------|--|
| Inventor: | Chin-Hung Chen | Date: | APR 1 0 2018 | |
| Signature: | Chin-Hung Cher | 1 | | |

Page 8 of 12

NPO#NAU-P3257-USA:0 CUST#UMCD-2018-0026

Title of Invention:

SEMICONDUCTOR DEVICE AND MANUFACTURING METHOD THEREOF

| As the below named inventor, I here This declaration is directed to: | eby declare that: | | |
|---|---|---|---------|
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| (referred to as "ASSIGNEE"below) to acknowledged, andfor other good are | o I of the sum of One Dollar (\$ 1.0 nd valuable consideration. | 00), the receipt of which is here | eby |
| I hereby sell, assign and transfer to a the entire right, title and interest in a invention as above-identified applica invention by the above application o substitutes, or extensions thereof, an | nd to any and all improvements wation and, in and to, all Letters Pat r any continuations, continuation- | which are disclosed in the tent to be obtained for said in-part, divisions, renewals. | Ε |
| I hereby covenant that no assignme entered into which would conflict wit | nt, sale, agreement or encumbrar h this assignment; | ice has been or will be made o | or |
| I further covenant that ASSIGNEE wand documents relating to said invertions and accessible to I and will to related thereto and will promptly exe | ntion and said Letters Patent and estify as to the same in any interfe | legal equivalents as may be rence, litigation proceeding | s |
| representatives any and all papers, i maintain, issue and enforce said app equivalents thereof which may be no IN WITNESS WHEREOF, I have he | olication, said invention and said lecessary or desirable to carry out | etters Patent and said | igning) |
| Note: An application data sheet (PToinventive entity, must accompany thi | O/SB/14 or equivalent), including is form. Use this form for each ad- | naming the entire ditional inventor. | |

Page 9 of 12

NPO#NAU-P3257-USA:0 CUST#UMCD-2018-0026

| LEGAL NAME OF INVENTOR(ASSIGNOR) | | | | |
|----------------------------------|-------------|-------|--------------|--|
| Inventor: | Chi-Ting Wu | Date: | APR 1 0 2018 | |
| Signature: | Chi-Ting Wu | | | |

Page 10 of 12

NPO#NAU-P3257-USA:0 CUST#UMCD-2018-0026

Title of Invention: SEMICONDUCTOR DEVICE AND MANUFACTURING METHOD THEREOF

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| I hereby acknowledge that any willfu under18 U.S.C. 1001 by fine or impr | | | | |
| In consideration of the payment by | UNITED MICROELECTRON | IICS hav | ing a postal address | s of |
| No.3, Li-Hsin Road 2, Science | -Based Industrial Park, Hsi | n-Chu City | [,] 300, Taiwan, R | .o.c |
| (referred to as "ASSIGNEE"below) to acknowledged, andfor other good ar | | 0), the recei | ot of which is hereby | / |
| I hereby sell, assign and transfer to ASSIGNEE and the successors and assignees of the ASSIGNEE the entire right, title and interest in and to any and all improvements which are disclosed in the invention as above-identified application and, in and to, all Letters Patent to be obtained for said invention by the above application or any continuations, continuation-in-part, divisions, renewals, substitutes, or extensions thereof, and as to Letters Patent any reissue or re-examination thereof. | | | | |
| I hereby covenant that no assignment, sale, agreement or encumbrance has been or will be made or entered into which would conflict with this assignment; | | | | |
| I further covenant that ASSIGNEE will, upon its request, be provided promptly with all pertinent facts and documents relating to said invention and said Letters Patent and legal equivalents as may be known and accessible to I and will testify as to the same in any interference, litigation proceeding related thereto and will promptly execute and deliver to ASSIGNEE or its legal | | | | |
| representatives any and all papers, i maintain, issue and enforce said app equivalents thereof which may be no IN WITNESS WHEREOF, I have her | olication, said invention and said L ecessary or desirable to carry out | etters Pater | t and said thereof. | ning) |
| Note: An application data sheet (PTC inventive entity, must accompany thi | | | | |

Page 11 of 12

NPO#NAU-P3257-USA:0 CUST#UMCD-2018-0026

| LEGAL NAME OF INVENTOR(ASSIGNOR) | | | | | | | |
|----------------------------------|---------------|-------|--------------|--|--|--|--|
| Inventor: | Yu-Hsiang Lin | Date: | APR 1 0 2018 | | | | |
| Signature: | Yn Heiang Lin | | | | | | |

NPO#NAU-P3257-USA:0 CUST#UMCD-2018-0026 Page 12 of 12

F#NPO-P0002E-US1201 DSB0-107U004285

PATENT REEL: 045512 FRAME: 0313