504625511 11/03/2017

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT4672229

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

CONVEYING PARTY DATA

| Name | Execution Date |
|-------------------|----------------|
| Liang Yi | 10/27/2017 |
| Che-Jung Hsu | 10/27/2017 |
| Yu-Cheng Tung | 10/31/2017 |
| JIANJUN YANG | 10/27/2017 |
| Yuan-Hsiang Chang | 10/27/2017 |
| Chih-Chien Chang | 10/27/2017 |
| WEICHANG LIU | 10/25/2017 |
| Shen-De Wang | 10/30/2017 |
| KOK WUN TAN | 10/27/2017 |

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: | 15802450 |

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.

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

Address Line 4: NEW TAIPEI CITY, TAIWAN

| ATTORNEY DOCKET NUMBER: | NAUP3176USA |
|-------------------------|-------------|
| NAME OF SUBMITTER: | SIBYL YU |
| SIGNATURE: | /SIBYL YU/ |

PATENT 504625511 REEL: 044024 FRAME: 0524

| DATE SIGNED: | 11/02/2017 |
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Title of Invention:

FINFET SEMICONDUCTOR DEVICES AND METHOD OF MANUFACTURING THE SAME IN MEMORY REGIONS AND LOGIC REGIONS

| 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 or | ı | , or |
| ☐ PCT international application | n number | filed | on | |
| The above-identified application was | made or authorized to be made to | oy me. | | |
| I believe that I am the original invent application. | 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 impri | I false statement made in this dec sonment of not more than five (5) | laration i years, c | is punishable or both. | |
| In consideration of the payment by | UNITED MICROELECTRON CORP. | IICS | having a postal add | ress 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 an | o I of the sum of One Dollar (\$ 1.0 d valuable consideration. | 0), the re | eceipt of which is he | reby |
| I hereby sell, assign and transfer to A the entire right, title and interest in ar invention as above-identified applica invention by the above application or substitutes, or extensions thereof, ar | nd to any and all improvements wi tion and, in and to, all Letters Pate any continuations, continuation-i | hich are ent to be n-part, di | disclosed in the obtained for said ivisions, renewals. | EE |
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| representatives any and all papers, in maintain, issue and enforce said app equivalents thereof which may be ne IN WITNESS WHEREOF, I have her | lication, said invention and said L cessary or desirable to carry out t | etters Pa he propo | atent and said | signing) |
| Note: An application data sheet (PTC inventive entity, must accompany this | D/SB/14 or equivalent), including r s form. Use this form for <u>each add</u> | naming ti litional in | he entire ventor. | |

Page 1 of 18

F#NPO-P0002E-US1201

| LEGAL NA | ME OF INVENTOR(ASSIGNOR) | | |
|------------|--------------------------|---------|------------|
| Inventor: | Liang Yi | Date: . | 2017-10-27 |
| Signature: | yi liang | | |
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Page 2 of 18

NPO#NAU-P3176-USA:0 CUST#UMCD-2017-0509

Title of Invention:

FINFET SEMICONDUCTOR DEVICES AND METHOD OF MANUFACTURING THE SAME IN MEMORY REGIONS AND LOGIC REGIONS

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|--|--|--|--------------------------------------|------------|
| ☑ 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 be made | de by me. | | |
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| I hereby acknowledge that any willfu under18 U.S.C. 1001 by fine or impr | I false statement made in this of isonment of not more than five | declaration (5) years, | is punishable or both. | |
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| (referred to as "ASSIGNEE"below) to acknowledged, andfor other good ar | o I of the sum of One Dollar (\$ ad valuable consideration. | 1.00), the r | eceipt of which is h | ereby |
| 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 or substitutes, or extensions thereof, ar | nd to any and all improvements tion and, in and to, all Letters F r any continuations, continuatio | s which are Patent to be on-in-part, o | disclosed in the e obtained for said | |
| I hereby covenant that no assignmer entered into which would conflict with | nt, sale, agreement or encumbr n this assignment; | rance has t | peen or will be mad | e 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 | ition and said Letters Patent ar stify as to the same in any inte | nd legal equ rference li | uivalents as may be | . |
| representatives any and all papers, i maintain, issue and enforce said app equivalents thereof which may be ne IN WITNESS WHEREOF, I have her | dication, said invention and said | d Letters P | atent and said oses thereof. | f signing) |
| Note: An application data sheet (PTC inventive entity, must accompany this | D/SB/14 or equivalent), including sform. Use this form for <u>each a</u> | ng naming t additional i | the entire nventor. | |

Page 3 of 18

NPO#NAU-P3176-USA:0 CUST#UMCD-2017-0509

| nventor: | Che-Jung Hsu | Date: | 2017 - | 10-27 |
|------------|----------------|-------|-----------|------------|
| Signature: | Che Tung 1 den | | | |
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Page 4 of 1

Title of Invention:

FINFET SEMICONDUCTOR DEVICES AND METHOD OF MANUFACTURING THE SAME IN MEMORY REGIONS AND LOGIC REGIONS

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| I believe that I am the original invent application. | or or an original joint inventor 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 in this de isonment of not more than five (| eclaration 5) years, | is punishable or both. | |
| In consideration of the payment by | UNITED MICROELECTRO | NICS | having a postal a | address of |
| No.3, Li-Hsin Road 2, Science | -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. ad valuable consideration. | .00), the r | eceipt of which is | hereby |
| 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 improvements to tion and, in and to, all Letters Par any continuations, continuation | which are atent to be i-in-part, d | disclosed in the cobtained for said livisions, renewals | t s. |
| I hereby covenant that no assignmer entered into which would conflict with | nt, sale, agreement or encumbra n this assignment; | nce has b | peen or will be ma | de 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 | ition and said Letters Patent and stify as to the same in any interf | l legal equ erence. Ii | uivalents as may l tigation proceedin | he |
| 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 and said ecessary or desirable to carry ou | Letters P | atent and said oses thereof. | 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 ac</u> | ı naming t dditional i | the entire nventor. | |

Page 5 of 18 NPO#NAU-P3176-USA:0 F#NPO-P0002E-US1201 CUST#UMCD-2017-0509 DSB0-106U028004

LEGAL NAME OF INVENTOR(ASSIGNOR)

Inventor:

Yu-Cheng Tung

Date:

OCT 3 1 2017

Signature:

Yu-cheng Tung

Page 6 of 18

NPO#NAU-P3176-USA:0 CUST#UMCD-2017-0509

F#NPO-P0002E-US1201 DSB0-106U028004

Title of Invention:

FINFET SEMICONDUCTOR DEVICES AND METHOD OF MANUFACTURING THE SAME IN MEMORY REGIONS AND LOGIC REGIONS

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| ☐ United States application nu | ımber | filed on | , or | |
| ☐ PCT international application | n number | filed on | | |
| The above-identified application was | made or authorized to be made | e by me. | | |
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| I hereby sell, assign and transfer to A the entire right, title and interest in ar invention as above-identified applica invention by the above application or substitutes, or extensions thereof, ar | nd to any and all improvements tion and, in and to, all Letters Pa any continuations, continuation | which are disclosed atent to be obtained i-in-part, divisions, re | in the for said enewals. | |
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| 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, in maintain, issue and enforce said app equivalents thereof which may be ne IN WITNESS WHEREOF, I have her | olication, said invention and said ecessary or desirable to carry ou | Letters Patent and a the proposes there | said | |
| Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form. Use this form for <u>each additional inventor.</u> | | | | |

Page 7 of 18

LEGAL NAME OF INVENTOR(ASSIGNOR) 2017-10-27 Inventor: **JIANJUN YANG** Date:

Page 8 of 1

Title of Invention:

FINFET SEMICONDUCTOR DEVICES AND METHOD OF MANUFACTURING THE SAME IN MEMORY REGIONS AND LOGIC REGIONS

| As the below named inventor, I here This declaration is directed to: | eby declare that: | | |
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| ☑ The attached application, o | r | | |
| ☐ United States application n | umber | _filed on, | or |
| ☐ PCT international application | on number | filed on | |
| The above-identified application wa | s made or authorized to be made | by me. | |
| I believe that I am the original inven application. | tor 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 imp | ul false statement made in this dec risonment of not more than five (5) | laration is punishable) years, or both. | |
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| hereby sell, assign and transfer to the entire right, title and interest in a invention as above-identified applica- invention by the above application o substitutes, or extensions thereof, a | and to any and all improvements w ation and, in and to, all Letters Pater or any continuations, continuation-i | hich are disclosed in the ent to be obtained for said n-part, divisions, renewals | Έ |
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| further covenant that ASSIGNEE wand documents relating to said inversement and accessible to I and will to related thereto and will promptly exe | ntion and said Letters Patent and I estify as to the same in any interfe | egal equivalents as may be rence. litigation proceeding | 3 |
| representatives any and all papers, maintain, issue and enforce said app equivalents thereof which may be no N WITNESS WHEREOF, I have he | plication, said invention and said L ecessary or desirable to carry out t | etters Patent and said | gning) |
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Page 9 of 18

F#NPO-P0002E-US1201

| LEGAL NA | ME OF INVENTOR(ASSIGNOR) | | |
|------------|--------------------------|-------|------------|
| Inventor: | Yuan-Hsiang Chang | Date: | 2017-10-27 |
| Signature: | Yuan Hsiang Chang | | |
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Page 10 of 18

NPO#NAU-P3176-USA:0 CUST#UMCD-2017-0509

F#NPO-P0002E-US1201 DSB0-106U028004

Title of Invention:

FINFET SEMICONDUCTOR DEVICES AND METHOD OF MANUFACTURING THE SAME IN MEMORY REGIONS AND LOGIC REGIONS

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| ☐ United States application nu | ımber | filed on | , or |
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| representatives any and all papers, i maintain, issue and enforce said app equivalents thereof which may be ne IN WITNESS WHEREOF, I have he | olication, said invention and said ecessary or desirable to carry out | Letters Patent and | d said |
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Page 11 of 18

F#NPO-P0002E-US1201 DSB0-106U028004

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Page 12 of 18

F#NPO-P0002E-US1201 DSB0-106U028004

NPO#NAU-P3176-USA:0 CUST#UMCD-2017-0509

Title of Invention:

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| representatives any and all papers, maintain, issue and enforce said app equivalents thereof which may be no IN WITNESS WHEREOF, I have he | olication, said invention ecessary or desirable | on and said Letters to carry out the pro | Patent and said poses thereof. | e of signing) |
| Note: An application data sheet (PT) inventive entity, must accompany th | | | | |

Page 13 of 18

NPO#NAU-P3176-USA:0 CUST#UMCD-2017-0509

LEGAL NAME OF INVENTOR(ASSIGNOR)

Inventor:

WEICHANG LIU

Date:

2017/10/25

Signature:

LIU WEI CHANG

Page 14 of 18

F#NPO-P0002E-US1201 DSB0-106U028004

NPO#NAU-P3176-USA:0 CUST#UMCD-2017-0509

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| representatives any and all papers, i maintain, issue and enforce said app equivalents thereof which may be ne IN WITNESS WHEREOF, I have he | olication, said invention and said L ecessary or desirable to carry out | etters Patent and said | 1) |
| Note: An application data sheet (PT0 inventive entity, must accompany thi | O/SB/14 or equivalent), including is form. Use this form for <u>each ad</u> | naming the entire ditional inventor. | |

Page 15 of 18

F#NPO-P0002E-US1201

| LEGAL NA | ME OF INVENTOR(AS | SIGNOR) | | |
|------------|-------------------|---------|-------|--|
| Inventor: | Shen-De Wang | | Date: | 2017-10-30 |
| Signature: | Wang | 5hen | De | |
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F#NPO-P0002E-US1201 DSB0-106U028004

CUST#UMCD-2017-0509

NPO#NAU-P3176-USA:0

Title of Invention:

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| In consideration of the payment by | UNITED MICROELECTRON CORP. | IICS having a postal add | lress 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 an | o I of the sum of One Dollar (\$ 1.0 and valuable consideration. | 0), the receipt of which is he | reby |
| I hereby sell, assign and transfer to A the entire right, title and interest in ar invention as above-identified applica invention by the above application or substitutes, or extensions thereof, an | nd to any and all improvements w tion and, in and to, all Letters Pate any continuations, continuation-i | hich are disclosed in the ent to be obtained for said n-part, divisions, renewals | EE |
| hereby covenant that no assignmer entered into which would conflict with | nt, sale, agreement or encumbran n this assignment; | ce has been or will be made | or |
| further covenant that ASSIGNEE wi and documents relating to said inven known and accessible to I and will te related thereto and will promptly exec | ition and said Letters Patent and I stify as to the same in any interfe | egal equivalents as may be rence, litigation proceeding | ets |
| representatives any and all papers, in maintain, issue and enforce said app equivalents thereof which may be ne N WITNESS WHEREOF, I have her | lication, said invention and said L cessary or desirable to carry out t | etters Patent and said | signing) |
| Note: An application data sheet (PTC nventive entity, must accompany this | D/SB/14 or equivalent), including r s form. Use this form for <u>each ado</u> | naming the entire litional inventor. | |

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| LEGAL NA | ME OF INVENTOR(ASSIGNOR) | | |
|------------|--------------------------|-------|------------|
| Inventor: | KOK WUN TAN | Date: | 2017-10-27 |
| Signature: | Indal Dur | | |

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RECORDED: 11/03/2017

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