PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT5147161

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

CONVEYING PARTY DATA

| Name | Execution Date |
|------------------|----------------|
| Yi-How Chou | 09/04/2018 |
| Tzu-Hao Fu | 09/04/2018 |
| Tsung-Yin Hsieh | 09/04/2018 |
| Chih-Sheng Chang | 09/04/2018 |
| Shih-Chun Tsai | 09/04/2018 |
| Kun-Chen Ho | 09/04/2018 |
| Yang-Chou Lin | 09/04/2018 |

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: | 16134902 |

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

Correspondent Name: WINSTON HSU

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

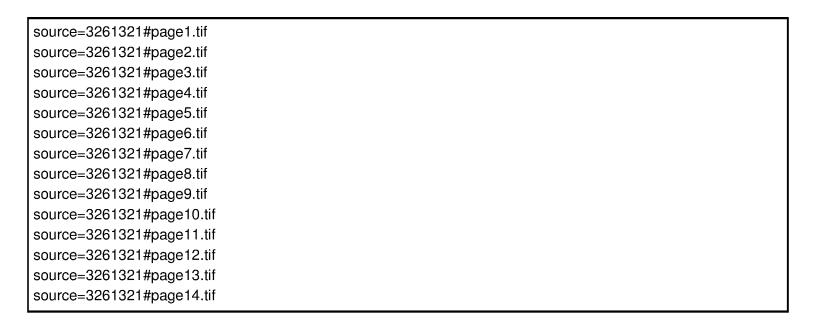
Address Line 4: NEW TAIPEI CITY, TAIWAN

| ATTORNEY DOCKET NUMBER: | NAUP3313USA |
|-------------------------|-------------|
| NAME OF SUBMITTER: | SIBYL YU |
| SIGNATURE: | /SIBYL YU/ |
| DATE SIGNED: | 09/18/2018 |

Total Attachments: 14

PATENT REEL: 046904 FRAME: 0732

505100401



Title of Invention:

METAL INTERCONNECT STRUCTURE AND METHOD FOR FABRICATING THE SAME

| 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 application | n number | file | d on | |
| The above-identified application was | made or authorized to | be made by me. | | |
| I believe that I am the original inventorapplication. | or or an original joint inv | ventor of a claimed | d invention in | the |
| I hereby acknowledge that any willfu under18 U.S.C. 1001 by fine or impri | I false statement made isonment of not more th | in this declaration an five (5) years, | is punishable or both. |) |
| In consideration of the payment by | UNITED MICROELI | ECTRONICS | having a pos | stal address of |
| No.3, Li-Hsin Road 2, Science | -Based Industrial P | ark, Hsin-Chu | City 300, T | aiwan, R.O.C |
| (referred to as "ASSIGNEE"below) to acknowledged, andfor other good an | o I of the sum of One Do d valuable consideratio | ollar (\$ 1.00), the r n. | eceipt of which | ch is hereby |
| 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 improv tion and, in and to, all L any continuations, con | ements which are etters Patent to be tinuation-in-part. c | disclosed in e obtained for livisions, rene | the said wals. |
| I hereby covenant that no assignment entered into which would conflict with | nt, sale, agreement or e n this assignment; | ncumbrance has i | peen or will be | e made or |
| I further covenant that ASSIGNEE w and documents relating to said inven known and accessible to I and will te related thereto and will promptly exec | ition and said Letters Pa stify as to the same in a | atent and legal equant and interference, li | uivalents as n tigation proce | nav be |
| 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 a cessary or desirable to | and said Letters P | atent and sai | d |
| Note: An application data sheet (PTC | D/SB/14 or equivalent), | including naming | the entire | |

Page 1 of 14

inventive entity, must accompany this form. Use this form for each additional inventor.

NPO#NAU-P3313-USA:0 CUST#UMCD-2018-0189

| LEGAL NA | ME OF INVENTOR | (ASSIGNOR) | | | |
|------------|----------------|------------|-------|--------------|--|
| Inventor: | Yi-How Chou | | Date: | SEP 0 4 2018 | |
| Signature: | Y: How | Chon | | | |

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NPO#NAU-P3313-USA:0 CUST#UMCD-2018-0189

F#NPO-P0002E-US1201 DSB0-107U019069

Title of Invention:

METAL INTERCONNECT STRUCTURE AND METHOD FOR FABRICATING THE SAME

| 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 | by me. | |
| I believe that I am the original invent application. | or or an original joint inventor of a | claimed invention in th | e |
| I hereby acknowledge that any willfu under18 U.S.C. 1001 by fine or impr | I false statement made in this decisionment of not more than five (5) | laration is punishable years, or both. | |
| In consideration of the payment by | UNITED MICROELECTRON CORP. | IICS having a posta | al address of |
| No.3, Li-Hsin Road 2, Science | -Based Industrial Park, Hsi | n-Chu City 300, Tai | iwan, R.O.C |
| (referred to as "ASSIGNEE"below) to acknowledged, andfor other good ar | o I of the sum of One Dollar (\$ 1.0 and valuable consideration. | 0), 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 applica invention by the above application of substitutes, or extensions thereof, ar | nd to any and all improvements w tion and, in and to, all Letters Pat rany continuations, continuation-i | hich are disclosed in the ent to be obtained for sa n-part, divisions, renew | e aid rals |
| I hereby covenant that no assignment entered into which would conflict with | nt, sale, agreement or encumbran n this assignment; | ce has been or will be r | made or |
| I further covenant that ASSIGNEE w and documents relating to said inver known and accessible to I and will te related thereto and will promptly exe | tion and said Letters Patent and I stify as to the same in any interfe | egal equivalents as ma | v 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 | lication, said invention and said L cessary or desirable to carry out t | etters Patent and said | |
| Note: An application data sheet (PTC | D/SB/14 or equivalent), including r | naming the entire | |

Page 3 of 14

inventive entity, must accompany this form. Use this form for each additional inventor.

NPO#NAU-P3313-USA:0 CUST#UMCD-2018-0189

LEGAL NAME OF INVENTOR(ASSIGNOR)

Inventor:

Tzu-Hao Fu

Date:

SEP 0 4 2018

Signature:

Page 4 of 14

Title of Invention:

METAL INTERCONNECT STRUCTURE AND METHOD FOR FABRICATING THE SAME

| 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 | s made or authorized to be made | by me. | |
| I believe that I am the original invent application. | or or an original joint inventor of | a claimed invention in | n the |
| I hereby acknowledge that any willfu under18 U.S.C. 1001 by fine or impr | Il false statement made in this de isonment of not more than five (| eclaration is punishab 5) years, or both. | le |
| In consideration of the payment by | UNITED MICROELECTRO | NICS having a po | ostal address of |
| No.3, Li-Hsin Road 2, Science | e-Based Industrial Park, H | sin-Chu City 300, | Taiwan, R.O.C |
| (referred to as "ASSIGNEE"below) to acknowledged, andfor other good ar | o I of the sum of One Dollar (\$ 1 and valuable consideration. | .00), the receipt of wh | ich 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 ition and, in and to, all Letters Pa r any continuations, continuation | which are disclosed ir atent to be obtained fo ı-in-part, divisions, rer | n the or said newals, |
| I hereby covenant that no assignment entered into which would conflict with | nt, sale, agreement or encumbra h this assignment; | ince has been or will b | be made or |
| I further covenant that ASSIGNEE w and 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 interf | d legal equivalents as ference, litigation prod | 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 | plication, said invention and said ecessary or desirable to carry ou | Letters Patent and sat the proposes thereo | f. |
| Note: An application data sheet (PTC | D/SB/14 or equivalent), including | naming the entire | |

Page 5 of 14

inventive entity, must accompany this form. Use this form for each additional inventor.

NPO#NAU-P3313-USA:0 CUST#UMCD-2018-0189

| LEGAL NA | ME OF INVENTOR(ASSIGNOR) | | | |
|------------|--------------------------|-------|--------------|--|
| Inventor: | Tsung-Yin Hsieh | Date: | SEP 0 4 2018 | |
| Signature: | 新学园 | | | |
| | Tsung-Yin Hsieh | | | |

Page 6 of 14

NPO#NAU-P3313-USA:0 CUST#UMCD-2018-0189

Title of Invention:

METAL INTERCONNECT STRUCTURE AND METHOD FOR FABRICATING THE SAME

| 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 | n number | filed on | |
| The above-identified application was | made or authorized to be made | by me. | |
| I believe that I am the original inventagplication. | 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 de sonment of not more than five (5 | claration is punishable i) years, or both. | |
| In consideration of the payment by | UNITED MICROELECTRO CORP. | NICS having a postal ac | ldress of |
| No.3, Li-Hsin Road 2, Science | -Based Industrial Park, Hs | in-Chu City 300, Taiwa | n, R.O.0 |
| (referred to as "ASSIGNEE"below) to acknowledged, andfor other good an | o I of the sum of One Dollar (\$ 1. d valuable consideration. | 00), the receipt of which is h | ereby |
| I hereby sell, assign and transfer to A the entire right, title and interest in an invention as above-identified application or substitutes, or extensions thereof, an | nd to any and all improvements v tion and, in and to, all Letters Pa any continuations, continuation- | which are disclosed in the tent to be obtained for said in-part, divisions, renewals | |
| I hereby covenant that no assignment entered into which would conflict with | nt, sale, agreement or encumbran n this assignment; | nce has been or will be mad | e or |
| I 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 | tion and said Letters Patent and stify as to the same in any interfe | legal equivalents as may be erence. litigation proceeding | ž |
| representatives any and all papers, ir maintain, issue and enforce said app equivalents thereof which may be ne- IN WITNESS WHEREOF, I have here | lication, said invention and said licessary or desirable to carry out | Letters Patent and said the proposes thereof | |
| Note: An application data sheet (PTC | 0/SB/14 or equivalent), including | naming the entire | |

Page 7 of 14

inventive entity, must accompany this form. Use this form for each additional inventor.

NPO#NAU-P3313-USA:0 CUST#UMCD-2018-0189

LEGAL NAME OF INVENTOR(ASSIGNOR)

Inventor:

Chih-Sheng Chang

Date:

SEP 0 4 2018

Signature:

Chih-Sheng Chang

Page 8 of 14

F#NPO-P0002E-US1201 DSB0-107U019069

Title of Invention:

METAL INTERCONNECT STRUCTURE AND METHOD FOR FABRICATING THE SAME

| As the below named inventor, I hereb This declaration is directed to: | y declare that: | | |
|---|--|--|------------|
| The attached application, or | | | |
| ☐ United States application nur | mber | filed on | , or |
| ☐ PCT international application | number | filed on | |
| The above-identified application was | made or authorized to be made t | by me. | |
| I believe that I am the original invento application. | r or an original joint inventor of a | claimed invention in the | |
| I hereby acknowledge that any willful under18 U.S.C. 1001 by fine or impris | false statement made in this dec sonment of not more than five (5) | laration is punishable years, or both. | |
| | UNITED MICROELECTRON | IICS having a postal | address of |
| No.3, Li-Hsin Road 2, Science- | Based Industrial Park, Hsi | n-Chu City 300, Taiv | van, R.O.C |
| (referred to as "ASSIGNEE"below) to acknowledged, andfor other good and | I of the sum of One Dollar (\$ 1.0 d valuable consideration. | 0), the receipt of which is | s hereby |
| I hereby sell, assign and transfer to A the entire right, title and interest in and invention as above-identified application invention by the above application or substitutes, or extensions thereof, and | d to any and all improvements wh on and, in and to, all Letters Pate any continuations, continuation-i | nich are disclosed in the ent to be obtained for sai n-part, divisions, renewa | d Is |
| I hereby covenant that no assignment entered into which would conflict with | r, sale, agreement or encumbrand this assignment; | ce has been or will be m | ade or |
| I further covenant that ASSIGNEE will and documents relating to said invent known and accessible to I and will tes related thereto and will promptly exec | ion and said Letters Patent and le tify as to the same in any interfer | egal equivalents as may ence. litigation proceedi | be |
| representatives any and all papers, in maintain, issue and enforce said appli equivalents thereof which may be nec IN WITNESS WHEREOF, I have here | cation, said invention and said Lessary or desirable to carry out t | etters Patent and said he proposes thereof | |
| Note: An application data sheet (PTO) inventive entity, must accompany this | /SB/14 or equivalent), including r form. Use this form for <u>each add</u> | aming the entire | |

Page 9 of 14

NPO#NAU-P3313-USA:0 CUST#UMCD-2018-0189

LEGAL NAME OF INVENTOR(ASSIGNOR)

Inventor: Shih-Chun Tsai

Date:

SEP 0 4 2018

Shih - Chun Tsai

Page 10 of 14

F#NPO-P0002E-US1201 DSB0-107U019069

Title of Invention:

METAL INTERCONNECT STRUCTURE AND METHOD FOR FABRICATING THE SAME

| As the below named inventor, I here This declaration is directed to: | by declare that: | | | |
|---|--|---|--|---------------------|
| ☑ The attached application, or | | | | |
| ☐ United States application number | | filed o | _filed on, or | |
| ☐ PCT international application number | | | filed on | |
| 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 in | ventor of a claime | d invention in t | the |
| I hereby acknowledge that any willfu under18 U.S.C. 1001 by fine or impri | I false statement made isonment of not more t | in this declaration nan five (5) years, | is punishable or both. | |
| In consideration of the payment by | UNITED MICROEL CORP. | ECTRONICS | having a pos | tal address of |
| No.3, Li-Hsin Road 2, Science | -Based Industrial | Park, Hsin-Chu | City 300, Ta | aiwan, R.O.C |
| (referred to as "ASSIGNEE"below) to acknowledged, andfor other good an | o I of the sum of One D id valuable consideration | ollar (\$ 1.00), the on. | receipt of which | h is hereby |
| 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 impro tion and, in and to, all l any continuations, co | vements which are ∟etters Patent to b ntinuation-in-part. | e disclosed in the obtained for a divisions, renew | he said wals. |
| I hereby covenant that no assignmer entered into which would conflict with | nt, sale, agreement or en this assignment; | encumbrance has | been or will be | made or |
| I further covenant that ASSIGNEE w and documents relating to said inven known and accessible to I and will te related thereto and will promptly exec | ition and said Letters F stify as to the same in | atent and legal ed any interference. I | quivalents as m litigation procee | nav be |
| representatives any and all papers, in maintain, issue and enforce said app equivalents thereof which may be ne IN WITNESS WHEREOF, I have her | dication, said invention cessary or desirable to | and said Letters I carry out the pro | Patent and said poses thereof. | i |
| Note: An application data sheet (PTC | D/SB/14 or equivalent), | including naming | the entire | |

Page 11 of 14

inventive entity, must accompany this form. Use this form for each additional inventor.

NPO#NAU-P3313-USA:0 CUST#UMCD-2018-0189

| LEGAL NA | ME OF INVENTOR(AS | SSIGNOR) | | |
|------------|-------------------|----------|-------|--------------|
| Inventor: | Kun-Chen Ho | | Date: | SEP 0 4 2018 |
| Signature: | kun-Chen | Но | | |

Page 12 of 14

NPO#NAU-P3313-USA:0 CUST#UMCD-2018-0189 F#NPO-P0002E-US1201 DSB0-107U019069

Title of Invention:

METAL INTERCONNECT STRUCTURE AND METHOD FOR FABRICATING THE SAME

| As the below named inventor, I here This declaration is directed to: | eby declare that: | | | |
|---|--|---|------------------|--|
| ☑ The attached application, o | r | | | |
| ☐ United States application number | | filed on | | |
| ☐ PCT international application number | | filed on | * | |
| The above-identified application was | s made or authorized to be n | nade by me. | | |
| I believe that I am the original invenapplication. | tor or an original joint invento | or of a claimed invention i | n the | |
| I hereby acknowledge that any willfuunder18 U.S.C. 1001 by fine or imple | al false statement made in th risonment of not more than fi | is declaration is punishabive (5) years, or both. | ole | |
| In consideration of the payment by | UNITED MICROELECT | RONICS having a p | ostal address of | |
| No.3, Li-Hsin Road 2, Science | e-Based Industrial Park | , Hsin-Chu City 300, | Taiwan, R.O.C. | |
| (referred to as "ASSIGNEE"below) to acknowledged, and for other good as | o I of the sum of One Dollar nd valuable consideration. | (\$ 1.00), the receipt of wh | nich 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 assignme entered into which would conflict wit | nt, sale, agreement or encur h this assignment; | nbrance has been or will | be made or | |
| 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, instruments or affidavits required to apply for, obtain, maintain, issue and enforce said application, said invention and said Letters Patent and said equivalents thereof which may be necessary or desirable to carry out the proposes thereof. IN WITNESS WHEREOF, I have hereunto set hand and seal this on the date(s) indicated. | | | | |
| Note: An application data sheet (PT | O/SB/14 or equivalent), inclu | iding naming the entire | | |

Page 13 of 14

inventive entity, must accompany this form. Use this form for each additional inventor.

NPO#NAU-P3313-USA:0 CUST#UMCD-2018-0189

| LEGAL NA | ME OF INVENTOR(ASSIGNOR) | | | |
|------------|--------------------------|-------|--------------|---|
| Inventor: | Yang-Chou Lin | Date: | SEP 0 4 2018 | _ |
| Signature: | Young - Chou LTh | | | - |

NPO#NAU-P3313-USA:0 CUST#UMCD-2018-0189 Page 14 of 14

F#NPO-P0002E-US1201 DSB0-107U019069

PATENT REEL: 046904 FRAME: 0747

RECORDED: 09/18/2018