

EUROPEAN PATENT OFFICE
U.S. PATENT AND TRADEMARK OFFICE

CPC NOTICE OF CHANGES 704

DATE: AUGUST 1, 2019

PROJECT RP0151

The following classification changes will be effected by this Notice of Changes:

| <u>Action</u> | <u>Subclass</u> | <u>Group(s)</u> |
|-----------------------|-----------------|--|
| SCHEME: | | |
| Symbols Deleted: | H01L | 21/28273, 21/28282, 21/28291 |
| Symbols New: | H01L | 29/4011, 29/40111, 29/40114, 29/40117 |
| Titles Changed: | H01L | 21/04, 21/28 |
| Warnings New: | H01L | 29/401, 29/4011, 29/40111, 29/40114, 29/40117 |
| DEFINITIONS: | | |
| Definitions Modified: | H01L | 21/04, 21/28 |

No other subclasses/groups are impacted by this Notice of Changes.

This Notice of Changes includes the following [Check the ones included]:

1. CLASSIFICATION SCHEME CHANGES

- A. New, Modified or Deleted Group(s)
- B. New, Modified or Deleted Warning(s)
- C. New, Modified or Deleted Note(s)
- D. New, Modified or Deleted Guidance Heading(s)

2. DEFINITIONS

- A. New or Modified Definitions (Full definition template)
- B. Modified or Deleted Definitions (Definitions Quick Fix)

3. REVISION CONCORDANCE LIST (RCL)

4. CHANGES TO THE CPC-TO-IPC CONCORDANCE LIST (CICL)

5. CHANGES TO THE CROSS-REFERENCE LIST (CRL)

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1. CLASSIFICATION SCHEME CHANGES

A. New, Modified or Deleted Group(s)**SUBCLASS H01L - SEMICONDUCTOR DEVICES; ELECTRIC SOLID STATE DEVICES NOT OTHERWISE PROVIDED FOR**

| <u>Type*</u> | <u>Symbol</u> | <u>Indent Level Number of dots (e.g. 0, 1, 2)</u> | <u>Title</u> <u>“CPC only” text should normally be enclosed in {curly brackets}**</u> | <u>Transferred to#</u> |
|--------------|---------------|---|---|---|
| M | H01L21/04 | 2 | the devices having at least one potential-jump barrier or surface barrier, e.g. PN junction, depletion layer or carrier concentration layer {(multistep manufacturing processes for semiconductor bodies of said devices H01L29/02; multistep manufacturing processes for electrodes of said devices H01L29/401; multistep manufacturing processes for said devices H01L29/6607)} | |
| M | H01L21/28 | 4 | Manufacture of electrodes on semiconductor bodies using processes or apparatus not provided for in groups H01L21/20 - H01L21/268 {(etching for patterning the electrodes H01L21/311, H01L21/3213; multistep manufacturing processes for data storage electrodes H01L29/4011)} | |
| D | H01L21/28273 | 5 | {Making conductor-insulator-conductor-insulator-semiconductor electrodes (H01L 21/28291 takes precedence)} | <administrative transfer to H01L29/40114> |
| D | H01L21/28282 | 5 | {comprising a charge trapping insulator} | <administrative transfer to H01L29/40117> |
| D | H01L21/28291 | 5 | {comprising a layer which is used for its ferroelectric properties} | <administrative transfer to H01L29/40111> |
| C | H01L29/401 | 2 | {Multistep manufacturing processes} | H01L29/401, H01L29/4011, H01L29/40111, H01L29/40114, H01L29/40117 |
| N | H01L29/4011 | 3 | {for data storage electrodes} | |
| N | H01L29/40111 | 4 | {the electrodes comprising a layer which is used for its ferroelectric properties} | |
| N | H01L29/40114 | 4 | {the electrodes comprising a conductor-insulator-conductor-insulator-semiconductor structure} | |
| N | H01L29/40117 | 4 | {the electrodes comprising a charge-trapping insulator} | |

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*N = new entries where reclassification into entries is involved; C = entries with modified file scope where reclassification of documents from the entries is involved; Q = new entries which are firstly populated with documents via administrative transfers from deleted (D) entries. Afterwards, the transferred documents into the Q entry will either stay or be moved to more appropriate entries, as determined by intellectual reclassification; T= existing entries with enlarged file scope, which receive documents from C or D entries, e.g. when a limiting reference is removed from the entry title; M = entries with no change to the file scope (no reclassification); D = deleted entries; F = frozen entries will be deleted once reclassification of documents from the entries is completed; U = entries that are unchanged.

NOTES:

- **No {curly brackets} are used for titles in CPC only subclasses, e.g. C12Y, A23Y; 2000 series symbol titles of groups found at the end of schemes (orthogonal codes); or the Y section titles. The {curly brackets} are used for 2000 series symbol titles found interspersed throughout the main trunk schemes (breakdown codes).
- U groups: it is obligatory to display the required “anchor” symbol (U group), i.e. the entry immediately preceding a new group or an array of new groups to be created (in case new groups are not clearly subgroups of C-type groups). Always include the symbol, indent level and title of the U group in the table above.
- All entry types should be included in the scheme changes table above for better understanding of the overall scheme change picture. Symbol, indent level, and title are required for all types .
- “Transferred to” column must be completed for all C, D, F, and Q type entries. F groups will be deleted once reclassification is completed.
- When multiple symbols are included in the “Transferred to” column, avoid using ranges of symbols in order to be as precise as possible.
- For administrative transfer of documents, the following text should be used: “< administrative transfer to XX>”, “<administrative transfer to XX and YY simultaneously>”, or “<administrative transfer to XX, YY, ...and ZZ simultaneously>” when administrative transfer of the same documents is to more than one place.
- Administrative transfer to main trunk groups is assumed to be the source allocation type, unless otherwise indicated.
- Administrative transfer to 2000/Y series groups is assumed to be “additional information”.
- If needed, instructions for allocation type should be indicated within the angle brackets using the abbreviations “ADD” or “INV”: <administrative transfer to XX ADD> , <administrative transfer to XX INV>, or < administrative transfer to XX ADD, YY INV, ... and ZZ ADD simultaneously>.
- In certain situations, the “D” entries of 2000-series or Y-series groups may not require a destination (“Transferred to”) symbol, however it is required to specify “<no transfer>” in the “Transferred to” column for such cases.
- For finalisation projects, the deleted “F” symbols should have <no transfer> in the “Transferred to” column.
- For more details about the types of scheme change, see CPC Guide.

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B. New, Modified or Deleted Warning(s)

SUBCLASS H01L - SEMICONDUCTOR DEVICES; ELECTRIC SOLID STATE DEVICES NOT OTHERWISE PROVIDED FOR

| <u>Type*</u> | <u>Location</u> | <u>Old Warning</u> | <u>New/Modified Warning</u> |
|--------------|-----------------|--------------------|--|
| N | H01L29/401 | | Group H01L29/401 is impacted by reclassification into groups H01L29/4011, H01L29/40111, H01L29/40114 and H01L29/40117. Groups H01L29/401, H01L29/4011, H01L29/40111, H01L29/40114 and H01L29/40117 should be considered in order to perform a complete search. |
| N | H01L29/4011 | | Group H01L29/4011 is incomplete pending reclassification of documents from group H01L29/401. Group H01L29/401 and H01L29/4011 should be considered in order to perform a complete search. |
| N | H01L29/40111 | | Group H01L29/40111 is incomplete pending reclassification of documents from group H01L29/401. Group H01L29/401 and H01L29/40111 should be considered in order to perform a complete search. |
| N | H01L29/40114 | | Group H01L29/40114 is incomplete pending reclassification of documents from group H01L29/401. Group H01L29/401 and H01L29/40114 should be considered in order to perform a complete search. |
| N | H01L29/40117 | | Group H01L29/40117 is incomplete pending reclassification of documents from group H01L29/401. Group H01L29/401 and H01L29/40117 should be considered in order to perform a complete search. |

*N = new warning, M = modified warning, D = deleted warning

NOTE: The "Location" column only requires the symbol PRIOR to the location of the warning. No further directions such as "before" or "after" are required.

2. A. DEFINITIONS (modified)

Insert: The following changes into the existing Definitions.

H01L 21/04

References

Limiting references

This place does not cover:

Insert: The following rows into the existing *Limiting references* table.

| | |
|--|-------------------------------|
| Multistep manufacturing processes for semiconductor bodies of said devices | H01L 29/02 |
| Multistep manufacturing processes for electrodes of said devices | H01L 29/401 |
| Multistep manufacturing processes for said devices | H01L 29/66007 |

Delete: The following rows from the existing *Limiting references* table.

| | |
|--|-------------------------------|
| Formation of insulating layers on semiconductor wafers and the direct post-treatment of this formation | H01L 21/02107 |
| Formation of SOI | H01L 21/7624 |

Insert: The following new *Informative references* section and the two new references.

Informative references

Attention is drawn to the following places, which may be of interest for search:

| | |
|--|-------------------------------|
| Formation of insulating layers on semiconductor wafers and the direct post-treatment of this formation | H01L 21/02107 |
| Formation of SOI | H01L 21/7624 |

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H01L 21/28**References****Limiting references***This place does not cover:***Insert:** The following rows into the existing *Limiting references* table.

| | |
|---|---|
| Etching for patterning the electrodes | H01L 21/311 , H01L 21/3213 |
| Multistep manufacturing processes for data storage electrodes | H01L 29/4011 |

Delete: The following rows from the existing *Limiting references* table.

| | |
|--|---|
| Mono-step- processes:single diffusion of dopants,alloying of electrode materials,implantation of dopants | H01L 21/22 , H01L 21/24 , H01L 21/265 |
| Multistep processes for forming capacitor electrodes | H01L 28/60 |

Informative references*Attention is drawn to the following places, which may be of interest for search:***Insert:** The following new *Informative references* section and the two new references.

| | |
|--|---|
| Mono-step processes: single diffusion of dopants, alloying of electrode materials, implantation of dopants | H01L 21/22 , H01L 21/24 , H01L 21/265 |
| Multistep processes for forming capacitor electrodes | H01L 28/60 |

Delete: The following row from the existing *Informative references* table.

| | |
|-----------------------------------|--|
| Etching for patterning electrodes | H01L 21/311 and H01L 21/3213 |
|-----------------------------------|--|

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3. REVISION CONCORDANCE LIST (RCL)

| <u>Type*</u> | <u>From CPC Symbol (existing)</u> | <u>To CPC Symbol(s)</u> |
|--------------|-----------------------------------|---|
| D | H01L21/28273 | <administrative transfer to H01L29/40114> |
| D | H01L21/28282 | <administrative transfer to H01L29/40117> |
| D | H01L21/28291 | <administrative transfer to H01L29/40111> |
| C | H01L29/401 | H01L29/401, H01L29/4011, H01L29/40111, H01L29/40114, H01L29/40117 |

* C = entries with modified file scope where reclassification of documents from the entries is involved; Q = new entries which are firstly populated with documents via administrative transfers from deleted (D) entries. Afterwards, the transferred documents into the Q entry will either stay or be moved to more appropriate entries, as determined by intellectual reclassification; D = deleted entries; F = frozen entries will be deleted once reclassification of documents from the entries is completed.

NOTES:

- Only C, D, F, and Q type entries are included in the table above.
- When multiple symbols are included in the “To” column, do not use ranges of symbols.
- For administrative transfer of documents, the following text should be used: “< administrative transfer to XX>”, “<administrative transfer to XX and YY simultaneously>”, or “<administrative transfer to XX, YY, ...and ZZ simultaneously>” when administrative transfer of the same documents is to more than one place.
- Administrative transfer to main trunk groups is assumed to be the source allocation type, unless otherwise indicated.
- Administrative transfer to 2000/Y series groups is assumed to be “additional information”.
- If needed, instructions for allocation type should be indicated within the angle brackets using the abbreviations “ADD” or “INV”: <administrative transfer to XX ADD>, <administrative transfer to XX INV>, or < administrative transfer to XX ADD, YY INV, ... and ZZ ADD simultaneously>.
- In certain situations, the “D” entries of 2000-series or Y-series groups may not require a destination (“To”) symbol, however it is required to specify “<no transfer>” in the “To” column for such cases.
- RCL is not needed for finalisation projects.

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4. CHANGES TO THE CPC-TO-IPC CONCORDANCE LIST (CICL)

| <u>CPC</u> | <u>IPC</u> | <u>Action*</u> |
|--------------|------------|----------------|
| H01L21/28273 | | DELETE |
| H01L21/28282 | | DELETE |
| H01L21/28291 | | DELETE |
| H01L29/4011 | H01L21/28 | NEW |
| H01L29/40111 | H01L21/28 | NEW |
| H01L29/40114 | H01L21/28 | NEW |
| H01L29/40117 | H01L21/28 | NEW |

*Action column:

- For an (N) or (Q) entry, provide an IPC symbol and complete the Action column with “NEW.”
- For an existing CPC main trunk entry or indexing entry where the existing IPC symbol needs to be changed, provide an updated IPC symbol and complete the Action column with “UPDATED.”
- For a (D) CPC entry or indexing entry complete the Action column with “DELETE.” IPC symbol does not need to be included in the IPC column.
- For an (N) 2000 series CPC entry which is positioned within the main trunk scheme (breakdown code) provide an IPC symbol and complete the action column with “NEW”.
- For an (N) 2000 series CPC entry positioned at the end of the CPC scheme (orthogonal code), with no IPC equivalent, complete the IPC column with “CPCONLY” and complete the action column with “NEW”.

NOTES:

- F symbols are not included in the CICL table above.
- T and M symbols are not included in the CICL table above unless a change to the existing IPC is desired.