EUROPEAN PATENT OFFICE
U.S. PATENT AND TRADEMARK OFFICE

CPC NOTICE OF CHANGES 270

DATE: NOVEMBER 1, 2016

PROJECT RP0259

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

Action	**Subclass**	**Group(s)**
Title wording changes:	H01L	21/18
	H01L	21/2033
	H01L	21/2053
	H01L	21/28255
	H01L	21/28512
	H01L	22/00
	H01L	25/00
	H01L	29/04
	H01L	29/16
	H01L	29/78681
	H01L	29/78684
	H01L	31/028
	H01L	31/0336
	H01L	31/03365
	H01L	31/035254
	H01L	31/03682
	H01L	31/03762
	H01L	31/03921
	H01L	31/04
	H01L	31/0525
	H01L	31/074
	H01L	31/1055
	H01L	31/1804
	H01L	31/202
Modified definitions:	H01L	22/00
	H01L	25/00
	H01L	31/0264
	H01L	31/04
	H01L	31/074
Warning Notice to be modified:	H01L	subclass
Scheme Notes to be modified:	H01L	21/18

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 Notice(s)

☒ C. New, Modified or Deleted Note(s)

☐ D. New, Modified or Deleted Guidance Heading(s)

2. DEFINITIONS (New or Modified)

☒ A. DEFINITIONS (Full definition template)

☐ B. DEFINITIONS (Definitions Quick Fix)

3. ☐ REVISION CONCORDANCE LIST (RCL)

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

5. ☐ CROSS-REFERENCE LIST (CRL)

CPC NOTICE OF CHANGES 270

DATE: NOVEMBER 1, 2016

PROJECT RP0259

1. CLASSIFICATION SCHEME CHANGES

A. New, Modified or Deleted Group(s)

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

Type*	**Symbol**	**Indent Level Number of dots (e.g. 0, 1, 2)**	**Title (new or modified) "CPC only" text should normally be enclosed in {curly brackets}****	**Transferred to#**
M	H01L21/18	3	the devices having semiconductor bodies comprising elements of Group IV of the Periodic System or A_{III} B_V compounds with or without impurities, e.g. doping materials {(H01L21/041 - H01L21/0425, H01L21/045 - H01L21/048 take precedence)}	
M	H01L21/2033	6	{Epitaxial deposition of elements of Group IV of the Periodic System, e.g. Si, Ge}	
M	H01L21/2053	6	{Expitaxial deposition of elements of Group IV of the Periodic System, e.g. Si, Ge}	
M	H01L21/28255	6	{the insulator being formed after the semiconductor body, the semiconductor belonging to Group IV and not being elemental silicon, e.g. Ge, SiGe, SiGeC}	
M	H01L21/28512	8	{on semiconductor bodies comprising elements of Group IV of the Periodic System}	
M	H01L21/30635	8	{of $A_{III}B_V$ compounds}	
M	H01L21/3245	6	{of $A_{III}B_V$ compounds}	
M	H01L21/7607	4	{between components manufactured in an active substrate comprising $A_{II}B_{VI}$ compounds}	
M	H01L22/00	0	{Testing or measuring during manufacture or treatment; Reliability measurements, i.e. testing of parts without further processing to modify the parts as such; Structural arrangements therefor}	
M	H01L25/00	0	Assemblies consisting of a plurality of individual semiconductor or other solid state devices {; Multistep manufacturing processes thereof} (devices consisting of a plurality of solid state components formed in or on a common substrate H01L27/00; photovoltaic modules or arrays of photovoltaic cells H01L31/042 {; panels or arrays of photo electrochemical cells H01G9/2068})	
M	H01L29/04	2	characterised by their crystalline structure, e.g. polycrystalline, cubic or particular orientation of crystalline planes (characterised by physical imperfections H01L29/30)	
M	H01L29/16	3	including, apart from doping materials or other impurities, only elements of Group IV of the Periodic System	
M	H01L29/78681	7	{having a semiconductor body comprising $A_{III}B_V$ or $A_{II}B_{VI}$ or $A_{IV}B_{VI}$ semiconductor materials, or Se or Te}	

Type*	**Symbol**	**Indent Level Number of dots (e.g. 0, 1, 2)**	**Title (new or modified) "CPC only" text should normally be enclosed in {curly brackets}****	**Transferred to#**
M	H01L29/78684	7	{having a semiconductor body comprising semiconductor materials of Group IV not being silicon, or alloys including an element of the group IV, e.g. Ge, SiN alloys, SiC alloys (H01L29/7869 takes precedence)}	
M	H01L31/028	4	including, apart from doping material or other impurities, only elements of Group IV of the Periodic System	
M	H01L31/0336	5	in different semiconductor regions, e.g. Cu_2 X/CdX hetero-junctions, X being an element of Group VI of the Periodic System	
M	H01L31/03365	6	{comprising only Cu_2X /CdX heterojunctions, X being an element of Group VI of the Periodic System}	
M	H01L31/035254	4	{including, apart from doping materials or other impurities, only elements of Group IV of the Periodic System, e.g. Si-SiGe superlattices}	
M	H01L31/03682	4	{including only elements of Group IV of the Periodic System}	
M	H01L31/03762	4	{including only elements of Group IV of the Periodic System}	
M	H01L31/03921	4	{including only elements of Group IV of the Periodic System}	
M	H01L31/04	1	adapted as photovoltaic [PV] conversion devices (testing thereof during manufacture {H01L22/00}; testing thereof after manufacture H02S50/10)	
M	H01L31/0525	3	including means to utilise heat energy directly associated with the PV cell, e.g. integrated Seebeck elements	
M	H01L31/074	4	comprising a heterojunction with an element of Group IV of the Periodic System, e.g. ITO/Si, GaAs/Si or CdTe/Si solar cells	
M	H01L31/1055	6	{the devices comprising amorphous materials of Group IV of the Periodic System}	
M	H01L31/1804	2	{comprising only elements of Group IV of the Periodic System}	
M	H01L31/202	3	{including only elements of Group IV of the Periodic System}	

*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; E= 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).
- For U groups, the minimum requirement is to include the U group located immediately prior to the N group or N group array, in order to show the N group hierarchy and improve the readability and understanding of the scheme. 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 except "D" which requires only a symbol.
- #"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>" or "<administrative transfer to XX and YY simultaneously>" when administrative transfer of the same documents is to more than one place.
- Administrative transfer to main trunk groups is assumed to be "invention information", unless otherwise indicated, and to 2000 series groups is assumed to be "additional information".

B. New, Modified or Deleted Warning notice(s)

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

Type*	**Location**	**Old Warning notice**	**New/Modified Warning notice**
M	H01L	H01L 21/66 covered by H01L 22/34	H01L21/66 covered by H01L22/00

*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.

C. New, Modified or Deleted Note(s)

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

Type*	Location	Old Note	New/Modified Note
M	H01L	1. This subclass covers electric solid state devices which are not provided for in any other subclass and details thereof. This includes: •semiconductor devices adapted for rectifying, amplifying, oscillating or switching; •semiconductor devices sensitive to radiation; •electric solid state devices using thermoelectric, superconductive, piezo-electric, electrostrictive, magnetostrictive, galvano-magnetic or bulk negative resistance effects and integrated circuit devices. Also covered by this subclass are photo-resistors, magnetic field dependent resistors, field effect resistors, capacitors with potential-jump barrier, resistors with potential-jump barrier or surface barrier, incoherent light emitting diodes, electromechanical solid state transducers and thin-film or thick-film circuits. Furthermore, it provides for processes and apparatus adapted for the manufacture or treatment of such devices, except where such processes relate to single step processes for which provision exists elsewhere.	1. This subclass covers : • electric solid state devices which are not covered by any other subclass and details thereof, and includes: semiconductor devices adapted for rectifying, amplifying, oscillating or switching; semiconductor devices sensitive to radiation; electric solid state devices using thermoelectric, superconductive, piezo-electric, electrostrictive, magnetostrictive, galvano-magnetic or bulk negative resistance effects and integrated circuit devices; • photoresistors, magnetic field dependent resistors, field effect resistors, capacitors with potential-jump barrier, resistors with potential-jump barrier or surface barrier, incoherent light emitting diodes and thin-film or thick-film circuits; • processes and apparatus adapted for the manufacture or treatment of such devices, except where such processes relate to single-step processes for which provision exists elsewhere.
M	H01L	2. In this subclass: • The expression "solid state body" refers to the body of material within which, or at the surface of which, the physical effects characteristic of the device occur. In thermoelectric devices it includes all materials in the current path. Regions in or on the body of the device (other than the solid state body itself), which exert an influence on the solid state body electrically, are considered to be "electrodes" whether or not an external electrical connection is made thereto.} An electrode may include several portions and the term includes metallic regions which exert influence on the solid state body through an insulating region, (e.g. capacitive coupling) and inductive coupling arrangements	2. In this subclass , the following terms or expressions are used with the meaning indicated: • "wafer" means a slice of semiconductor or crystalline substrate material, which can be modified by impurity diffusion (doping), ion implantation or epitaxy, and whose active surface can be processed into arrays of discrete components or integrated circuits; • "solid state body" means the body of material within which, or at the surface of which, the physical effects characteristic of the device occur. In thermoelectric devices, it includes all materials in the current path.

Type*	Location	Old Note	New/Modified Note
		to the body. The dielectric region in a capacitive arrangement is regarded as part of the electrode. In arrangements including several portions only those portions which exert an influence on the solid state body by virtue of their shape, size or disposition or the material of which they are formed are considered to be part of the electrode. The other portions are considered to be "arrangements for conducting electric current to or from the solid state body" or "interconnections between solid state components formed in or on a common substrate", i.e. leads. • The word "device" refers to an electric circuit element; where an electric circuit element is one of a plurality or elements formed in or on a common substrate it is • •The word "device" refers to an electric circuit element; where an electric circuit element is one of a plurality or elements formed in or on a common substrate it is referred to as a "component". •A "complete device" is a device in its fully assembled state which may or may not require further treatment, e.g. electro-forming, before it is ready for use but which does not require the addition of further structural units. • The word "parts" includes all structural units which are included in a complete device. • A "container" is an enclosure forming part of the complete device and is essentially a solid construction in which the body of the device is placed, or which is formed around the body without forming an intimate layer thereon. An enclosure which consists of one or more layers formed on the body and in intimate contact therewith is referred to as an "encapsulation". •"Integrated circuit" is a device where all components, e.g. diodes, resistors, are built up on a common substrate and form the device including interconnections between the components.	Regions in or on the body of the device (other than the solid state body itself), which exert an influence on the solid state body electrically, are considered to be "electrodes" whether or not an external electrical connection is made thereto. An electrode may include several portions and the term includes metallic regions which exert influence on the solid state body through an insulating region (e.g. capacitive coupling) and inductive coupling arrangements to the body. The dielectric region in a capacitive arrangement is regarded as part of the electrode. In arrangements including several portions, only those portions which exert an influence on the solid state body by virtue of their shape, size, or disposition or the material of which they are formed are considered to be part of the electrode. The other portions are considered to be "arrangements for conducting electric current to or from the solid state body" or "interconnections between solid state components formed in or on a common substrate", i .e. leads; • "device" means an electric circuit element; where an electric circuit element is one of a plurality of elements formed in or on a common substrate it is referred to as a "component"; • "complete device" is a device in its fully assembled state which may or may not require further treatment, e.g. electroforming, before it is ready for use but which does not require the addition of further structural units; • "parts" includes all structural units which are included in a complete device; • "container" is an enclosure forming part of the complete device and is essentially a solid construction in which the body of the device is placed, or which is formed around the body without forming an intimate layer thereon. An enclosure which consists of one or more layers formed on the body and in

Type*	**Location**	**Old Note**	**New/Modified Note**
			intimate contact therewith is referred to as an "encapsulation"; • “integrated circuit” is a device where all components, e.g. diodes, resistors, are built up on a common substrate and form the device including interconnections between the components ; • “assembly” of a device is the building up of the device from its component constructional units and includes the provision of fillings in containers.
M	H01L	3. "Integration processes" are processes for the manufacture of at least two different components where the process is especially adapted to their integration, e.g. to take advantage of it or to reduce their manufacturing cost. Example: in a CMOS process, the same ion implant dopes the p-MOS gate and the n-MNOS source and drain. Consequently, a process for the manufacture of a component per se is not considered as an integration process, even though that component will be part of an integrated circuit. "Assembly" of a device is the building up of the device from its component constructional units and includes the provision of fillings in containers. When referring to the periodic table of the elements, either the new IUPAC notation, i.e. numbering system from 1 to 18, or the previous IUPAC form may be used to indicate an element group, e.g. Group IV elements according to the previous IUPAC form correspond to group 14 elements according to the new notation.	3. In this subclass, both the process or apparatus for the manufacture or treatment of a device and the device itself are classified, whenever both of these are described sufficiently to be of interest. 4. Attention is drawn to Note (3) after the title of section C, which Note indicates to which version of the periodic table of chemical elements the IPC refers. In this subclass, the Periodic System used is the 8 group system indicated by Roman numerals in the Periodic Table thereunder.
M	H01L 21/18	This group covers also processes and apparatus which, by using the appropriate technology, are clearly suitable for manufacture or treatment of devices whose bodies comprise elements of the fourth group of the Periodic System or AIIIBV compounds, even if the material used is not explicitly specified.	This group covers also processes and apparatus which, by using the appropriate technology, are clearly suitable for manufacture or treatment of devices whose bodies comprise elements of Group IV of the Periodic System or $A_{III}B_{V}$ compounds, even if the material used is not explicitly specified.

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

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

2. A. DEFINITIONS (modified)

H01L22/00

Definition statement

Delete: The following duplicate words from the existing paragraph:

which are specific to semiconductor device fabrication.

Delete: The following paragraph:

Includes process end point determination.

Relationships with other classification places

Delete: The existing paragraph:

Processes which…in G01N or G01R

Replace with: The following paragraph:

Processes which are not specific to semiconductor device fabrication or processes, where the semiconductor devices are included in a larger system, are typically not classified in H01L22/00, but are classified in the relevant place for the processes or testing in general, e.g. G01N or G01R.

Limiting references

Delete: The entire Limiting references section.

Informative references

Insert: The following three new rows:

Contactless testing of integrated circuits,	G01R31/302
Testing and controlling photoresist and lithographic patterns	G03F7/70633
Testing of photovoltaic systems	H02S 50/00

H01L25/00

Limiting references

Delete: The following three rows:

Assemblies of photo electrochemical …cells	H01G9/2068
Assemblies of semiconductor … lead-frames	H01L23/49575
Tandem solar cells, meaning …coating processes	H01L31/0687, H01L31/0725, H01L31/076 and H01L31/078

Insert: The following new row:

Panels or arrays of photo electrochemical cells	H01G9/2068

Informative references

Insert: The following three new rows:

Assemblies of semiconductor devices on lead-frames	H01L23/49575
Tandem solar cells, meaning monolithically integrated solar cells with different wavelengths	H01L31/0687, H01L31/0725,

sensibilities deposited on one another by coating processes	H01L31/076, H01L31/078
Assembling semiconductor devices using processes or apparatus not provided for in a single one of the subgroups	H01L21/06 - H01L21/326

H01L31/0264

Limiting references

Delete: The entire Limiting references section.

Insert: The following new Informative references section:

Informative references

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

Organic semiconductor materials	H01L51/0032

H01L31/04

Special rules of classification

Delete: The second bulleted paragraph in the Special rules section:

- Devices including photovoltaic cell(s)…as such.

Replace with: The following paragraph:

- Devices including photovoltaic cells as power source, wherein the document does not disclose any structural details regarding said photovoltaic devices, should be classified in the relevant groups for said device as such.

Glossary of terms

Delete: The following text from the second column of the row: “Group 14 elements”:

formerly known as group IVa elements (C, Si, Ge, Sn, PB)

Replace with: The following text:

formerly known as Group IVA elements (C, Si, Ge, Sn, Pb)

H01L31/074

Definition statement

Delete: The following word from the paragraph:

group

Replace with: The following word:

Group

Limiting references

Delete: The entire Limiting references section.

Informative references

Delete: From the existing row, the text shown below:

Iii-V

Replace with: The following text:

III-V

Insert: The following new row:

Heterojunction comprising only group IV materials	H01L31/0745, H01L31/0747

Glossary of terms

Delete: The following word from the paragraph:

group

Replace with: The following word:

Group