

# CPC COOPERATIVE PATENT CLASSIFICATION

## H ELECTRICITY

(NOTE omitted)

## H10 SEMICONDUCTOR DEVICES; ELECTRIC SOLID-STATE DEVICES NOT OTHERWISE PROVIDED FOR

## H10H INORGANIC LIGHT-EMITTING SEMICONDUCTOR DEVICES HAVING POTENTIAL BARRIERS

### NOTES

1. This subclass covers inorganic light-emitting semiconductor devices that emit visible, infrared [IR] or ultraviolet [UV] light. This includes light-emitting diodes [LED] and superluminescent diodes [SLD].
2. This subclass does not cover semiconductor lasers, which are covered by group [H01S 5/00](#).
3. In this subclass, the periodic system used is the I to VIII group system indicated in the Periodic Table under Note (3) of section [C](#).

20/00	<b>Individual inorganic light-emitting semiconductor devices having potential barriers, e.g. light-emitting diodes [LED]</b>	20/014	. . . {having light-emitting regions comprising only Group IV materials}
20/01	. Manufacture or treatment		<b>WARNING</b> Group <a href="#">H10H 20/014</a> is impacted by reclassification into group <a href="#">H10H 20/0145</a> . Groups <a href="#">H10H 20/014</a> and <a href="#">H10H 20/0145</a> should be considered in order to perform a complete search.
	<b>WARNING</b> Group <a href="#">H10H 20/01</a> is impacted by reclassification into groups <a href="#">H10H 20/011</a> , <a href="#">H10H 20/016</a> , <a href="#">H10H 20/0165</a> , <a href="#">H10H 20/017</a> , <a href="#">H10H 20/021</a> , <a href="#">H10H 20/032</a> , <a href="#">H10H 20/034</a> , <a href="#">H10H 20/036</a> , <a href="#">H10H 20/0362</a> , <a href="#">H10H 20/0363</a> , <a href="#">H10H 20/0364</a> , <a href="#">H10H 20/0365</a> , <a href="#">H10H 29/01</a> , <a href="#">H10H 29/011</a> , <a href="#">H10H 29/012</a> , <a href="#">H10H 29/02</a> , <a href="#">H10H 29/03</a> , <a href="#">H10H 29/032</a> , <a href="#">H10H 29/034</a> , <a href="#">H10H 29/036</a> , <a href="#">H10H 29/0361</a> , <a href="#">H10H 29/0362</a> , <a href="#">H10H 29/0363</a> , <a href="#">H10H 29/0364</a> and <a href="#">H10H 29/0365</a> . All groups listed in this Warning should be considered in order to perform a complete search.	20/0145	. . . . {comprising polycrystalline, amorphous or porous Group IV materials}
			<b>WARNING</b> Group <a href="#">H10H 20/0145</a> is incomplete pending reclassification of documents from group <a href="#">H10H 20/014</a> . Groups <a href="#">H10H 20/014</a> and <a href="#">H10H 20/0145</a> should be considered in order to perform a complete search.
20/011	. . {of bodies, e.g. forming semiconductor layers}	20/016	. . . {Thermal treatments}
	<b>WARNING</b> Groups <a href="#">H10H 20/011</a> , <a href="#">H10H 20/016</a> , <a href="#">H10H 20/0165</a> and <a href="#">H10H 20/017</a> are incomplete pending reclassification of documents from group <a href="#">H10H 20/01</a> . All groups listed in this Warning should be considered in order to perform a complete search.	20/0165	. . . . {for recrystallisation}
		20/017	. . . {Etching}
		20/018	. . . {Bonding of wafers}
			<b>WARNING</b> Group <a href="#">H10H 20/018</a> is impacted by reclassification into group <a href="#">H10H 20/019</a> . Groups <a href="#">H10H 20/018</a> and <a href="#">H10H 20/019</a> should be considered in order to perform a complete search.
20/012	. . . {having light-emitting regions comprising only Group II-IV materials}	20/019	. . . {Removal of at least a part of a substrate on which semiconductor layers have been formed}
20/0125	. . . . {with a substrate not being Group II-VI materials}		<b>WARNING</b> Group <a href="#">H10H 20/019</a> is incomplete pending reclassification of documents from group <a href="#">H10H 20/018</a> . Groups <a href="#">H10H 20/018</a> and <a href="#">H10H 20/019</a> should be considered in order to perform a complete search.
20/013	. . . {having light-emitting regions comprising only Group III-V materials}		
20/0133	. . . . {with a substrate not being Group III-V materials}		
20/01335	. . . . . {the light-emitting regions comprising nitride materials}		
20/0137	. . . . . {the light-emitting regions comprising nitride materials}		

20/021 . . {Singulating, e.g. dicing}

**WARNING**

Group [H10H 20/021](#) is incomplete pending reclassification of documents from group [H10H 20/01](#).

Groups [H10H 20/01](#) and [H10H 20/021](#) should be considered in order to perform a complete search.

20/032 . . {of electrodes}

**WARNING**

Group [H10H 20/032](#) is incomplete pending reclassification of documents from group [H10H 20/01](#).

Group [H10H 20/032](#) is also impacted by reclassification into group [H10H 29/032](#).

Groups [H10H 20/01](#), [H10H 20/032](#) and [H10H 29/032](#) should be considered in order to perform a complete search.

20/034 . . {of coatings}

**WARNING**

Group [H10H 20/034](#) is incomplete pending reclassification of documents from group [H10H 20/01](#).

Group [H10H 20/034](#) is also impacted by reclassification into group [H10H 29/034](#).

Groups [H10H 20/01](#), [H10H 20/034](#) and [H10H 29/034](#) should be considered in order to perform a complete search.

20/036 . . {of packages}

**WARNING**

Group [H10H 20/036](#) is incomplete pending reclassification of documents from group [H10H 20/01](#).

Group [H10H 20/036](#) is also impacted by reclassification into group [H10H 29/036](#).

Groups [H10H 20/01](#), [H10H 20/036](#) and [H10H 29/036](#) should be considered in order to perform a complete search.

20/0361 . . . {of wavelength conversion means}

**WARNING**

Group [H10H 20/0361](#) is impacted by reclassification into group [H10H 29/0361](#).

Groups [H10H 20/0361](#) and [H10H 29/0361](#) should be considered in order to perform a complete search.

20/0362 . . . {of encapsulations}

**WARNING**

Group [H10H 20/0362](#) is incomplete pending reclassification of documents from group [H10H 20/01](#).

Group [H10H 20/0362](#) is also impacted by reclassification into group [H10H 29/0362](#).

Groups [H10H 20/01](#), [H10H 20/0362](#) and [H10H 29/0362](#) should be considered in order to perform a complete search.

20/0363 . . . {of optical field-shaping means}

**WARNING**

Group [H10H 20/0363](#) is incomplete pending reclassification of documents from group [H10H 20/01](#).

Group [H10H 20/0363](#) is also impacted by reclassification into group [H10H 29/0363](#).

Groups [H10H 20/01](#), [H10H 20/0363](#) and [H10H 29/0363](#) should be considered in order to perform a complete search.

20/0364 . . . {of interconnections}

**WARNING**

Group [H10H 20/0364](#) is incomplete pending reclassification of documents from group [H10H 20/01](#).

Group [H10H 20/0364](#) is also impacted by reclassification into group [H10H 29/0364](#).

Groups [H10H 20/01](#), [H10H 20/0364](#) and [H10H 29/0364](#) should be considered in order to perform a complete search.

20/0365 . . . {of means for heat extraction or cooling}

**WARNING**

Group [H10H 20/0365](#) is incomplete pending reclassification of documents from group [H10H 20/01](#).

Group [H10H 20/0365](#) is also impacted by reclassification into group [H10H 29/0365](#).

Groups [H10H 20/01](#), [H10H 20/0365](#) and [H10H 29/0365](#) should be considered in order to perform a complete search.

20/042 . {Superluminescent diodes}

20/052 . {Light-emitting semiconductor devices having Schottky type light-emitting regions; Light emitting semiconductor devices having Metal-Insulator-Semiconductor type light-emitting regions}

20/062 . {Light-emitting semiconductor devices having field effect type light-emitting regions, e.g. light-emitting High-Electron Mobility Transistors}

20/80 . Constructional details

**WARNING**

Group [H10H 20/80](#) is impacted by reclassification into groups [H10H 29/80](#), [H10H 29/8517](#) and [H10H 29/8552](#).

All groups listed in this Warning should be considered in order to perform a complete search.

20/81	. . Bodies	20/817	. . . characterised by the crystal structures or orientations, e.g. polycrystalline, amorphous or porous
20/811	. . . having quantum effect structures or superlattices, e.g. tunnel junctions	20/818	. . . . within the light-emitting regions
<b><u>WARNING</u></b>		<b><u>NOTE</u></b>	
Group <a href="#">H10H 20/811</a> is impacted by reclassification into group <a href="#">H10H 20/812</a> .		When classifying in this group, classification is also made in group <a href="#">H10H 20/822</a> in order to identify the chemical composition of the light-emitting region.	
Groups <a href="#">H10H 20/811</a> and <a href="#">H10H 20/812</a> should be considered in order to perform a complete search.			
20/812	. . . . within the light-emitting regions, e.g. having quantum confinement structures	20/819	. . . characterised by their shape, e.g. curved or truncated substrates
<b><u>WARNING</u></b>		20/82	. . . . Roughened surfaces, e.g. at the interface between epitaxial layers
Group <a href="#">H10H 20/812</a> is incomplete pending reclassification of documents from group <a href="#">H10H 20/811</a> .		20/821	. . . . of the light-emitting regions, e.g. non-planar junctions
Groups <a href="#">H10H 20/811</a> and <a href="#">H10H 20/812</a> should be considered in order to perform a complete search.		20/8215	. . . {characterised by crystalline imperfections, e.g. dislocations; characterised by the distribution of dopants, e.g. delta-doping}
20/813	. . . having a plurality of light-emitting regions, e.g. multi-junction LEDs or light-emitting devices having photoluminescent regions within the bodies	20/822	. . . Materials of the light-emitting regions
<b><u>WARNING</u></b>		<b><u>NOTE</u></b>	
Group <a href="#">H10H 20/813</a> is impacted by reclassification into groups <a href="#">H10H 20/8131</a> , <a href="#">H10H 20/8132</a> and <a href="#">H10H 20/8133</a> .		When classifying in this group, constituents of a material are considered irrespective of any dopants or other impurities.	
All groups listed in this Warning should be considered in order to perform a complete search.			
20/8131	. . . . {Stacked light-emitting regions}	20/823	. . . . comprising only Group II-VI materials, e.g. ZnO
<b><u>WARNING</u></b>		20/8232	. . . . . {characterised by the dopants}
Group <a href="#">H10H 20/8131</a> is incomplete pending reclassification of documents from group <a href="#">H10H 20/813</a> .		20/824	. . . . comprising only Group III-V materials, e.g. GaP
Groups <a href="#">H10H 20/813</a> and <a href="#">H10H 20/8131</a> should be considered in order to perform a complete search.		20/8242	. . . . . {characterised by the dopants}
20/8132	. . . . {Laterally arranged light-emitting regions, e.g. nano-rods}	20/825	. . . . . containing nitrogen, e.g. GaN
<b><u>WARNING</u></b>		20/8252	. . . . . {characterised by the dopants}
Groups <a href="#">H10H 20/8132</a> and <a href="#">H10H 20/8133</a> are incomplete pending reclassification of documents from group <a href="#">H10H 20/813</a> .		20/826	. . . . comprising only Group IV materials
Groups <a href="#">H10H 20/813</a> , <a href="#">H10H 20/8132</a> and <a href="#">H10H 20/8133</a> should be considered in order to perform a complete search.		<b><u>WARNING</u></b>	
20/8133	. . . . . {having core-shell structures}	Group <a href="#">H10H 20/826</a> is impacted by reclassification into group <a href="#">H10H 20/8264</a> .	
20/814	. . . having reflecting means, e.g. semiconductor Bragg reflectors	Groups <a href="#">H10H 20/826</a> and <a href="#">H10H 20/8264</a> should be considered in order to perform a complete search.	
20/8142	. . . . {forming resonant cavity structures}		
20/815	. . . having stress relaxation structures, e.g. buffer layers	20/8262	. . . . . {characterised by the dopants}
20/816	. . . having carrier transport control structures, e.g. highly-doped semiconductor layers or current-blocking structures	20/8264	. . . . . {comprising polycrystalline, amorphous or porous Group IV materials}
20/8162	. . . . {Current-blocking structures}	<b><u>WARNING</u></b>	
		Group <a href="#">H10H 20/8264</a> is incomplete pending reclassification of documents from group <a href="#">H10H 20/826</a> .	
		Groups <a href="#">H10H 20/826</a> and <a href="#">H10H 20/8264</a> should be considered in order to perform a complete search.	
20/83	. . Electrodes		
		<b><u>WARNING</u></b>	
		Group <a href="#">H10H 20/83</a> is impacted by reclassification into group <a href="#">H10H 29/832</a> .	
		Groups <a href="#">H10H 20/83</a> and <a href="#">H10H 29/832</a> should be considered in order to perform a complete search.	

20/831 . . . characterised by their shape

**WARNING**

Group [H10H 20/831](#) is impacted by reclassification into group [H10H 29/8321](#).  
Groups [H10H 20/831](#) and [H10H 29/8321](#) should be considered in order to perform a complete search.

20/8312 . . . . {extending at least partially through the bodies}

20/8314 . . . . {extending at least partially onto an outer side surface of the bodies}

20/8316 . . . . {Multi-layer electrodes comprising at least one discontinuous layer}

20/832 . . . characterised by their material

**WARNING**

Group [H10H 20/832](#) is impacted by reclassification into group [H10H 29/8322](#).  
Groups [H10H 20/832](#) and [H10H 29/8322](#) should be considered in order to perform a complete search.

20/833 . . . . Transparent materials

**WARNING**

Group [H10H 20/833](#) is impacted by reclassification into group [H10H 29/8323](#).  
Groups [H10H 20/833](#) and [H10H 29/8323](#) should be considered in order to perform a complete search.

20/835 . . . . {Reflective materials}

**WARNING**

Group [H10H 20/835](#) is impacted by reclassification into group [H10H 29/8325](#).  
Groups [H10H 20/835](#) and [H10H 29/8325](#) should be considered in order to perform a complete search.

20/84 . . Coatings, e.g. passivation layers or antireflective coatings

**WARNING**

Group [H10H 20/84](#) is impacted by reclassification into groups [H10H 29/842](#), [H10H 29/8517](#) and [H10H 29/8552](#).  
All groups listed in this Warning should be considered in order to perform a complete search.

20/841 . . . Reflective coatings, e.g. dielectric Bragg reflectors

**WARNING**

Group [H10H 20/841](#) is impacted by reclassification into group [H10H 29/8421](#).  
Groups [H10H 20/841](#) and [H10H 29/8421](#) should be considered in order to perform a complete search.

20/85 . . Packages

**WARNING**

Group [H10H 20/85](#) is impacted by reclassification into groups [H10H 20/8504](#), [H10H 20/8508](#), [H10H 29/85](#), [H10H 29/8508](#), [H10H 29/8517](#) and [H10H 29/8552](#).

All groups listed in this Warning should be considered in order to perform a complete search.

20/8502 . . . {Surface mount technology [SMT] type packages}

**WARNING**

Group [H10H 20/8502](#) is incomplete pending reclassification of documents from group [H10H 20/8506](#).

Groups [H10H 20/8506](#) and [H10H 20/8502](#) should be considered in order to perform a complete search.

20/8504 . . . {Chip-scale type packages}

**WARNING**

Group [H10H 20/8504](#) is incomplete pending reclassification of documents from groups [H10H 20/85](#) and [H10H 20/8506](#).

Groups [H10H 20/85](#), [H10H 20/8506](#) and [H10H 20/8504](#) should be considered in order to perform a complete search.

20/8506 . . . {Containers}

**WARNING**

Group [H10H 20/8506](#) is impacted by reclassification into groups [H10H 20/8502](#), [H10H 20/8504](#), [H10H 20/8508](#), [H10H 29/8506](#) and [H10H 29/8508](#).

All groups listed in this Warning should be considered in order to perform a complete search.

20/8508 . . . {Package substrates, e.g. submounts}

**WARNING**

Group [H10H 20/8508](#) is incomplete pending reclassification of documents from groups [H10H 20/85](#) and [H10H 20/8506](#).

Groups [H10H 20/85](#), [H10H 20/8506](#) and [H10H 20/8508](#) should be considered in order to perform a complete search.

20/851 . . . Wavelength conversion means

**WARNING**

Group [H10H 20/851](#) is impacted by reclassification into group [H10H 29/851](#).

Groups [H10H 20/851](#) and [H10H 29/851](#) should be considered in order to perform a complete search.

20/8511 . . . . {characterised by their material, e.g. binder}

**WARNING**

Group [H10H 20/8511](#) is impacted by reclassification into group [H10H 29/8511](#).  
Groups [H10H 20/8511](#) and [H10H 29/8511](#) should be considered in order to perform a complete search.

20/8512 . . . . . {Wavelength conversion materials}

**WARNING**

Group [H10H 20/8512](#) is impacted by reclassification into group [H10H 29/8512](#).  
Groups [H10H 20/8512](#) and [H10H 29/8512](#) should be considered in order to perform a complete search.

20/8513 . . . . . {having two or more wavelength conversion materials}

**WARNING**

Group [H10H 20/8513](#) is impacted by reclassification into group [H10H 29/8513](#).  
Groups [H10H 20/8513](#) and [H10H 29/8513](#) should be considered in order to perform a complete search.

20/8514 . . . . {characterised by their shape, e.g. plate or foil}

**WARNING**

Group [H10H 20/8514](#) is impacted by reclassification into group [H10H 29/8514](#).  
Groups [H10H 20/8514](#) and [H10H 29/8514](#) should be considered in order to perform a complete search.

20/8515 . . . . {not being in contact with the bodies}

**WARNING**

Group [H10H 20/8515](#) is impacted by reclassification into group [H10H 29/8515](#).  
Groups [H10H 20/8515](#) and [H10H 29/8515](#) should be considered in order to perform a complete search.

20/8516 . . . . {having a non-uniform spatial arrangement or non-uniform concentration, e.g. patterned wavelength conversion layer or wavelength conversion layer with a concentration gradient}

**WARNING**

Group [H10H 20/8516](#) is impacted by reclassification into group [H10H 29/8516](#).  
Groups [H10H 20/8516](#) and [H10H 29/8516](#) should be considered in order to perform a complete search.

20/852 . . . Encapsulations

**WARNING**

Group [H10H 20/852](#) is impacted by reclassification into group [H10H 29/852](#).  
Groups [H10H 20/852](#) and [H10H 29/852](#) should be considered in order to perform a complete search.

20/853 . . . . characterised by their shape

**WARNING**

Group [H10H 20/853](#) is impacted by reclassification into group [H10H 29/853](#).  
Groups [H10H 20/853](#) and [H10H 29/853](#) should be considered in order to perform a complete search.

20/854 . . . . characterised by their material, e.g. epoxy or silicone resins

**WARNING**

Group [H10H 20/854](#) is impacted by reclassification into group [H10H 29/854](#).  
Groups [H10H 20/854](#) and [H10H 29/854](#) should be considered in order to perform a complete search.

20/855 . . . Optical field-shaping means, e.g. lenses

**WARNING**

Group [H10H 20/855](#) is impacted by reclassification into groups [H10H 29/855](#) and [H10H 29/8552](#).  
Groups [H10H 20/855](#), [H10H 29/855](#) and [H10H 29/8552](#) should be considered in order to perform a complete search.

20/856 . . . . Reflecting means

**WARNING**

Group [H10H 20/856](#) is impacted by reclassification into group [H10H 29/856](#).  
Groups [H10H 20/856](#) and [H10H 29/856](#) should be considered in order to perform a complete search.

20/857 . . . Interconnections, e.g. lead-frames, bond wires or solder balls

**WARNING**

Group [H10H 20/857](#) is impacted by reclassification into groups [H10H 29/49](#), [H10H 29/857](#), [H10H 29/922](#) and [H10H 29/942](#).

All groups listed in this Warning should be considered in order to perform a complete search.

20/858 . . . Means for heat extraction or cooling

**WARNING**

Group [H10H 20/858](#) is impacted by reclassification into group [H10H 29/858](#).  
Groups [H10H 20/858](#) and [H10H 29/858](#) should be considered in order to perform a complete search.

20/8581 . . . . {characterised by their material}

**WARNING**

Group [H10H 20/8581](#) is impacted by reclassification into group [H10H 29/8581](#).  
Groups [H10H 20/8581](#) and [H10H 29/8581](#) should be considered in order to perform a complete search.

20/8582 . . . . {characterised by their shape}

**WARNING**

Group [H10H 20/8582](#) is impacted by reclassification into group [H10H 29/8582](#).  
Groups [H10H 20/8582](#) and [H10H 29/8582](#) should be considered in order to perform a complete search.

20/8583 . . . . {not being in contact with the bodies}

**WARNING**

Group [H10H 20/8583](#) is impacted by reclassification into group [H10H 29/8583](#).  
Groups [H10H 20/8583](#) and [H10H 29/8583](#) should be considered in order to perform a complete search.

20/8584 . . . . {electrically controlled, e.g. Peltier elements}

**WARNING**

Group [H10H 20/8584](#) is impacted by reclassification into group [H10H 29/8584](#).  
Groups [H10H 20/8584](#) and [H10H 29/8584](#) should be considered in order to perform a complete search.

20/8585 . . . . {being an interconnection}

**WARNING**

Group [H10H 20/8585](#) is impacted by reclassification into group [H10H 29/8585](#).  
Groups [H10H 20/8585](#) and [H10H 29/8585](#) should be considered in order to perform a complete search.

20/8586 . . . . {comprising fluids, e.g. heat-pipes}

**WARNING**

Group [H10H 20/8586](#) is impacted by reclassification into group [H10H 29/8586](#).  
Groups [H10H 20/8586](#) and [H10H 29/8586](#) should be considered in order to perform a complete search.

20/862 . . {Resonant cavity structures (formed by reflecting means in the bodies [H10H 20/8142](#))}

**WARNING**

Group [H10H 20/862](#) is impacted by reclassification into group [H10H 29/862](#).  
Groups [H10H 20/862](#) and [H10H 29/862](#) should be considered in order to perform a complete search.

20/872 . . {Periodic patterns for optical field-shaping, e.g. photonic bandgap structures}

**WARNING**

Group [H10H 20/872](#) is impacted by reclassification into group [H10H 29/872](#).  
Groups [H10H 20/872](#) and [H10H 29/872](#) should be considered in order to perform a complete search.

20/882 . . {Scattering means ([H10H 20/82](#) takes precedence)}

**WARNING**

Group [H10H 20/882](#) is impacted by reclassification into group [H10H 29/882](#).  
Groups [H10H 20/882](#) and [H10H 29/882](#) should be considered in order to perform a complete search.

29/00 **Integrated devices, or assemblies of multiple devices, comprising at least one light-emitting semiconductor element covered by group [H10H 20/00](#)**

29/01 . Manufacture or treatment

**WARNING**

Groups [H10H 29/01](#), [H10H 29/012](#), [H10H 29/02](#) and [H10H 29/03](#) are incomplete pending reclassification of documents from group [H10H 20/01](#).

All groups listed in this Warning should be considered in order to perform a complete search.

29/011 . . {of integrated devices comprising at least one light-emitting semiconductor component covered by group [H10H 20/00](#)}

**WARNING**

Group [H10H 29/011](#) is incomplete pending reclassification of documents from groups [H10H 20/01](#), [H10H 29/10](#), [H10H 29/14](#) and [H10H 29/142](#).

All groups listed in this Warning should be considered in order to perform a complete search.

29/012 . . {of active-matrix LED displays}

29/02 . . using pick-and-place processes

29/03 . . using mass transfer of LEDs, e.g. by using liquid suspensions

29/032 . . {of electrodes}

**WARNING**

Group [H10H 29/032](#) is incomplete pending reclassification of documents from groups [H10H 20/01](#) and [H10H 20/032](#).

Groups [H10H 20/01](#), [H10H 20/032](#) and [H10H 29/032](#) should be considered in order to perform a complete search.



29/034 . . {of coatings}

**WARNING**

Group [H10H 29/034](#) is incomplete pending reclassification of documents from groups [H10H 20/01](#) and [H10H 20/034](#).

Groups [H10H 20/01](#), [H10H 20/034](#) and [H10H 29/034](#) should be considered in order to perform a complete search.

29/036 . . {of packages}

**WARNING**

Group [H10H 29/036](#) is incomplete pending reclassification of documents from groups [H10H 20/01](#) and [H10H 20/036](#).

Groups [H10H 20/01](#), [H10H 20/036](#) and [H10H 29/036](#) should be considered in order to perform a complete search.

29/0361 . . . {of wavelength conversion means}

**WARNING**

Group [H10H 29/0361](#) is incomplete pending reclassification of documents from groups [H10H 20/01](#) and [H10H 20/0361](#).

Groups [H10H 20/01](#), [H10H 20/0361](#) and [H10H 29/0361](#) should be considered in order to perform a complete search.

29/0362 . . . {of encapsulations}

**WARNING**

Group [H10H 29/0362](#) is incomplete pending reclassification of documents from groups [H10H 20/01](#) and [H10H 20/0362](#).

Groups [H10H 20/01](#), [H10H 20/0362](#) and [H10H 29/0362](#) should be considered in order to perform a complete search.

29/0363 . . . {of optical field-shaping means}

**WARNING**

Group [H10H 29/0363](#) is incomplete pending reclassification of documents from groups [H10H 20/01](#) and [H10H 20/0363](#).

Groups [H10H 20/01](#), [H10H 20/0363](#) and [H10H 29/0363](#) should be considered in order to perform a complete search.

29/0364 . . . {of interconnections}

**WARNING**

Group [H10H 29/0364](#) is incomplete pending reclassification of documents from groups [H10H 20/01](#) and [H10H 20/0364](#).

Groups [H10H 20/01](#), [H10H 20/0364](#) and [H10H 29/0364](#) should be considered in order to perform a complete search.

29/0365 . . . {of means for heat extraction or cooling}

**WARNING**

Group [H10H 29/0365](#) is incomplete pending reclassification of documents from groups [H10H 20/01](#) and [H10H 20/0365](#).

Groups [H10H 20/01](#), [H10H 20/0365](#) and [H10H 29/0365](#) should be considered in order to perform a complete search.

29/10 . Integrated devices comprising at least one light-emitting semiconductor component covered by group [H10H 20/00](#) (active-matrix LED displays [H10H 29/30](#))

**WARNING**

Group [H10H 29/10](#) is impacted by reclassification into group [H10H 29/011](#).

Groups [H10H 29/10](#) and [H10H 29/011](#) should be considered in order to perform a complete search.

29/14 . . comprising multiple light-emitting semiconductor components

**WARNING**

Group [H10H 29/14](#) is incomplete pending reclassification of documents from group [H10H 29/142](#).

Group [H10H 29/14](#) is also impacted by reclassification into groups [H10H 29/011](#), [H10H 29/922](#), [H10H 29/942](#) and [H10H 29/962](#).

All groups listed in this Warning should be considered in order to perform a complete search.

29/142 . . . {Two-dimensional arrangements, e.g. asymmetric LED layout}

**WARNING**

Group [H10H 29/142](#) is impacted by reclassification into groups [H10H 29/011](#), [H10H 29/14](#), [H10H 29/30](#), [H10H 29/32](#), [H10H 29/34](#), [H10H 29/345](#), [H10H 29/352](#), [H10H 29/362](#), [H10H 29/37](#), [H10H 29/39](#), [H10H 29/41](#), [H10H 29/45](#), [H10H 29/49](#), [H10H 29/8517](#), [H10H 29/8552](#), [H10H 29/922](#), [H10H 29/942](#) and [H10H 29/962](#).

All groups listed in this Warning should be considered in order to perform a complete search.

29/20 . Assemblies of multiple devices comprising at least one light-emitting semiconductor device covered by group [H10H 20/00](#) (active-matrix LED displays [H10H 29/30](#))

**WARNING**

Groups [H10H 29/20](#) and [H10H 29/24](#) are incomplete pending reclassification of documents from group [H10W 90/00](#).

Groups [H10W 90/00](#), [H10H 29/20](#) and [H10H 29/24](#) should be considered in order to perform a complete search.

- 29/24 . . comprising multiple light-emitting semiconductor devices
- 29/30 . Active-matrix LED displays

**NOTE**

This group covers active-matrix displays where the emphasis of the invention concerns the LEDs, the layers closely related to the LEDs or constructional details closely related to the LEDs, e.g. interconnections between the LEDs or their encapsulations.

**WARNING**

Groups [H10H 29/30](#), [H10H 29/32](#), [H10H 29/34](#), [H10H 29/345](#), [H10H 29/352](#), [H10H 29/362](#), [H10H 29/37](#), [H10H 29/39](#), [H10H 29/41](#), [H10H 29/45](#) and [H10H 29/49](#) are incomplete pending reclassification of documents from group [H10W 90/00](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 29/32 . . characterised by the geometry or arrangement of elements within a subpixel, e.g. arrangement of the transistor within its RGB subpixel
- 29/34 . . characterised by the geometry or arrangement of subpixels within a pixel, e.g. relative disposition of the RGB subpixels
- 29/345 . . . {the area of the subpixels being different}
- 29/352 . . {characterised by differences in geometry or arrangement of elements, subpixels or pixels in different regions of the display, e.g. at the central and peripheral regions}
- 29/362 . . {comprising more than three subpixels, e.g. red-green-blue-white [RGBW]}
- 29/37 . . Pixel-defining structures, e.g. banks between the LEDs
- 29/39 . . Connection of the pixel electrodes to the driving transistors
- 29/41 . . Insulating layers formed between the driving transistors and the LEDs
- 29/45 . . comprising two substrates, each having active devices thereon, e.g. displays comprising LED arrays and driving circuitry on different substrates
- 29/49 . . Interconnections, e.g. wiring lines or terminals (connection of the pixel electrodes to the driving transistors [H10H 29/39](#))

**WARNING**

Group [H10H 29/49](#) is incomplete pending reclassification of documents from groups [H10H 20/857](#) and [H10H 29/142](#).

Groups [H10H 20/857](#), [H10H 29/142](#) and [H10H 29/49](#) should be considered in order to perform a complete search.

- 29/80 . Constructional details

**NOTE**

Classification is made in group [H10H 29/80](#) when the constructional detail is relevant to integrated devices or assemblies comprising multiple devices. When the constructional

detail is relevant to individual devices, then classification is made in group [H10H 20/80](#).

**WARNING**

Group [H10H 29/80](#) is incomplete pending reclassification of documents from group [H10H 20/80](#).

Groups [H10H 20/80](#) and [H10H 29/80](#) should be considered in order to perform a complete search.

- 29/832 . . {Electrodes}

**WARNING**

Group [H10H 29/832](#) is incomplete pending reclassification of documents from group [H10H 20/83](#).

Groups [H10H 20/83](#) and [H10H 29/832](#) should be considered in order to perform a complete search.

- 29/8321 . . . {characterised by their shape}

**WARNING**

Group [H10H 29/8321](#) is incomplete pending reclassification of documents from group [H10H 20/831](#).

Groups [H10H 20/831](#) and [H10H 29/8321](#) should be considered in order to perform a complete search.

- 29/8322 . . . {characterised by their materials}

**WARNING**

Group [H10H 29/8322](#) is incomplete pending reclassification of documents from group [H10H 20/832](#).

Groups [H10H 20/832](#) and [H10H 29/8322](#) should be considered in order to perform a complete search.

- 29/8323 . . . . {Transparent materials}

**WARNING**

Group [H10H 29/8323](#) is incomplete pending reclassification of documents from group [H10H 20/833](#).

Groups [H10H 20/833](#) and [H10H 29/8323](#) should be considered in order to perform a complete search.

- 29/8325 . . . . {Reflective materials}

**WARNING**

Group [H10H 29/8325](#) is incomplete pending reclassification of documents from group [H10H 20/835](#).

Groups [H10H 20/835](#) and [H10H 29/8325](#) should be considered in order to perform a complete search.



- 29/842 . . . {Coatings, e.g. passivation layers or antireflective coatings}

**WARNING**

Group [H10H 29/842](#) is incomplete pending reclassification of documents from group [H10H 20/84](#).

Groups [H10H 20/84](#) and [H10H 29/842](#) should be considered in order to perform a complete search.

- 29/8421 . . . {Reflective coatings, e.g. dielectric Bragg reflectors}

**WARNING**

Group [H10H 29/8421](#) is incomplete pending reclassification of documents from group [H10H 20/841](#).

Groups [H10H 20/841](#) and [H10H 29/8421](#) should be considered in order to perform a complete search.

- 29/85 . . Packages

**WARNING**

Group [H10H 29/85](#) is incomplete pending reclassification of documents from group [H10H 20/85](#).

Groups [H10H 20/85](#) and [H10H 29/85](#) should be considered in order to perform a complete search.

- 29/8506 . . . {Containers}

**WARNING**

Group [H10H 29/8506](#) is incomplete pending reclassification of documents from group [H10H 20/8506](#).

Groups [H10H 20/8506](#) and [H10H 29/8506](#) should be considered in order to perform a complete search.

- 29/8508 . . . {Package substrates, e.g. submounts}

**WARNING**

Group [H10H 29/8508](#) is incomplete pending reclassification of documents from groups [H10H 20/85](#) and [H10H 20/8506](#).

Groups [H10H 20/85](#), [H10H 20/8506](#) and [H10H 29/8508](#) should be considered in order to perform a complete search.

- 29/851 . . . Wavelength conversion means

**WARNING**

Group [H10H 29/851](#) is incomplete pending reclassification of documents from group [H10H 20/851](#).

Groups [H10H 20/851](#) and [H10H 29/851](#) should be considered in order to perform a complete search.

- 29/8511 . . . . {characterised by their material, e.g. binder}

**WARNING**

Group [H10H 29/8511](#) is incomplete pending reclassification of documents from group [H10H 20/8511](#).

Groups [H10H 20/8511](#) and [H10H 29/8511](#) should be considered in order to perform a complete search.

- 29/8512 . . . . . {Wavelength conversion materials}

**WARNING**

Group [H10H 29/8512](#) is incomplete pending reclassification of documents from group [H10H 20/8512](#).

Groups [H10H 20/8512](#) and [H10H 29/8512](#) should be considered in order to perform a complete search.

- 29/8513 . . . . . {having two or more wavelength conversion materials}

**WARNING**

Group [H10H 29/8513](#) is incomplete pending reclassification of documents from group [H10H 20/8513](#).

Groups [H10H 20/8513](#) and [H10H 29/8513](#) should be considered in order to perform a complete search.

- 29/8514 . . . . {characterised by their shape, e.g. plate or foil}

**WARNING**

Group [H10H 29/8514](#) is incomplete pending reclassification of documents from group [H10H 20/8514](#).

Groups [H10H 20/8514](#) and [H10H 29/8514](#) should be considered in order to perform a complete search.

- 29/8515 . . . . {not being in contact with the bodies}

**WARNING**

Group [H10H 29/8515](#) is incomplete pending reclassification of documents from group [H10H 20/8515](#).

Groups [H10H 20/8515](#) and [H10H 29/8515](#) should be considered in order to perform a complete search.

- 29/8516 . . . . {having a non-uniform spatial arrangement or non-uniform concentration, e.g. patterned wavelength conversion layer, wavelength conversion layer with a concentration gradient}

#### **WARNING**

Group [H10H 29/8516](#) is incomplete pending reclassification of documents from group [H10H 20/8516](#).

Groups [H10H 20/8516](#) and [H10H 29/8516](#) should be considered in order to perform a complete search.

- 29/8517 . . . . {Colour filters}

#### **WARNING**

Group [H10H 29/8517](#) is incomplete pending reclassification of documents from groups [H10H 20/80](#), [H10H 20/84](#), [H10H 20/85](#) and [H10H 29/142](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 29/852 . . . . Encapsulations

#### **WARNING**

Group [H10H 29/852](#) is incomplete pending reclassification of documents from group [H10H 20/852](#).

Groups [H10H 20/852](#) and [H10H 29/852](#) should be considered in order to perform a complete search.

- 29/853 . . . . characterised by their shape

#### **WARNING**

Group [H10H 29/853](#) is incomplete pending reclassification of documents from group [H10H 20/853](#).

Groups [H10H 20/853](#) and [H10H 29/853](#) should be considered in order to perform a complete search.

- 29/854 . . . . characterised by their material, e.g. epoxy or silicone resins

#### **WARNING**

Group [H10H 29/854](#) is incomplete pending reclassification of documents from group [H10H 20/854](#).

Groups [H10H 20/854](#) and [H10H 29/854](#) should be considered in order to perform a complete search.

- 29/855 . . . . Optical field-shaping means, e.g. lenses

#### **WARNING**

Group [H10H 29/855](#) is incomplete pending reclassification of documents from group [H10H 20/855](#).

Groups [H10H 20/855](#) and [H10H 29/855](#) should be considered in order to perform a complete search.

- 29/8552 . . . . {Light absorbing arrangements, e.g. black matrix}

#### **WARNING**

Group [H10H 29/8552](#) is incomplete pending reclassification of documents from groups [H10H 20/80](#), [H10H 20/84](#), [H10H 20/85](#), [H10H 20/855](#) and [H10H 29/142](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 29/856 . . . . Reflecting means

#### **WARNING**

Group [H10H 29/856](#) is incomplete pending reclassification of documents from group [H10H 20/856](#).

Groups [H10H 20/856](#) and [H10H 29/856](#) should be considered in order to perform a complete search.

- 29/857 . . . . {Interconnections (of active-matrix LED displays [H10H 29/49](#))}

#### **WARNING**

Group [H10H 29/857](#) is incomplete pending reclassification of documents from group [H10H 20/857](#).

Groups [H10H 20/857](#) and [H10H 29/857](#) should be considered in order to perform a complete search.

- 29/858 . . . . {Means for heat extraction or cooling}

#### **WARNING**

Group [H10H 29/858](#) is incomplete pending reclassification of documents from group [H10H 20/858](#).

Groups [H10H 20/858](#) and [H10H 29/858](#) should be considered in order to perform a complete search.

- 29/8581 . . . . {characterised by their material}

#### **WARNING**

Group [H10H 29/8581](#) is incomplete pending reclassification of documents from group [H10H 20/8581](#).

Groups [H10H 20/8581](#) and [H10H 29/8581](#) should be considered in order to perform a complete search.

- 29/8582 . . . . {characterised by their shape}

#### **WARNING**

Group [H10H 29/8582](#) is incomplete pending reclassification of documents from group [H10H 20/8582](#).

Groups [H10H 20/8582](#) and [H10H 29/8582](#) should be considered in order to perform a complete search.

29/8583 . . . . {not being in contact with the bodies}

**WARNING**

Group [H10H 29/8583](#) is incomplete pending reclassification of documents from group [H10H 20/8583](#).

Groups [H10H 20/8583](#) and [H10H 29/8583](#) should be considered in order to perform a complete search.

29/8584 . . . . {electrically controlled, e.g. Peltier elements}

**WARNING**

Group [H10H 29/8584](#) is incomplete pending reclassification of documents from group [H10H 20/8584](#).

Groups [H10H 20/8584](#) and [H10H 29/8584](#) should be considered in order to perform a complete search.

29/8585 . . . . {being an interconnection}

**WARNING**

Group [H10H 29/8585](#) is incomplete pending reclassification of documents from group [H10H 20/8585](#).

Groups [H10H 20/8585](#) and [H10H 29/8585](#) should be considered in order to perform a complete search.

29/8586 . . . . {comprising fluids, e.g. heat-pipes}

**WARNING**

Group [H10H 29/8586](#) is incomplete pending reclassification of documents from group [H10H 20/8586](#).

Groups [H10H 20/8586](#) and [H10H 29/8586](#) should be considered in order to perform a complete search.

29/862 . . {Resonant cavity structures}

**WARNING**

Group [H10H 29/862](#) is incomplete pending reclassification of documents from group [H10H 20/862](#).

Groups [H10H 20/862](#) and [H10H 29/862](#) should be considered in order to perform a complete search.

29/872 . . {Periodic patterns for optical field-shaping, e.g. photonic bandgap structures}

**WARNING**

Group [H10H 29/872](#) is incomplete pending reclassification of documents from group [H10H 20/872](#).

Groups [H10H 20/872](#) and [H10H 29/872](#) should be considered in order to perform a complete search.

29/882 . . {Scattering means}

**WARNING**

Group [H10H 29/882](#) is incomplete pending reclassification of documents from group [H10H 20/882](#).

Groups [H10H 20/882](#) and [H10H 29/882](#) should be considered in order to perform a complete search.

29/922 . . {Parallel electrical configurations of multiple light-emitting semiconductor components or devices}

**WARNING**

Group [H10H 29/922](#) is incomplete pending reclassification of documents from groups [H10H 20/857](#), [H10H 29/14](#) and [H10H 29/142](#).

All groups listed in this Warning should be considered in order to perform a complete search.

29/942 . . {Serial electrical configurations of multiple light-emitting semiconductor components or devices}

**WARNING**

Group [H10H 29/942](#) is incomplete pending reclassification of documents from groups [H10H 20/857](#), [H10H 29/14](#) and [H10H 29/142](#).

All groups listed in this Warning should be considered in order to perform a complete search.

29/962 . . {Stacked configurations of light-emitting semiconductor components or devices, the components or devices emitting at different wavelengths}

**WARNING**

Group [H10H 29/962](#) is incomplete pending reclassification of documents from groups [H10H 29/14](#) and [H10H 29/142](#).

Groups [H10H 29/14](#), [H10H 29/142](#) and [H10H 29/962](#) should be considered in order to perform a complete search.

**99/00 Subject matter not provided for in other groups of this subclass**