



New connection on: : 29-10-2020 : 20:15:18 - Last disconnection on: : 29-10-2020 : 20:15:10

V 4.0.0.44803(LP,U,linux) (Rev:43856 2017-04-27 09:03:29 +0200#{D201820}) (RPM D201820)

Welcome to EPOQUE Rebuild under the Production Environment

[EPODOC: SS 13] (image_sensor) and substrate and (bond_pad) and layer and nanowell and silicon

Results in EPODOC 0

[SS 14] (image_sensor) and substrate and (bond_pad) and layer and nanowell

Results in EPODOC 0

[SS 15] (image_sensor) and substrate and (bond_pad) and layer and silicon

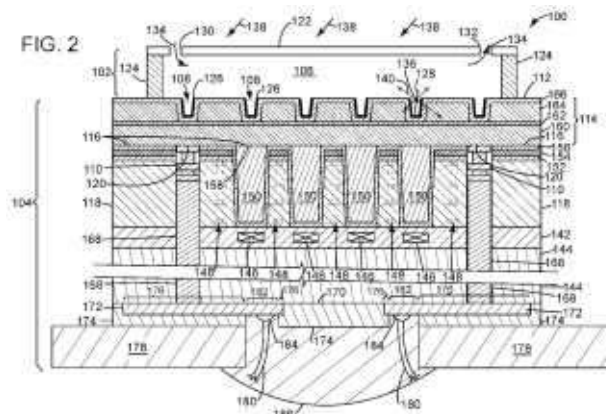
Results in EPODOC 10

[SS 16] ..li



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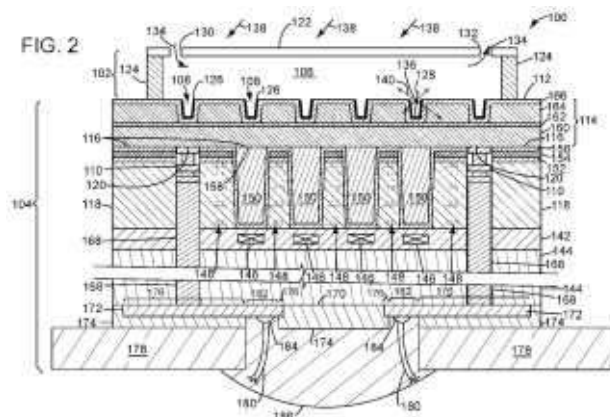
PN - [CR20190592](#) A 20200226
 PR - WO2017US68397 20171226
 AP - [CR20190000592](#) 20171226
 DT - I
 CCI - [G01N21/6454](#) ; [H01L23/481](#)
 CI - G01N21/6454 (EP)
 - H01L23/3135 (US)
 - H01L23/481 (EP)
 - H01L24/29 (US)
 - H01L24/45 (US)
 - H01L24/91 (US)
 - H01L25/0657 (US)
 CA - H01L2224/02372 (US)
 - H01L2225/06541 (US)
 PA - ILLUMINA INC [US]
 TI - SENSOR SYSTEM
 AB - A system includes an **image sensor** structure and a flow cell.
 The **image sensor** structure includes an image **layer**



disposed over a base **substrate**. A device stack is disposed over the image **layer**. A **bond pad** is disposed in the device stack. A passivation stack is disposed over the device stack and the **bond pad**. An array of nanowells is disposed in a top **layer** of the passivation stack. A through-silicon via (TSV) is in electrical contact with the **bond pad**. The TSV extends through the base **substrate**. A redistribution **layer** (RDL) is disposed on a bottom surface of the base **substrate**. The RDL is in electrical contact with the TSV. The flow cell is disposed upon the top **layer** of the passivation stack to form a flow channel therebetween. The flow channel is disposed over the array of nanowells and the **bond pad**.

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- PN - [CN111095558](#) A 20200501
- PR - WO2017US68397 20171226
- AP - [CN20178092760](#) 20171226
- DT - I
- CT - || STSE (A)
[CN103066081](#) A 20130424 [A]
 (OMNIVISION TECH INC)
 [A] 1-20
 * 全文 *;
[US2014084407](#) A1 20140327 [Y]
 (CHURCHWELL SCOTT [US], et al)
 [Y] 1-20
 * 说明书第[0006]- [0049]段及附图
 1-6 *;
[CN105006478](#) A 20151028 [A]
 (PERSONAL GENOMICS INC)
 [A] 1-20
 * 全文 *;
[CN105980832](#) A 20160928 [Y]
 (ILLUMINA INC)
 [Y] 1-20
 * 说明书第[0009]- [0178]段及附图
 1-12B *;
[CN106353285](#) A 20170125 [Y]
 (POWERCHIP TECH CORP)
 [Y] 5-6,14-15,19-20



* 说明书第[0006]- [0087]段及附图
1-12 *;

[CN106471621](#) A 20170301 [A]
(GOOGLE INC)

[A] 1-20

* 全文 *;

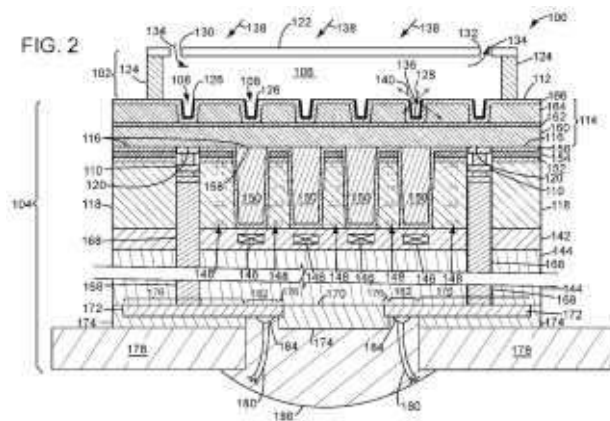
[CN107265391](#) A 20171020 [A] (NAT
CT ADVANCED PACKAGING CO LTD
NCAP CHINA)

[A] 1-20

* 全文 *

- CCI - [G01N21/6454](#) ; [H01L23/481](#)
- CI - G01N21/6454 (EP)
- H01L23/3135 (US)
- H01L23/481 (EP)
- H01L24/29 (US)
- H01L24/45 (US)
- H01L24/91 (US)
- H01L25/0657 (US)
- CA - H01L2224/02372 (US)
- H01L2225/06541 (US)
- PA - ILLUMINA INC
- TI - Sensor system
- AB - A system includes an **image sensor** structure and a flow cell. The **image sensor** structure includes an image **layer** disposed over a base **substrate**. A device stack is disposed over the image **layer**. A **bondpad** is disposed in the device stack. A passivation stack is disposed over the device stack and the **bondpad**. An array of nanowells is disposed in a top **layer** of the passivation stack. A through-**silicon** via (TSV) is in electrical contact with the **bond pad**. The TSV extends through the base **substrate**. A redistribution **layer** (RDL) is disposed on a bottom surface of the base **substrate**. The RDL is in electrical contact with the TSV. The flow cell is disposed upon the top **layer** of the passivation stack to form a flow channel therebetween. The flow channel is disposed over the array of nanowells and the **bond pad**.

- PN - [US2020066684](#) A1 20200227
- PR - WO2017US68397 20171226
- AP - [US201716609554](#) 20171226
- DT - **
- CCI - [G01N21/6454](#) ; [H01L23/481](#)
- CI - G01N21/6454 (EP)
 - H01L23/3135 (US)
 - H01L23/481 (EP)
 - H01L24/29 (US)
 - H01L24/45 (US)
 - H01L24/91 (US)
 - H01L25/0657 (US)
- CA - H01L2224/02372 (US)
 - H01L2225/06541 (US)
- PA - ILLUMINA INC [US]
- TI - SENSOR SYSTEM
- AB - A system includes an **image sensor** structure and a flow cell. The **image sensor** structure includes an **image layer** disposed over a base **substrate**. A device stack is disposed over the **image layer**. A **bond pad** is disposed in the device stack. A passivation stack is disposed over the device stack and the **bond pad**. An array of nanowells is disposed in a top **layer** of the passivation stack. A through-**silicon** via (TSV) is in electrical contact with the **bond pad**. The TSV extends through the base **substrate**. A redistribution **layer** (RDL) is disposed on a bottom surface of the base **substrate**. The RDL is in electrical contact with the TSV. The flow cell is disposed upon the top **layer** of the passivation stack to form a flow channel therebetween. The flow channel is disposed over the array of nanowells and the **bond pad**.



PN - [CA3066347](#) A1 20190704

PR - WO2017US68397 20171226

AP - [CA20173066347](#) 20171226

DT - I

CCI - [G01N21/6454](#) ; [H01L23/481](#)

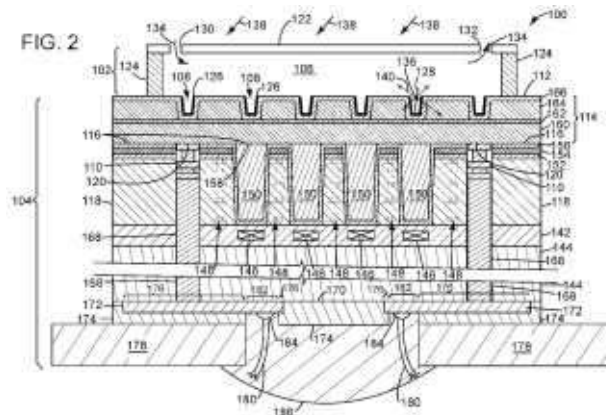
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- [H01L23/481](#) (EP)
- [H01L24/29](#) (US)
- [H01L24/45](#) (US)
- [H01L24/91](#) (US)
- [H01L25/0657](#) (US)

CA - [H01L2224/02372](#) (US)
- [H01L2225/06541](#) (US)

PA - ILLUMINA INC [US]

TI - SENSOR SYSTEM

AB - A system includes an **image sensor** structure and a flow cell. The **image sensor** structure includes an image **layer** disposed over a base **substrate**. A device stack is disposed over the image **layer**. A **bond pad** is disposed in the device stack. A passivation stack is disposed over the device stack and the **bond pad**. An array of nanowells is disposed in a top **layer** of the passivation stack. A through-silicon via (TSV) is in electrical contact with the **bond pad**. The TSV extends through the base **substrate**. A redistribution **layer** (RDL) is disposed on a bottom surface of the base **substrate**. The RDL is in electrical contact with the TSV. The flow cell is disposed upon the top **layer** of the passivation stack to form a flow channel therebetween. The flow channel is disposed over the array of nanowells and the **bond pad**.



PN - [AU2017444624](#) A1 20191219

PR - WO2017US68397 20171226

AP - [AU20170444624](#) 20171226

DT - I

CCI - [G01N21/6454](#) ; [H01L23/481](#)

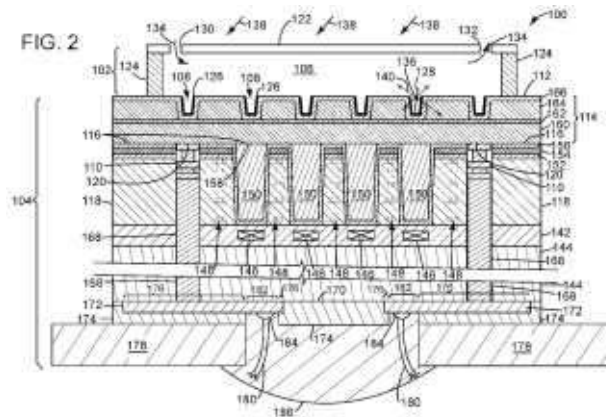
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- [H01L23/3135](#) (US)
- [H01L23/481](#) (EP)
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- [H01L24/45](#) (US)
- [H01L24/91](#) (US)
- [H01L25/0657](#) (US)

CA - [H01L2224/02372](#) (US)
- [H01L2225/06541](#) (US)

PA - ILLUMINA INC [US]

TI - Sensor system

AB - A system includes an **image sensor** structure and a flow cell. The **image sensor** structure includes an image **layer** disposed over a base **substrate**. A device stack is disposed over the image **layer**. A **bond pad** is disposed in the device stack. A passivation stack is disposed over the device stack and the **bond pad**. An array of nanowells is disposed in a top **layer** of the passivation stack. A through-silicon via (TSV) is in electrical contact with the **bond pad**. The TSV extends through the base **substrate**. A redistribution **layer** (RDL) is disposed on a bottom surface of the base **substrate**. The RDL is in electrical contact with the TSV. The flow cell is disposed upon the top **layer** of the passivation stack to form a flow channel therebetween. The flow channel is disposed over the array of nanowells and the **bond pad**.



PN - [TW201928333](#) A 20190716

PR - WO2017US68397 20171226

AP - [TW20180128608](#) 20180816

DT - I

CCI - [G01N21/6454](#) ; [H01L23/481](#)

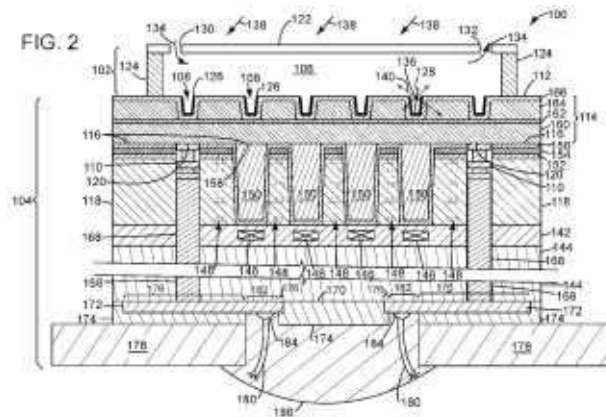
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- [H01L23/3135](#) (US)
- [H01L23/481](#) (EP)
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- [H01L24/45](#) (US)
- [H01L24/91](#) (US)
- [H01L25/0657](#) (US)

CA - [H01L2224/02372](#) (US)
- [H01L2225/06541](#) (US)

PA - ILLUMINA INC [US]

TI - Sensor system

AB - A system includes an **image sensor** structure and a flow cell. The **image sensor** structure includes an image **layer** disposed over a base **substrate**. A device stack is disposed over the image **layer**. A **bond pad** is disposed in the device stack. A passivation stack is disposed over the device stack and the **bond pad**. An array of nanowells is disposed in a top **layer** of the passivation stack. A through-silicon via (TSV) is in electrical contact with the **bond pad**. The TSV extends through the base **substrate**. A redistribution **layer** (RDL) is disposed on a bottom surface of the base **substrate**. The RDL is in electrical contact with the TSV. The flow cell is disposed upon the top **layer** of the passivation stack to form a flow channel therebetween. The flow channel is disposed over the array of nanowells and the **bond pad**.



PN - [WO2019132857](#) A1 20190704
 PR - WO2017US68397 20171226
 AP - [WO2017US68397](#) 20171226
 DT - *; Rep
 CT - |KR| ISR (A1)
 [US2016356715](#) A1 20161208 [A]
 (ZHONG CHENG FRANK [US], et al)
 [A] 1-20
 * See paragraphs [0006], [0038],
 [0089], [0100], [0108]; claim 6; and
 figures 7-11. *;
 [US2015311376](#) A1 20151029 [A] (YU
 TENG-CHIEN [TW])
 [A] 1-20
 * See paragraph [0013]; and figure 1.
 *;
 [US2007034777](#) A1 20070215 [A]
 (TUCKERMAN DAVID B [US], et al)
 [A] 1-20
 * See paragraph [0011]; and figure
 12. *;
 [US2015054106](#) A1 20150226 [A]
 (CHEN GANG [US], et al)
 [A] 1-20
 * See paragraph [0024]; and figure 3.
 *;
 [US2016254312](#) A1 20160901 [A] (LEE
 YOUNG SEEN [US], et al)
 [A] 1-20
 * See paragraph [0009]; and figure
 12. *

CCI - [G01N21/6454](#) ; [H01L23/481](#)
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 H01L23/3135 (US)
 H01L23/481 (EP)
 H01L24/29 (US)
 H01L24/45 (US)
 H01L24/91 (US)
 H01L25/0657 (US)
 CA - H01L2224/02372 (US)
 H01L2225/06541 (US)
 PA - ILLUMINA INC [US]
 TI - SENSOR SYSTEM
 AB - A system includes an **image**
 sensor structure and a flow cell.
 The **image sensor** structure
 includes an image **layer**
 disposed over a base **substrate**. A
 device stack is disposed over the

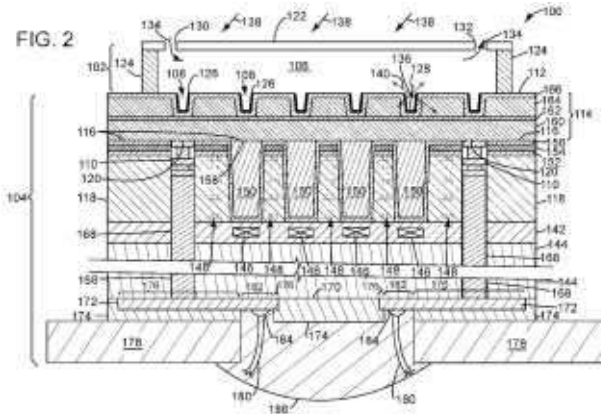
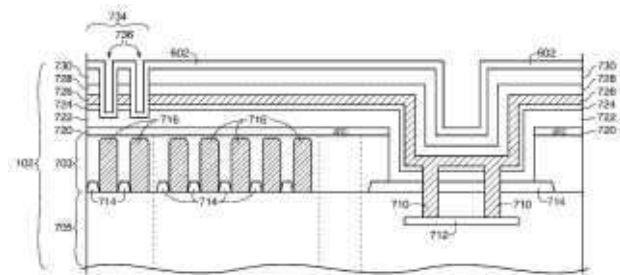


image **layer**. A **bond pad** is disposed in the device stack. A passivation stack is disposed over the device stack and the **bond pad**. An array of nanowells is disposed in a top **layer** of the passivation stack. A through-silicon via (TSV) is in electrical contact with the **bond pad**. The TSV extends through the base **substrate**. A redistribution **layer** (RDL) is disposed on a bottom surface of the base **substrate**. The RDL is in electrical contact with the TSV. The flow cell is disposed upon the top **layer** of the passivation stack to form a flow channel therebetween. The flow channel is disposed over the array of nanowells and the **bond pad**.

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- PN - [US2016300871](#) A1 20161013
- PNFP - US9818776 B2 20171114
- PR - US201514681940 20150408
- AP - [US201514681940](#) 20150408
- DT - *; Rep
- CT - *// R141 (A1)*
[US2014263962](#) A1 00000000 [];
[US2009243053](#) A1 00000000 []
// STSE (B2)
[US2005140772](#) A1 00000000 [];
[US2009243053](#) A1 00000000 [];
[US2013323875](#) A1 00000000 [];
[US2014263962](#) A1 00000000 []
- CCI - [H01L27/1446](#) ; [H01L27/14607](#) ;
[H01L27/14621](#) ; [H01L27/14623](#) ;
[H01L27/1463](#) ; [H01L27/14636](#) ;
[H01L27/1464](#) ; [H01L27/14645](#) ;
[H01L27/14685](#) ; [H01L27/14689](#)
- CI - H01L27/1446 (EP, US)
H01L27/14607 (EP, US)
H01L27/14621 (EP, US)
H01L27/14623 (EP, US)
H01L27/1463 (EP, US)
H01L27/14636 (EP, US)
H01L27/1464 (EP, US)
H01L27/14645 (EP, US)



	- H01L27/14685 (EP, US) - H01L27/14689 (EP, US)
PA	- (A1 B2) SEMICONDUCTOR COMPONENTS IND LLC [US]
TI	- (A1) METHODS FOR INTEGRATING BOND PAD STRUCTURES WITH LIGHT SHIELDING STRUCTURES ON AN IMAGE SENSOR - (B2) Integrating bond pad structures with light shielding structures on an image sensor
AB	- (A1 B2) An imaging system may include an image sensor that may be a backside illuminated (BSI) image sensor. The BSI sensor may be bonded to an inactive silicon substrate or bonded to an active silicon substrate like a digital signal processor (DSP). Through-oxide vias (TOVs) may be formed in the image sensor die. A bond pad region may be formed on a light shielding layer to facilitate coupling the light shield to a ground source or other power sources. Color filter housing structures may be formed over active image sensor pixels on the image sensor die. In- pixel grid structures may be integrated with the color filter housing structures to help reduce crosstalk. The light shielding layer may also be formed over reference image sensor pixels on the image sensor die. The TOVs, the in-pixel grid structures, and the light shielding structures may be formed simultaneously.

PN - [WO03019670](#) A1 20030306
 PR - FR20010011337 20010831
 AP - [WO2002FR02980](#) 20020830
 DT - *; Rep
 CT - |EP| ISR (A1)
 [US6257491](#) B1 20010710 [Y] (TAN
 CHINH [US], et al)
 [Y] 1,2,5,6
 * column 3, line 60 - column 14, line
 60; figures 5-8,14,15 *;
 [EP1094511](#) A2 20010425 [YA]
 (LUCENT TECHNOLOGIES INC [US])
 [Y] 1,2,5,6
 * column 1, line 21 - column 5, line
 18; figures 1,3-6 *
 [A] 4;
 [US5561295](#) A 19961001 [A]
 (JACKSEN NIELS F [US], et al)
 [A] 1,3
 * column 4, line 13 - column 9, line
 31; figures 7-9 *;
 [US5665607](#) A 19970909 [A]
 (KAWAMA YOSHITATSU [JP], et al)
 [A] 1,3
 * the whole document *;
 [US5144747](#) A 19920908 [A]
 (EICHELBERGER CHARLES W [US])
 [A] 1-6
 * the whole document *

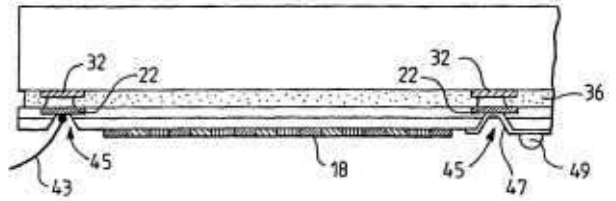
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 [H01L31/02162](#) ; [H01L31/1892](#)

 CCA - [H01L2224/05568](#) ;
 [H01L2224/05573](#) ;
 [H01L2224/16225](#) ;
 [H01L2224/32225](#) ;
 [H01L2224/73204](#) ; [H01L2224/81](#)

 CLC - [H01L2224/73204](#), [H01L2224/16225](#),
 [H01L2224/32225](#), [H01L2924/00](#) ,
 ADD

 CI - H01L27/14634 (EP)
 H01L27/1464 (EP)
 H01L27/14645 (EP)
 H01L27/14683 (EP)
 H01L31/02162 (EP)
 H01L31/1892 (EP)

 CA - H01L2224/05568 (EP)
 H01L2224/05573 (EP)
 H01L2224/16225 (EP)

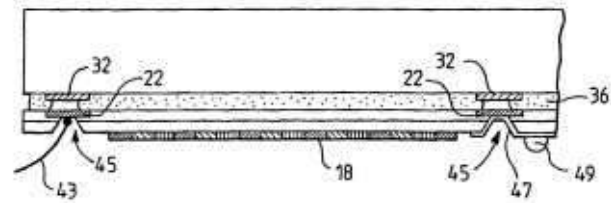


	- H01L2224/32225 (EP)
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	- H01L2224/81 (EP)
CL	- H01L2224/73204, H01L2224/16225, H01L2224/32225, H01L2924/00, ADD (EP)
PA	- ATMEL GRENOBLE SA [FR] ; POURQUIER ERIC [FR]; ROMMEVEAUX PHILIPPE [FR]
TI	- METHOD FOR MAKING A COLOUR IMAGE SENSOR WITH SUPPORT SUBSTRATE WELDED CONNECTION-ON-CONNECTION
AB	- The invention concerns a method for making colour image sensors for miniature cameras. The manufacturing method consists in: forming on the front surface of a silicon wafer (10) a series of active zones (ZA) comprising image detection circuits and corresponding each to a respective image sensor , each active zone being surrounded with input/output contact studs (22) ; transferring the wafer by its front surface against the front surface of a support substrate (20) ; eliminating the major part of the thickness of the silicon wafer, leaving on the substrate a fine silicon layer (30) comprising the image detection circuits. The method is characterised in that: it comprises the deposition followed by etching of colour filter layers (18) on the thus thinned silicon wafer; the substrate comprises bond pads (32) arranged in similar geometry as the connections of each active zone to be urged opposite said contact studs (22) during the transfer, connection balls (34) being provided to weld a respective bond pad (32) of the substrate (20) to a corresponding contact studs (22) of the silicon wafer (10); finally in cutting out the substrate into individual sensors after

deposition and etching of the
coloured filters.

10/10 © EPODOC / EPO

- PN - [FR2829292](#) A1 20030307
- PNFP - [FR2829292](#) B1 20040910
- PR - [FR20010011337](#) 20010831
- AP - [FR20010011337](#) 20010831
- DT - **
- CT - || STSE (A1)
[US6257491](#) B1 20010710 [Y] (TAN
 CHINH [US], et al)
 [Y] 1,2,5,6
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 60; figures 5-8,14,15 *;
[EP1094511](#) A2 20010425 [YA]
 (LUCENT TECHNOLOGIES INC [US])
 [Y] 1,2,5,6
 * column 1, line 21 - column 5, line
 18; figures 1,3-6 *
 [A] 4;
[US5561295](#) A 19961001 [A]
 (JACKSEN NIELS F [US], et al)
 [A] 1,3
 * column 4, line 13 - column 9, line
 31; figures 7-9 *;
[US5665607](#) A 19970909 [A]
 (KAWAMA YOSHITATSU [JP], et al)
 [A] 1,3
 * the whole document *;
[US5144747](#) A 19920908 [A]
 (EICHELBERGER CHARLES W [US])
 [A] 1-6
 * the whole document *
- CCI - [H01L27/14634](#) ; [H01L27/1464](#) ;
[H01L27/14645](#) ; [H01L27/14683](#) ;
[H01L31/02162](#) ; [H01L31/1892](#)
- CCA - [H01L2224/05568](#) ;
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- CLC - [H01L2224/73204](#), [H01L2224/16225](#),
[H01L2224/32225](#), [H01L2924/00](#) ,
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- CI - [H01L27/14634](#) (EP)
[H01L27/1464](#) (EP)
[H01L27/14645](#) (EP)
[H01L27/14683](#) (EP)



	- H01L31/02162 (EP)
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	- H01L2224/05573 (EP)
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CL	- H01L2224/73204, H01L2224/16225, H01L2224/32225, H01L2924/00, ADD (EP)
PA	- (A1 B1) ATMEL GRENOBLE SA [FR]
AB	- (A1) The invention concerns a method for making colour image sensors for miniature cameras. The manufacturing method consists in: forming on the front surface of a silicon wafer (10) a series of active zones (ZA) comprising image detection circuits and corresponding each to a respective image sensor , each active zone being surrounded with input/output contact studs (22) ; transferring the wafer by its front surface against the front surface of a support substrate (20) ; eliminating the major part of the thickness of the silicon wafer, leaving on the substrate a fine silicon layer (30) comprising the image detection circuits. The method is characterised in that: it comprises the deposition followed by etching of colour filter layers (18) on the thus thinned silicon wafer; the substrate comprises bond pads (32) arranged in similar geometry as the connections of each active zone to be urged opposite said contact studs (22) during the transfer, connection balls (34) being provided to weld a respective bond pad (32) of the substrate (20) to a corresponding contact studs (22) of the silicon wafer (10); finally in

cutting out the **substrate** into individual sensors after deposition and etching of the coloured filters.

[SS 16]