## 505642638 08/27/2019

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT5689444

SUBMISSION TYPE:		NEW ASSIGNMENT					
NATURE OF CONVEYANCE:		ASSIGNMENT					
CONVEYING PARTY	ΔΤΑ						
			Name		Execution Date		
KYOSUKE ITO					07/13/2019		
TOSHIFUMI WAKANO					07/16/2019		
YUSUKE OTAKE					07/16/2019		
RECEIVING PARTY D	ΑΤΑ						
Name:	SONY	NY SEMICONDUCTOR SOLUTIONS CORPORATION					
Street Address:	4-14-1	4-14-1 ASAHI-CHO					
Internal Address:	ATSU	ATSUGI-SHI					
City:	KANA	KANAGAWA					
State/Country:	JAPAN	١					
Postal Code:	243-00	)14					
Property TypeApplication Number:1646		Number 2471	-				
Application Number:		1646	2471	]			
CORRESPONDENCE	DATA						
Fax Number:		(303)	863-0223				
			e-mail address first; if that is uns hat is unsuccessful, it will be ser				
Phone:	provide	•	863-9700		, man.		
Email:		sony(	@sheridanross.com				
<b>Correspondent Name</b>	:	SHEF	RIDAN ROSS P.C.				
Address Line 1: 1560			BROADWAY				
Address Line 4:		DEN	VER, COLORADO 80202-5141				
ATTORNEY DOCKET NUMBER:			6810-1090				
NAME OF SUBMITTER:			BRADLEY M. KNEPPER				
SIGNATURE:			/Bradley M. Knepper/				
DATE SIGNED:			08/27/2019				
Fotal Attachments: 3							
ource=SP368928US00		-					
ource=SP368928US00	_USFP#p	bage2.	tif				

PATENT REEL: 050191 FRAME: 0016

Attorney Docket No.: Sony Ref. No.: SP368928US00

This declaration is directed to: The above-iden I believe that I is WHEREAS, <u>4-14-1 Asa</u> acquiring all int	amed inventor, I hereby declare that:  The attached application, or  United States application or PCT international application number PCT/JP2018/032637 filed on 2018/09/03  tified application was made or authorized to be made by me.  any the original inventor or an original joint inventor of a claimed invention in the application. SONY SEMICONDUCTOR SOLUTIONS CORPORATION , with offices an ahi-cho, Atsugi-shi, Kanagawa, Japan (hereinafter referred to as ASSIGNEE), is desirous or terest in, to and under said invention, said application disclosing the invention and in, to and under any Letters Patent or similar twich may be granted therefor in the United States and in any and all foreign countries;
s directed to: The above-iden I believe that I s WHEREAS, <u>4-14-1 Asa</u> acquiring all int	The attached application, or     United States application or PCT international application number PCT/JP2018/032637     filed on _2018/09/03     trified application was made or authorized to be made by me.     and the original inventor or an original joint inventor of a claimed invention in the application.     SONY SEMICONDUCTOR SOLUTIONS CORPORATION     , with offices a     ahi-cho, Atsugi-shi, Kanagawa, Japan (hereinafter referred to as ASSIGNEE), is desirous or     terest in, to and under said invention, said application disclosing the invention and in, to and under any Letters Patent or similar
believe that I a WHEREAS, <u>4-14-1 Asa</u> acquiring all int	filed on2018/09/03,  tified application was made or authorized to be made by me. and the original inventor or an original joint inventor of a claimed invention in the application. SONY SEMICONDUCTOR SOLUTIONS CORPORATION, with offices a ahi-cho, Atsugi-shi, Kanagawa, Japan(hereinafter referred to as ASSIGNEE), is desirous or terest in, to and under said invention, said application disclosing the invention and in, to and under any Letters Patent or similar
believe that I a WHEREAS, <u>4-14-1 Asa</u> acquiring all int	am the original inventor or an original joint inventor of a claimed invention in the application. SONY SEMICONDUCTOR SOLUTIONS CORPORATION , with offices a ahi-cho, Atsugi-shi, Kanagawa, Japan (hereinalter referred to as ASSIGNEE), is desirous of terest in, to and under said invention, said application disclosing the invention and in, to and under any Letters Patent or similar
WHEREAS, 4-14-1 Asa acquiring all int	SONY SEMICONDUCTOR SOLUTIONS CORPORATION , with offices a
equiring all int	terest in, to and under said invention, said application disclosing the invention and in, to and under any Letters Patent or similar
	e witten unig de gennee mes end sin uit conten sames aut neury and an tereign commeted
of which are he legal representa in and to any as any and all prio Convention Rel adheres, and to United States a	FORE, in consideration of the sum of One Dollar (\$1.00), and other good and valuable consideration, the receipt and sufficiency ereby acknowledged. I by these presents do hereby assign, sell and transfer unto said ASSIGNEE, its successors, assigns, and atives, the entire right, title and interest in said invention, said application, including any divisions and continuations thereof, and and all Letters Patent of the United States, and countries foreign thereto, which may be granted for said invention, and in and to ority rights and/or convention rights under the International Convention for the Protection of Industrial Property, Inter-America lating to Patents, Designs and Industrial Models, and any other international agreements to which the United States of America orary other benefits accruing or to accrue to me with respect to the filing of applications for patents or securing of patents in the und countries foreign thereto, and I hereby authorize and request the Commissioner of Patents to issue said United States Letters ASSIGNEE, as the assignee of the whole right, title and interest thereto;
designee, as A remuneration, i	agree to execute all necessary or desirable and lawful future documents, including assignments in favor of ASSIGNEE or it: ASSIGNEE or its successors, assigns and legal representatives may from time-to-time present to me and without further in order to perfect title in said invention, modifications, and improvements in said invention, applications and Letters Patent of es and countries foreign thereto;
application for	agree to properly execute and deliver and without further remuneration, such necessary or desirable and lawful papers fo- foreign patents, for filing subdivisions of said application for patent, and or, for obtaining any reissue or reissues of any Letter say be granted for my aforesaid invention, as said ASSIGNEE thereof shall hereafter require and prepare at its own expense;
application, said	agree that ASSIGNEE will, upon its request, be provided promptly with all pertinent facts and documents relating to sak id invention and said Letters Patent and legal equivalents in foreign countries as may be known and accessible to me and will a same in any interference or litigation related thereto;
And I hereby co this assignment	covenant that no assignment, sale, agreement or encumbrance has been or will be made or entered into which would conflict with t and sale.
	wledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment o five (5) years, or both
LEGAL NAMI	E OF INVENTOR
Inventor:	Kyosuke Ito Date: July 13, 2019

PATENT REEL: 050191 FRAME: 0017

Attorney Docket No.: Sony Ref. No.: SP368928US00

PHOTODIODE PIVEL CIRCUIT AND METHOD OF MANUFACTURING						
Fitle of Invention	PHOTODIODE, PIXEL CIRCUIT, AND METHOD OF MANUFACTURING PHOTODIODE					
As the below	named inventor, I hereby declare that:					
This declarati is directed to:	and the second					
	United States application or PCT international application number <u>PCT/JP2018/032637</u> filed on <u>2018/09/03</u>					
The above-id	entified application was made or authorized to be made by me.					
	I am the original inventor or an original joint inventor of a claimed invention in the application. SONY SEMICONDUCTOR SOLUTIONS CORPORATION , with offices at					
	sahi-cho, Atsugi-shi, Kanagawa, Japan (hereinafter referred to as ASSIGNEE), is desirous of					
	interest in, to and under said invention, said application disclosing the invention and in, to and under any Letters Patent or similar on which may be granted therefor in the United States and in any and all foreign countries;					
of which are	EFORE, in consideration of the sum of One Dollar (\$1.00), and other good and valuable consideration, the receipt and sufficiency hereby acknowledged, I by these presents do hereby assign, sell and transfer unto said ASSIGNEE, its successors, assigns, and					
of which are egal represent n and to any uny and all pu- convention f idheres, and United States Patent to said	EFORE, in consideration of the sum of One Dollar (\$1.00), and other good and valuable consideration, the receipt and sufficiency hereby acknowledged, I by these presents do hereby assign, sell and transfer unto said ASSIGNEE, its successors, assigns, and natives, the entire right, title and interest in said invention, said application, including any divisions and continuations thereof, and and all Letters Patent of the United States, and countries foreign thereto, which may be granted for said invention, and in and it riority rights and/or convention rights under the International Convention for the Protection of Industrial Property, Inter-American Relating to Patents, Designs and Industrial Models, and any other international agreements to which the United States of America to any other benefits accruing or to accrue to me with respect to the filing of applications for patents to issue said United States Letter I ASSIGNEE, as the assignee of the whole right, title and interest thereto;					
of which are egal represent n and to any uny and all p Convention F idheres, and United States Patent to said And T further lesignee, as remuneration	EFORE, in consideration of the sum of One Dollar (\$1.00), and other good and valuable consideration, the receipt and sufficiency hereby acknowledged. I by these presents do hereby assign, sell and transfer unto said ASSIGNEE, its successors, assigns, and natives, the entire right, title and interest in said invention, said application, including any divisions and continuations thereof, and and all Letters Patent of the United States, and countries foreign thereto, which may be granted for said invention, and in and it riority rights and/or convention rights under the International Convention for the Protection of Industrial Property, Inter-American Relating to Patents, Designs and Industrial Models, and any other international agreements to which the United States of America to any other benefits accruing or to accuse to me with respect to the filing of applications for patents or securing of patents in the and countries foreign thereto, and I hereby authorize and request the Commissioner of Patents to issue said United States Letter I ASSIGNEE, as the assignce of the whole right, title and interest thereto; r agree to execute all necessary or desirable and lawful future documents, including assignments in favor of ASSIGNEE or it ASSIGNEE or its successors, assigns and legal representatives may from time-to-time present to me and without furthe					
of which are egal represent n and to any uny and all pi Convention H adheres, and Jurited States Patent to said And J further lesignee, as remuneration the United St And J further upplication fit	EFORE, in consideration of the sum of One Dollar (\$1.00), and other good and valuable consideration, the receipt and sufficiency hereby acknowledged, I by these presents do hereby assign, sell and transfer unto said ASSIGNEE, its successors, assigns, and natives, the entire right, title and interest in said invention, said application, including any divisions and continuations thereof, and and all Letters Patent of the United States, and countries foreign thereto, which may be granted for said invention, and in and it riority rights and/or convention rights under the International Convention for the Protection of Industrial Property, Inter-American Relating to Patents, Designs and Industrial Models, and any other international agreements to which the United States of America Relating to Patents, Designs and Industrial Models, and any other international agreements to which the United States of America Relating to Patents, Designs and Industrial Models, and request the Commissioner of Patents to issue said United States Letter I ASSIGNEE, as the assignce of the whole right, title and interest thereto; r agree to execute all necessary or desirable and lawful future documents, including assignments in favor of ASSIGNEE or it ASSIGNEE or its successors, assigns and legal representatives may from time-to-time present to me and without furthe and order to perfect title in said invention, modifications, and improvements in said invention, applications and Letters Patent or ates and countries foreign thereto;					
of which are egal represent n and to any my and all p. Convention F adheres, and Juited States Patent to said And I further lesignee, as empneration the United St And I further upplication fi Patent which And I further pplication, s	EFORE, in consideration of the sum of One Dollar (\$1.00), and other good and valuable consideration, the receipt and sufficiency hereby acknowledged, I by these presents do hereby assign, sell and transfer unto said ASSIGNEE, its successors, assigns, and natives, the entire right, title and interest in said invention, said application, including any divisions and continuations thereof, and and all Letters Patent of the United States, and countries foreign thereto, which may be granted for said invention, and in and two and all Letters Patent of the United States, and countries foreign thereto, which may be granted for said invention, and in and two and all Letters Patents. Designs and Industrial Models, and any other international agreements to which the United States of America to any other benefits accruing or to accrue to me with respect to the filing of applications for patents or securing of patents in the and countries foreign thereto, and I hereby authorize and request the Commissioner of Patents to issue said United States Letter LASSIGNEE, as the assignee of the whole right, title and interest thereto; in agree to execute all necessary or desirable and lawful future documents, including assignments in favor of ASSIGNEE or it ASSIGNEE or its successors, assigns and legal representatives may from time-to-time present to me and without further, in order to perfect the in said invention, modifications, and improvements in said invention, applications and Letters Patent or ates and countries foreign thereto;					
of which are egal represent n and to any uny and all p Convention F adheres, and Juited States Patent to said And I further he United St And I further upplication for Patent which And I further upplication, s estily as to the And I bereby	EFORE, in consideration of the sum of One Dollar (\$1.00), and other good and valuable consideration, the receipt and sufficiency hereby acknowledged, I by these presents do hereby assign, sell and transfer unto said ASSIGNEE, its successors, assigns, and natives, the entire right, tille and interest in said invention, said application, including any divisions and continuations thereof, and and all Letters Patent of the United States, and countries foreign thereto, which may be granted for said invention, and in and training to Patents, Designs and Industrial Models, and any other international agreements to which the United States of America Velating to Patents, Designs and Industrial Models, and any other international agreements to which the United States of America to any other benefits accruing or to accrue to me with respect to the filing of applications for patents to issue said United States of America and countries foreign thereto, and 1 hereby authorize and request the Commissioner of Patents to issue said United States Letter (ASSIGNEE, as the assignee of the whole right, title and interest thereto; and countries foreign thereto, and 1 hereby authorize and request the Comments, including assignments in favor of ASSIGNEE or it ASSIGNEE or its successors, assigns and legal representatives may from time-to-time present to me and without furthe to be refect title in said invention, modifications, and improvements in said invention, applications and Letters Patent or access are or reissues of said application for patent, and or, for obtaining any reissue or reissues of any Letter may be granted for my aforesaid invention, as said ASSIGNEE thereof shall hereafter require and prepare at its own expense; tr agree that ASSIGNEE will, upon its request, be provided promptly with all pertinent facts and documents relating to said any thereafter require and prepare at its own expense; tr agree that ASSIGNEE will, upon its request, be provided promptly with all pertinent facts and documents relating to said inventi					
of which are egal represent n and to any uny and all p. Convention H adheres, and Jurited States Patent to said And I further lesignee, as emaneration he United St And I further upplication for Patent which And I further pplication, s estily as to the And I hereby his assignment	EFORE, in consideration of the sum of One Dollar (\$1.00), and other good and valuable consideration, the receipt and sufficiency hereby acknowledged, I by these presents do hereby assign, sell and transfer unto said ASSIGNEE, its successors, assigns, and natives, the entire right, title and interest in said invention, said application, including any divisions and continuations thereof, and and all Letters Patent of the United States, and countries foreign thereto, which may be granted for said invention, and in and to riceity rights and/or convention fights under the International Convention for the Protection of Industrial Property, Inter-America Relating to Patents, Designs and Industrial Models, and any other international agreements to which the United States of America to any other benefits accruing or to accrue to me with respect to the filing of applications for patents or securing of patents in the and countries foreign thereto, and I hereby authorize and request the Commissioner of Patents to issue said United States Letter I ASSIGNEE, as the assignee of the whole right, title and interest thereto; r agree to execute all necessary or desirable and lawful future documents, including assignments in favor of ASSIGNEE or it ASSIGNEE or its successors, assigns and legal representatives may from time-to-time present to me and without furthe a, in order to perfect title in said invention, modifications, and improvements in said invention, applications and Letters Patent or ates and countries foreign thereto;					
of which are legal represent in and to any any and all p. Convention F adheres, and United States Patent to said And I further designee, as remuneration the United St And I further application fit Patent which And I further application, s testify as to the And I hereby this assignment I hereby acknow	EFORE, in consideration of the sum of One Dollar (\$1.00), and other good and valuable consideration, the receipt and sufficiency hereby acknowledged, I by these presents do hereby assign, sell and transfer unto said ASSIGNEE, its successors, assigns, and autives, the entire right, tile and interest in said invention, said application, including any divisions and continuations thereof, and and all Letters Patent of the United States, and countries foreign thereto, which may be granted for said invention, and in and two rights and/or convention rights under the International Convention for the Protection of Industrial Property, Inter-American Relating to Patents, Designs and Industrial Models, and any other international agreements to which the United States of America to any other benefits accruing or to accrue to me with respect to the filing of applications for patents or securing of patents in the and countries foreign thereto, and I hereby authorize and request the Commissioner of Patents to issue said United States Letters I ASSIGNEE, as the assignce of the whole right, tilte and interest thereto; in advected all necessary or desirable and lawful future documents, including assignments in favor of ASSIGNEE or in ASSIGNEE or its successors, assigns and legal representatives may from time-to-time present to me and without furthe a and countries foreign thereto; in order to perfect tilte in said invention, modifications, and improvements in said invention, applications and Letters Patent or ates and countries foreign thereto; if an equest, be provided promptily with all perfect and prepare at its own expense; if agree that ASSIGNEE will, upon its request, be provided promptily with all periment facts and documents relating to said invention and said Letters Patent and legal equivalents in foreign countries as may be known and accessible to me and will he same in any interference or lingation related thereto;					

PATENT REEL: 050191 FRAME: 0018

Attorney Docket No.: Sony Ref. No.: SP368928US00

Title of Invention	PHOTODI PHOTODI	IODE, PIXEL CIRCUIT, IODE	AND METHOD OF N	MANUFACTURING
As the below named inventor, I hereby destare that:				
This declarat is directed to		The attached application, or		
	$\boxtimes$	United States application or PCT i filed on	nternational application number	PCT/JP2018/032637
The above-id	lentified applicati	ion was made or authorized to be me	đe by me.	
		inventor or an original joint invento		
		MICONDUCTOR SOLUTION		, with offices a nafter referred to as ASSIGNEE), is desirous of
acquiring all	interest in, to and		ion disclosing the invention and	I in, to and under any Letters Patent or similar
legal represe in and to any any and all p Convention I adheres, and United States	matives, the entiry and all Letters F priority rights and Relating to Patent to any other bend s and countries fo	re right, title and interest in said inve Patent of the United States, and cour for convention rights under the Inter its, Designs and Industrial Models, a efits accruing or to accrue to me with	ntion, said application, includir ntries foreign thereto, which m national Convention for the Pr nd any other international agre h respect to the filing of applic e and request the Commissione	said ASSIGNEE, its successors, assigns, and any divisions and continuations thereof, and ay be granted for said invention, and in and to tection of Industrial Property, Inter-American ements to which the United States of America ations for patents or securing of patents in the r of Patents to issue said United States Letters
designee, as remuneratior	ASSIGNEE or a, in order to perf			ng assignments in favor of ASSIGNEE or it e-to-time present to me and without furthe
me onnen s	tates and commute	fect title in said invention, modifica is foreign thereto;		
And 1 furthe application f	er agree to prope or foreign patents	is foreign thereto; any execute and deliver and witho s, for filing subdivisions of said app	tions, and improvements in sai ut further remuneration, such lication for patent, and or, for c	d invention, applications and Letters Patent o necessary or desirable and lawful papers fo
And 1 furthe application f Patent which And 1 furthe application,	er agree to prope for foreign patents a may be granted l er agree that ASS said invention an	is foreign thereto; erly execute and deliver and witho s, for filing subdivisions of said app for my aforesaid invention, as said A SIGNEE will, upon its request, be	tions, and improvements in sai at further remaneration, such lication for patent, and or, for c SSIGNEE thereof shall hereaf provided promptly with all p valents in foreign countries as	d invention, applications and Letters Patent o necessary or desirable and lawful papers fo btaining any reissue or reissues of any Letter ter require and prepare at its own expense; ertinent facts and documents relating to said
And 1 furthe application f Patent which And 1 furthe application, testify as to t	er agree to prope for foreign patents a may be granted I er agree that ASS said invention an the same in any in y covenant that no	es foreign thereto; erly execute and deliver and witho s, for filing subdivisions of said app for my aforesaid invention, as said / SIGNEE will, upon its request, be ad said Letters Patent and legal equi interference or litigation related there	tions, and improvements in sai at further remuneration, such lication for patent, and or, for c SSIGNEE thereof shall hereaf provided promptly with all p valents in foreign countries as to;	d invention, applications and Letters Patent o necessary or desirable and lawful papers for blaining any reissue or reissues of any Letter
And 1 furthe application f Patent which And 1 furthe application, i testify as to t And 1 hereby this assignment	er agree to prope for foreign patents a may be granted i er agree that ASS said invention an the same in any in y covenant that no em and safe.	es foreign thereto; erly execute and deliver and witho s, for filing subdivisions of said app for my aforesaid invention, as said A SIGNEE will, upon its request, be ad said Letters Patent and legal equi interference or litigation related there o assignment, sale, agreement or enc ey willful false statement made in th	tions, and improvements in sai at further remuneration, such lication for patent, and or, for o CSSIGNEE thereof shall hereaf provided promptly with all p valents in foreign countries as to; umbrance has been or will be a	d invention, applications and Letters Patent o necessary or desirable and lawful papers fo obtaining any reissue or reissues of any Letter let require and prepare at its own expense; ertinent facts and documents relating to said may be known and accessible to me and wil
And 1 furthe application f Patent which And 1 furthe application, testify as to t And 1 hereby this assignme 1 hereby ack not more tha	er agree to prope for foreign patents a may be granted l er agree that ASS said invention an the same in any in a covenant that ne ent and safe. nowledge that an	es foreign thereto; erly execute and deliver and witho s, for filing subdivisions of said app for my aforesaid invention, as said / SIGNEE will, upon its request, be ad said Letters Patent and legal equi merference or flugation related there o assignment, sale, agreement or enc ey willful false statement made in th or both.	tions, and improvements in sai at further remuneration, such lication for patent, and or, for o CSSIGNEE thereof shall hereaf provided promptly with all p valents in foreign countries as to; umbrance has been or will be a	d invention, applications and Letters Patent on necessary or desirable and lawful papers for obtaining any reissue or reissues of any Letter for require and prepare at its own expense; ertinent facts and documents relating to said may be known and accessible to me and will nade or entered into which would conflict wit

**RECORDED: 08/27/2019**