01/12/2021 506444617

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT6491386

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
SARAH ATANASOV	12/02/2020
ABHISHEK A. SHARMA	12/03/2020
BERNARD SELL	11/25/2020
CHIEH-JEN KU	12/04/2020
ELIOT TAN	12/17/2020
HUI JAE YOO	12/07/2020
NORIYUKI SATO	12/03/2020
TRAVIS W. LAJOIE	12/06/2020
VAN H. LE	12/15/2020
THOE MICHAELOS	12/01/2020

RECEIVING PARTY DATA

Name:	INTEL CORPORATION
Mairie.	INTEL CONTON
Street Address:	2200 MISSION COLLEGE BOULEVARD
City:	SANTA CLARA
State/Country:	CALIFORNIA
Postal Code:	95054

PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	17117350

CORRESPONDENCE DATA

Fax Number: (972)226-4837

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

Phone: 617-268-6487

Email: liseann@patcapgroup.com,docketing@patcapgroup.com

LAURA A. ZAGER Correspondent Name:

Address Line 1: 2816 LAGO VISTA LANE Address Line 2: PATENT CAPITAL GROUP Address Line 4: ROCKWALL, TEXAS 75032

ATTORNEY DOCKET NUMBER: AC8559-US

PATENT REEL: 054962 FRAME: 0339 506444617

NAME OF SUBMITTER:	LISE ANN RUGGERI-KALIL
SIGNATURE:	/LISE ANN RUGGERI-KALIL/
DATE SIGNED:	01/12/2021

Total Attachments: 31

source=AC8559-US Executed Assignment#page1.tif source=AC8559-US Executed Assignment#page2.tif source=AC8559-US Executed Assignment#page3.tif source=AC8559-US Executed Assignment#page4.tif source=AC8559-US Executed Assignment#page5.tif source=AC8559-US Executed Assignment#page6.tif source=AC8559-US Executed Assignment#page7.tif source=AC8559-US Executed Assignment#page8.tif source=AC8559-US Executed Assignment#page9.tif source=AC8559-US Executed Assignment#page10.tif source=AC8559-US Executed Assignment#page11.tif source=AC8559-US Executed Assignment#page12.tif source=AC8559-US Executed Assignment#page13.tif source=AC8559-US Executed Assignment#page14.tif source=AC8559-US Executed Assignment#page15.tif source=AC8559-US Executed Assignment#page16.tif source=AC8559-US Executed Assignment#page17.tif source=AC8559-US Executed Assignment#page18.tif source=AC8559-US Executed Assignment#page19.tif source=AC8559-US Executed Assignment#page20.tif source=AC8559-US Executed Assignment#page21.tif source=AC8559-US Executed Assignment#page22.tif source=AC8559-US Executed Assignment#page23.tif source=AC8559-US Executed Assignment#page24.tif source=AC8559-US Executed Assignment#page25.tif source=AC8559-US Executed Assignment#page26.tif source=AC8559-US Executed Assignment#page27.tif source=AC8559-US Executed Assignment#page28.tif source=AC8559-US Executed Assignment#page29.tif source=AC8559-US Executed Assignment#page30.tif source=AC8559-US Executed Assignment#page31.tif

> PATENT REEL: 054962 FRAME: 0340

ASSIGNMENT

In consideration of good and valuable consideration, the receipt of which is hereby acknowledged, we, the undersigned inventor(s):

Sarah Atanasov
Abhishek A. Sharma
Bernhard Sell
Chieh-Jen Ku
Elliot Tan
Hui Jae Yoo
Noriyuki Sato
Travis W. Lajoie
Van H. Le
Thoe Michaelos

hereby sell, assign, and transfer to:

Intel Corporation

a corporation of Delaware, having a principal place of business at 2200 Mission College Boulevard, Santa Clara, California, 95054 USA ("Assignee"), and its successors, assigns, and legal representatives, the entire right, title, and interest for the United States and all other countries, in and to any and all inventions and improvements that are disclosed in the application for the patent entitled:

TRANSISTORS, MEMORY CELLS, AND ARRANGEMENTS THEREOF

(I hereby authorize and request any attorney having appropriate authority from the assignee to insert on the designated lines below, the filing date and application number of said application when known.)

which was filed on	December 10,	2020	as	
US		Application Number	17/117,350	and
COUNTRY or Inte	rnational Office			

which has been executed by the undersigned prior hereto or concurrently herewith on the date(s) indicated below,

and in and to said application and all Additional Applications, and all other patent applications that have been or shall be filed in the United States and all other countries and international filing offices on any of said inventions and improvements; and in and to all original and reissued patents that have been or shall be issued in the United States and all other countries and international filing offices on said inventions and improvements; and in and to all rights of priority resulting from the filing of said applications; as used herein "Additional Applications" includes but is not limited to provisional, design, utility, utility model, divisional, continuing, continuation-in-part, substitute, renewal, reissue, and national phase applications on said inventions and improvements;

and agree that and exaggree may apply for and exerce it pages or pagests for and increments and improvements of any organization of pagests of any Assigned its ancestors as agree and agreements of courty on in good faith the internant purpose of the Assignment the interrupted of a received Assignment Application, and all other pagest applications or any and all said inventions and improvements executed agricultural saids, assignment provers of attorney and other pagest, communicate to said Assignments and exercises and agreements and other pagest, communicate to said Assignments and exercises.

In pagest, and legal expression result force known to the understand relating to said intermediate and improvements and the pagest and assignment agreements and approximate and approximate any any agreement and approximate any and approximate any agreement and approximate and approximate and improvements and the result as any assignment agreement and approximate to page the analysis and all pagests on said improvements in said Assignments according to any agreement agreement and approximate to page the agreement and approximate and all pagests on said improvements in said Assignments according to any agreement and approximate any agreement any agreement any agreement and approximate any agreement any agreement any agreement and approximate any agreement any agreement any agreement any agreement any agre

coverant with said Assigned, its successors, assigns, and legal representatives that no accignment, grain, mortgage, figures, or other agreement affecting the rights and properly herein conveyed has been made to others by the indexingued, and that full right to convey the same as herein expressed to passessed by the undersigned.

Dataly A. Sarah Atanasov	12 /2/2025 (Today's Date)
Abhishek A. Sharma	(Today's Date)
Bernhard Sell	(Today's Date)
Chieh-len Ku	(Today's Date)
Elliot Tan	(Today's Date)
Hui Jae Yoo	(Today's Date)
Normali Sala	(Turkey's Date)

Intel	Case	Reference:	AC8559-	US

Travis W. Lajoie	(Today's Date)
Van H. Le	(Today's Date)
Thoe Michaelos	(Today's Date)

ASSIGNMENT

In consideration of good and valuable consideration, the receipt of which is hereby acknowledged, we, the undersigned inventor(s):

Sarah Atanasov
Abhishek A. Sharma
Bernhard Sell
Chieh-Jen Ku
Elliot Tan
Hui Jae Yoo
Noriyuki Sato
Travis W. Lajoie
Van H. Le
Thoe Michaelos

hereby sell, assign, and transfer to:

Intel Corporation

a corporation of Delaware, having a principal place of business at 2200 Mission College Boulevard, Santa Clara, California, 95054 USA ("Assignee"), and its successors, assigns, and legal representatives, the entire right, title, and interest for the United States and all other countries, in and to any and all inventions and improvements that are disclosed in the application for the patent entitled:

TRANSISTORS, MEMORY CELLS, AND ARRANGEMENTS THEREOF

(I hereby authorize and request any attorney having appropriate authority from the assignee to insert on the designated lines below, the filing date and application number of said application when known.)

which was filed on	December 10,	2020	as	
US		Application Number	17/117,350	and
COUNTRY or Inte	rnational Office			

which has been executed by the undersigned prior hereto or concurrently herewith on the date(s) indicated below,

and in and to said application and all Additional Applications, and all other patent applications that have been or shall be filed in the United States and all other countries and international filing offices on any of said inventions and improvements; and in and to all original and reissued patents that have been or shall be issued in the United States and all other countries and international filing offices on said inventions and improvements; and in and to all rights of priority resulting from the filing of said applications; as used herein "Additional Applications" includes but is not limited to provisional, design, utility, utility model, divisional, continuing, continuation-in-part, substitute, renewal, reissue, and national phase applications on said inventions and improvements;

and agree that said Assignce may apply for and receive a patent or patents for said inventions and improvements in its own name; and that, when requested, without charge to, but at the expense of, said Assignee, its successors, assigns, and legal representatives, to carry out in good faith the intent and purpose of this Assignment, the undersigned will execute all Additional Applications, and all other patent applications on any and all said inventions and improvements; execute all rightful oaths, assignments, powers of attorney, and other papers; communicate to said Assignee, its successors, assigns, and legal representatives all facts known to the undersigned relating to said inventions and improvements and the history thereof; and generally assist said Assignee, its successors, assigns, or legal representatives in securing and maintaining proper patent protection for said inventions and improvements and for vesting title to said inventions and improvements, and all applications for patents and all patents on said improvements, in said Assignee, its successors, assigns, and legal representatives; and

covenant with said Assignee, its successors, assigns, and legal representatives that no assignment, grant, mortgage, license, or other agreement affecting the rights and property herein conveyed has been made to others by the undersigned, dersigned, and that full right to convey the same as herein expressed is possessed by the undersigned.

	Sarah Atanasov	(Today's Date) 12/3/202-0
*	Abhishek A. Sharma	(Today's Date)
	Bernhard Sell	(Today's Date)
	Chieh-Jen Ku	(Today's Date)
	Elliot Tan	(Today's Date)
	Hui Jac Yoo	(Today's Date)
	Noriyuki Sato	(Todsy's Date)

Travis W. Lajoie	(Today's Date)
Van H. Le	(Today's Date)
Thoe Michaelos	(Today's Date)

ASSIGNMENT

In consideration of good and valuable consideration, the receipt of which is hereby acknowledged, we, the undersigned inventor(s):

Sarah Atanasov
Abhishek A. Sharma
Bernhard Sell
Chieh-Jen Ku
Elliot Tan
Hui Jae Yoo
Noriyuki Sato
Travis W. Lajoie
Van H. Le
Thoe Michaelos

hereby sell, assign, and transfer to:

Intel Corporation

a corporation of Delaware, having a principal place of business at 2200 Mission College Boulevard, Santa Clara, California, 95054 USA ("Assignee"), and its successors, assigns, and legal representatives, the entire right, title, and interest for the United States and all other countries, in and to any and all inventions and improvements that are disclosed in the application for the patent entitled:

TRANSISTORS, MEMORY CELLS, AND ARRANGEMENTS THEREOF

(I hereby authorize and request any attorney having appropriate authority from the assignee to insert on the designated lines below, the filing date and application number of said application when known.)

which was filed on	December 10,	2020	as	
US		Application Number	17/117,350	and
COUNTRY or Inte	rnational Office			

which has been executed by the undersigned prior hereto or concurrently herewith on the date(s) indicated below,

and in and to said application and all Additional Applications, and all other patent applications that have been or shall be filed in the United States and all other countries and international filing offices on any of said inventions and improvements; and in and to all original and reissued patents that have been or shall be issued in the United States and all other countries and international filing offices on said inventions and improvements; and in and to all rights of priority resulting from the filing of said applications; as used herein "Additional Applications" includes but is not limited to provisional, design, utility, utility model, divisional, continuing, continuation-in-part, substitute, renewal, reissue, and national phase applications on said inventions and improvements;

and agree that said Assignee may apply for and receive a patent or patents for said inventions and improvements in its own name, and that, when requested, without charge to, but at the expense of, said Assignee, its successors, assigns, and legal representatives, to carry out in good faith the intent and purpose of this Assignment, the undersigned will execute all Additional Applications, and all other patent applications on any and all said inventions and improvements, execute all rightful caths, assignments, powers of attorney, and other papers; communicate to said Assignee, its successors, assigns, and legal representatives all facts known to the undersigned relating to said inventions and improvements and the history thereof; and generally assist said Assignee, its successors, assigns, or legal representatives in securing and maintaining proper patent protection for said inventions and improvements and for vesting title to said inventions and improvements, and all applications for patents and all patents on said improvements, in said Assignee, its successors, assigns, and legal representatives; and

covenant with said Assignee, its successors, assigns, and legal representatives that no assignment, grant, mortgage, license, or other agreement affecting the rights and property herein conveyed has been made to others by the undersigned, and that full right to convey the same as herein expressed is possessed by the undersigned.

Sarah Atanasoy	(Today's Date)
Abhishek A. Sharma	(Today's Date)
Bernhard Sell	<u>///25/2920</u> (Today's Date)
Chieh-Jen Ku	(Today's Date)
Elliot Tan	(Today's Date)
Hui Jac Yoo	(Today's Date)
Noriyuki Sato	(Today's Date)

Page 2 of 3

Intel Case Reference:	AC8559-US

Travis W. Lajoie	(Today's Date)
Van H. Le	(Today's Date)
Thoe Michaelos	(Today's Date)

ASSIGNMENT

In consideration of good and valuable consideration, the receipt of which is hereby acknowledged, we, the undersigned inventor(s):

Sarah Atanasov
Abhishek A. Sharma
Bernhard Sell
Chieh-Jen Ku
Elliot Tan
Hui Jae Yoo
Noriyuki Sato
Travis W. Lajoie
Van H. Le
Thoe Michaelos

hereby sell, assign, and transfer to:

Intel Corporation

a corporation of Delaware, having a principal place of business at 2200 Mission College Boulevard, Santa Clara, California, 95054 USA ("Assignee"), and its successors, assigns, and legal representatives, the entire right, title, and interest for the United States and all other countries, in and to any and all inventions and improvements that are disclosed in the application for the patent entitled:

TRANSISTORS, MEMORY CELLS, AND ARRANGEMENTS THEREOF

(I hereby authorize and request any attorney having appropriate authority from the assignee to insert on the designated lines below, the filing date and application number of said application when known.)

which was filed on	December 10,	2020	as	
US		Application Number	17/117,350	and
COUNTRY or Inte	rnational Office			

which has been executed by the undersigned prior hereto or concurrently herewith on the date(s) indicated below,

and in and to said application and all Additional Applications, and all other patent applications that have been or shall be filed in the United States and all other countries and international filing offices on any of said inventions and improvements; and in and to all original and reissued patents that have been or shall be issued in the United States and all other countries and international filing offices on said inventions and improvements; and in and to all rights of priority resulting from the filing of said applications; as used herein "Additional Applications" includes but is not limited to provisional, design, utility, utility model, divisional, continuing, continuation-in-part, substitute, renewal, reissue, and national phase applications on said inventions and improvements;

and agree that said Assignee may apply for and receive a patent or patents for said inventions and improvements in its own name; and that, when requested, without charge to, but at the expense of, said Assignee, its successors, assigns, and legal representatives, to carry out in good faith the intent and purpose of this Assignment, the undersigned will execute all Additional Applications, and all other patent applications on any and all said inventions and improvements; execute all rightful oaths, assignments, powers of attorney, and other papers; communicate to said Assignee, its successors, assigns, and legal representatives all facts known to the undersigned relating to said inventions and improvements and the history thereof; and generally assist said Assignee, its successors, assigns, or legal representatives in securing and maintaining proper patent protection for said inventions and improvements and for vesting title to said inventions and improvements, and all applications for patents and all patents on said improvements, in said Assignee, its successors, assigns, and legal representatives; and

covenant with said Assignee, its successors, assigns, and legal representatives that no assignment, grant, mortgage, license, or other agreement affecting the rights and property herein conveyed has been made to others by the undersigned, and that full right to convey the same as herein expressed is possessed by the undersigned.

Sarah Atanasov	(Today's Date)
Abhishek A. Sharma	(Today's Date)
Bernhard Sell	(Today's Date)
Chieh-Jen Ku	12/0 4/20, (Today's Date)
Elliot Tan	(Today's Date)
Hui Jae Yoo	(Today's Date)
Noriyuki Sato	(Today's Date)

Page 2 of 3

Intel	Case	Reference:	AC8559-US

Travis W. Lajoie	(Today's Date)
Van H. Le	(Today's Date)
Thoe Michaelos	(Today's Date)

ASSIGNMENT

In consideration of good and valuable consideration, the receipt of which is hereby acknowledged, we, the undersigned inventor(s):

Sarah Atanasov
Abhishek A. Sharma
Bernhard Sell
Chieh-Jen Ku
Elliot Tan
Hui Jae Yoo
Noriyuki Sato
Travis W. Lajoie
Van H. Le
Thoe Michaelos

hereby sell, assign, and transfer to:

Intel Corporation

a corporation of Delaware, having a principal place of business at 2200 Mission College Boulevard, Santa Clara, California, 95054 USA ("Assignee"), and its successors, assigns, and legal representatives, the entire right, title, and interest for the United States and all other countries, in and to any and all inventions and improvements that are disclosed in the application for the patent entitled:

TRANSISTORS, MEMORY CELLS, AND ARRANGEMENTS THEREOF

(I hereby authorize and request any attorney having appropriate authority from the assignee to insert on the designated lines below, the filing date and application number of said application when known.)

which was filed on	December 10,	2020	as	
US		Application Number	17/117,350	and
COUNTRY or Inte	rnational Office			

which has been executed by the undersigned prior hereto or concurrently herewith on the date(s) indicated below,

and in and to said application and all Additional Applications, and all other patent applications that have been or shall be filed in the United States and all other countries and international filing offices on any of said inventions and improvements; and in and to all original and reissued patents that have been or shall be issued in the United States and all other countries and international filing offices on said inventions and improvements; and in and to all rights of priority resulting from the filing of said applications; as used herein "Additional Applications" includes but is not limited to provisional, design, utility, utility model, divisional, continuing, continuation-in-part, substitute, renewal, reissue, and national phase applications on said inventions and improvements;

and agree that said Assignee may apply for and receive a patent or patents for said inventions and improvements in its own name; and that, when requested, without charge to, but at the expense of, said Assignee, its successors, assigns, and legal representatives, to carry our in good faith the intent and purpose of this Assignment, the undersigned will execute all Additional Applications, and all other patent applications on any and all said inventions and improvements; execute all rightful oaths, assignments, powers of attorney, and other papers; communicate to said Assignee, its successors, assigns, and legal representatives all facts known to the undersigned relating to said inventions and improvements and the history thereof; and generally assist said Assignee, its successors, assigns, or legal representatives in securing and maintaining proper patent protection for said inventions and improvements and for vesting title to said inventions and improvements, and all applications for patents and all patents on said improvements, in said Assignee, its successors, assigns, and legal representatives; and

covenant with said Assignee, its successors, assigns, and legal representatives that no assignment, grant, mortgage, license, or other agreement affecting the rights and property herein conveyed has been made to others by the undersigned, and that full right to convey the same as herein expressed is possessed by the undersigned.

:	
Sarah Atanasov	(Today's Date)
 Abhishek A. Sharma	(Today's Date)
Bernhard Sell	(Today's Date)
Chieh-Jen Ku	(Today's Date)
Vilhot Tan	(Today's Date)
Hui Jae Yoo	(Today's Date)
Noriyuki Sato	(Today's Date)

Travis W. Lajoie Travis W. Lajoie (Today's Date) Thoe Michaelos (Today's Date)

Page 3 of 3

ASSIGNMENT

In consideration of good and valuable consideration, the receipt of which is hereby acknowledged, we, the undersigned inventor(s):

Sarah Atanasov
Abhishek A. Sharma
Bernhard Sell
Chieh-Jen Ku
Elliot Tan
Hui Jae Yoo
Noriyuki Sato
Travis W. Lajoie
Van H. Le
Thoe Michaelos

hereby sell, assign, and transfer to:

Intel Corporation

a corporation of Delaware, having a principal place of business at 2200 Mission College Boulevard, Santa Clara, California, 95054 USA ("Assignee"), and its successors, assigns, and legal representatives, the entire right, title, and interest for the United States and all other countries, in and to any and all inventions and improvements that are disclosed in the application for the patent entitled:

TRANSISTORS, MEMORY CELLS, AND ARRANGEMENTS THEREOF

(I hereby authorize and request any attorney having appropriate authority from the assignee to insert on the designated lines below, the filing date and application number of said application when known.)

which was filed on	December 10,	2020	as	
US		Application Number	17/117,350	and
COUNTRY or Inte	rnational Office			

which has been executed by the undersigned prior hereto or concurrently herewith on the date(s) indicated below,

and in and to said application and all Additional Applications, and all other patent applications that have been or shall be filed in the United States and all other countries and international filing offices on any of said inventions and improvements; and in and to all original and reissued patents that have been or shall be issued in the United States and all other countries and international filing offices on said inventions and improvements; and in and to all rights of priority resulting from the filing of said applications; as used herein "Additional Applications" includes but is not limited to provisional, design, utility, utility model, divisional, continuing, continuation-in-part, substitute, renewal, reissue, and national phase applications on said inventions and improvements;

and agree that said Assignee may apply for and receive a patent or patents for said inventions and improvements in its own name; and that, when requested, without charge to, but at the expense of, said Assignee, its successors, assigns, and legal representatives, to carry out in good faith the intent and purpose of this Assignment, the undersigned will execute all Additional Applications, and all other patent applications on any and all said inventions and improvements; execute all rightful oaths, assignments, powers of attorney, and other papers; communicate to said Assignee, its successors, assigns, and legal representatives all facts known to the undersigned relating to said inventions and improvements and the history thereof; and generally assist said Assignee, its successors, assigns, or legal representatives in securing and maintaining proper patent protection for said inventions and improvements and for vesting title to said inventions and improvements, and all applications for patents and all patents on said improvements, in said Assignee, its successors, assigns, and legal representatives; and

covenant with said Assignee, its successors, assigns, and legal representatives that no assignment, grant, mortgage, license, or other agreement affecting the rights and property herein conveyed has been made to others by the undersigned, and that full right to convey the same as herein expressed is possessed by the undersigned.

Sarah Atanasov	(Today's Date)
Abhishek A. Sharma	(Today's Date)
Bernhard Sell	(Today's Date)
Chieh-Jen Ku	(Today's Date)
Elliot Tan	(Today's Date)
Hui Jae Yoo	12/7/2020 (Today's Date)
Noriyuki Sato	(Today's Date)

Intel	Case Reference:	AC8559-US

Travis W. Lajoie	(Today's Date)
Van H. Le	(Today's Date)
Thoe Michaelos	(Today's Date)

Travis W. Lajoie	(Today's Date)
Van H. Le	(Today's Date)

Thoe Michaelos

Intel Case Reference: AC8559-US

(Today's Date)

ASSIGNMENT

In consideration of good and valuable consideration, the receipt of which is hereby acknowledged, we, the undersigned inventor(s):

Sarah Atanasov
Abhishek A. Sharma
Bernhard Sell
Chieh-Jen Ku
Elliot Tan
Hui Jae Yoo
Noriyuki Sato
Travis W. Lajoie
Van H. Le
Thoe Michaelos

hereby sell, assign, and transfer to:

Intel Corporation

a corporation of Delaware, having a principal place of business at 2200 Mission College Boulevard, Santa Clara, California, 95054 USA ("Assignee"), and its successors, assigns, and legal representatives, the entire right, title, and interest for the United States and all other countries, in and to any and all inventions and improvements that are disclosed in the application for the patent entitled:

TRANSISTORS, MEMORY CELLS, AND ARRANGEMENTS THEREOF

(I hereby authorize and request any attorney having appropriate authority from the assignee to insert on the designated lines below, the filing date and application number of said application when known.)

which was filed on	December 10,	2020	as	
US		Application Number	17/117,350	and
COUNTRY or Inte	rnational Office			

which has been executed by the undersigned prior hereto or concurrently herewith on the date(s) indicated below,

and in and to said application and all Additional Applications, and all other patent applications that have been or shall be filed in the United States and all other countries and international filing offices on any of said inventions and improvements; and in and to all original and reissued patents that have been or shall be issued in the United States and all other countries and international filing offices on said inventions and improvements; and in and to all rights of priority resulting from the filing of said applications; as used herein "Additional Applications" includes but is not limited to provisional, design, utility, utility model, divisional, continuing, continuation-in-part, substitute, renewal, reissue, and national phase applications on said inventions and improvements;

and agree that said Assignee may apply for and receive a patent or patents for said inventions and improvements in its own name; and that, when requested, without charge to, but at the expense of, said Assignee, its successors, assigns, and legal representatives, to carry out in good faith the intent and purpose of this Assignment, the undersigned will execute all Additional Applications, and all other patent applications on any and all said inventions and improvements; execute all rightful oaths, assignments, powers of attorney, and other papers; communicate to said Assignee, its successors, assigns, and legal representatives all facts known to the undersigned relating to said inventions and improvements and the history thereof; and generally assist said Assignee, its successors, assigns, or legal representatives in securing and maintaining proper patent protection for said inventions and improvements and for vesting title to said inventions and improvements, and all applications for patents and all patents on said improvements, in said Assignee, its successors, assigns, and legal representatives; and

covenant with said Assignee, its successors, assigns, and legal representatives that no assignment, grant, mortgage, license, or other agreement affecting the rights and property herein conveyed has been made to others by the undersigned, and that full right to convey the same as herein expressed is possessed by the undersigned.

Sarah Atanasov	(Today's Date)
Abhishek A. Sharma	(Today's Date)
Bernhard Sell	(Today's Date)
Chieh-Jen Ku	(Today's Date)
Elliot Tan	(Today's Date)
Hui Jac Yoo	(Today's Date)
Noriyuki Sato	$\frac{\frac{12}{3}\frac{20}{20}}{\text{(Today's Date)}}$

Page 2 of 3

Travis W. Lajoie	(Today's Date)
Van H. Le	(Today's Date)
Thos Michaelos	(Today's Date)

REEL: 054962 FRAME: 0362

ASSIGNMENT

In consideration of good and valuable consideration, the receipt of which is hereby acknowledged, we, the undersigned inventor(s):

Sarah Atanasov
Abhishek A. Sharma
Bernhard Sell
Chieh-Jen Ku
Elliot Tan
Hui Jae Yoo
Noriyuki Sato
Travis W. Lajoie
Van H. Le
Thoe Michaelos

hereby sell, assign, and transfer to:

Intel Corporation

a corporation of Delaware, having a principal place of business at 2200 Mission College Boulevard, Santa Clara, California, 95054 USA ("Assignee"), and its successors, assigns, and legal representatives, the entire right, title, and interest for the United States and all other countries, in and to any and all inventions and improvements that are disclosed in the application for the patent entitled:

TRANSISTORS, MEMORY CELLS, AND ARRANGEMENTS THEREOF

(I hereby authorize and request any attorney having appropriate authority from the assignee to insert on the designated lines below, the filing date and application number of said application when known.)

which was filed on	December 10,	2020	as	
US		Application Number	17/117,350	and
COUNTRY or Inte	rnational Office			

which has been executed by the undersigned prior hereto or concurrently herewith on the date(s) indicated below,

and in and to said application and all Additional Applications, and all other patent applications that have been or shall be filed in the United States and all other countries and international filing offices on any of said inventions and improvements; and in and to all original and reissued patents that have been or shall be issued in the United States and all other countries and international filing offices on said inventions and improvements; and in and to all rights of priority resulting from the filing of said applications; as used herein "Additional Applications" includes but is not limited to provisional, design, utility, utility model, divisional, continuing, continuation-in-part, substitute, renewal, reissue, and national phase applications on said inventions and improvements;

and agree that said Assignee may apply for and receive a patent or patents for said inventions and improvements in its own name; and that, when requested, without charge to, but at the expense of, said Assignee, its successors, assigns, and legal representatives, to carry out in good faith the intent and purpose of this Assignment, the undersigned will execute all Additional Applications, and all other patent applications on any and all said inventions and improvements; execute all rightful oaths, assignments, powers of attorney, and other papers; communicate to said Assignee, its successors, assigns, and legal representatives all facts known to the undersigned relating to said inventions and improvements and the history thereof; and generally assist said Assignee, its successors, assigns, or legal representatives in securing and maintaining proper patent protection for said inventions and improvements and for vesting title to said inventions and improvements, and all applications for patents and all patents on said improvements, in said Assignee, its successors, assigns, and legal representatives; and

covenant with said Assignee, its successors, assigns, and legal representatives that no assignment, grant, mortgage, license, or other agreement affecting the rights and property herein conveyed has been made to others by the undersigned, and that full right to convey the same as herein expressed is possessed by the undersigned.

Sarah Atanasov	(Today's Date)
Abhishek A. Sharma	(Today's Date)
Bernhard Sell	(Today's Date)
Chieh-Jen Ku	(Today's Date)
Elliot Tan	(Today's Date)
Hui Jae Yoo	(Today's Date)
Noriyuki Sato	(Today's Date)

Travis W. Lajoie	/2/6/20 (Today's Date)
Van H. Le	(Today's Date)
Thoe Michaelos	(Today's Date)

ASSIGNMENT

In consideration of good and valuable consideration, the receipt of which is hereby acknowledged, we, the undersigned inventor(s):

Sarah Atanasov
Abhishek A. Sharma
Bernhard Sell
Chieh-Jen Ku
Elliot Tan
Hui Jae Yoo
Noriyuki Sato
Travis W. Lajoie
Van H. Le
Thoe Michaelos

hereby sell, assign, and transfer to:

Intel Corporation

a corporation of Delaware, having a principal place of business at 2200 Mission College Boulevard, Santa Clara, California, 95054 USA ("Assignee"), and its successors, assigns, and legal representatives, the entire right, title, and interest for the United States and all other countries, in and to any and all inventions and improvements that are disclosed in the application for the patent entitled:

TRANSISTORS, MEMORY CELLS, AND ARRANGEMENTS THEREOF

(I hereby authorize and request any attorney having appropriate authority from the assignee to insert on the designated lines below, the filing date and application number of said application when known.)

which was filed on	December 10,	2020	as	
US		Application Number	17/117,350	and
COUNTRY or Inte	rnational Office			

which has been executed by the undersigned prior hereto or concurrently herewith on the date(s) indicated below,

and in and to said application and all Additional Applications, and all other patent applications that have been or shall be filed in the United States and all other countries and international filing offices on any of said inventions and improvements; and in and to all original and reissued patents that have been or shall be issued in the United States and all other countries and international filing offices on said inventions and improvements; and in and to all rights of priority resulting from the filing of said applications; as used herein "Additional Applications" includes but is not limited to provisional, design, utility, utility model, divisional, continuing, continuation-in-part, substitute, renewal, reissue, and national phase applications on said inventions and improvements;

and agree that said Assignee may apply for and receive a patent or patents for said inventions and improvements in its own name; and that, when requested, without charge to, but at the expense of, said Assignee, its successors, assigns, and legal representatives, to carry out in good faith the intent and purpose of this Assignment, the undersigned will execute all Additional Applications, and all other patent applications on any and all said inventions and improvements; execute all rightful oaths, assignments, powers of attorney, and other papers; communicate to said Assignee, its successors, assigns, and legal representatives all facts known to the undersigned relating to said inventions and improvements and the history thereof; and generally assist said Assignee, its successors, assigns, or legal representatives in securing and maintaining proper patent protection for said inventions and improvements and for vesting title to said inventions and improvements, and all applications for patents and all patents on said improvements, in said Assignee, its successors, assigns, and legal representatives; and

covenant with said Assignee, its successors, assigns, and legal representatives that no assignment, grant, mortgage, license, or other agreement affecting the rights and property herein conveyed has been made to others by the undersigned, and that full right to convey the same as herein expressed is possessed by the undersigned.

Sarah Atanasov	(Today's Date)
Abhishek A. Sh	arma (Today's Date)
Bernhard Sell	(Today's Date)
Chieh-Jen Ku	(Today's Date)
Elliot Tan	(Today's Date)
Hui Jae Yoo	(Today's Date)
Noriyuki Sato	

Iravis	W. Lajoie	(Today's Date)
19	11/1/	0115/20
Ván II.	I e	(Today & Date)
Those A		(Today's Date)

ASSIGNMENT

In consideration of good and valuable consideration, the receipt of which is hereby acknowledged, we, the undersigned inventor(s):

Sarah Atanasov
Abhishek A. Sharma
Bernhard Sell
Chieh-Jen Ku
Elliot Tan
Hui Jae Yoo
Noriyuki Sato
Travis W. Lajoie
Van H. Le
Thoe Michaelos

hereby sell, assign, and transfer to:

Intel Corporation

a corporation of Delaware, having a principal place of business at 2200 Mission College Boulevard, Santa Clara, California, 95054 USA ("Assignee"), and its successors, assigns, and legal representatives, the entire right, title, and interest for the United States and all other countries, in and to any and all inventions and improvements that are disclosed in the application for the patent entitled:

TRANSISTORS, MEMORY CELLS, AND ARRANGEMENTS THEREOF

(I hereby authorize and request any attorney having appropriate authority from the assignee to insert on the designated lines below, the filing date and application number of said application when known.)

which was filed on	December 10, 2020		as	
US		Application Number	17/117,350	and
COUNTRY or International Office				

which has been executed by the undersigned prior hereto or concurrently herewith on the date(s) indicated below,

and in and to said application and all Additional Applications, and all other patent applications that have been or shall be filed in the United States and all other countries and international filing offices on any of said inventions and improvements; and in and to all original and reissued patents that have been or shall be issued in the United States and all other countries and international filing offices on said inventions and improvements; and in and to all rights of priority resulting from the filing of said applications; as used herein "Additional Applications" includes but is not limited to provisional, design, utility, utility model, divisional, continuing, continuation-in-part, substitute, renewal, reissue, and national phase applications on said inventions and improvements;

and agree that said Assignee may apply for and receive a patent or patents for said inventions and improvements in its own name; and that, when requested, without charge to, but at the expense of, said Assignee, its successors, assigns, and legal representatives, to carry out in good faith the intent and purpose of this Assignment, the undersigned will execute all Additional Applications, and all other patent applications on any and all said inventions and improvements; execute all rightful oaths, assignments, powers of attorney, and other papers; communicate to said Assignee, its successors, assigns, and legal representatives all facts known to the undersigned relating to said inventions and improvements and the history thereof; and generally assist said Assignee, its successors, assigns, or legal representatives in securing and maintaining proper patent protection for said inventions and improvements and for vesting title to said inventions and improvements, and all applications for patents and all patents on said improvements, in said Assignee, its successors, assigns, and legal representatives; and

covenant with said Assignee, its successors, assigns, and legal representatives that no assignment, grant, mortgage, license, or other agreement affecting the rights and property herein conveyed has been made to others by the undersigned, and that full right to convey the same as herein expressed is possessed by the undersigned.

Sarah Atanasov	(Today's Date)
Abhishek A. Sharma	(Today's Date)
Bernhard Sell	(Today's Date)
Chieh-Jen Ku	(Today's Date)
Elliot Tan	(Today's Date)
Hui Jae Yoo	(Today's Date)
Noriyuki Sato	(Today's Date)

(Today's Date) Travis W. Lajoie (Today's Date)

<u>QOZO/12/01</u> (Today's Date) Thoe Michaelos

<mark>Уа</mark>џ Н. Le

al sesso 🥦