

PATENT ASSIGNMENT COVER SHEET

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SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT
CONVEYING PARTY DATA	
Name	Execution Date
MICROCHIP TECHNOLOGY INC.	12/21/2018
ATMEL CORPORATION	12/21/2018
MICROCHIP TECHNOLOGY GERMANY GMBH	12/21/2018
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Property Type	Number
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DATE SIGNED:	11/26/2019
Total Attachments: 55	
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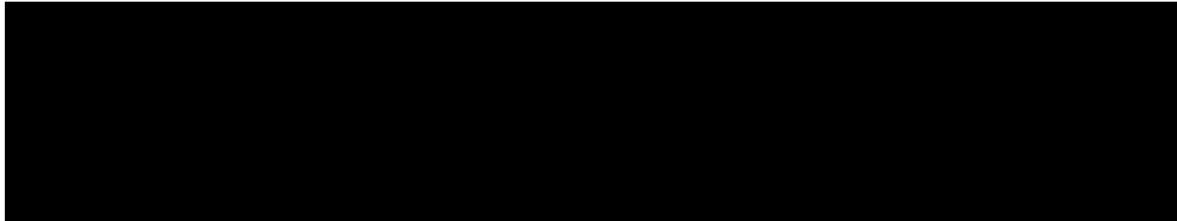
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Schedule 2
Form of U.S. Patent Assignment

Patent Assignment

For good and valuable consideration, the receipt of which is hereby acknowledged, and subject to the encumbrances described, and the other terms and conditions set forth, in the Patent Sale and Assignment Agreement dated as of December 21, 2018 ("Patent Sale Agreement") between Microchip Technology Inc., a Delaware corporation and its Affiliates, including Atmel Corporation and Microchip Technology Germany GmbH ("Assignor"), and Neodrón Limited, a company incorporated in Ireland ("Assignee"), Assignor hereby sells and assigns to Assignee, all of Assignor's right, title, and interest in and to (i) the U.S. registered patents and patent applications listed in Attachment A ("Listed Patents"), (ii) any patents that may issue on the patent applications included in the Listed Patents, (iii) any reissues and renewals of any Listed Patents, and (iv) any results of oppositions, reexaminations, supplemental examinations, and other review procedures with respect to any Listed Patents (collectively, including the Listed Patents, the "Assigned Patents") for the full term of such Assigned Patents, including any rights to (a) maintain, further prosecute, and renew the Assigned Patents (in each case where possible under applicable law), (b) transfer, and grant licenses and other rights under, the Assigned Patents, and (c) enforce, and bring actions for all past, present and future infringement of, the Assigned Patents.



In witness whereof, the Parties have caused their duly authorized representatives to execute this Agreement as of the date hereof.

MICROCHIP TECHNOLOGY INC.

By: Steve Sanghi

Name: Steve Sanghi

Title: CEO

NEODRÓN LIMITED

By: Ciaran O'Gara
Ciaran O'Gara (Jan 26, 2012)

Name: Ciaran O'Gara

Title: Managing Director

ATMEL CORPORATION.

By: Kim van Herk

Name: Kim van Herk

Title: VP & General Counsel

**MICROCHIP TECHNOLOGY GERMANY
GMBH**

By: Mohammed Nawaz Sharif

Name: Mohammed Nawaz Sharif

Title: Managing Director

Schedule 1

Listed Patents

PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
8,378,660	12/560,906	Programmable Integrated Circuit Device to Support Inductive Sensing	US	Granted	2009-09-16	2013-02-19
2332256	09741512.9	Programmable Integrated Silicon Device to Support Inductive Sensing	DE	Granted	2011-03-16	2012-11-07
2332256	09741512.9	Programmable Integrated Silicon Device to Support Inductive Sensing	NL	Granted	2011-03-16	2012-11-07
2332256	09741512.9	Programmable Integrated Silicon Device to Support Inductive Sensing	FR	Granted	2011-03-16	2012-11-07
10-1718846	10-2010-7028310	Programmable Integrated Circuit Device to Support Inductive Sensing	KR	Granted	2010-12-16	2017-03-16
ZL200980131301.5	200980131301.5	Programmable Integrated Silicon Device to Support Inductive Sensing	CN	Granted	2011-02-11	2013-09-18
8,427,450	12/642,089	Capacitive Touch Sensing and Light Emitting Diode Drive Matrix	US	Granted	2009-12-18	2013-04-23
I527377	099100712	Capacitive Touch Key and Light Emitting Diode Matrix Sensing	TW	Granted	2010-01-12	2016-03-21

PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
		and Drive Method, System and Apparatus				
ZL201080004445.7	201080004445.7	Capacitive Touch Key and Light Emitting Diode Matrix Sensing and Drive Method, System and Apparatus	CN	Granted	2011-07-12	2015-08-19
10-1703077	10-2011-7004833	Capacitive Touch Sensing and Light Emitting Diode Drive Matrix	KR	Granted	2011-02-28	2017-01-31
8,780,068	13/866,700	Capacitive Touch Sensing and Light Emitting Diode Drive Matrix	US	Granted	2013-04-19	2014-07-15
8,972,214	13/420,200	Touch Sense Determined by Characterizing Impedance Changes in a Transmission Line	US	Granted	2012-03-14	2015-03-03
2699988	12718508.0	Touch Sense Determined by Characterizing Impedance Changes in a Transmission Line	IT	Granted	2013-11-20	2015-04-15
2699988	12718508.0	Touch Sense Determined by Characterizing Impedance Changes in a Transmission Line	NL	Granted	2013-11-20	2015-04-15
2699988	602012006730.6	Touch Sense Determined by Characterizing Impedance Changes in a Transmission Line	DE	Granted	2013-11-20	2015-04-15
2699988	12718508.0	Touch Sense Determined by Characterizing Impedance	GB	Granted	2013-11-20	2015-04-15

PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
		Changes in a Transmission Line				
2699988	12718508.0	Touch Sense Determined by Characterizing Impedance Changes in a Transmission Line	FR	Granted	2013-11-20	2015-04-15
I585625	101113844	Touch Sense Determined by Characterizing Impedance Changes in a Transmission Line	TW	Granted	2012-04-18	2017-06-01
2542248	12718508.0	Touch Sense Determined by Characterizing Impedance Changes in a Transmission Line	ES	Granted	2013-11-20	2015-04-15
10-1899895	10-2013-7029623	Touch Sense Determined by Characterizing Impedance Changes in a Transmission Line	KR	Granted	2012-04-16	2018-09-12
2699988	12718508.0	Touch Sense Determined by Characterizing Impedance Changes in a Transmission Line	IE	Granted	2013-11-20	2015-04-15
ZL201280019268.9	201280019268.9	Touch Sense Determined by Characterizing Impedance Changes in a Transmission Line	CN	Granted	2012-04-16	2017-11-14
2831709	13715583.4	Method and System for Multi-Touch Decoding	FR	Granted	2013-03-29	2018-07-18
2831709	13715583.4	Method and System for Multi-Touch Decoding	DE	Granted	2013-03-29	2018-07-18
2831709	13715583.4	Method and System for Multi-Touch Decoding	IT	Granted	2013-03-29	2018-07-18

PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
2831709	13715583.4	Method and System for Multi-Touch Decoding	GB	Granted	2013-03-29	2018-07-18
6255381	10-2014-7030456	Method and System for Multi-Touch Decoding	KR	Application	2013-03-29	
9,207,820	2015-503647	Method and System for Multi-Touch Decoding	JP	Granted	2013-03-29	2017-12-08
1584179	13/830,891	Method and System for Multi-Touch Decoding	US	Granted	2013-03-14	2015-12-08
ZL201380025260.8	102111326	Method and System for Multi-Touch Decoding	TW	Granted	2013-03-29	2017-05-21
2147364	201380025260.8	Method and System for Multi-Touch Decoding	CN	Granted	2013-03-29	2017-07-28
2147364	102007020873	Sensor device, as well as a process for the generation of with respect to the position or position signals indicative of limbs	DE	Granted	2007-04-26	2017-02-22
2147364	08758350	Sensor Apparatus and Method for Generating Signals Indicative of the Position or Change in Position of Limbs	GB	Granted	2008-04-28	2017-02-22
101689079	200880022205	Is used for generating the body position or position change of the signal sensor device and method for	CN	Granted	2008-04-28	2013-11-13

PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
10-1484677	10-2009-7024540	Sensor apparatus and method for generating signals indicative of the position or change in position of limbs	KR	Granted	2008-04-28	2015-01-14
2147364	08758350	Sensor Apparatus and Method for Generating Signals Indicative of the Position or Change in Position of Limbs	FR	Granted	2008-04-28	2017-02-22
2147364	08758350	Sensor Apparatus and Method for Generating Signals Indicative of the Position or Change in Position of Limbs	NL	Granted	2008-04-28	2017-02-22
5506661	2010-504571	The sensor device and the method of forming the signal which displays the change of position or position of the quarters	JP	Granted	2008-04-28	2014-03-28
8,345,015	12/597,619	Sensor apparatus and method for generating signals indicative of the position or change in position of limbs	US	Granted	2008-04-28	2013-01-01
2147364	08758350.6	Sensor Apparatus and Method for Generating Signals Indicative of the Position or Change in Position of Limbs	ES	Granted	2008-04-28	2017-02-22
	102007020873	Sensor device, as well as a process for the generation of with respect to the position or	DE	Published	2007-04-26	

PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
		position signals indicative of limbs				
103140820	201180046625.6	Is used for detecting the hand-held device of the grasping method and sensor device	CN	Granted	2011-11-07	2016-11-09
102010043519	102010043519	Method and sensor device for detection of a straddling of a hand-held device	DE	Granted	2010-11-05	2012-10-18
10-1815042	10-2013-7008299	Method and Sensor Device for the Detection of a Gripping of a Hand-Held Device	KR	Granted	2011-11-07	2017-12-28
9,322,861	13/883,757	Method and Sensor Device for the Detection of a Gripping of a Hand-Held Device	US	Granted	2011-11-07	2016-04-26
	11781517.5	Method and Sensor Device for the Detection of a Gripping of a Hand-Held Device	EP	Published	2011-11-07	
2544085	12701072.6	Sensor Arrangement for Capacitive Proximity Detection	ES	Granted	2013-08-01	2015-05-06
9,733,290	13/977,723	Sensor Device and Method for Capacitive Approximation Detection	US	Granted	2014-02-24	2017-08-15
10-1829002	10-2013-7020544	Sensor Device and Method for Capacitive Approximation Detection	KR	Granted	2012-01-03	2018-02-07

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PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
	102011002446	Sensor device and method for the capacitive detecting	DE	Published	2011-01-04	
	201610635419.3	Sensor Device and Method for Capacitive Approximation Defection	CN	Published	2016-08-05	
8,600,688	13/049,932	Geometrically Based Button Discrimination in Capacitive Sensing Applications	US	Granted	2011-03-17	2013-12-03
	10-2015-7022971	Force Sensing X-Y Touch Sensor	KR	Application	2015-08-24	
I614647	103108489	Force Sensing X-Y Touch Sensor	TW	Granted	2014-03-11	2018-02-11
	14/097,370	Force Sensing X-Y Touch Sensor	US	Published	2013-12-05	
	14712850.8	Force Sensing X-Y Touch Sensor	EP	Published	2015-09-21	
	201480010535.5	Force Sensing X-Y Touch Sensor	CN	Published	2015-08-26	
2564297	11718626.2	Mutual Capacitance Measurement in a Multi-Touch Input Device	FR	Granted	2011-04-28	2017-10-04
2564297	11718626.2	Mutual Capacitance Measurement in a Multi-Touch Input Device	DE	Granted	2011-04-28	2017-10-04

PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
2564297	11718626.2	Mutual Capacitance Measurement in a Multi-Touch Input Device	NL	Granted	2011-04-28	2017-10-04
I531947	100114715	Mutual Capacitance Using a CSM	TW	Granted	2011-04-27	2016-05-01
8,542,215	13/089,786	Mutual Capacitance Measurement in a Mutli-Touch Input Device	US	Granted	2011-04-19	2013-09-24
ZL201180012498.8	201180012498.8	Mutual Capacitance Measurement in a Multi-Touch Input Device	CN	Granted	2012-09-05	2016-10-12
	10-2012-7022585	Mutual Capacitance Measurement in a Multi-Touch Input Device	KR	Published	2011-04-28	
9,074,310	12/529,414	CAPACITATIVE SENSOR DEVICE	US	Granted	2009-07-03	2015-07-07
102008031774	102008031774	Protection system for detecting presence of e.g. infant, inside holding area of e.g. washing machine, has evaluation circuit for detecting dynamics of electric field interactions with one of two electrode devices	DE	Granted	2008-07-04	2010-04-15
9,354,263	14/007,073	Measuring Device and Method for the Detection of an Approach	US	Granted	2012-03-22	2016-05-31

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PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
2689313	102011006079	Measuring device and method for detecting	DE	Granted	2011-03-24	2016-07-13
102011006079	102011006079.0	Measuring Device and Method for Proximity Detection	DE	Granted	2011-03-24	2012-12-06
2689313	12714254.5	MEASURING DEVICE AND METHOD FOR THE DETECTION OF AN APPROACH	FR	Granted	2012-03-22	2016-07-13
I570610	101110017	Measuring Device and Method for the Detection of an Approach	TW	Granted	2012-03-23	2017-02-11
ZL201280014714.7	201280014714.7	Measuring Device and Method for the Detection of an Approach to a Hand-Held Device	CN	Granted	2013-09-23	2017-02-15
2689313	12714254.5	MEASURING DEVICE AND METHOD FOR THE DETECTION OF AN APPROACH	NL	Granted	2012-03-22	2016-07-13
2689313	12714254.5	MEASURING DEVICE AND METHOD FOR THE DETECTION OF AN APPROACH	GB	Granted	2012-03-22	2016-07-13
6121397	2014-500391	Measurement device and manner for detecting the approach to portable device	JP	Granted	2012-03-22	2017-04-07

PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
10-1868924	10-2013-7025810	Measuring Device and Method for the Detection of an Approach to a Hand-Held Device	KR	Granted	2012-03-22	2018-06-12
102011006743	102011006743	Detection method for sensing gripping of hand-held device involves operating sensor device in first and second operating modes to detect gripping of hand-held device once amount of electrical signal satisfies predetermined conditions	DE	Granted	2011-04-04	2012-12-06
I571056	101111783	Sensor Device and Method for the Detection of a Gripping of a Hand-Held Device	TW	Granted	2012-04-03	2017-02-11
102011075276	102011075276	Capacitive sensor device and method for operating an input device	DE	Granted	2011-05-04	2015-10-08
10-1867502	10-2013-7031856	A Capacitive Sensor Device as Well as a Method for Operating an Input Device	KR	Granted	2012-05-02	2018-06-07
9,360,975	14/115,541	Capacitive Sensor Device With Additional Sensor Electrode For Determining Mode Of Operation	US	Granted	2014-05-20	2016-06-07
I586104	101116072	A Capacitive Sensor Device as Well as a Method for Operating	TW	Granted	2012-05-04	2017-06-01

PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
		an Input Device				
103608752	201280030197.2	Capacitive sensor device and method for operating input device method for	CN	Granted	2012-05-02	2016-11-30
	12721446.8	A Capacitive Sensor Device as Well as a Method for Operating an Input Device	EP	Published	2012-05-02	
6081996	2014-516332	The printed circuit baseplate which has the electrode constitution of the capacitive sensor	JP	Granted	2012-06-20	2017-01-27
2724464	12730884.9	Printed circuit board with electrode configuration of a capacitive sensor	DE	Granted	2012-06-20	2016-09-14
2724464	12730884.9	PRINTED CIRCUIT BOARD COMPRISING AN ELECTRODE CONFIGURATION OF AN CAPACITIVE SENSOR	FR	Granted	2012-06-20	2016-09-14
9,702,902	14/128,998	Printed Circuit Board Comprising an Electrode Configuration of a Capacitive Sensor	US	Granted	2012-06-20	2017-07-11
ZL201280039513.2	201280039513.2	Printed circuit board comprising an electrode configuration of an capacitive sensor	CN	Granted	2012-06-20	2017-11-17

PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
I556693	101122553	Printed Circuit Board Comprising an Electrode Configuration of a Capacitive Sensor	TW	Granted	2012-06-22	2016-11-01
2724464	12730884.9	PRINTED CIRCUIT BOARD COMPRISING AN ELECTRODE CONFIGURATION OF AN CAPACITIVE SENSOR	GB	Granted	2012-06-20	2016-09-14
2724464	12730884.9	PRINTED CIRCUIT BOARD COMPRISING AN ELECTRODE CONFIGURATION OF AN CAPACITIVE SENSOR	NL	Granted	2012-06-20	2016-09-14
	10-2014-7001022	Printed Circuit Board Comprising an Electrode Configuration of a Capacitive Sensor	KR	Published	2012-06-20	
9,665,725	14/616,076	Gesture Based Access Control Method and System	US	Granted	2015-02-06	2017-05-30
	16707268.5	Contactless Gesture Based Access Control	EP	Published	2016-01-28	
	105104174	Gesture Based Access Control Method and System	TW	Published	2016-02-05	
	201680005535.5	Contactless Gesture Based Access Control	CN	Published	2016-01-28	

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PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
	2017-533463	Contactless Gesture Based Access Control	JP	Published	2016-01-28	
	10-2017-7014258	Contactless Gesture Based Access Control	KR	Published	2016-01-28	
ZL201080039036.0	201080039036.0	Capacitive Key Touch Sensing Using Analog Inputs and Digital Outputs	CN	Granted	2012-03-02	2016-03-30
10-1749540	10-2012-7002766	Processor Capacitive Key Touch Sensing Using Analog Inputs and Digital Outputs	KR	Granted	2012-01-31	2017-06-15
2484013	10744792.2	Capacitive Key Touch Sensing Using Analog Inputs and Digital Outputs	DE	Granted	2012-03-29	2017-05-31
2484013	10744792.2	Capacitive Key Touch Sensing Using Analog Inputs and Digital Outputs	FR	Granted	2012-03-29	2017-05-31
8,310,381	12/794,153	Capacitive Key Touch Sensing Using Analog Inputs and Digital Outputs	US	Granted	2010-06-04	2012-11-13
I528251	099126980	Capacitive Key Touch Sensing Using Analog Inputs and Digital Outputs	TW	Granted	2010-08-12	2016-04-01
2484013	10744792.2	Capacitive Key Touch Sensing Using Analog Inputs and Digital Outputs	NL	Granted	2012-03-29	2017-05-31

PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
102009032357	102009032357	Electrode arrangement system for electrical handheld device has transmission electrode and compensation electrode, which generate current in reception electrode representing approach of hand to handheld device	DE	Granted	2009-07-08	2011-06-16
102009061064	102009061064	Detection device for an electrical hand-held device, as well as hand-held tool having a detection device	DE	Granted	2009-07-08	2013-11-28
102217195	200980138720.1	Is used for generating an indication of four limbs of the position or position change of the signal sensor device	CN	Granted	2009-08-07	2016-01-20
5684125	2011-521488	The sensor device in order to form the signal which becomes index of change of position or position of the hand and foot	JP	Granted	2011-02-07	2015-01-23
2364526	09804526	Sensor device for generating signals that are indicative of the position or change of position of limbs	IT	Granted	2009-08-07	2013-10-09
2364526	09804526.3	Sensor device for generating signals that are indicative of the position or change of position of limbs	ES	Granted	2009-08-07	2013-10-09

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PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
2364526	09804526.3	Sensor device for generating signals that are indicative of the position or change of position of limbs	FR	Granted	2011-03-05	2013-10-09
2364526	102008036720	Sensor device for the generation of with respect to the position or position signals indicative of limbs	DE	Granted	2008-08-07	2013-10-09
10-1391171	10-2011-7005167	Sensor device for generating signals that are indicative of the position or change of position of limbs	KR	Granted	2009-08-07	2014-04-25
8,558,791	12/682,303	Sensor System for Generating Signals that are Indicative of the Position or Change of Position of Limbs	US	Granted	2009-08-07	2013-10-15
2364526	09804526	Sensor device for generating signals that are indicative of the position or change of position of limbs	NL	Granted	2009-08-07	2013-10-09
2364526	09804526	Sensor device for generating signals that are indicative of the position or change of position of limbs	GB	Granted	2009-08-07	2013-10-09
	102008036720	Sensor device for the generation of with respect to the position or position signals indicative of	DE	Published	2008-08-07	

PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
		limbs				
102010012961	102010012961.5	Sensor device and method for the approach - and tactile sensing	DE	Granted	2010-03-25	2011-12-22
9,166,581	13/637,131	Electrode Device, Circuit Arrangement and Method for the Approach and Touch Detection	US	Granted	2011-03-24	2015-10-20
10-1899899	10-2012-7023020	Electrode Device, Circuit Arrangement and Method for the Approach and Touch Detection	KR	Granted	2011-03-24	2018-09-12
102906678	201180012560.3	For near and touch detection electrode device circuit arrangement and method for	CN	Granted	2011-03-24	2017-04-12
	14/885,651	Electrode Device, Circuit Arrangement and Method for the Approach and Touch Detection	US	Published	2015-10-16	
	11712508	Electrode Device, Circuit Arrangement and Method for the Approach and Touch Detection	EP	Published	2011-03-24	
102010044778	102010044778	Electrode device, circuit arrangement as well as a process for the approach - and tactile sensing	DE	Granted	2010-09-08	2013-08-22

PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
9,430,107	14/254,098	Determining Touch Locations and Forces Thereo on a Touch and Force Sensing Surface	US	Granted	2014-04-16	2016-08-30
	10-2016-7024023	Determining Touch Locations and Forces Thereo on a Touch and Force Sensing Surface	KR	Application	2016-08-31	
	2016-550560	Determining Touch Locations and Forces Thereo on a Touch and Force Sensing Surface	JP	Application	2016-08-05	
	201580009205.9	Determining Touch Locations and Forces Thereo on a Touch and Force Sensing Surface	CN	Published	2016-08-17	
	15719103.2	Determining Touch Locations and Forces Thereo on a Touch and Force Sensing Surface	EP	Published	2016-11-11	
	104112257	Determining Touch Locations and Forces Thereo on a Touch and Force Sensing Surface	TW	Published	2015-04-16	
8,154,317	12/560,855	Integrated Circuit Device to Support Inductive Sensing	US	Granted	2009-09-16	2012-04-10
2332255	09793171.1	Integrated Circuit Device to Support Inductive Sensing	DE	Granted	2009-09-30	2012-11-07
2332255	09793171.1	Integrated Circuit Device to Support Inductive Sensing	FR	Granted	2009-09-30	2012-11-07
2332255	09793171.1	Integrated Circuit Device to	NL	Granted	2009-09-30	2012-11-07

PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
		Support Inductive Sensing				
1526911	098133999	Integrated Circuit Device to Support Inductive Sensing	TW	Granted	2009-10-07	2016-03-21
10-1385650	10-2010-7028978	Integrated Circuit Device to Support Inductive Sensing	KR	Granted	2009-09-30	2014-04-09
ZL200980129346.9	200980129346.9	Integrated Circuit Device to Support Inductive Sensing	CN	Granted	2009-09-30	2013-12-18
8,723,833	12/827,592	Capacitive Touch System with Noise Immunity	US	Granted	2010-06-30	2014-05-13
9,141,174	13/947,424	Electrode System for Proximity Detection and Hand-Held Device with Electrode System	US	Granted	2013-07-22	2015-09-22
5462861	2011-505467	The hand-held device which possesses the electrode system and the electrode system which detect approach	JP	Granted	2009-04-16	2014-01-24
8,493,074	12/519,185	Electrode System for Proximity Detection and Hand-Held Device with Electrode System	US	Granted	2009-06-30	2013-07-23
2281343	09734949	Electrode System for Proximity Detection and Hand-Held Device with Electrode System	DE	Granted	2009-04-16	2013-03-13
2281343	09734949	Electrode System for Proximity Detection and Hand-Held Device with Electrode System	FR	Granted	2009-04-16	2013-03-13

PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
2281343	09734949	Electrode System for Proximity Detection and Hand-Held Device with Electrode System	NL	Granted	2009-04-16	2013-03-13
I518554	098138548	Electrode System for Proximity Detection and Hand-Held Device with Electrode System	TW	Granted	2009-11-13	2016-01-21
101849217	200980000516	Is adjacent to the detection electrode of the system and has an electrode system of hand-held device	CN	Granted	2009-04-16	2013-12-11
10-1370987	20097008088	Electrode System for Proximity Detection and Hand-Held Device with Electrode System	KR	Granted	2009-04-16	2014-02-28
	102008020819	Wireless computer mouse for use in e.g. computing applications, has tapping circuit generating electrode signals, where electrode signals are supplied to signal control unit designed as microcontroller unit	DE	Published	2008-04-25	
2324275	09772562	Contact and proximity detection using capacitive sensors	IT	Granted	2009-07-03	2013-01-09
2324275	09772562	Contact and proximity detection using capacitive sensors	ES	Granted	2009-07-03	2013-01-09
8,575,948	12/529,426	Touch and approach detection with capacitive sensors	US	Granted	2011-09-22	2013-11-05

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2324275	09772562	Contact and proximity detection using capacitive sensors	NL	Granted	2009-07-03	2013-01-09
2324275	102008031743	Contact surfaces - and approximately recognition with capacitive sensors	DE	Granted	2008-07-04	2013-01-09
2324275	09772562	Contact and proximity detection using capacitive sensors	FR	Granted	2009-07-03	2013-01-09
2324275	09772562	Contact and proximity detection using capacitive sensors	GB	Granted	2009-07-03	2013-01-09
102008031743	102008031743	Contact surfaces - and approximately recognition with capacitive sensors	DE	Granted	2008-07-04	2011-04-14
102009016355	102009016355	Measuring electrode for improved proximity detection	DE	Granted	2009-04-07	2010-07-08
102009060995	102009060995	Measuring electrode for improved proximity detection	DE	Granted	2009-04-07	2015-02-12
9,124,274	13/513,076	Device and Method for Detecting a Clasp of a Hand-Held Device by a Hand	US	Granted	2010-12-13	2015-09-01
5840139	2012-542579	The device and method in order to detect the holding of the portable device by the hand	JP	Granted	2010-12-13	2015-11-20
6109885	2015-143647	Device and Method for Detecting a Hand-Held Device Being Clapsed by a Hand	JP	Granted	2015-07-21	2017-03-17

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102009057935	102009057935.4	Einrichtung und Verfahren zur Detektion eines Umgreifens eines Handgeräts durch eine Hand	DE	Granted	2009-12-11	2015-07-09
ZL201080055951.9	201080055951.9	Device and Method for Detecting a Hand-Held Device Being Clasped by a Hand	CN	Granted	2012-06-08	2016-10-05
10-1795530	10-2012-7017337	Device and method for detecting a hand-held device being clasped by a hand	KR	Granted	2010-12-13	2017-11-02
	10800715	Device and method for detecting a hand-held device being clasped by a hand	EP	Published	2010-12-13	
2294695	10713444	Sensor Device and Method for Grip and Proximity Detection	ES	Granted	2010-04-07	2016-04-06
9,236,860	12/745,093	Sensor Device and Method for Grip and Proximity Detection	US	Granted	2010-05-27	2016-01-12
10-1742982	10-2011-7026479	Sensor Device and Method for Grip and Proximity Detection	KR	Granted	2010-04-07	2017-05-29
102498669	201080024912.2	Sensor Device and Method for Grip and Proximity Detection	CN	Granted	2010-04-07	2015-10-21
5882194	2012-504012	And methods sensor device for proximity detection and gripping	JP	Granted	2010-04-07	2016-02-12
2294695	10713444	Sensor Device and Method for	DE	Granted	2010-04-07	2016-04-06

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		Grip and Proximity Detection				
102009057931	102009057931.1	Circuit arrangement for a capacitive sensor element	DE	Granted	2009-12-11	2015-07-09
2294695	10713444	Sensor Device and Method for Grip and Proximity Detection	GB	Granted	2010-04-07	2016-04-06
2294695	10713444	Sensor Device and Method for Grip and Proximity Detection	FR	Granted	2010-04-07	2016-04-06
2294695	10713444	Sensor Device and Method for Grip and Proximity Detection	NL	Granted	2010-04-07	2016-04-06
2294695	10713444.7	Sensor Device and Method for Grip and Proximity Detection	IE	Granted	2010-12-21	2016-04-06
2294695	10713444	Sensor Device and Method for Grip and Proximity Detection	IT	Granted	2010-04-07	2016-04-06
9,442,143	13/977,724	Capacitive Proximity Sensor as well as Method for Capacitive Approximation Detection	US	Granted	2014-02-12	2016-09-13
103339860	201280007526.1	Capacitive proximity sensor and capacitive proximity detection method of	CN	Granted	2012-01-03	2016-10-05
102011002447	102011002447	Capacitive proximity sensor, as well as a process for the capacitive detecting	DE	Granted	2011-01-04	2014-07-10
10-1830796	10-2013-7020554	Capacitive Proximity Sensor as well as Method for Capacitive	KR	Granted	2012-01-03	2018-02-13

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		Proximity Detection				
	12700034.7	CAPACITIVE PROXIMITY SENSOR AS WELL AS METHOD FOR CAPACITIVE APPROXIMATION DETECTION	EP	Published	2012-01-03	
2727243	12740512.4	Capacitive Sensor Device and Method for Calibrating a Capacitive Sensor Device	FR	Granted	2012-06-28	2018-05-02
2727243	12740512.4	Capacitive Sensor Device and Method for Calibrating a Capacitive Sensor Device	IT	Granted	2012-06-28	2018-05-02
2727243	12740512.4	Capacitive Sensor Device and Method for Calibrating a Capacitive Sensor Device	GB	Granted	2012-06-28	2018-05-02
102011078369	102011078369	Capacitive sensor device and method for calibrating a capacitive sensor device	DE	Granted	2011-06-29	2013-02-28
6014131	2014-517723	Method of calibrating a capacitive sensor device and the capacitive sensor device	JP	Granted	2012-06-28	2016-09-30
9,442,175	14/129,351	Capacitive Sensor Device and Method for Calibrating a Capacitive Sensor Device	US	Granted	2012-06-28	2016-09-13
103748789	201280039515.1	Capacitive Sensor Device and Method for Calibrating a	CN	Granted	2012-06-28	2016-11-30

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		Capacitive Sensor Device				
I573393	101123657	Capacitive Sensor Device and Method for Calibrating a Capacitive Sensor Device	TW	Granted	2012-06-29	2017-03-01
	10-2014-7001769	Capacitive Sensor Device and Method for Calibrating a Capacitive Sensor Device	KR	Published	2012-06-28	
	10-2016-7000559	Capacitive Proximity Detection Using Delta-Sigma Conversion	KR	Application	2016-01-08	
9,587,964	14/301,462	Capacitive Proximity Detection Using Delta-Sigma Conversion	US	Granted	2014-06-11	2017-03-07
	2016-519635	Capacitive Proximity Detection Using Delta-Sigma Conversion	JP	Published	2015-12-10	
	103120370	Capacitive Proximity Detection Using Delta-Sigma Conversion	TW	Published	2014-06-12	
	14736556.3	Capacitive Proximity Detection Using Delta-Sigma Conversion	EP	Published	2016-01-12	
	201480040649.1	Capacitive Proximity Detection Using a Delta-Sigma Conversion	CN	Published	2016-01-18	
9,298,327	14/101,014	Integrated Shielding In Touch Sensors	US	Granted	2013-12-09	2016-03-29
9,171,188	14/540,319	Charge Measurement	US	Granted	2014-11-13	2015-10-27

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9,823,285	14/919,889	Charge Measurement	US	Granted	2015-10-22	2017-11-21
8,723,586	13/667,171	Charge Measurement	US	Granted	2012-11-02	2014-05-13
	102013222146.0	Charge Measurement	DE	Published	2013-10-31	
9,727,168	15/224,132	Touch Sensor Scanning for Display Embedded Touch Sensors	US	Granted	2016-07-29	2017-08-08
9,448,659	13/827,713	Simultaneous Touch Sensor Scanning and Display Refreshing for Minimizing Display Degradation for Display-Embedded Touch Sensors	US	Granted	2013-03-14	2016-09-20
	102013227191.3	Touch Sensor Scanning for Display-Embedded Touch Sensors	DE	Published	2013-12-30	
9,046,942	13/486,562	Combined Accumulator and Maximum/Minimum Comparator	US	Granted	2012-06-01	2015-06-02
9,274,656	13/929,307	Fast Scanning for Mutual Capacitance Screens	US	Granted	2013-06-27	2016-03-01
9804722	15/057,878	Fast Scanning for Mutual Capacitance Screens	US	Granted	2016-03-01	2017-10-31
	102014212207.4	Fast Scanning for Mutual Capacitance Screens	DE	Published	2014-06-25	

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9,542,046	13/927,579	Changing the Detection Range of a Touch Sensor	US	Granted	2013-06-26	2017-01-10
	102014211244.3	Method for Changing the Detection Range of a Touch Sensor	DE	Published	2014-06-12	
	15/342,483	Method for Changing the Detection Range of a Touch Sensor	US	Published	2016-11-03	
9,442,599	13/950,893	System and Method for Using Signals Resulting From Signal Transmission in a Touch Sensor	US	Granted	2013-07-25	2016-09-13
I619049	103113574	Touch Sensor with High-Density Macro-Feature Design	TW	Granted	2014-04-14	2018-03-21
ZL201410150982.2	201410150982.2	Touch Sensor with High-Density Macro-Feature Design	CN	Granted	2014-04-15	2017-07-11
9,086,770	13/863,036	Touch Sensor with High-Density Macro-Feature Design	US	Granted	2013-04-15	2015-07-21
	10 2014 207 005.8	Touch Sensor with High-Density Macro-Feature Design	DE	Published	2014-04-11	
9,916,047	13/618,068	Pattern of Electrodes for a Touch Sensor	US	Granted	2012-09-14	2018-03-13
9,647,658	13/671,106	Resistive Interpolation for a Touch Sensor with Opaque Conductive Material	US	Granted	2012-11-07	2017-05-09

PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
	13/828,021	Reduction of Touch Sensor Pattern Visibility Using Beamsplitters	US	Published	2013-03-14	
9,465,490	14/031,743	Curved Surface Sensor Pattern	US	Granted	2013-09-19	2016-10-11
9,310,944	13/951,300	Oncell Single-Layer Touch Sensor	US	Granted	2013-07-25	2016-04-12
9791992	15/083,417	Oncell Single-Layer Touch Sensor	US	Granted	2016-03-29	2017-10-17
	107127307	Oncell Single-Layer Touch Sensor	TW	Application	2014-07-24	
	103125394	Oncell Single-Layer Touch Sensor	TW	Published	2014-07-24	
	201410332340.4	Oncell Single-Layer Touch Sensor	CN	Published	2014-07-11	
	102014214466.3	Oncell Single-Layer Touch Sensor	DE	Published	2014-07-24	
	106112139	Touch Sensor Mesh Designs	TW	Application	2017-04-12	
	1020170049159	Touch Sensor Mesh Designs	KR	Application	2017-04-17	
	102017206699.7	Touch Sensor Mesh Designs	DE	Application	2017-04-20	
	15/134,044	Touch Sensor Mesh Designs	US	Published	2016-04-20	
9,557,361	13/904,904	Edgeless Single-Layer Touch Sensor	US	Granted	2013-05-29	2017-01-31

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PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
	201410227910.3	Edgeless Single-Layer Touch Sensor	CN	Published	2014-05-27	
	103118873	Edgeless Single-Layer Touch Sensor	TW	Published	2014-05-29	
	102014210210.3	Edgeless Single-Layer Touch Sensor	DE	Published	2014-05-28	
	15/419,737	Edgeless Single-Layer Touch Sensor	US	Published	2017-01-30	
9,939,965	13/711,105	Sending Drive Signals with an Increased Number of Pulses to Particular Drive Lines	US	Granted	2012-12-11	2018-04-10
	15/927,827	Sending Drive Signals with an Increased Number of Pulses to Particular Drive Lines	US	Application	2018-03-21	
9,927,901	15/177,864	Force Sensor Pattern	US	Granted	2016-06-09	2018-03-27
	106119191	Force Sensor Pattern	TW	Application	2017-06-09	
	102017209760.4	Force Sensor Pattern	DE	Application	2017-06-09	
	2017113958	Force Sensor Pattern	JP	Application	2017-06-09	
	15/918,310	Force Sensor Pattern	US	Application	2018-03-12	
	201710438167.X	Force sensor array	CN	Published	2017-06-09	
9,880,674	13/931,181	Pattern of Electrodes for a Touch Sensor	US	Granted	2013-06-28	2018-01-30

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	15/881,996	Pattern of Electrodes for a Touch Sensor	US	Application	2018-01-29	
9,128,577	14/102,222	Hybrid Capacitive Touch System Design	US	Granted	2013-12-10	2015-09-08
	103142916	Hybrid Capacitive Touch System Design	TW	Published	2014-12-09	
	201410748910.8	Hybrid Capacitive Touch System Design	CN	Published	2014-12-09	
	102014225254.7	Hybrid capacitive contact system	DE	Published	2014-12-09	
	14/930,480	Low to medium speed AC-coupled serial interface	US	Published	2015-11-02	
9,292,144	14/283,428	Touch-Sensor-Controller Sensor Hub	US	Granted	2014-05-21	2016-03-22
8,736,551	13/548,049	Touch-Sensor-Controller Hub	US	Granted	2012-07-12	2014-05-27
	102013213689.7	Touch-Sensor-Controller Sensor Hub	DE	Published	2013-07-12	
9,152,285	13/954,232	Position Detection of an Object Within Proximity of a Touch Sensor	US	Granted	2013-07-30	2015-10-06
	10 2014 214 937.1	Position Detection of an Object Within Proximity of a Touch Sensor	DE	Published	2014-07-30	

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9,298,222	14/135,329	Touch Sensor with Plastic Lens Cover	US	Granted	2013-12-18	2016-03-29
	103135758	Touch Sensor with Plastic Lens Cover	TW	Published	2014-10-15	
	201410575026.9	Touch Sensor with Plastic Lens Cover	CN	Published	2014-10-15	
	102014224060.3	Touch Sensor with Plastic Lens Cover	DE	Published	2014-11-17	
9825104	14/204,949	Low-Birefringence Substrate for Touch Sensor	US	Granted	2014-03-11	2017-11-21
9,927,927	14/270,189	Implementing a Virtual Controller Outside an Area of a Touch Sensor	US	Granted	2014-05-05	2018-03-27
	15/921,004	Implementing a Virtual Controller Outside an Area of a Touch Sensor	US	Application	2018-03-14	
9,395,836	13/964,603	System and Method for Reducing Borders of a Touch Sensor	US	Granted	2013-08-12	2016-07-19
	10 2013 219 944.9	System and Method for Reducing Borders of a Touch Sensor	DE	Published	2013-10-01	
8,988,376	13/665,520	Charge Compensation for Capacitive Touch Sensor Nodes	US	Granted	2012-10-31	2015-03-24

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	10 2013 221 719.6	Charge Compensation for Capacitive Touch Sensor Nodes	DE	Published	2013-10-25	
9,274,152	13/753,755	Current-Based Charge Compensation in a Touch Sensor	US	Granted	2013-01-30	2016-03-01
	102013227225.1	Current-Based Charge Compensation in a Touch Sensor	DE	Published	2013-12-30	
9,081,454	13/852,816	Touch Sensor with Capacitive Voltage Driver	US	Granted	2013-03-28	2015-07-14
	102014201 852.8	Touch Sensor with Capacitive Voltage Driver	DE	Published	2014-02-03	
9,436,328	14/310,864	Single-Layer Touch Sensor	US	Granted	2014-06-20	2016-09-06
9,760,207	15/256,188	Single-Layer Touch Sensor	US	Granted	2016-09-02	2017-09-12
	201510341731.7	Single layer capacitive position sensor	CN	Published	2015-06-18	
	104119872	Single layer capacitive position sensor	TW	Published	2015-06-18	
	102015211352.3	Single layer capacitive position sensor	DE	Published	2015-06-19	
8,643,621	13/614,923	Touch-Sensitive User Interface	US	Granted	2012-09-13	2014-02-04
8,279,189	12/539,421	Touch-Sensitive User Interface	US	Granted	2009-08-11	2012-10-02

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I518576	99129310	Capacitive Control Panel	TW	Granted	2010-08-31	2016-01-21
ZL201010275716.4	201010275716.4	Capacitive Control Panel	CN	Granted	2010-09-03	2015-09-16
8,730,199	12/554,552	Capacitive Control Panel	US	Granted	2009-09-04	2014-05-20
9,563,317	14/278,864	Capacitive Control Panel	US	Granted	2014-05-22	2017-02-07
	102010040164.1	Capacitive Control Panel	DE	Published	2010-09-02	
9,692,439	13/593,982	Apparatus Using a Differential Analog-to-Digital Converter	US	Granted	2012-08-24	2017-06-27
8,253,706	12/492,856	Apparatus Using a Differential Analog-to-Digital Converter	US	Granted	2009-06-26	2012-08-28
	1020100303747	Apparatus Using A Differential Analog-to-Digital Converter	DE	Published	2010-06-23	
8,621,942	12/534,753	Force Sensor with Compressible Electrode	US	Granted	2009-08-03	2014-01-07
	102010038771.1	Force Sensor with Compressible Electrode	DE	Published	2010-08-02	
9,916,045	12/605,779	Sense Electrode Design	US	Granted	2009-10-26	2018-03-13
	15/915,726	Sense Electrode Design	US	Allowed	2018-03-08	
8,451,237	12/498,317	Sensitivity Control as a Function of Touch Shape	US	Granted	2009-07-06	2013-05-28
	102010030935.4	Touch Shape Based Automatic Gain Control	DE	Published	2010-07-05	

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8,797,290	12/604,174	Sense Electrode Spine Interpolation	US	Granted	2009-10-22	2014-08-05
9,836,167	102010042767.5	Sense Electrode Spine Interpolation	DE	Published	2010-10-21	
	12/534,748	Electrode Layout for Touch Screens	US	Granted	2009-08-03	2017-12-05
	102010038717.7	Electrode Layout for Touch Screens	DE	Published	2010-07-30	
8,797,280	12/787,732	Systems and Methods for Improved Touch Screen Response	US	Granted	2010-05-26	2014-08-05
8,786,572	12/939,794	Touch Position-Sensor Panel and Method	US	Granted	2010-11-04	2014-07-22
8,823,656	12/871,687	Touch Tracking Across Multiple Touch Screens	US	Granted	2010-08-30	2014-09-02
9,252,768	12/880,836	Position-Sensing Panel	US	Granted	2010-09-13	2016-02-02
9,651,355	13/846,458	Proximity Detection	US	Granted	2013-03-18	2017-05-16
8,400,209	12/910,484	Proximity Detection	US	Granted	2010-10-22	2013-03-19
	102011085007.4	Proximity Detection	DE	Application	2011-10-21	
	15/595,471	Proximity Detection	US	Published	2017-05-15	
9,223,445	12/959,166	Position-Sensing and Force Detection Panel	US	Granted	2010-12-02	2015-12-29

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	16/129,863	Position-Sensing and Force Detection Panel	US	Application	2018-09-13	
	14/981,510	Position-Sensing and Force Detection Panel	US	Allowed	2015-12-28	
	10 2011 087 565.4	Position-Sensing and Force Detection Panel	DE	Published	2011-12-01	
I522932	100138521	Capacitive Sensor, Device and Method	TW	Granted	2011-10-24	2016-02-21
ZL 201110346025.3	201110346025.3	Capacitive Touch Sensor for Identifying a Fingerprint	CN	Granted	2011-11-02	2016-12-07
9,465,491	14/057,107	Capacitive Touch Sensor for Identifying a Fingerprint	US	Granted	2013-10-18	2016-10-11
8,564,314	12/938,050	Capacitive Touch Sensor for Identifying a Fingerprint	US	Granted	2010-11-02	2013-10-22
	10 2011 085 578.5	Capacitive Touch Sensor for Identifying a Fingerprint	DE	Published	2011-11-02	
8,797,285	13/089,061	Panel	US	Granted	2011-04-18	2014-08-05
20 2011 052 530.9	20 2011 052 530.9	Panel	DE	Granted	2011-12-29	2012-02-29
8,946,574	13/312,405	Two-Layer Sensor Stack	US	Granted	2011-12-06	2015-02-03
9,411,481	11/734,813	Hybrid Capacitive Touch Screen Element	US	Granted	2007-04-13	2016-08-09
7,903,092	11/750,430	Capacitive Keyboard with Position Dependent Reduced	US	Granted	2007-05-18	2011-03-08

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		Keying Ambiguity				
8,791,910	13/043,231	Capacitive Keyboard with Position-Dependent Reduced Keying Ambiguity	US	Granted	2011-03-08	2014-07-29
	10 2007 024 455.1	Touch Sensitive User Interface	DE	Published	2007-05-25	
9,128,554	14/015,140	Chained Differential Sensing for Touch Sensors	US	Granted	2013-08-30	2015-09-08
	102014217282.9	Chained Differential Sensing for Touch Sensors	DE	Published	2014-08-29	
8,797,281	12/816,900	Capacitive Touch-Screen Panel with Multiple Sense Units and Related Methods	US	Granted	2010-06-16	2014-08-05
	14/448,472	Capacitive Touch-Screen Panel with Multiple Sense Units and Related Methods	US	Published	2014-07-31	
1528422	100116720	Panel for Position Sensors	TW	Granted	2011-05-12	2016-04-01
8,766,929	12/780,436	Panel for Position Sensors	US	Granted	2010-05-14	2014-07-01
	10 2011 075 852.6	Panel for Position Sensors	DE	Published	2011-05-16	
9,244,570	13/351,597	System and Method for Reducing the Effects of Parasitic Capacitances	US	Granted	2012-01-17	2016-01-26
9,634,660	13/330,257	Touch Sensor with Reduced Anti-Touch Effects	US	Granted	2011-12-20	2017-04-25

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202012102989.8	202012103231.7	Touch Sensor with Reduced Anti-Touch Effects	DE	Granted	2012-08-27	2012-09-17
ZL201210557374.4	201210557374.4	Touch Sensor with Reduced Anti-Touch Effects	CN	Granted	2012-12-20	2018-06-12
I569190	101148511	Touch Sensor with Reduced Anti-Touch Effects	TW	Granted	2012-12-19	2017-02-01
	102012223363.6	Touch Sensor with Reduced Anti-Touch Effects	DE	Published	2012-12-17	
8,711,292	13/422,410	Integrated Touch Screen	US	Granted	2012-03-16	2014-04-29
202012102388.1	202012102388.1	Integrated Touch Screen	DE	Granted	2012-06-28	2012-07-26
9,608,047	14/254,979	Integrated Touch Screen	US	Granted	2014-04-17	2017-03-28
	102012221359.7	Integrated Touch Screen	DE	Published	2012-11-22	
	14/509,525	Integrated Touch Screen	US	Published	2014-10-08	
202012103361.5	202012103361.5	Flexible Touch Sensor Input Device	DE	Granted	2012-09-04	2012-09-28
9,471,185	13/400,810	Flexible Touch Sensor Input Device	US	Granted	2012-02-21	2016-10-18
9,287,865	13/207,108	Capacitive Touch Sensor Control Unit With Sampling Capacitors For Differential Integration	US	Granted	2011-08-10	2016-03-15
I545896	101128820	Capacitive Touch Sensor Control Unit With Sampling	TW	Granted	2012-08-09	2016-08-11

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		Capacitors For Differential Integration				
20 2011 052 513.9	20 2011 052 513.9	Capacitive Touch Sensor Control Unit with Sampling Capacitors for Differential Integration	DE	Granted	2011-12-28	2012-02-14
	102012214228.2	Capacitive Touch Sensor Control Unit With Sampling Capacitors For Differential Integration	DE	Published	2012-08-10	
20 2011 052 520.1	20 2011 052 520.1	Analog to Digital Converter with Adjustable Conversion Window	DE	Granted	2011-12-29	2012-03-26
8,421,666	13/208,234	Analog to Digital Converter with Adjustable Conversion Window	US	Granted	2011-08-11	2013-04-16
	102012213823.4	Analog to Digital Converter with Adjustable Conversion Window	DE	Published	2012-08-03	
9,310,941	13/252,533	Touch Sensor Input Tool With Offset Between Touch Icon And Input Icon	US	Granted	2011-10-04	2016-04-12
202012101703.2	202012101703.2	Substantially Edgeless Touch Sensor	DE	Granted	2012-05-09	2012-05-25
9,024,645	13/312,369	Substantially Edgeless Touch Sensor	US	Granted	2011-12-06	2015-05-05

PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
20 2012 101 479.3	20 2012 101 479.3	Single-Layer Touch Sensor	DE	Granted	2012-04-20	2012-05-03
9,207,814	13/325,239	Single-Layer Touch Sensor	US	Granted	2011-12-14	2015-12-08
202012101733.4	202012101733.4	Touch Sensor with Inductive Charging	DE	Granted	2012-05-11	2012-06-11
9,507,447	13/314,690	Touch Sensor With Inductive Charging	US	Granted	2011-12-08	2016-11-29
202012102385.7	202012102385.7	Touch Screen with Electrodes Positioned Between Pixels	DE	Granted	2012-06-28	2012-07-26
9,965,106	13/350,018	Touch Screen with Electrodes Positioned Between Pixels	US	Granted	2012-01-13	2018-05-08
8,860,690	13/327,381	Touch Sensor with Capacitive Nodes Having a Capacitance that is Approximately the Same	US	Granted	2011-12-15	2014-10-14
9,354,760	14/510,220	Touch Sensor with Capacitive Nodes Having a Capacitance that is Approximately the Same	US	Granted	2014-10-09	2016-05-31
8,502,796	13/595,595	Interpolated Single-Layer Touch Sensor	US	Granted	2012-08-27	2013-08-06
	102013216486.6	Interpolated Single-Layer Touch Sensor	DE	Published	2013-08-20	
9,231,588	13/873,979	Touchscreen Routing Flow for Single Layer Pattern	US	Granted	2013-04-30	2016-01-05
9,411,472	13/314,858	Touch Sensor with Adaptive	US	Granted	2011-12-08	2016-08-09

PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
		Touch Detection Thresholding				
8,786,554	11/750,588	Priority and Combination Suppression Techniques (PST/CST) for a Capacitive Keyboard	US	Granted	2007-05-18	2014-07-22
	11 2007 001 643.4	Priority Suppression Technique (PST) and Combination	DE	Published	2007-05-23	
8,432,173	13/118,280	Capacitive Position Sensor	US	Granted	2011-05-27	2013-04-30
7,830,160	12/317,305	Capacitive Position Sensor	US	Granted	2008-12-22	2010-11-09
8,502,547	12/939,816	Capacitive Sensor	US	Granted	2010-11-04	2013-08-06
7,952,367	12/703,614	Capacitive Position Sensor	US	Granted	2010-02-10	2011-05-31
	102007049559.7	Capacitive Position Sensor	DE	Published	2007-10-16	
7,821,274	12/114,709	Capacitive Position Sensor	US	Granted	2008-05-02	2010-10-26
7,986,152	12/898,153	Capacitive Position Sensor	US	Granted	2010-10-05	2011-07-26
7,808,255	12/061,483	Two-Dimensional Position Sensor	US	Granted	2008-04-02	2010-10-05
8,624,609	12/873,905	Two-Dimensional Position Sensor	US	Granted	2010-09-01	2014-01-07
9,600,124	12/671,501	Sensor and Method of Sensing	US	Granted	2010-04-08	2017-03-21
8,536,880	12/675,732	Capacitive Sensor with Additional Noise-Registering Electrode	US	Granted	2010-04-08	2013-09-17

PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
8,970,229	14/027,838	Capacitive Sensor with Additional Noise-Registering Electrode	US	Granted	2013-09-16	2015-03-03
9823784	12/421,705	Capacitive Touch Screen with Noise Suppression	US	Granted	2009-04-10	2017-11-21
	15/796,985	Capacitive Touch Screen with Noise Suppression	US	Application	2017-10-30	
	102009017418.4	Capacitive Touch Screen with Noise Suppression	DE	Published	2009-04-14	
8,659,557	12/255,610	Touch Finding Method and Apparatus	US	Granted	2008-10-21	2014-02-25
	11 2009 002 525.0	Touch Finding Method and Apparatus	DE	Published	2009-10-21	
8,866,790	12/255,620	Multi-Touch Tracking	US	Granted	2008-10-21	2014-10-21
	11 2009 002 578.1	Multi-Touch Tracking	DE	Published	2009-10-21	
8,056,044	12/254,859	Signal Processing	US	Granted	2008-10-21	2011-11-08
8,533,654	13/290,807	Signal Processing	US	Granted	2011-11-07	2013-09-10
8,605,037	12/255,335	Noise Reduction in Capacitive Touch Sensors	US	Granted	2008-10-21	2013-12-10
8,054,090	12/255,998	Noise Handling in Capacitive Touch Sensors	US	Granted	2008-10-22	2011-11-08
8,598,894	13/290,931	Noise Handling in Capacitive	US	Granted	2011-11-07	2013-12-03

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PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
		Touch Sensors				
9,448,267	14/153,821	Noise Measurement in Capacitive Touch Sensors	US	Granted	2014-01-13	2016-09-20
8,629,686	13/945,820	Noise Measurement in Capacitive Touch Sensors	US	Granted	2013-07-18	2014-01-14
	11 2009 002 587.0	Noise Handling in Capacitive Touch Sensors	DE	Published	2009-10-21	
8,610,009	12/501,296	Capacitive Touch Sensors	US	Granted	2009-07-10	2013-12-17
8,937,611	14/094,443	Capacitive Touch Sensors	US	Granted	2013-12-02	2015-01-20
8,823,675	12/572,944	Capacitive Matrix Touch Sensor	US	Granted	2009-10-02	2014-09-02
	11 2009 002 394.0	Capacitive Matrix Touch Sensor	DE	Published	2009-10-02	
8,490,013	12/512,903	Method and Apparatus for Single Touch Zoom Using Spiral Rotation	US	Granted	2009-07-30	2013-07-16
I516992	099136189	Interdigitated Touchscreen Electrodes	TW	Granted	2010-10-22	2016-01-11
ZL201010519970.4	201010519970.4	Interdigitated Touchscreen Electrodes	CN	Granted	2010-10-22	2016-01-20
9,632,628	12/604,944	Interdigitated Touchscreen Electrodes	US	Granted	2009-10-23	2017-04-25
	102010042884.1	Interdigitated Touchscreen Electrodes	DE	Published	2010-10-25	

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8,610,688	13/411,343	Electrode Crossovers	US	Granted	2012-03-02	2013-12-17
8,704,779	12/643,622	Multiple Electrode Touch Sensitive Device	US	Granted	2009-12-21	2014-04-22
9,141,227	14/257,376	Multiple Electrode Touch Sensitive Device	US	Granted	2014-04-21	2015-09-22
7,986,153	12/395,896	Method and Apparatus for Sensing	US	Granted	2009-03-02	2011-07-26
9,531,380	13/537,986	Capacitive Sensing	US	Granted	2012-06-29	2016-12-27
8,237,456	12/395,880	Capacitive Sensing	US	Granted	2009-03-02	2012-08-07
	15/388,774	Capacitive Sensing	US	Published	2016-12-22	
8,830,180	12/421,713	Capacitive Position Sensor	US	Granted	2009-04-10	2014-09-09
9,322,633	14/459,610	Capacitive Position Sensor	US	Granted	2014-08-14	2016-04-26
10,088,960	14/850,223	Sensor Stack with Opposing Electrodes	US	Granted	2015-09-10	2018-10-02
	10 2009 017 419.2	Capacitive Position Sensor	DE	Published	2009-04-14	
9,041,682	12/605,068	Driving Electrodes with Different Phase Signals	US	Granted	2009-10-23	2015-05-26
9,007,332	13/069,084	Position Sensing Panel	US	Granted	2011-03-22	2015-04-14
ZL201210390794.8	201210390794.8	Single-Layer Touch Sensor	CN	Granted	2012-10-15	2017-09-22
20 2012 101 378.9	20 2012 101 378.9	Single-Layer Touch Sensor	DE	Granted	2012-04-16	2012-04-27

PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
	101137128	Single-Layer Touch Sensor	TW	Published	2012-10-08	
	102012217341.2	Single-Layer Touch Sensor	DE	Published	2012-09-26	
10,044,353	13/206,689	Substantially Edgeless Touch Sensor	US	Granted	2011-08-10	2018-08-07
20 2011 052 512.0	20 2011 052 512.0	Substantially Edgeless Touch Sensor	DE	Granted	2011-12-28	2012-02-10
20 2011 052 508.2	20 2011 052 508.2	Touch Sensor for Flexible or Curved Surfaces	DE	Granted	2011-12-28	2012-02-29
9,501,179	13/198,579	Touch Sensor for Curved or Flexible Surfaces	US	Granted	2011-08-04	2016-11-22
20 2012 101 382.7	20 2012 101 382.7	Flexible Touch Sensor	DE	Granted	2012-04-16	2012-05-09
8,847,898	13/226,848	Signal-to-Noise Ratio in Touch Sensors	US	Granted	2011-09-07	2014-09-30
I560585	101132193	Improving Signal-to-Noise Ratio in Touch Sensors	TW	Granted	2012-09-04	2016-12-01
20 2011 052 491.4	20 2011 052 491.4	Improving Signal-to-Noise Ratio in Touch Sensors	DE	Granted	2011-12-27	2012-02-29
	201210328416.7	Improving Signal-to-Noise Ratio in Touch Sensors	CN	Published	2012-09-06	
	102012215894.4	Improving Signal-to-Noise Ratio in Touch Sensors	DE	Published	2012-09-07	
8,847,612	13/227,599	Integrated Test System for a	US	Granted	2011-09-08	2014-09-30

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PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
		Touch Sensor				
	10 2011 081 319.5	Electronic Ink Touch Sensitive Display	DE	Published	2011-08-22	
	12/859,874	Electronic Ink Touch Sensitive Display	US	Published	2010-08-20	
9,489,072	12/761,238	Noise Reduction in Capacitive Touch Sensors	US	Granted	2010-04-15	2016-11-08
9,081,427	12/838,165	Position-Sensing Panel and Method	US	Granted	2010-07-16	2015-07-14
8,723,834	12/845,546	Touch Sensitive Screen Configurations	US	Granted	2010-07-28	2014-05-13
9,069,423	13/414,377	Buffer-Reference Self-Capacitance Measurement	US	Granted	2012-03-07	2015-06-30
202012103357.7	202012103357.7	Buffer-Reference Self-Capacitance Measurement	DE	Granted	2012-09-04	2012-09-24
9,306,560	13/471,094	Self-Capacitance Detection Using Trans-Conductance Reference	US	Granted	2012-05-14	2016-04-05
9,626,045	12/891,329	Position-Sensing Panel and Related Methods	US	Granted	2010-09-27	2017-04-18
8,723,818	12/879,693	Touch Screen Poly Layer Electrode Distribution	US	Granted	2010-09-10	2014-05-13
9,495,042	12/423,148	Two-Dimensional Position	US	Granted	2009-04-14	2016-11-15

PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
		Sensor				
	10 2010 027732.0	Two-Dimensional Position Sensor	DE	Published	2010-04-14	
8,576,182	12/552,195	Methods and Apparatuses to Test the Functionality of Capacitive Sensors	US	Granted	2009-09-01	2013-11-05
1131641	699 20 034.2	Charge Transfer Capacitance Measurement Circuit	DE	Granted	1999-11-18	2010-09-29
6,466,036	09/390,869	Charge Transfer Capacitance Measurement Circuit	US	Granted	1999-09-07	2002-10-15
7,256,714	11/160,885	Capacitive Keyboard with Reduced Keying Ambiguity	US	Granted	2005-07-14	2007-08-14
6,993,607	10/617,602	Capacitive Keyboard with Reduced Keying Ambiguity	US	Granted	2003-07-11	2006-01-31
60 301 831.9	03254396.9	Capacitive Keyboard with Reduced Keying Ambiguity	DE	Granted	2003-07-11	2005-10-12
1656608	04768019	Anisotropic Touch Screen Element	DE	Granted	2004-08-09	2013-05-22
8,049,738	12/915,730	Anisotropic, Resistance-Based Determination of a Position of an Object with Respect to a Touch Screen Element	US	Granted	2010-10-29	2011-11-01
8,847,900	13/286,153	Touch Screen Element	US	Granted	2011-10-31	2014-09-30

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7,825,905	11/422,799	Anisotropic Touch Screen Element	US	Granted	2006-06-07	2010-11-02
6,535,200	09/940,006	Capacitive Position Sensor	US	Granted	2001-08-27	2003-03-18
6,288,707	09/230,420	Capacitive Position Sensor	US	Granted	1999-01-25	2001-09-11
7,295,190	10/851,269	Touch Sensitive Control Panel	US	Granted	2004-05-21	2007-11-13
7,932,898	11/532,560	Touch Sensitive Screen	US	Granted	2006-09-18	2011-04-26
9,250,751	13/093,685	Touch Sensitive Screen	US	Granted	2011-04-25	2016-02-02
102006043665.2	10 2006 043 665.2	Touch Sensitive Screen	DE	Granted	2006-09-18	2012-03-01
7,279,647	11/424,900	Rotary Sensor with Tactile Buttons	US	Granted	2006-06-19	2007-10-09
141775	95124551	Two-Dimensional Position Sensor	TW	Granted	2006-07-05	2013-12-01
7,821,502	11/428,670	Two-Dimensional Position Sensor	US	Granted	2006-07-05	2010-10-26
8,223,133	12/899,353	Two-Dimensional Position Sensor	US	Granted	2010-10-06	2012-07-17
ZL200610143149.0	200610143149.0	Two-Dimensional Position Sensor	CN	Granted	2006-07-07	2012-08-29
8,593,424	13/493,031	Two-Dimensional Position Sensor	US	Granted	2012-06-11	2013-11-26
	102006031376.3	Single-Layer Indium Tin Oxide	DE	Published	2006-07-06	

PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
		Touch Screen				
I415389	95123644	Keyboard with Reduced Keying Ambiguity	TW	Granted	2006-06-29	2013-11-11
8,102,286	12/899,229	Capacitive Keyboard with Non-Locking Reduced Keying Ambiguity	US	Granted	2010-10-06	2012-01-24
ZL200680052852.9	200680052852.9	Capacitive Keyboard with Non-Locking Reduced Keying Ambiguity	CN	Granted	2006-06-20	2011-09-07
7,821,425	11/279,402	Capacitive Keyboard with Non-Locking Reduced Keying Ambiguity	US	Granted	2006-04-12	2010-10-26
1964265	60 2006 013 189.5-08	Capacitive Keyboard with Non-Locking Reduced Keying Ambiguity	DE	Granted	2006-06-20	2010-03-24
9,024,790	13/347,312	Capacitive Keyboard with Non-Locking Reduced Keying Ambiguity	US	Granted	2012-01-10	2015-05-05
I424337	096118385	Two-Dimensional Position Screen	TW	Granted	2007-05-23	2014-01-21
ZL200710108809.6	200710108809.6	Two-Dimensional Position Screen	CN	Granted	2007-05-31	2011-08-03
8,619,054	11/752,615	Two-Dimensional Position Screen	US	Granted	2007-05-23	2013-12-31

PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
101325875	10-2007-0053232	Two-Dimensional Capacitive Position Sensor Operated by a Finger or a Stylus Pen in a Touch Screen, a Touch Pad, and a Pen Input Tablet	KR	Granted	2007-05-31	2013-10-30
102007023853	10 2007 023 853.5	Two-Dimensional Position Screen	DE	Granted	2007-05-23	2016-08-25
9,927,476	14/144,174	Two-Dimensional Position Screen	US	Granted	2013-12-30	2016-03-27
9,864,463	13/786,124	Touch Panel Deformation Compensation	US	Granted	2013-03-05	2018-01-09
	10 2013 227 090.9	Method to account for changes in measurement signal due to deformation of the touch panel.	DE	Published	2013-12-23	
8,717,325	13/849,253	Detecting Presence of an Object in the Vicinity of a Touch Interface of a Device	US	Granted	2013-03-22	2014-05-06
9,342,182	14/268,693	Detecting Presence of an Object in the Vicinity of a Touch Interface of a Device	US	Granted	2014-05-02	2016-04-25
	102013227227.8	Detecting Presence of an Object in the Vicinity of a Touch Interface of a Device	DE	Published	2013-12-30	
9,035,663	13/610,114	Capacitive Position Encoder	US	Granted	2012-09-11	2015-05-19
	102013218051.9	Capacitive Position Encoder	DE	Published	2013-09-10	

PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
20 2012 101 505.6	20 2012 101 505.6	Touch Sensor with Spacers Supporting a Cover Panel	DE	Granted	2012-04-23	2012-05-14
9,317,161	13/302,527	Touch Sensor with Spacers Supporting a Cover Panel	US	Granted	2011-11-22	2016-04-19
	102012221361.9	Touch Sensor with Spacers Supporting a Cover Panel	DE	Published	2012-11-22	
9,372,580	13/332,945	Enhanced Touch Detection Methods	US	Granted	2011-12-21	2016-06-21
8,952,927	13/475,644	Self-Capacitance Measurement with Compensated Capacitance	US	Granted	2012-05-18	2015-02-10
9,262,023	13/544,680	Drive Signals for a Touch Sensor	US	Granted	2012-07-09	2016-02-16
	102013213250.6	Drive Signals for a Touch Sensor	DE	Published	2013-07-05	
	15/042,390	Drive Signals for a Touch Sensor	US	Published	2016-02-12	
202012102751.8	202012102751.8	Touch Sensor with Conductive Lines Having Different Widths	DE	Granted	2012-07-23	2012-08-28
9,262,019	13/331,022	Touch Sensor with Conductive Lines Having Different Widths	US	Granted	2011-12-20	2016-02-16
9,013,444	13/475,691	Self-Capacitance Measurement with Isolated Capacitance	US	Granted	2012-05-18	2015-04-21
9,921,691	13/475,750	Burst-Mode Self-Capacitance	US	Granted	2012-05-18	2018-03-20

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PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
		Measurement with Compensated Capacitance				
202012102387.3	202012102387.3	Single-Layer Touch Sensor with Crossovers	DE	Granted	2012-06-28	2012-07-26
9,098,152	13/556,968	Dielectric Layer for Touch Sensor Stack	US	Granted	2012-07-24	2015-08-04
8,896,327	13/445,748	Current Mirror Self-Capacitance Measurement	US	Granted	2012-04-12	2014-11-25
9,134,871	14/305,683	Current Mirror Self-Capacitance Measurement	US	Granted	2014-06-16	2015-09-15
9,459,737	13/479,068	Proximity Detection Using Multiple Inputs	US	Granted	2012-05-23	2016-10-04
1627578	103121440	Method of Compensating for Retransmission Effects in a Touch Sensor	TW	Granted	2014-06-20	2018-06-21
9,335,873	13/922,871	Method of Compensating for Retransmission Effects in a Touch Sensor	US	Granted	2013-06-20	2016-05-10
	201410257760.0	Method of Compensating for Retransmission Effects in a Touch Sensor	CN	Published	2014-06-11	
	102014211118.8	Method of Compensating for Retransmission Effects in a Touch Sensor	DE	Published	2014-06-11	

PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
I613573	103116424	Method for Restructuring Distorted Capacitive Touch Data	TW	Granted	2014-05-08	2018-02-01
9,110,550	13/889,692	Method for Restructuring Distorted Capacitive Touch Data	US	Granted	2013-05-07	2015-08-18
	201410193443.7	Method for Restructuring Distorted Capacitive Touch Data	CN	Published	2014-05-08	
10,120,489	15/209,388	Touch Sensor Mesh Designs	US	Granted	2016-07-13	2018-11-06
	102017207016.1	Touch Sensor Mesh Designs	DE	Application	2017-04-26	
	106112122	Touch Sensor Mesh Designs	TW	Application	2017-04-12	
	1020170053006	Touch Sensor Mesh Designs	KR	Application	2017-04-25	
	16/178,886	Touch Sensor Mesh Designs	US	Application	2018-11-02	
9,389,727	13/928,099	Method and System to Determine When a Device is Being Held	US	Granted	2013-06-26	2016-07-12
9,354,734	14/196,958	Common-Mode Hover Detection	US	Granted	2014-03-04	2016-05-31
9,354,740	14/061,338	Object Orientation Determination	US	Granted	2013-10-23	2016-05-31
9864456	14/977,132	Automotive Header Invert for Active Stylus	US	Granted	2015-12-21	2018-01-09

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PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
		Sensor Electrodes				
10,042,501	15/868,706	Dynamic Clustering of Touch Sensor Electrodes	US	Granted	2018-01-11	2018-08-07
10,037,119	15/875,827	Dynamic Configuration of Touch Sensor Electrode Clusters	US	Granted	2018-01-19	2018-07-31
	102014222287.7	Dynamic Configuration of Touch Sensor Electrode Clusters	DE	Published	2014-10-31	
	102014215067.1	Dynamic Clustering of Touch Sensor Electrodes	DE	Published	2014-07-31	
9,612,677	13/930,754	Pseudo Driven Shield	US	Granted	2013-06-28	2017-04-04
10,031,632	15/477,866	Pseudo Driven Shield	US	Granted	2017-04-03	2018-07-24
	16/042,872	Pseudo Driven Shield	US	Application	2018-07-23	
	102014212094.2	Pseudo Driven Shield	DE	Published	2014-06-24	
9,535,545	13/930,454	Common Mode Noise Suppression During Hovering and Proximity Detection	US	Granted	2013-06-28	2017-01-03
	102014212355.0	Common Mode Noise Suppression During Hovering and Proximity Detection	DE	Published	2014-06-26	

PATENT #	APP #	TITLE	CTRY	STATUS	FILED DATE	ISSUE DATE
	15/864,928	Automotive Header Invert for Active Stylus	US	Application	2018-01-08	
9,621,135	15/089,358	Voltage Level Shifter	US	Granted	2016-04-01	2017-04-11
9,164,136	14/093,899	Capacitive Measurement Circuit for a Touch Sensor Device	US	Granted	2013-12-02	2015-10-20
10,067,619	14/885,061	Capacitive Measurement Circuit for a Touch Sensor Drive	US	Granted	2015-10-16	2018-09-04
	201410640098.7	Capacitive measurement circuit for a touch sensor device	CN	Published	2014-11-13	
	103141833	Capacitive measurement circuit for a touch sensor device	TW	Published	2014-12-02	
	102014222478.0	Capacitive measuring circuit for a contact sensor device	DE	Published	2014-11-04	
9,207,802	13/932,767	Suppression of Unintended Touch Objects	US	Granted	2013-07-01	2015-12-08
9,081,443	13/928,905	Shieldless Touch Sensor Noise Cancellation	US	Granted	2013-06-27	2015-07-14
	102014212250.3	Shieldless Touch Sensor Noise Cancellation	DE	Published	2014-06-26	
9874980	14/075,412	Dynamic Configuration of Touch Sensor Electrode Clusters	US	Granted	2013-11-08	2018-01-23
9870104	13/955,352	Dynamic Clustering of Touch	US	Granted	2013-07-31	2018-01-16

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