



AiP5905 5-key Touch Chip

Product Specification

Specification Revision History:

Version	Date	Description
2023-06-A1	2023-06	New



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1、General Description

AiP5905 is a capacitive touch key circuit, which provides five touch key channels, and the sensitivity can be adjusted by external capacitors. Each touch key channel of AiP5905 corresponds to an output port, and the touch detection result is directly output in the form of high/low level.

Features:

- 5 independent touch key channels
Suitable for cases where multiple keys are pressed at the same time
- Sensitivity can be adjusted through the capacitance of C0 port
Suitable for all kinds of capacitive touch keys
Suitable for the application of panels with thickness less than 5 mm
- Use external port to configure output mode: straight-through mode or flip mode
- Use external port to configure the default output state
- Package information: SOP16

Ordering Information:

Tube packing specifications:

Part number	Packaging form	Marking code	Tube quantity	Boxed tube quantity	Boxed quantity	Notes
AiP5905SA16.TB	SOP16	AiP5905	50 PCS/tube	200 tube/box	10000 PCS/box	Dimensions of plastic enclosure: 10.0mm×3.9mm Pin spacing: 1.27mm

Reel packing specifications:

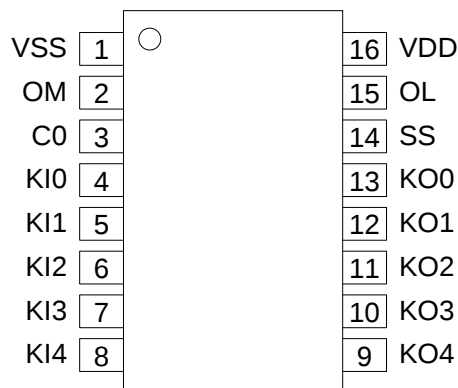
Part number	Packaging form	Marking code	Reel quantity	Boxed reel quantity	Notes
AiP5905SA16.TR	SOP16	AiP5905	4000 PCS/reel	8000 PCS/box	Dimensions of plastic enclosure: 10.0mm×3.9mm Pin spacing: 1.27mm

Note: If the physical information is inconsistent with the ordering information, please refer to the actual product.



2、Block Diagram And Pin Description

2.1、Pin Configurations



2.2、Pin Description

IO	Description	IO	Description
1	VSS	POWER	GND
2	OM	I	Output mode selection port
3	C0	I	External sensitivity adjustment capacitor
4	KI0	I	The key port which must be suspended when not in use
5	KI1	I	The key port which must be suspended when not in use
6	KI2	I	The key port which must be suspended when not in use
7	KI3	I	The key port which must be suspended when not in use
8	KI4	I	The key port which must be suspended when not in use
9	KO4	O	K4 key output
10	KO3	O	K3 key output
11	KO2	O	K2 key output
12	KO1	O	K1 key output
13	KO0	O	K0 key output
14	SS	I	Default pull-up, floated or VDD
15	OL	I	Default output status control port
16	VDD	POWER	Power supply



3、Electrical Parameter

3.1、Absolute Maximum Ratings

($T_{amb}=25^{\circ}\text{C}$, unless otherwise specified)

Characteristic	Symbol	Conditions	Ratings	Unit
Supply Voltage	VDD	-	-0.3 to +6.5	V
Input Voltage	V_I	All the ports	-0.3 to VDD+0.3	V
Port Output Voltage	V_O	All the ports	-0.3 to VDD+0.3	V
High-Level Output Current	I_{OH}	KO<4:0>	-10	mA
Low-Level Output Current	I_{OL}	KO<4:0>	20	mA
Storage Temperature	T_{stg}	-	-65 to +150	$^{\circ}\text{C}$
Lead Temperature	T_L	10s	260	$^{\circ}\text{C}$

3.2、Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage	VDD	2.2	5.0	5.5	V
Ambient Temperature	T_{amb}	0	-	+70	$^{\circ}\text{C}$

3.3、Electrical Characteristics

3.3.1、DC Characteristics

($T_{amb}=25^{\circ}\text{C}$, VDD=5V, VSS=0V, unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Supply Voltage	VDD	-	2.2	5	5.5	V
Input High Level	V_{IH}	VDD=2.2V to 5.5V, SS, OL, OM	0.8VDD	-	VDD	V
Input Low Level	V_{IL}	VDD=2.2V to 5.5V, SS, OL, OM	0	-	0.2VDD	V
Output High Level	V_{OH}	VDD=2.2V to 5.5V, $I_{OH}=-10\text{mA}$, KO<4:0>	VDD-1.0	-	-	V
Output Low Level	V_{OL}	VDD=2.2V to 5.5V, $I_{OL}=20\text{mA}$, KO<4:0>	-	-	1.0	V
Operating Current	I_{DD}	Operating mode	-	43	60	μA

3.3.2、AC Characteristics

($T_{amb}=25^{\circ}\text{C}$, VDD=5V, VSS=0V, unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Input Capacitance	C_{IN}	-	-	-	10	pF
Output Capacitance	C_{OUT}					
I/O Capacitance	C_{IO}					



4、Function Description

4.1、Output Mode Selection

AiP5905 uses OM port to control the output mode of touch detection results:

OM Port Status	Output Mode	Description
“L”	Flip mode	When KIn is pressed, the corresponding KOn output level changes once. KIn releases the key, and the corresponding KOn output state remains unchanged.
“H” or Floated	Direct mode	When KIn is pressed, the corresponding KOn output level changes once. KIn releases the key, and the corresponding KOn output returns to the default state.

4.2、Output Port Default State Selection

AiP5905 uses the OL port to control the default state of the output port.

OL Port Status	Output Mode	Description
“L”	“H”	In flip mode, the initial state of the output after power-on is “H” In straight mode, the default state of the output after power-on is “H”
“H” or Floated	“L”	In flip mode, the initial state of the output after power-on is “L” In straight mode, the default state of the output after power-on is “L”

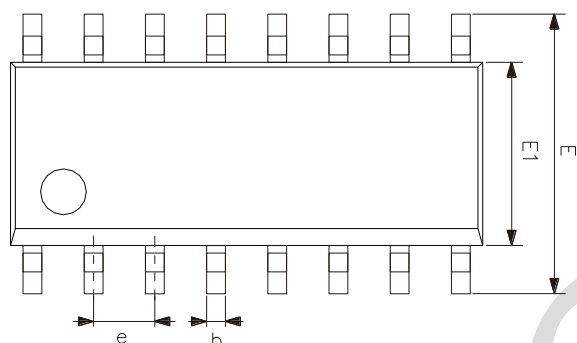
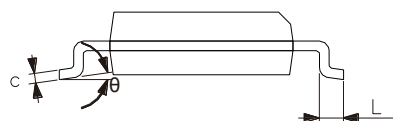
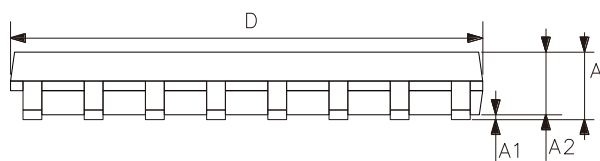
4.3、Touch Key Sensitivity

AiP5905 adjusts the touch sensitivity by adjusting the external capacitance of C0 port. The recommended value is 10nF, which can be adjusted according to the actual application. The larger the capacitance value, the higher the sensitivity.



6、Package Information

6.1、SOP16



符 号	尺寸 (mm)	
	最小	最大
A	1.35	1.80
A1	0.10	0.25
A2	1.25	1.55
b	0.33	0.51
c	0.19	0.25
D	9.50	10.10
E	5.80	6.30
E1	3.70	4.10
e	1.27	
L	0.35	0.89
θ	0°	8°



7、Statements And Notes

7.1、The name and content of Hazardous substances or Elements in the product

Part name	Hazardous substances or Elements									
	Lead and lead compounds	Mercury and mercury compounds	Cadmium and cadmium compounds	Hexavalent chromium compounds	Polybrominated biphenyls	Polybrominated biphenyl ethers	Dibutyl phthalate	Butylbenzyl phthalate	Di-2-ethylhexyl phthalate	Diisobutyl phthalate
Lead frame	○	○	○	○	○	○	○	○	○	○
Plastic resin	○	○	○	○	○	○	○	○	○	○
Chip	○	○	○	○	○	○	○	○	○	○
The lead	○	○	○	○	○	○	○	○	○	○
Plastic sheet installed	○	○	○	○	○	○	○	○	○	○
explanation	○: Indicates that the content of hazardous substances or elements in the detection limit of the following the SJ/T11363-2006 standard. ×: Indicates that the content of hazardous substances or elements exceeding the SJ/T11363-2006 Standard limit requirements.									

7.2、Notes

We recommend you to read this chapter carefully before using this product.

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