

Single-key capacitive touch button IC- - - -TTP223-BA6-TD

1 summary

TTP223-BA6-TD is a single key capacitive touch button dedicated detection sensor IC. The latest generation of charge detection technology is used to generate the charge level between the operator's finger and the touch button pad to determine whether the finger is approaching or touching the inductive surface. With no mechanical parts and no wear, the sensing part can be placed behind any insulation layer (usually glass or plastic material), easily made into a keyboard sealed with the surrounding environment. The panel pattern is designed at will, the key size and shape are freely selected, characters, trademarks, perspective window can be arbitrarily collocation, beautiful appearance, fashion, and do not fade, not deformation, durable. Fundamentally changed a variety of metal panels and mechanical panels can not achieve the effect. Its reliability and aesthetic design is arbitrary, can directly replace the existing ordinary panel (metal keyboard, film keyboard, conductive adhesive keyboard). No changes to the existing program are required. It has the advantages of less peripheral components, low cost and less power consumption.

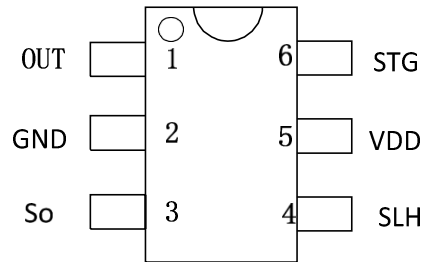
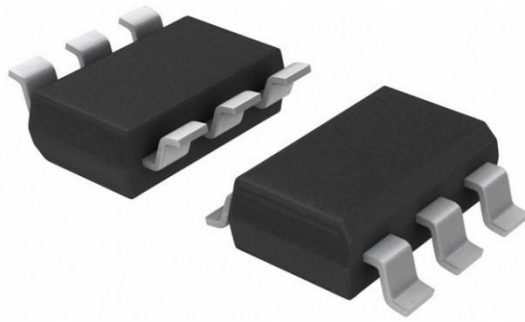
2 characteristic

- Wide input voltage range: 2.0V~ 5. 5V;
- Very low working current: 3.5 uA;
- The sensitivity can be adjusted by the external capacitance value;
- Can realize the synchronous output mode and the level switching mode output;
- Independent touch button control with self-calibration;
- Built-in voltage regulator circuit LDO, more stable and reliable;
- The SOT 23-6 package

3 application

Touch DVD, touch remote control, touch MP3, touch MP4, touch password lock, touch rice cooker, touch microwave oven, touch electric water heater, touch electric fan, touch refrigerator, touch vacuum cleaner, touch air cleaner, touch range hood, touch speaker, touch dimlight, touch electrical switch, touch printer, touch fax machine, touch LCD TV, touch LCD Monitor, touch telephone, etc.

4 Encapsulation and pin definition



No	Feet name	I/O	Functional description
1	OUT	Push pull output	Touch the detection output foot
2	GND	Source	Power to
3	SO	Import	Touch the input detection foot
4	SLH	Import	Output high and low level selection (not suspended)
5	VDD	Source	Positive power supply
6	STG	Import	Mode selection foot (not suspended)

STG	SLH	Functional description
0	0	Synchronous output mode (similar to light touch button), the output is low at the beginning of power and without touch, and the output is high level after touch (default)
0	1	Synchronous output mode (similar to the light touch button), the output is high at the beginning of power and without touch, and the output is low level after touch
1	0	Level switching mode (similar to self-locking switch), low level at the beginning of power, and flip level after touch
1	1	Level switching mode (similar to self-locking switch), the level is high at the beginning of the power on, and the level is flipped after touch

remarks:

STG: To configure the working mode of the chip.

When grounding: Synchronous output mode. That is, the output effective level time follows the touch time, But the maximum touch time cannot be greater than 6s.

Direct power supply: level switching mode. That is, the output effective level is in the holding state. The output level was flipped at each retouch. But the maximum touch time cannot be greater than 6 s.

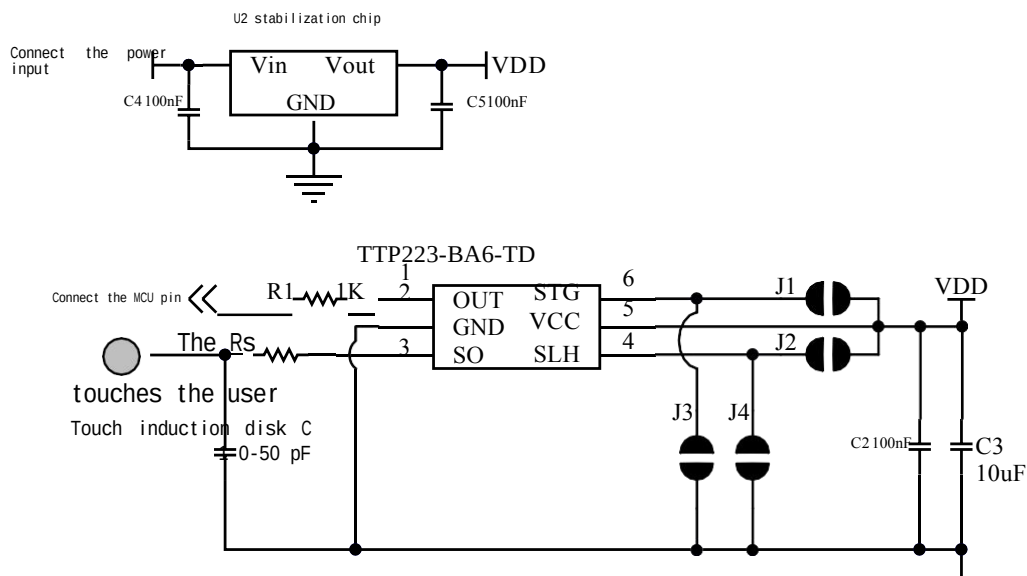
SLH: Configure a valid level.

When grounding: The output is at a high level when touched.
Power is low at initial state and without touch
Level output. The output voltage is consistent with the VDD voltage.

Direct power supply: the output is low level when touched.
High level output at power state and without touch. The output voltage is consistent with the VDD voltage.

All configuration feet must not be suspended

5 Applied circuit



Note 1: The higher the C 1 capacitance value is, the lower the sensitivity is, and the thinner the thickness of the induction panel is. On the contrary, the smaller the capacitance value, the higher the sensitivity, and the thicker the thickness of the induction panel.

Note 2: If the product is required to improve the anti-interference performance, in the touch sensing PAD with
An Rs resistance is connected between the chip So input feet, and the resistance value is between 100 and 1000 Ω .
TTP223-BA6-TD If the application environment of the product is good, the resistance can be omitted, directly connected.

Note 3: J1, J2, J3, and J4 are the mode selection switches

6 Electrical parameters

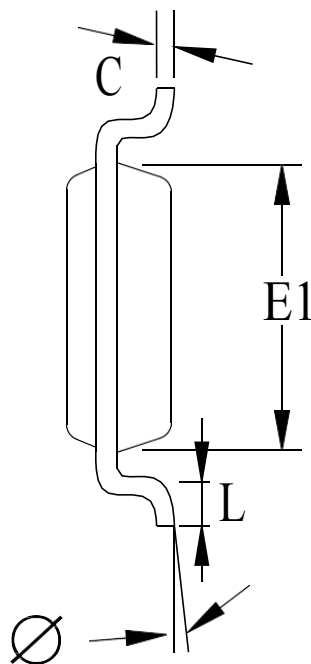
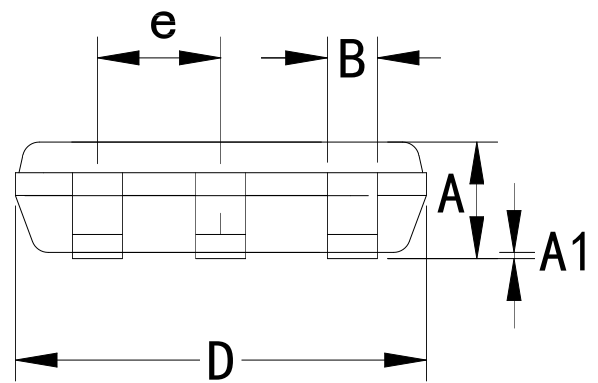
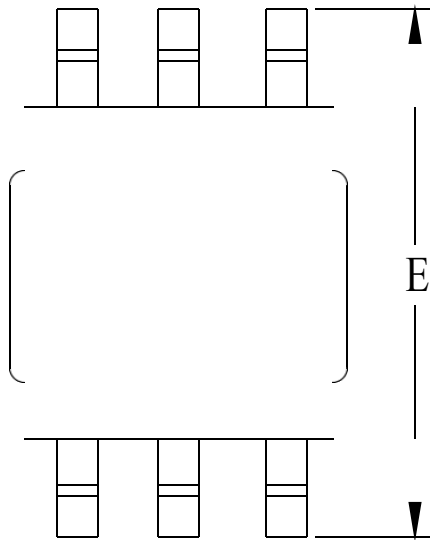
Characteristic	Symbol	Test condition	Minimum	Unit
Working temperature	T_{OP}	---	20~ +70	°C
Storage temperature	T_{STG}	---	-50~ +125	°C
Supply voltage	VDD	$T_A=25$ °C	VSS-0.3~VSS +5.5	V
Input voltage	V_{in}	$T_A=25$ °C	VSS-0.3~VDD +0.3	V
Anti-static strength	ESD	---		KV

Characteristic	Symbol	Test condition	Least value	Representative value	Crest value	Unit
Working voltage	VDD		2.0	3.0	5.5	V
Working current	I_{OP}	VDD=3.0V		2.5	7.0	uA
Input end	V_{OL}	Input low voltage	0	--	0.2	VDD
Input end	V_{OH}	Enter high voltage	0.8	--	1.0	VDD

Output pin irrigation current	I_{OL}	VDD=3V, $V_{OL}=0.6V$		10	-	mA
The output pin drives the current	I_{OH}	VDD=3V, $V_{OL}=2.4V$		-6.0	-	mA
Output response time	T_R	VDD=3.0V		--	60	ms
Senso	F_{SEN}	VDD = 3.0		--	500	KHz

r		V with no load	-			z
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7 Package instructions



	Least value	Representative value	Crest value
A	-	-	1.26
A1	0.04	0.10	0.16
B	-	0.40	-
C	0.17	-	0.25
D	2.70	2.90	3.10
E1	1.50	1.70	1.80
E	2.70	2.85	3.00
e	0.95		
L	0.35	0.45	0.55
Φ	1'	4'	7'