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SPECIFICATION

CUSTOMER ： _____

MODULE NO.: TST0005R7B3111XXXX01

APPROVED BY: **(FOR CUSTOMER USE ONLY)**	**PCB VERSION:** **DATA:**

SALES BY	APPROVED BY	CHECKED BY	PREPARED BY

VERSION	DATE	REVISED PAGE NO.	SUMMARY
B	2013.06.07		ADD Timing Characteristics

MODLE NO：

DOC. FIRST ISSUE

RECORDS OF REVISION

VERSION	DATE	REVISED PAGE NO.	SUMMARY
0	2012/12/14		First issue
A	2013.05.31		Modify PIN DEFINE
B	2013.06.07		Modify Power Consumption Modify Timing Characteristics Modify Application Circuit

Contents

1. Product Type:

PROJECTED CAPACITIVE TOUCH MODULE

DATA SHEET FOR CONTROLLER/DRIVER PLEASE REFER TO:

FOCALTECH FT5406

2. Mechanical Characteristics

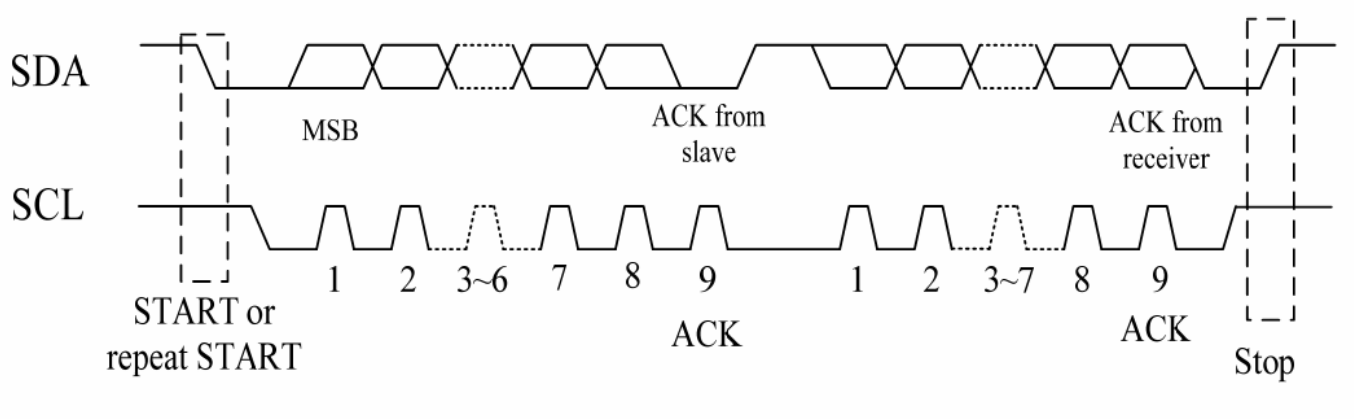
NO.	Description	INL Specification	Remark
1	TOUCH PANEL SIZE	5.7 inch	
2	Outline dimension (OD)	125.7±0.15(H) x101.25±0.15(W)	Cover Lens Outline
3	Product Thickness	1.1mm±0.05mm	
4	INK View Area	117.9*89.1	
5	Sensor Active area	118.3*89.5	
6	Input Method	5 Finger	
7	Activation Force	Touch	
8	Surface hardness	≧7H	

3. Electrical Characteristics:

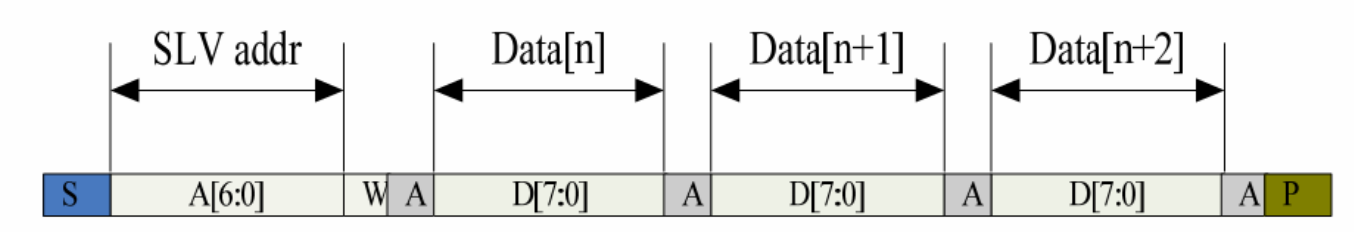
Description		Specification	Remark
Operating Voltage		DC 2.8~3.3V	
Power Consumption (IDD)	Active Mode	10~18mA	
	Sleep Mode	50~100uA	
Interface		IIC	
Linearity		＜1.5%	
Controller		FT5406	
RESOLUTION		1408*1024	

4. Timing Characteristics:

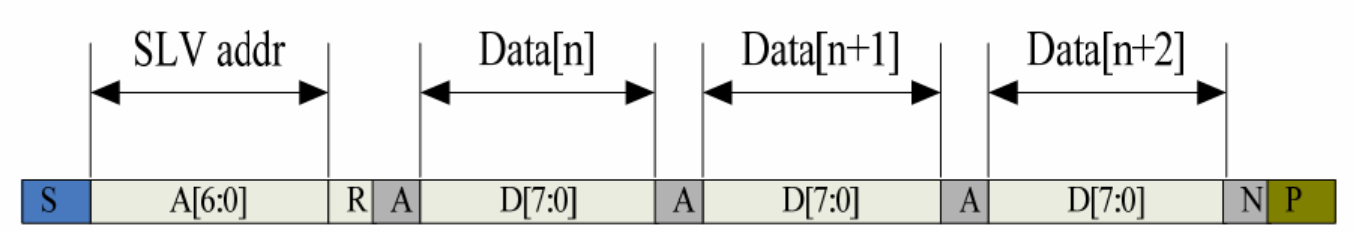
(1) CTP I2C Timing:



I2C Serial Data Transfer Format



I2C master write, slave read



I2C master read, slave write

Mnemonics	Description
S	I2C Start or I2C Restart
A[6:0]	Slave address A[6:4]: 3'b011 A[3:0]: data bits are identical to those of I2CCON[7:4] register.
W	1'b0: Write
R	1'b1: Read
A(N)	ACK(NACK)
P	STOP: the indication of the end of a packet (if this bit is missing, S will indicate the end of the current packet and the beginning of the next packet)

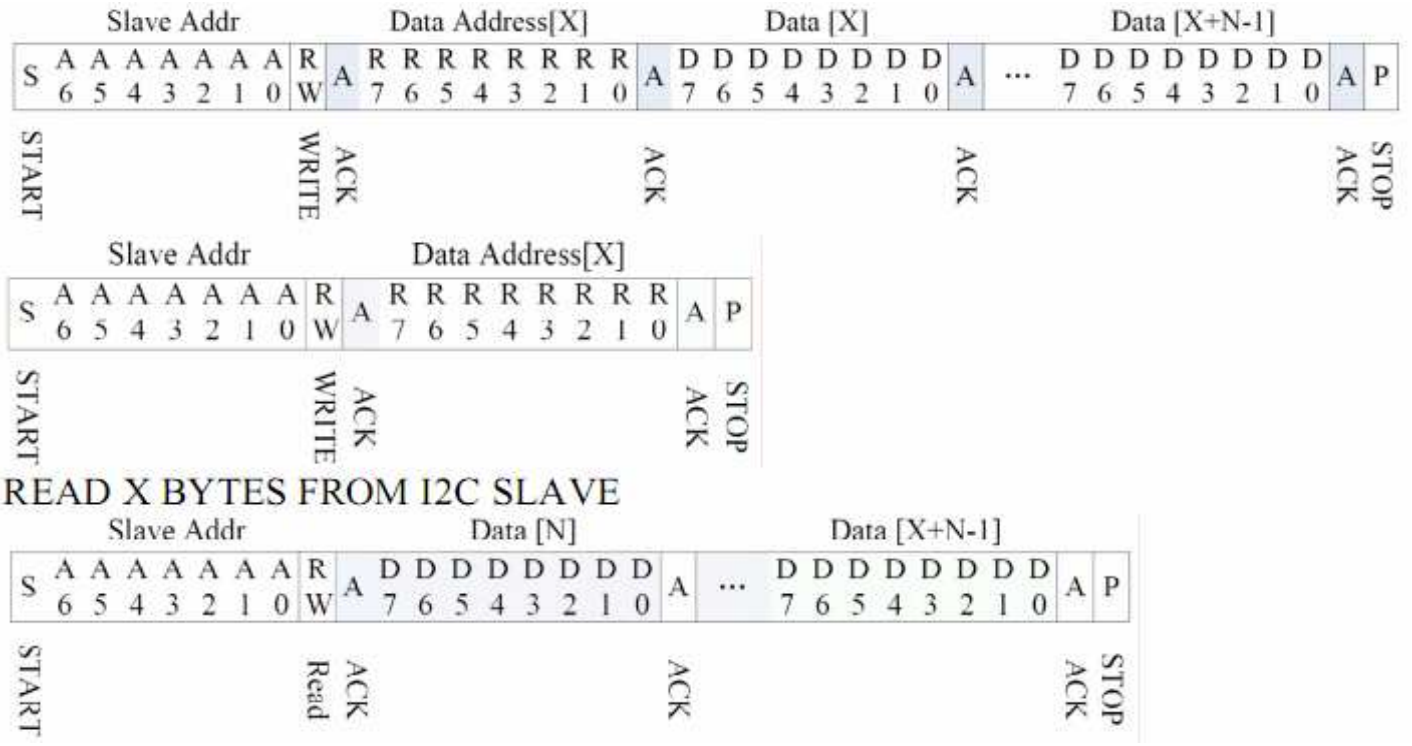
Lists the meanings of the mnemonics used in the above figures

Parameter	Unit	Min	Max
SCL frequency	KHz	0	400
Bus free time between a STOP and START condition	us	4.7	\
Hold time (repeated) START condition	us	4.0	\
Data setup time	ns	250	\
Setup time for a repeated START condition	us	4.7	\
Setup Time for STOP condition	us	4.0	\

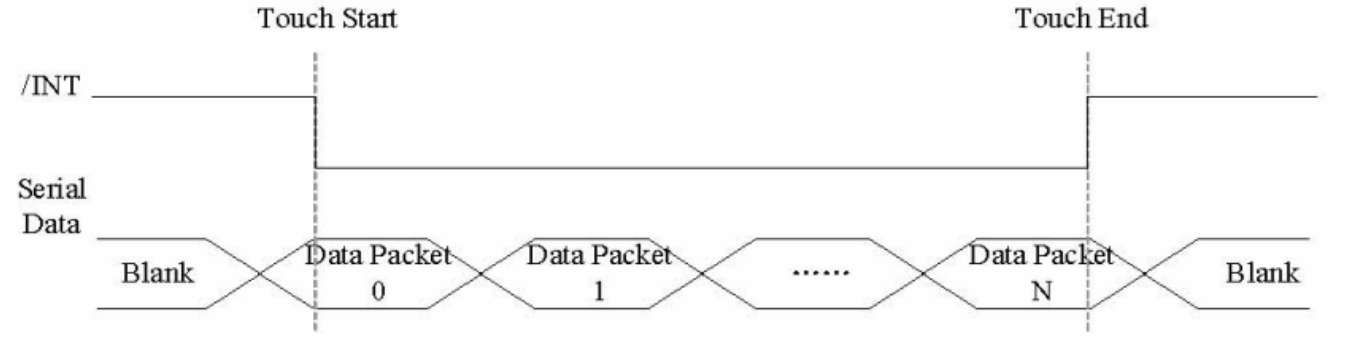
Interface Timing Characteristics

AS FOR STANDARD CTPM, HOST NEED TO USE BOTH INTERRUPT CONTROL SIGNAL AND SERIAL DATA INTERFACE TO GET THE TOUCH DATA. HERE IS THE TIMING TO GET TOUCH DATA.

(2)WRITE BYTES TO I2C SLAVE:



AS FOR STANDARD CTPM, HOST NEED TO USE BOTH INTERRUPT CONTROL SIGNAL AND SERIAL DATA INTERFACE TO GET THE TOUCH DATA, HERE IS THE TIMING TO GET TOUCH DATA.



(3)Touch Data Read Protocol:

Address: 0x38

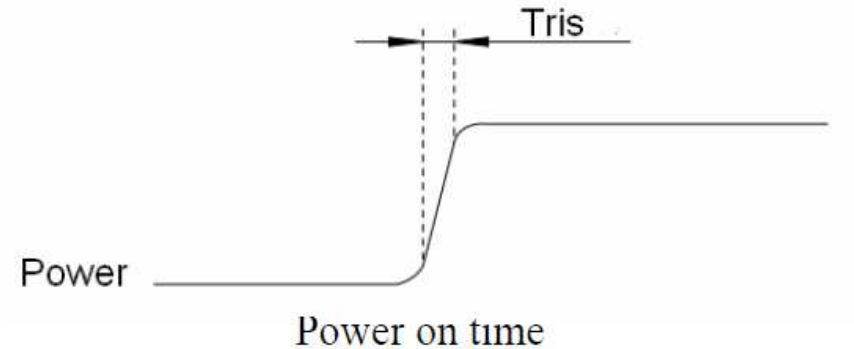
A DATA PACKET STARTS EITH A HEADER AND ENDS WITH CRC CODE. AS FOR 5 POINTS DATA PACKET, THE LENGTH OF THE PACKET IS ALWAYS 26 BYTES IN SPITE OF ACTUAL TOUCH POINTS.

Address	Name	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0	Host Access
00h	DEVIDE_MODE		Device Mode[2:0]							RW
01h	GEST_ID	Gesture ID[7:0]								R
02h	TD_STATUS					Number of touch points[3:0]				R
03h	TOUCH1_XH	1st Event Flag				1st Touch X Position[11:8]				R
04h	TOUCH1_XL	1st Touch X Position[7:0]								R
05h	TOUCH1_YH	1st Touch ID[3:0]				1st Touch Y Position[11:8]				R
06h	TOUCH1_YL	1st Touch Y Position[7:0]								R
07h										
08h										
09h	TOUCH2_XH	2nd Event Flag				2nd Touch X Position[11:8]				R
0Ah	TOUCH2_XL	2nd touch X Position[7:0]								R

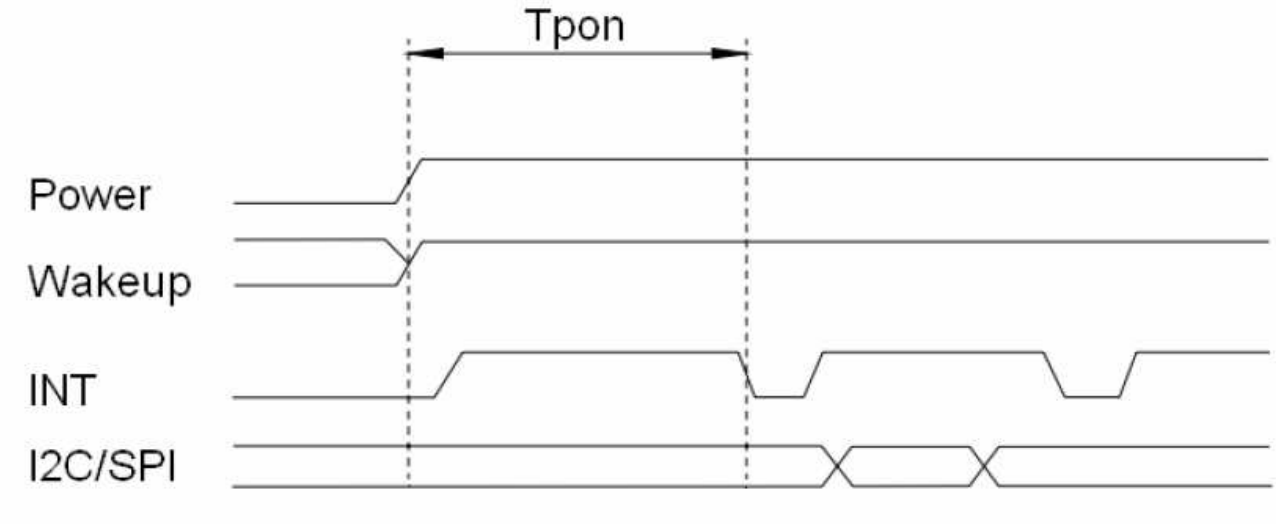
0Bh	TOUCH2_YH	2nd Touch ID[3:0]		2nd Touch Y Position[11:8]	R
0Ch	TOUCH2_YL	2nd Touch Y Position[7:0]			R
0Dh					R
0Eh					R
0Fh	TOUCH3_XH	3rdEvent Flag		3rd Touch X Position[11:8]	R
10h	TOUCH3_XL	3rd Touch X Position[7:0]			R
11h	TOUCH3_YH	3rd Touch ID[3:0]		3rd Touch Y Position[11:8]	R
12h	TOUCH3_YL	3rd Touch Y Position[7:0]			R
13h					R
14h					R
15h	TOUCH4_XH	4thEvent Flag		4th Touch X Position[11:8]	R
16h	TOUCH4_XL	4th Touch X Position[7:0]			R
17h	TOUCH4_YH	4th Touch ID[3:0]		4th Touch Y Position[11:8]	R
18h	TOUCH4_YL	4th Touch Y Position[7:0]			R
19h					R
1Ah					R
1Bh	TOUCH5_XH	5thEvent Flag		5th Touch X Position[11:8]	R
1Ch	TOUCH5_XL	5thTouch X Position[7:0]			R
1Dh	TOUCH5_YH	5th Touch ID[3:0]		5th Touch Y Position[11:8]	R
1Eh	TOUCH5_YL	5th Touch Y Position[7:0]			R

(4)Power on, Reset, and Wakeup sequence:

Wake, INT and I2C should be pulled down to be low before powering on. The signal of waking up should be set to be high after powering on. INT signal will be sent to the host after initializing all parameters and then start to report points to the host.

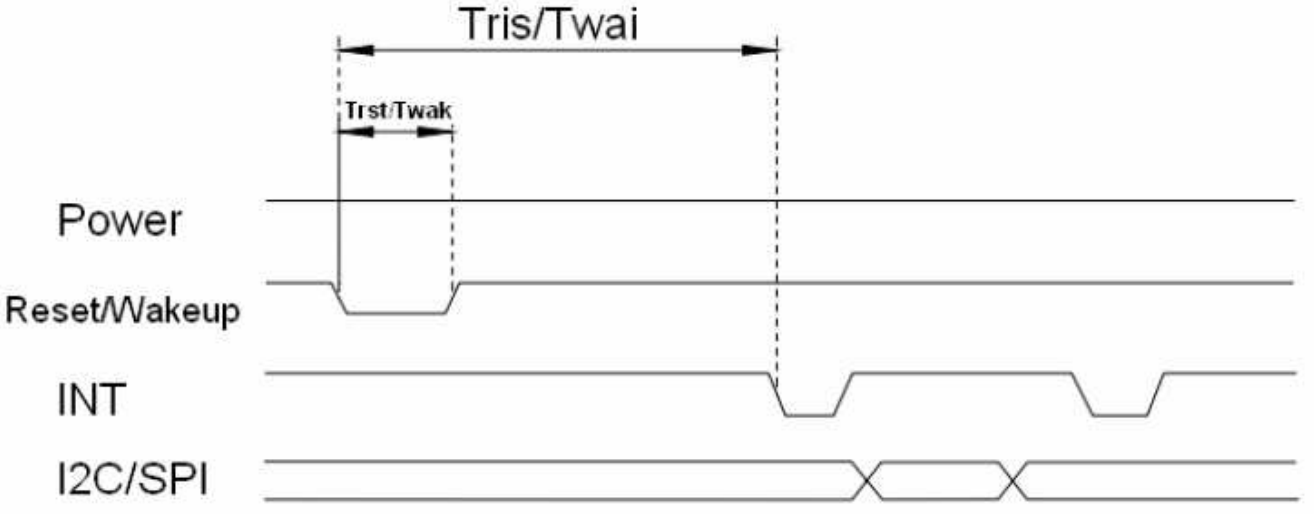


Power on time



Power on sequence

Reset time must be enough to guarantee reliable reset, the time of starting to report point after resetting approach to the time of starting to report point after powering on. Wake time must be enough to wake up the system, the time of starting to report point after waking approach to the time of starting to report point after powering on.



Reset/Wakeup sequence

Table 4-1 Power on/Reset/Wakeup parameters:

Parameter	Description	Min	Max	Unit
Tris	Rise time from 0.1VDD to 0.9VDD	-	10	ms
Tpon	Time of starting to report point after powering on	300		ms
Trsi/ Twai	Time of starting to report point after resetting/ waking	300		ms
Trst/ Twak	Reset/Wakeup time	5		ms

5. Pin Define:

PIN NO.	Symbol	Function Description
1	GND	Ground
2	VDDT	Power Supply
3	SCL	Serial IIC Clock
4	NC	----
5	SDA	Serial IIC Data
6	NC	----
7	/RST	Reset Signal
8	/WAKE	External Interrupt Signal From Host
9	/INT	Interrupt Signal From Touch Panel Module To Host
10	GND	Ground

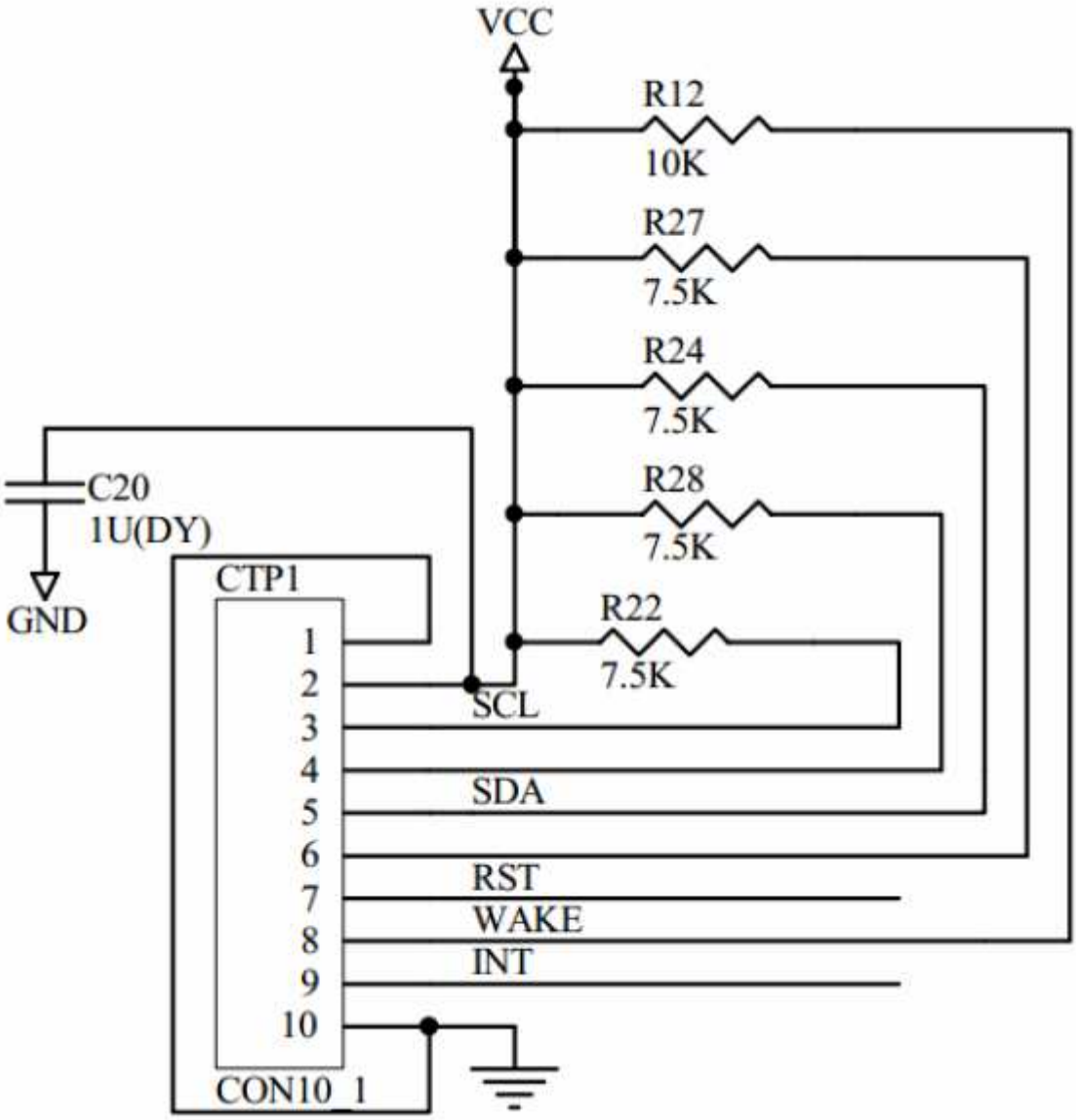
6. Reliability and Durability:

NO.	Item	Specification	Remark
1	Operating	-40℃～+85℃;45%～85%RH	Non-condensing
2	Storage	-50℃～+95℃;5%～95%RH	Non-condensing
3	High temp./high humidity test	80℃@ 90%RH/72hrs	
4	Low temp.	-40℃/72hrs	
5	High temp.	80℃/72hrs	
6	Thermal shock	-40℃/0.5hrs→75℃/0.5hrs Total 50 cycles	

7. Optical Specification:

NO.	Item	Specification	Remark
1	Transmittance	≥80%	
2	Chromaticity	a*＜4 b*＜6	
3	Haze	3% Max	

8. Application Circuit:



9. Function and Feature:

The product can realize five fingers touch, it provides two points coordinates and distance between two points (two fingers operation), it provides both of these data to the host computer, the customer can define this coordinate or distance of different changes as different gestures, Such as zoom in, zoom out, rotate, handwriting, and so on, that is the gesture resolution.

10. Appearance Inspection Criteria:

(Remark: D=Diameter L=Length W=Width)

Unveil product appearance inspection standard and to assurance product quality Level.

10-1) SCOPE:

Touch Panel View Area.

Inspection Area:

Concerning about the appearance inspection area, which is defined in the view area (V.A.) if there is no other special concern. The area out off V.A. isn't considered for appearance inspection.

Limit Sample:

If the definition of appearance inspection is out off the description mentioned in this specification, we will base the both parties limit sample. Both parties will have the same standard limit sample and the appearance definition will be based on the limit sample priority.

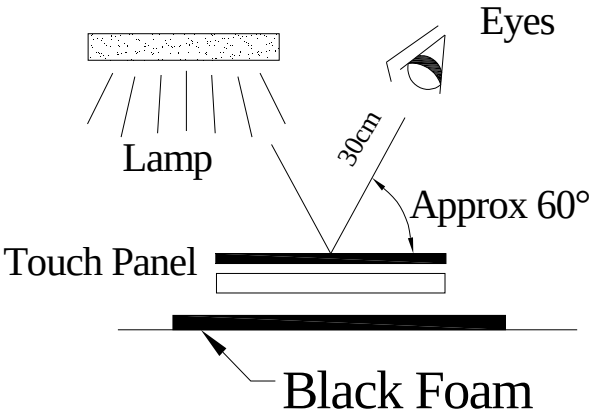
Inspection Conditions

(a) The brightness in test site: 500Lux

(b) Inspection distance: 30cm (take PANEL under Transmit Light)

(c) Visible Angle: >60°

(d) Light Source: 30W natural color light.



10-2) Foreign Object

Inspection Method	Criteria
D<0.15mm	Ignored
0.15mm ≦<D≦0.25 mm	3 or less （distance 20mm over）
D > 0.25 mm	NG

10-3) Liner Foreign Object

Inspection Method	Criteria
W≦0.0 3 mm	Ignored
0.03mm < W ≦0.15mm	L≦2mm, 4 or less （distance 25mm over） 2.0<L，NG
W > 0.15mm	NG

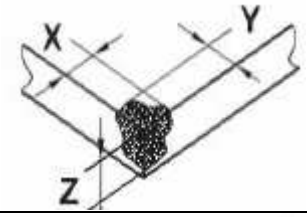
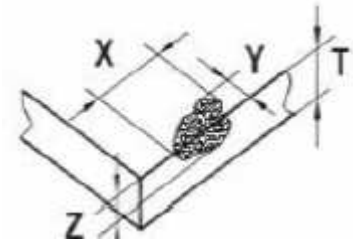
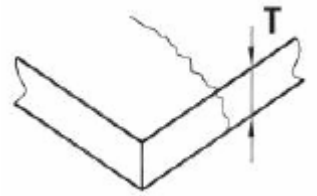
10-4) Air Bubble

Can not have air bubble in V.A .

10-5) Scratch

Inspection Method	Criteria
W≦0.05mm	Ignored
0.05mm < W ≦0.10mm	L≦5mm, the object is >10mm in distance from any other foreign object is ignored. L≦5mm, the object is <10mm in distance from any other foreign object. It is NG. L≧5mm, it is NG.
W > 0.10mm	NG

10-6) Glass crack (T=Glass thickness)

Item	Remark	Value	Standard
Corner fragment		X≦0.5mm Y≦0.5mm Z≦T	Corner fragment: X≦ 3mm / Y≦3mm / Z≦T, It is OK
Side Fragment		X≦0.5mm Y≦0.5mm Z≦T	When the defect is more than spec. it is NG. When the defect is less than spec. Two objects are allowed.
Progressive		NA	NG

10-7) FPC bending test.

Bending degree: 0-180-0 ; bending Radius: 1mm; Bending number: 8 cycles.

After bending test, the function is ok.

11. Cautions:

11-1) Cautions for storage

Store the products at the temperature and humidity mentioned in the specification in a proper storage of package with care and not to expose the products to the direct sunlight or stresses.

11-2) Cautions for operation

1) Do not put a heavy , hard or sharp object on the product.

2) Do not bend the product in order to assure the reliability.

3) Do not put one product on the there. Otherwise, it may cause the product to be scratched and/or changes on cosmetic occur.

4) Don’t pile touch panel. Don’t put heavy goods on touch panel.

5) Don’t use any organic solvent acid or alkali solution.

6) Please use dry clothes or soft clothes with neutral net or one with ethanol to clean surface. Forbid wiping the boundary between upper and lower ITO Film.

11-3) Cautions for handling

Transparency is an important factor for the product. So, Please wear clean finger sacks, gloves and mask to project the products from fingerprint or stain attach, and also hold the portion outside the view area when handling the panel.

11-4) Others

1) Please note that dew gathering in the panel due to abrupt temperature or humidity change, etc. May cause deterioration of performance.

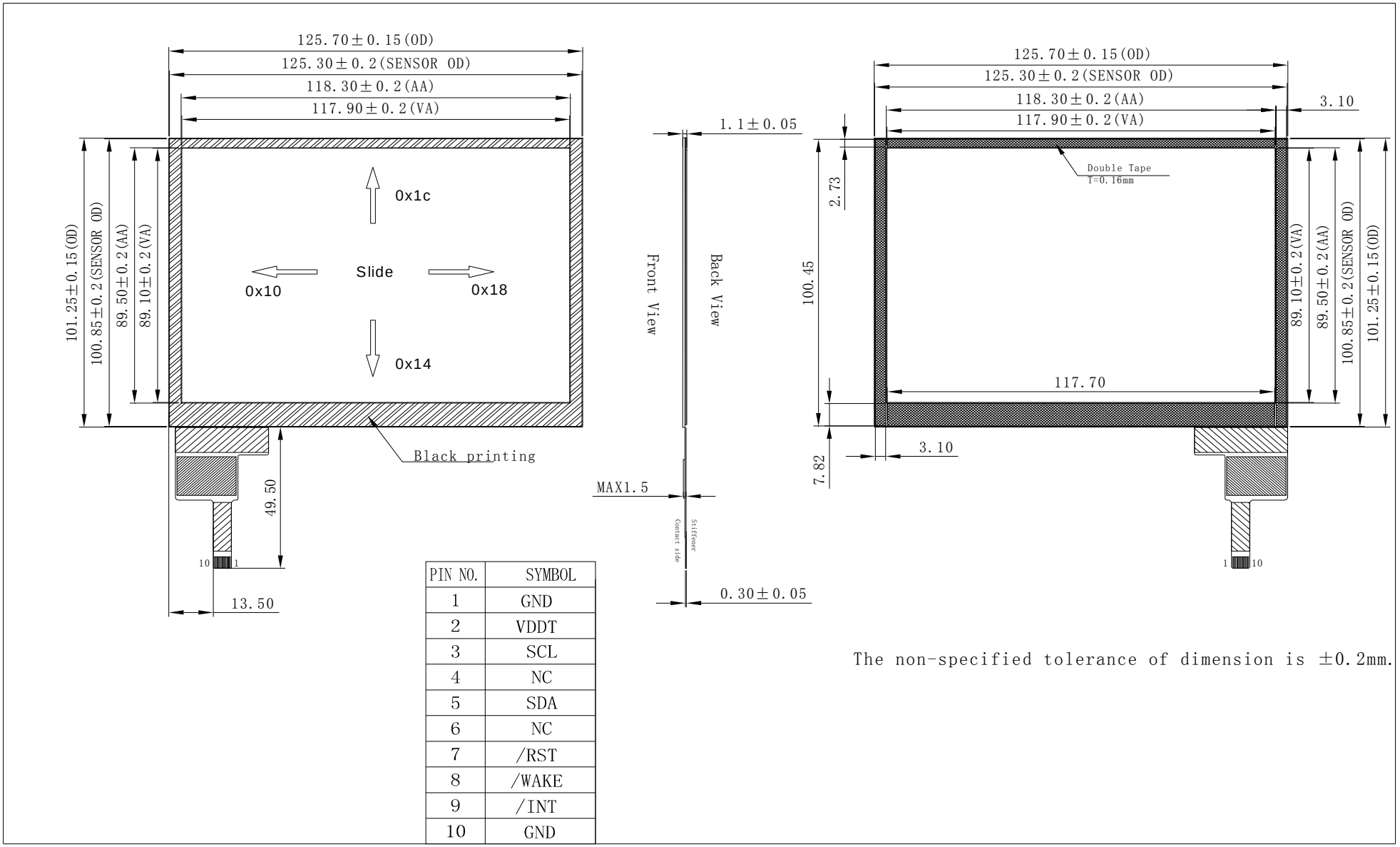
2) When this product was built into the set, if there is vulcanization material such as vulcanized rubber which has a possibility of generating the salutation gas near the set since abnormalities will be caused to wring of the product and it will become the cause of functional degradation, please give a constitutional cautions.

3) Caution for product safety set

Although full care is taken to ensure product quality, failure modes such as degradation, short circuits, or open circuits might be caused. Therefore, to design a product set, please study the effects of any single failure of the panel in advance and consider the safety of product configuration.

Quality function life for one year, outward appearance six month non-color variation.

12. Contour Drawing



PIN NO.	SYMBOL
1	GND
2	VDDT
3	SCL
4	NC
5	SDA
6	NC
7	/RST
8	/WAKE
9	/INT
10	GND

The non-specified tolerance of dimension is ±0.2mm.