NEWHAVEN DISPLAY INTERNATIONAL

Product Specification

NHD-2.9-376960AF-ASXP-CTP

TFT Liquid Crystal Display

NHD-	Newhaven Display
2.9-	2.9" Diagonal
376960-	376xRGBx960 Pixels
AF-	Model
A-	Built-in Driver / No Controller
S-	High Brightness, White LED Backlight
X-	TFT
P-	IPS, Wide Temperature
CTP-	Capacitive Touch Panel

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REACH Compliant

RoHS Compliant

Table of Contents

Additional Resources

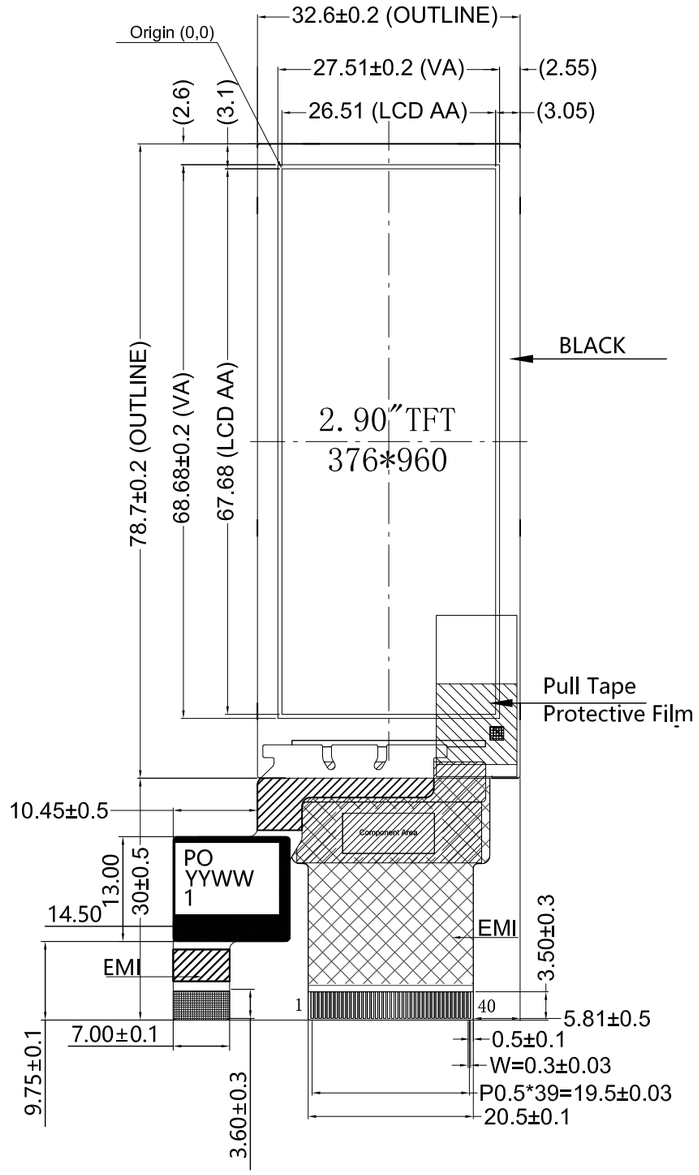
- **Support Forum:** https://support.newhavendisplay.com/hc/en-us/community/topics
- **GitHub:** https://github.com/newhavendisplay
- **Example Code:** https://support.newhavendisplay.com/hc/en-us/categories/4409527834135-Example-Code/
- **Knowledge Center:** https://www.newhavendisplay.com/knowledge_center.html
- **Quality Center:** https://www.newhavendisplay.com/quality_center.html
- **Precautions for using LCDs/LCMs:** https://www.newhavendisplay.com/specs/precautions.pdf
- **Warranty / Terms & Conditions:** https://www.newhavendisplay.com/terms.html

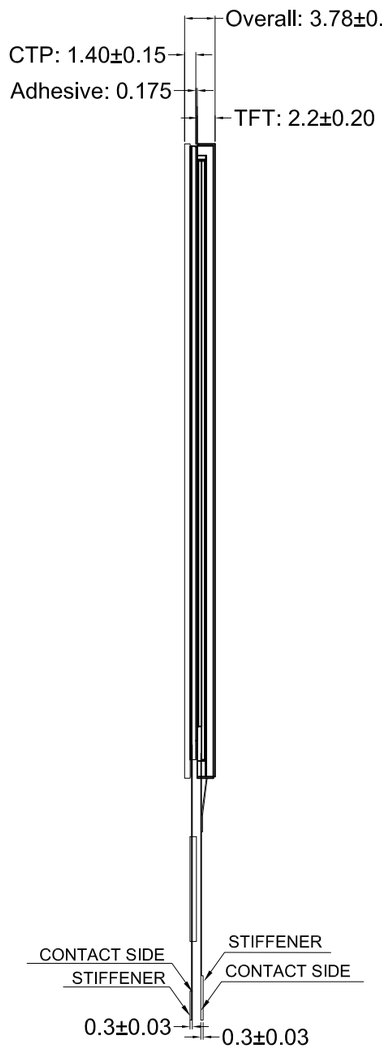
Document Revision History

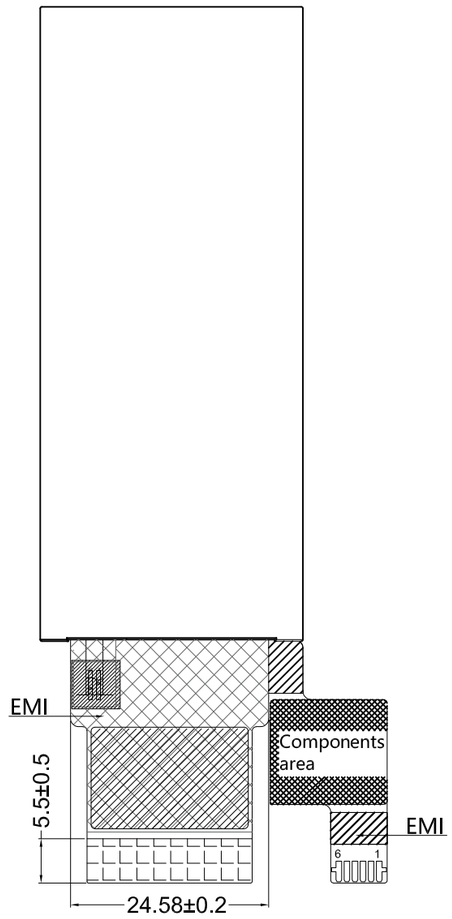
Revision	Date	Description	Changed By
-	07/30/2025	Initial Release	KL

Mechanical Drawing

Newhaven Display
NHD-2.9-376960AF-ASXP-CTP
Date Code
Part Label (type/format may vary)





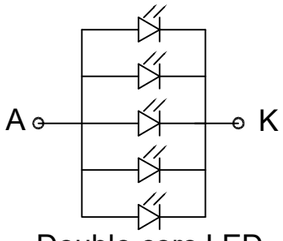


Pin No.	Symbol
1	LED-K
2	LED-A
3	GND
4	V_{DD}
5-12	[R0-R7]
13-20	[G0-G7]
21-28	[B0-B7]
29	GND
30	PCLK
31	RESETX
32	HS
33	VS
34	DE
35	NC
36	GND
37	CSX
38	DCX
39	SCL
40	SDA

Pin No.	Symbol
1	V_{DD}
2	V_{SS}
3	SCL
4	SDA
5	/INT
6	/RESET

Product Description: 2.9” 376x960 IPS TFT w/ Capacitive Touch

1. Driver IC: ST7701SN TFT, FT5426G CTP
2. Interface: 24-bit Parallel RGB, 4-wire SPI, I²C CTP
3. Power Requirement: 3.0V TFT, 6.0V/100mA Backlight, 3.3V CTP
4. Optical Features: Normally Black, Transmissive,892cd/m²
5. Recommended FFC Connector:
   TFT: 40pin 0.5mm pitch; Ex. Molex 54104-4031
   CTP: 6pin 1.0mm pitch; Ex. Molex 52271-0679
6. Key Features: Built-in EMI Shielding, 5-point Multitouch



Double core LED

Standard Tolerance:
(Unless otherwise specified)
Linear: ±0.3mm

Unless otherwise specified:
• Dimensions are in Millimeters
• Third Angle Projection

NEWHAVEN DISPLAY INTERNATIONAL

Drawing/Part Number:	Revision:
NHD-2.9-376960AF-ASXP-CTP	-

Drawn By:	Approved By:
K. Lewis	K. Lewis
Drawn Date: 07/30/2025	Approved Date: 07/30/2025

Pin Description

TFT:

Pin No.	Symbol	External Connection	Function Description
1	LED-K	LED Power Supply	Ground for Backlight
2	LED-A	LED Power Supply	Backlight Power Supply (100mA @ 6.0V)
3	GND	Power Supply	Ground
4	V_{DD}	Power Supply	Power supply for LCD and logic (3.0V)
5-12	[R0-R7]	MPU	Red Data signals
13-20	[G0-G7]	MPU	Green Data signals
21-28	[B0-B7]	MPU	Blue Data signals
29	GND	Power Supply	Ground
30	PCLK	MPU	Pixel Clock signal for input data (Rising edge)
31	RESETX	MPU	Active LOW Reset signal
32	HS	MPU	Horizontal (Line) synchronization signal
33	VS	MPU	Vertical (Frame) synchronization signal
34	DE	MPU	Data Enable signal
35	NC	-	No Connect
36	GND	Power Supply	Ground
37	CSX	MPU	Active LOW Chip Select signal
38	DCX	MPU	Data/Command selection: '1' = Data; '0' = Command
39	SCL	MPU	Serial Clock Input signal
40	SDA	MPU	Serial Data Input signal

Recommended LCD connector: 0.5mm pitch 40-Conductor FFC. Molex p/n: 54104-4031 (top contact)

CTP:

Pin No.	Symbol	External Connection	Function Description
1	V_{DD}	Power Supply	Supply voltage for Logic (3.3V)
2	V_{SS}	Power Supply	Ground
3	SCL	MPU	Serial I2C Clock (Requires 4.7KΩ pull-up resistor)
4	SDA	MPU	Serial I2C Data (Requires 4.7kΩ pull-up resistor)
5	/INT	MPU	Interrupt signal from touch panel module to host
6	/RESET	MPU	Active LOW Reset signal

Recommended connector: 6pin, 1.0mm pitch, FFC connector. Molex P/N 52271-0679

RGB Interface Mode Selection

The ST7701SN driver IC is user configurable for DE Mode (mode 1) or HV Mode (mode 2) RGB interface.

DE Mode is enabled by using Command C3h to set the DE/HV select bit to '0'.
In this mode, DE signal is toggled high for valid pixel data. Data is clocked in using PCLK signal. HS and VS are used for internal display clock. DE mode is recommended to enable ST7701SN driver IC to synchronize the display image on TFT panel without depending on specific horizontal and vertical sync timing from host controller.

HV Mode is enabled by using Command C3h to set the DE/HV select bit to '1'.
In this mode, DE signal is set to logic-high state, and HS and VS signals are used to explicitly define the horizontal and vertical sync timing to synchronize the display image on TFT panel. Data is clocked in using PCLK signal. Any change to the HS or VS values may prevent the image from correctly appearing on the display.
Back porch of HS is defined by HBP_HVRGB [7:0] of RGBCTR command.
Back porch of VS is defined by VBP_HVRGB [7:0] of RGBCTR command. Front porch of VS is not set in this mode.

RGB Mode Selection Table	PCLK	DE	VS	HS
DE Mode (mode 1)	Used	Used	Used	Used
HV Mode (mode 2)	Used	Not used	Used	Used

Electrical Characteristics

TFT:

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Operating Temperature Range	T_{OP}	Absolute Max	-20	-	+70	°C
Storage Temperature Range	T_{ST}	Absolute Max	-30	-	+80	°C
Supply Voltage	V_{DD}	-	2.5	3.0	3.3	V
Supply Current	I_{DD}	V_{DD} = 3.0V	13	26	39	mA
"H" Level input	V_{IH}	-	0.7 * V_{DD}	-	V_{DD}	V
"L" Level input	V_{IL}	-	V_{SS}	-	0.3V_{DD}	V
"H" Level output	V_{OH}	-	0.8V_{DD}	-	V_{DD}	V
"L" Level output	V_{OL}	-	V_{SS}	-	0.2V_{DD}	V
Backlight Supply Current	I_{LED}	-	75	100	125	mA
Backlight Supply Voltage	V_{LED}	I_{LED} = 100mA	5.5	6.0	6.5	V
Backlight Lifetime*	-	T_{OP} = 25°C	30,000	-	-	Hrs.

*Backlight lifetime is rated as Hours until **half-brightness**, under normal operating conditions. The LED of the backlight is driven by current drain; drive voltage is for reference only. Drive voltage must be selected to ensure backlight current drain is below MAX level stated.

Capacitive Touch Panel:

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Operating Temperature Range	T_{OP}	Absolute Max	-20	-	+70	°C
Storage Temperature Range	T_{ST}	Absolute Max	-30	-	+80	°C
Supply Voltage	V_{DD}	-	2.7	3.3	3.6	V
Supply Current – Operating	I_{DD}	-	6	10	18	mA
"H" Level input	V_{IH}	-	0.7*V_{DD}	-	V_{DD}	V
"L" Level input	V_{IL}	-	-0.3	-	0.3*V_{DD}	V
"H" Level output	V_{OH}	-	0.7*V_{DD}	-	V_{DD}	V
"L" Level output	V_{OL}	-	V_{SS}	-	0.3*V_{DD}	V

Optical Characteristics

Item		Symbol	Condition	Min.	Typ.	Max.	Unit
Optimal Viewing Angles	Top	φY+	-	-	85	-	°
	Bottom	φY-		-	85	-	°
	Left	θX-		-	85	-	°
	Right	θX+		-	85	-	°
Contrast Ratio		CR	-	1000	1500	-	-
Luminance		L_V	I_{LED} = 100 mA	714	892	-	cd/m^2
Response Time (Rise + Fall)		$T_R + T_F$	T_{OP} = 25°C	-	30	35	ms
Chromaticity	Red	X_R	-	0.561	0.611	0.661	-
		Y_R	-	0.276	0.326	0.376	-
	Green	X_G	-	0.291	0.341	0.391	-
		Y_G	-	0.552	0.602	0.652	-
	Blue	X_B	-	0.070	0.120	0.170	-
		Y_B	-	0.023	0.073	0.123	-
	White	X_W	-	0.242	0.292	0.342	-
		Y_W	-	0.260	0.310	0.360	-

Driver/Controller Information

Built-in ST7701SN Source Driver: https://support.newhavendisplay.com/hc/en-us/articles/14147699906711-ST7701SN
Built-in FT5426G Controller: https://support.newhavendisplay.com/hc/en-us/articles/17688730921367-FT5426G

Capacitive Touch Panel Registers

Register No.	Access	Register Name	Bits	Value	Description
01h	RO	Gesture ID	[7:0]	1Ch 14h 10 18 48 49 00	Swipe Up Swipe Down Swipe Left Swipe Right Zoom In Zoom Out No gesture
02h	RO	Touch Points	[7:0]	0-Ah	0: No touch detected A: 5 touch points detected
03h	RO	TOUCH1_Event_Flag	[7:6]	0 1 2 3	Put Down Put Up Contact Reserved
03h	RO	TOUCH1_XH	[3:0]	0 -1	Upper 4 bits of X touch coordinate
04h	RO	TOUCH1_XL	[7:0]	00 – FFh	Lower 8 bits of X touch coordinate
05h	RO	TOUCH1_YH	[3:0]	0 -1	Upper 4 bits of Y touch coordinate
06h	RO	TOUCH1_YL	[7:0]	00 – FFh	Lower 8 bits of Y touch coordinate
07h	RO	TOUCH1_Weight	[7:0]		Touch Weight
08h	RO	TOUCH1_Misc	[3:0]	00-0Fh	Touch Area
09h	RO	TOUCH2_Event_Flag	[7:6]	0 1 2 3	Put Down Put Up Contact Reserved
09h	RO	TOUCH1_XH	[3:0]	0 -1	Upper 4 bits of X touch coordinate
0Ah	RO	TOUCH2_XL	[7:0]	00 – FFh	Lower 8 bits of X touch coordinate
0Bh	RO	TOUCH2_YH	[3:0]	0 -1	Upper 4 bits of Y touch coordinate
0Ch	RO	TOUCH2_YL	[7:0]	00 – FFh	Lower 8 bits of Y touch coordinate
0Dh	RO	TOUCH2_Weight	[7:0]		Touch Weight
0Eh	RO	TOUCH2_Misc	[3:0]	00-0Fh	Touch Area
0Fh	RO	TOUCH3_Event_Flag	[7:6]	0 1 2 3	Put Down Put Up Contact Reserved
0Fh	RO	TOUCH3_XH	[3:0]	0 -1	Upper 4 bits of X touch coordinate
10	RO	TOUCH3_XL	[7:0]	00 – FFh	Lower 8 bits of X touch coordinate
11h	RO	TOUCH3_YH	[3:0]	0 -1	Upper 4 bits of Y touch coordinate
12h	RO	TOUCH3_YL	[7:0]	00 – FFh	Lower 8 bits of Y touch coordinate
13h	RO	TOUCH3_Weight	[7:0]		Touch Weight
14h	RO	TOUCH3_Misc	[3:0]	00-0Fh	Touch Area
15h	RO	TOUCH4_Event_Flag	[7:6]	0 1 2 3	Put Down Put Up Contact Reserved
15h	RO	TOUCH4_XH	[3:0]	0 -1	Upper 4 bits of X touch coordinate
16h	RO	TOUCH4_XL	[7:0]	00 – FFh	Lower 8 bits of X touch coordinate
17h	RO	TOUCH4_YH	[3:0]	0 -1	Upper 4 bits of Y touch coordinate
18h	RO	TOUCH4_YL	[7:0]	00 – FFh	Lower 8 bits of Y touch coordinate
1Ah	RO	TOUCH4_Misc	[3:0]	00-0Fh	Touch Area
1Bh	RO	TOUCH5_Event_Flag	[7:6]	0 1 2 3	Put Down Put Up Contact Reserved

Register No.	Access	Register Name	Bits	Value	Description
1Bh	RO	TOUCH5_XH	[3:0]	0 -1	Upper 4 bits of X touch coordinate
1Ch	RO	TOUCH5_XL	[7:0]	00 – FFh	Lower 8 bits of X touch coordinate
1Dh	RO	TOUCH5_YH	[3:0]	0 -1	Upper 4 bits of Y touch coordinate
1Eh	RO	TOUCH5_YL	[7:0]	00 – FFh	Lower 8 bits of Y touch coordinate
1Fh	RO	TOUCH5_Weight	[7:0]		Touch Weight
20	RO	TOUCH5_Misc	[3:0]	00-0Fh	Touch Area
21h	RO	TOUCH6_Event_Flag	[7:6]	0 1 2 3	Put Down Put Up Contact Reserved
21h	RO	TOUCH6_XH	[3:0]	0 -1	Upper 4 bits of X touch coordinate
22h	RO	TOUCH6_XL	[7:0]	00 – FFh	Lower 8 bits of X touch coordinate
23h	RO	TOUCH6_YH	[3:0]	0 -1	Upper 4 bits of Y touch coordinate
24h	RO	TOUCH6_YL	[7:0]	00 – FFh	Lower 8 bits of Y touch coordinate
25h	RO	TOUCH6_Weight	[7:0]		Touch Weight
26h	RO	TOUCH6_Misc	[3:0]	00-0Fh	Touch Area
27h	RO	TOUCH7_Event_Flag	[7:6]	0 1 2 3	Put Down Put Up Contact Reserved
27h	RO	TOUCH7_XH	[3:0]	0 -1	Upper 4 bits of X touch coordinate
28h	RO	TOUCH7_XL	[7:0]	00 – FFh	Lower 8 bits of X touch coordinate
29h	RO	TOUCH7_YH	[3:0]	0 – 1	Upper 4 bits of Y touch coordinate
2Ah	RO	TOUCH7_YL	[7:0]	00 – FFh	Lower 8 bits of Y touch coordinate
2Bh	RO	TOUCH7_Weight	[7:0]		Touch Weight
2Ch	RO	TOUCH7_Misc	[3:0]	00-0Fh	Touch Area
2Dh	RO	TOUCH8_Event_Flag	[7:6]	0 1 2 3	Put Down Put Up Contact Reserved
2Dh	RO	TOUCH8_XH	[3:0]	0 – 1	Upper 4 bits of X touch coordinate
2Eh	RO	TOUCH8_XL	[7:0]	00 – FFh	Lower 8 bits of X touch coordinate
2Fh	RO	TOUCH8_YH	[3:0]	0 – 1	Upper 4 bits of Y touch coordinate
30	RO	TOUCH8_YL	[7:0]	00 – FFh	Lower 8 bits of Y touch coordinate
31h	RO	TOUCH8_Weight	[7:0]		Touch Weight
32h	RO	TOUCH8_Misc	[3:0]	00-0Fh	Touch Area
33h	RO	TOUCH9_Event_Flag	[7:6]	0 1 2 3	Put Down Put Up Contact Reserved
33h	RO	TOUCH9_XH	[3:0]	0 – 1	Upper 4 bits of X touch coordinate
34h	RO	TOUCH9_XL	[7:0]	00 – FFh	Lower 8 bits of X touch coordinate
35h	RO	TOUCH9_YH	[3:0]	0 – 1	Upper 4 bits of Y touch coordinate
36h	RO	TOUCH9_YL	[7:0]	00 – FFh	Lower 8 bits of Y touch coordinate
37h	RO	TOUCH9_Weight	[7:0]		Touch Weight
38h	RO	TOUCH9_Misc	[3:0]	00 – 0Fh	Touch Area
39h	RO	TOUCH10_Event_Flag	[7:6]	0 1 2 3	Put Down Put Up Contact Reserved
39h	RO	TOUCH10_XH	[3:0]	0 – 1	Upper 4 bits of X touch coordinate
3Ah	RO	TOUCH10_XL	[7:0]	00 – FFh	Lower 8 bits of X touch coordinate
3Bh	RO	TOUCH10_YH	[3:0]	0 – 1	Upper 4 bits of Y touch coordinate
3Ch	RO	TOUCH10_YL	[7:0]	00 - FFh	Lower 8 bits of Y touch coordinate

Register No.	Access	Register Name	Bits	Value	Description
3Dh	RO	TOUCH10_Weight	[7:0]	00-FFh	Touch Weight
3Eh	RO	TOUCH10_Misc	[3:0]	00-0Fh	Touch Area
A1h	RO	ID_G_LIB_VERSION_H	[7:0]	00-FFh	App library version high-byte Default: 0
A2h	RO	ID_G_LIB_VERSION_L	[7:0]	00-FFh	App library version low-byte Default: 1h
A3h	RO	ID_G_CHIPER_HIGH	[7:0]	00-FFh	Chip Vendor ID Default: 54
A6h	RO	ID_G_FIRMID	[7:0]	00-FFh	Firmware ID Number Default: 1
A8h	RO	ID_G_VENODRID	[7:0]	00-FFh	CTPM Vendor's Chip ID Default: 79h

Timing Characteristics-TFT Display

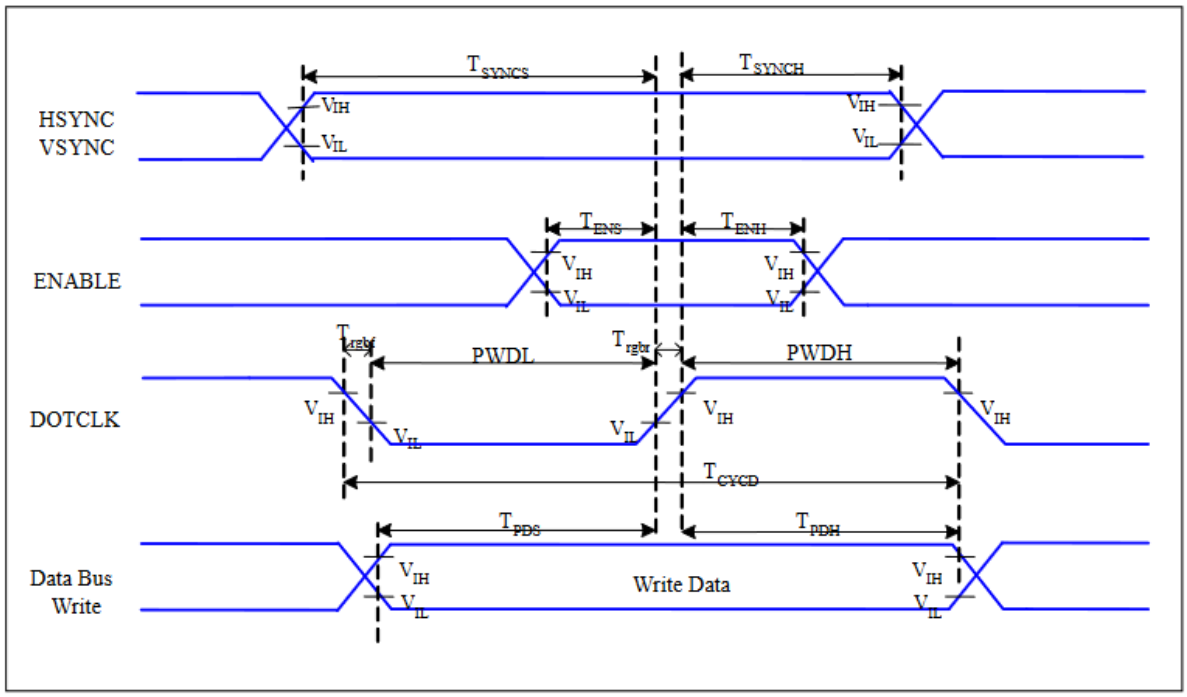
Horizontal Input Timing

Parameter	Symbol	Min	Typ	Max	Unit	Note
Horizontal Sync Width	hpw	2	-	255	Clock	VS + VBP <= 254, HPW + HBP <= 255
Horizontal Sync Back Porch	hbp	2	-	255		
Horizontal Sync Front Porch	hfp	2	-	-		

Vertical Input Timing

Parameter	Symbol	Min	Typ	Max	Unit	Note
Vertical Sync. Width	vs	2	-	254	Line	VS + VBP <= 254, HPW + HBP <= 255
Vertical Sync. Back Porch	vbp	2	-	254		
Vertical Sync. Front Porch	vfp	2	-	-		

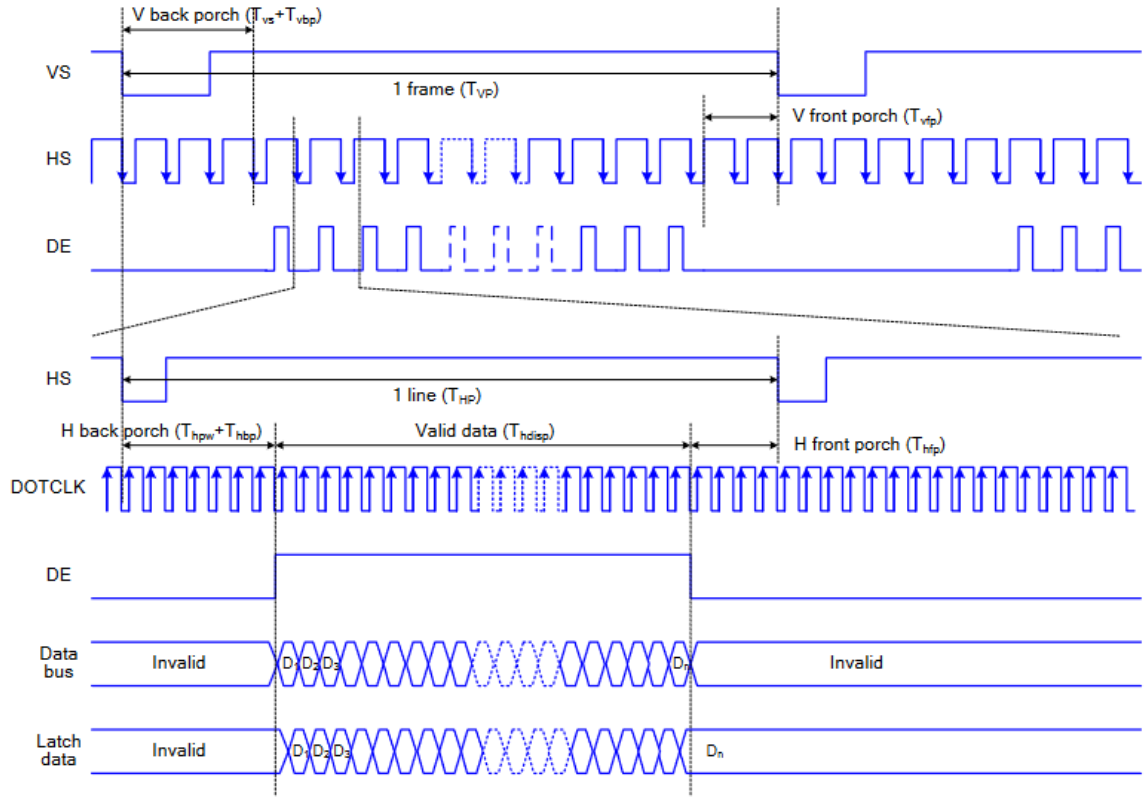
RGB Interface Characteristics



Signal	Symbol	Parameter	MIN	MAX	Unit	Description
HSYNC, VSYNC	T_{SYNCS}	VSYNC, HSYNC Setup Time	5	-	ns	
ENABLE	T_{ENS}	Enable Setup Time	5	-	ns	
	T_{ENH}	Enable Hold Time	5	-	ns	
DOTCLK	PWDH	DOTCLK High-level Pulse Width	15	-	ns	
	PWDL	DOTCLK Low-level Pulse Width	15	-	ns	
	T_{CYCD}	DOTCLK Cycle Time	33	-	ns	
	Trghr, Trghf	DOTCLK Rise/Fall time	-	15	ns	
DB	T_{PDS}	PD Data Setup Time	5	-	ns	
	T_{PDH}	PD Data Hold Time	5	-	ns	

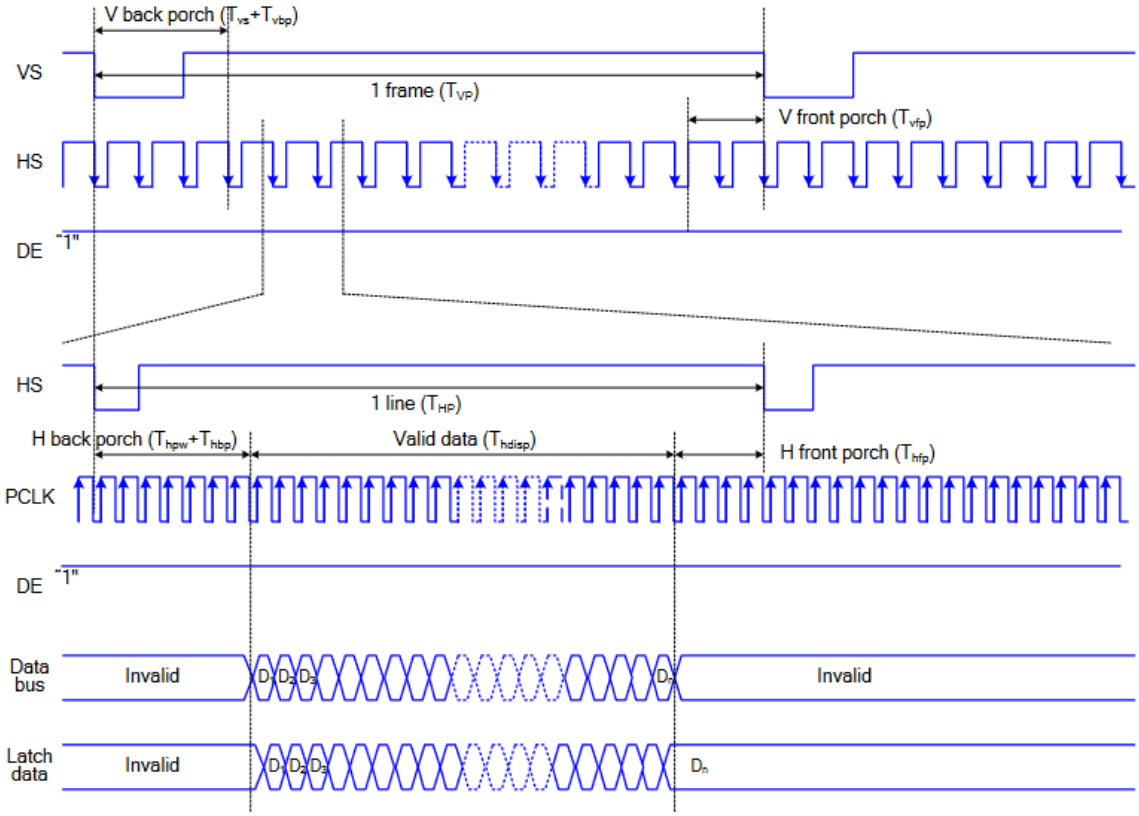
RGB Interface Timing

RGB Interface DE mode

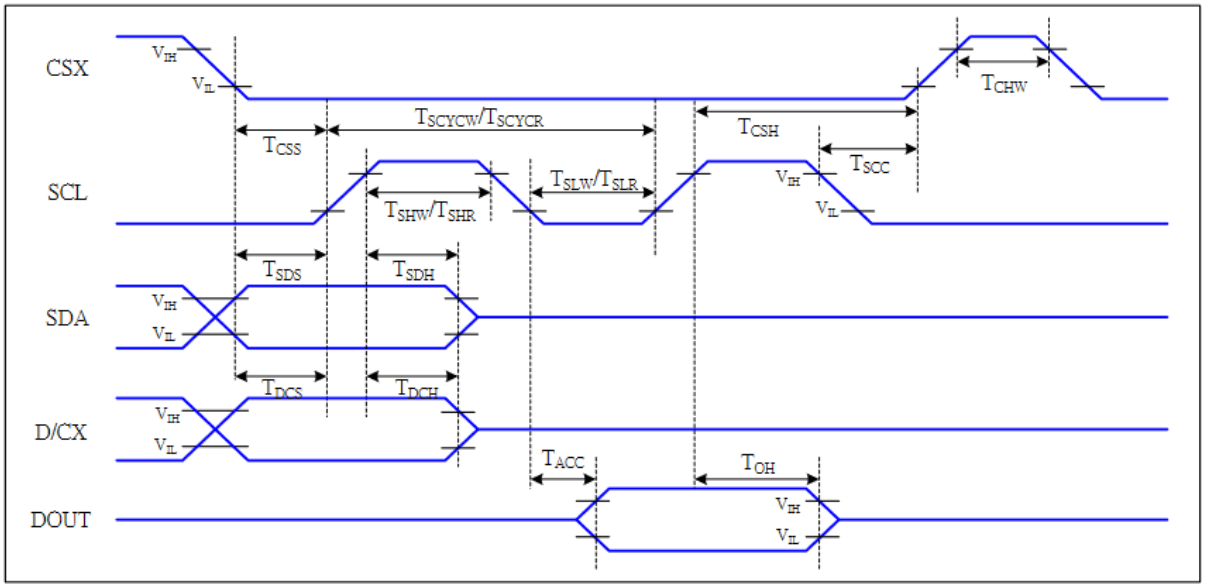


Note: The setting of front porch and back porch in host must match that in IC as this mode.

RGB Interface HV Mode

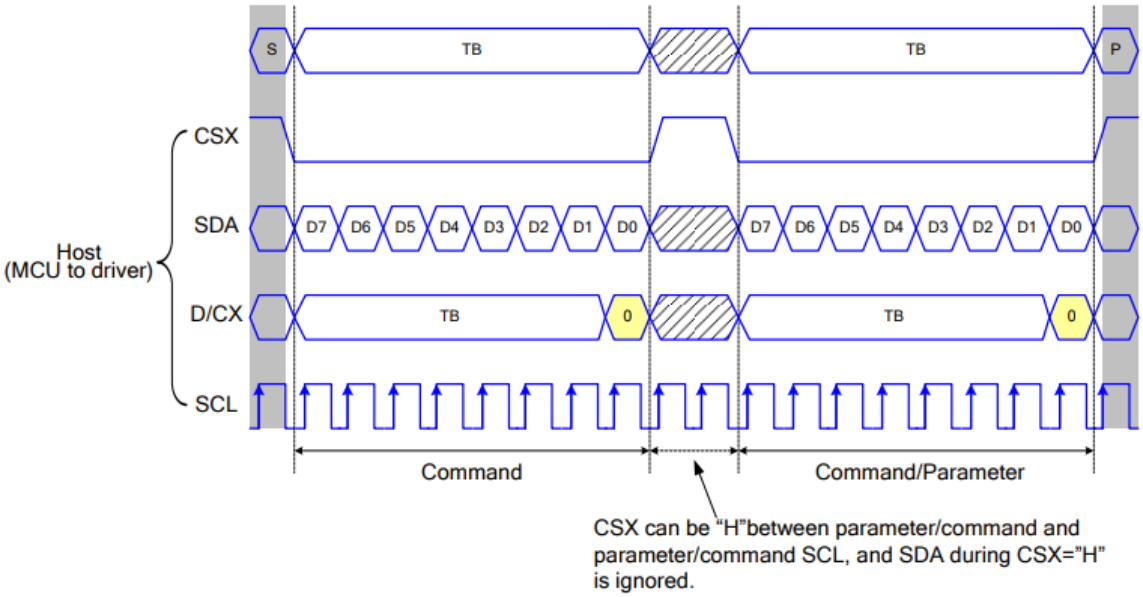


4-wire Serial Interface Timing Characteristics

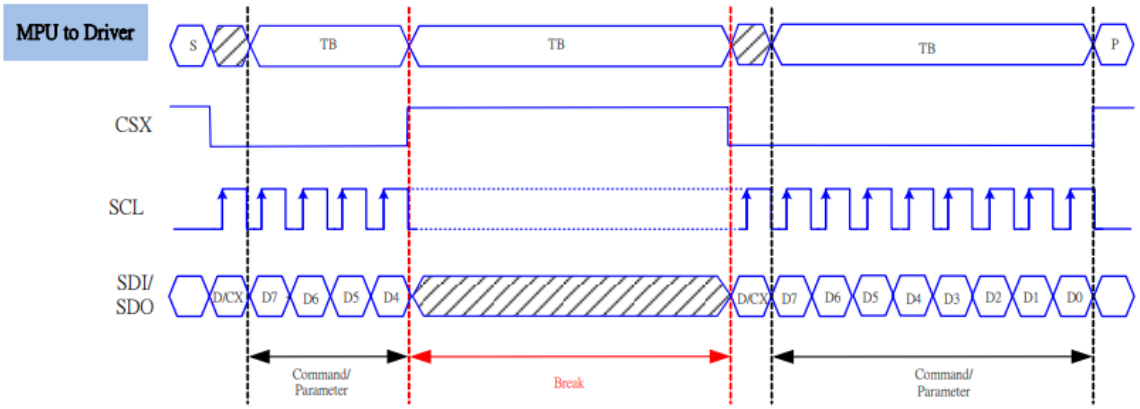


Signal	Symbol	Parameter	MIN	MAX	Unit	Description
CSX	T_{CSS}	Chip select setup time (write)	15		ns	
	T_{CSH}	Chip select hold time (write)	15		ns	
	T_{CSS}	Chip select setup time (read)	60		ns	
	T_{SCC}	Chip select hold time (read)	65		ns	
	T_{CHW}	Chip select "H" pulse width	40		ns	
SCL	T_{SCYCW}	Serial clock cycle (Write)	66		ns	
	T_{SHW}	SCL "H" pulse width (Write)	15		ns	-write command
	T_{SLW}	SCL "L" pulse width (Write)	15		ns	
	T_{SCYCR}	Serial clock cycle (Read)	150		ns	
	T_{SHR}	SCL "H" pulse width (Read)	60		ns	-read command
	T_{SLR}	SCL "L" pulse width (Read)	60		ns	
D/CX	T_{DCS}	D/CX setup time	10		ns	
	T_{DCH}	D/CX hold time	10		ns	
SDA (DIN)	T_{SDS}	Data setup time	10		ns	
	T_{SDH}	Data hold time	10		ns	
SDO (DOUT)	T_{ACC}	Access time	20	50	ns	Max: CL=30pF
	T_{OH}	Output disable time	50	50	ns	Min: CL=8pF

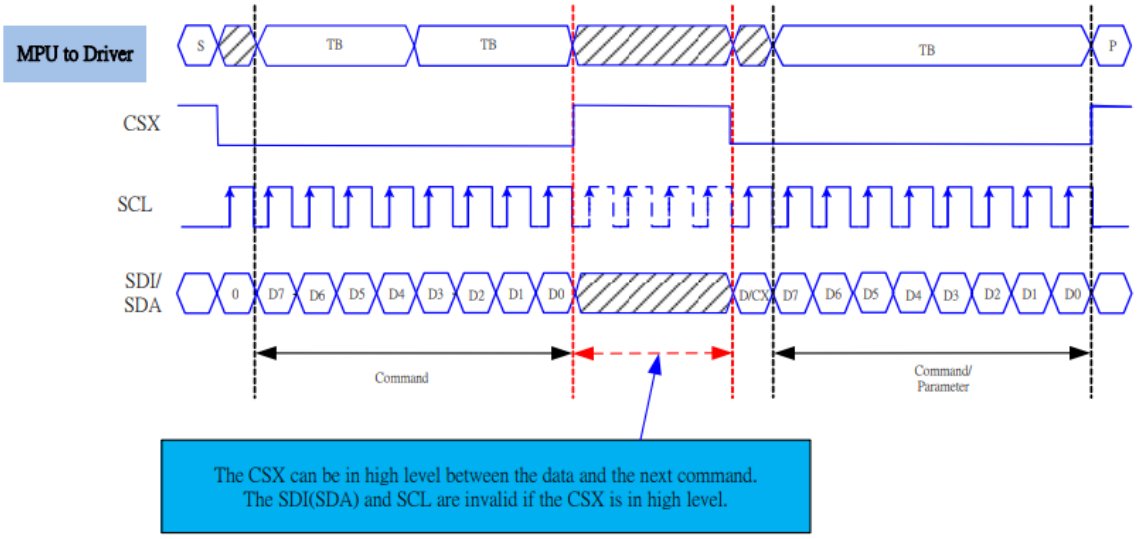
4-line Serial Interface Write Protocol (write to register with control bit in transmission)



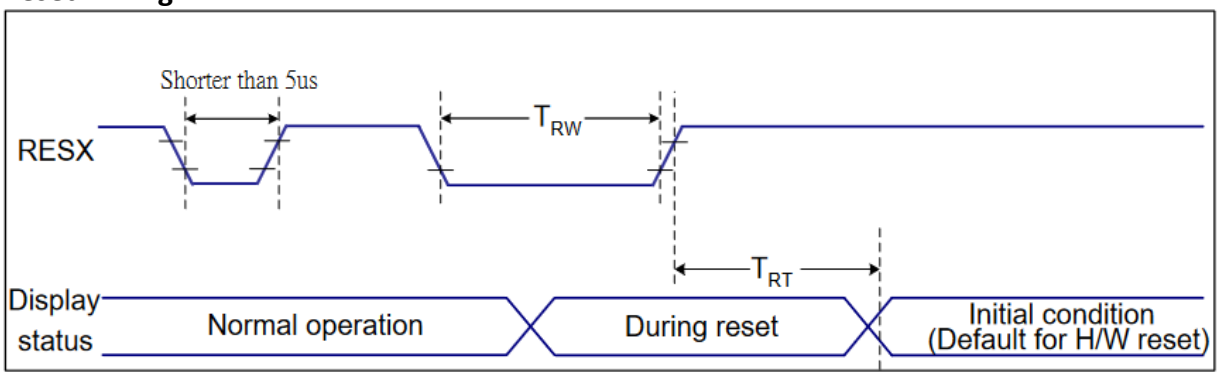
4-line Serial Interface Data Transfer Break and Recovery – please refer to ST7701SN driver IC spec for detailed information.



4-line Serial Interface Data Transfer Pause – please refer to ST7701SN driver IC spec for detailed information.



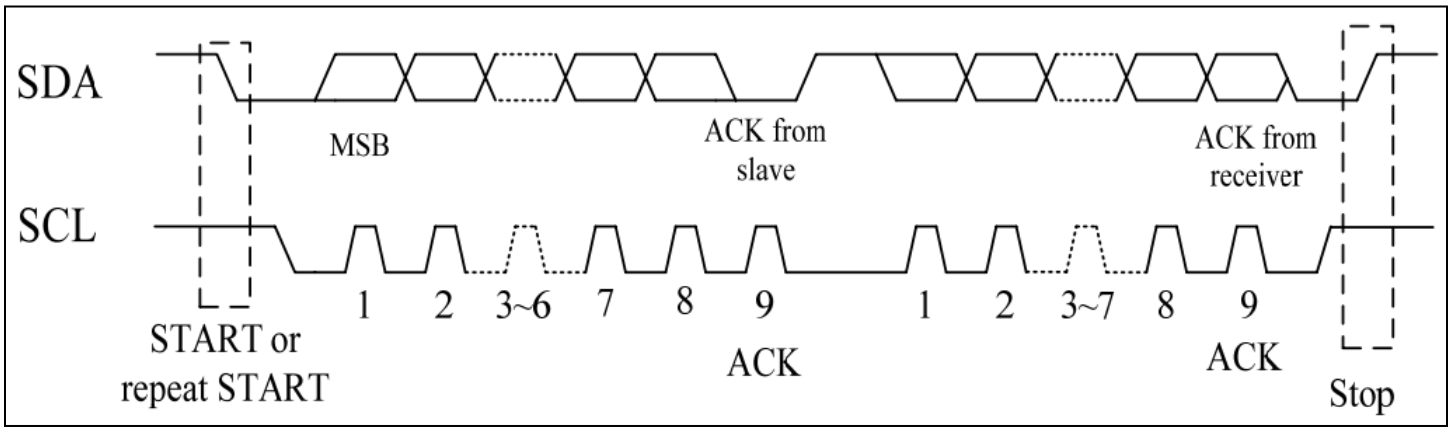
Reset Timing



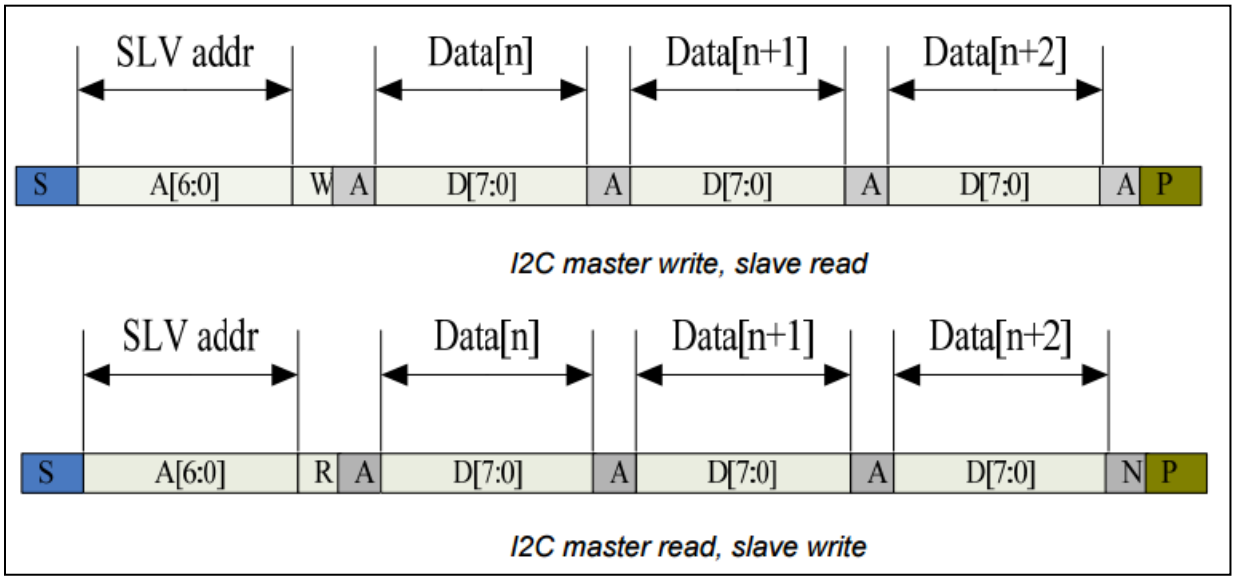
Related Pins	Symbol	Parameter	MIN	MAX	Unit
RESX	TRW	Reset pulse duration	10	-	us
	TRT	Reset cancel	-	5 (Note 1, 5)	ms
				120(Note 1, 6, 7)	ms

Timing Characteristics – Capacitive Touch Panel

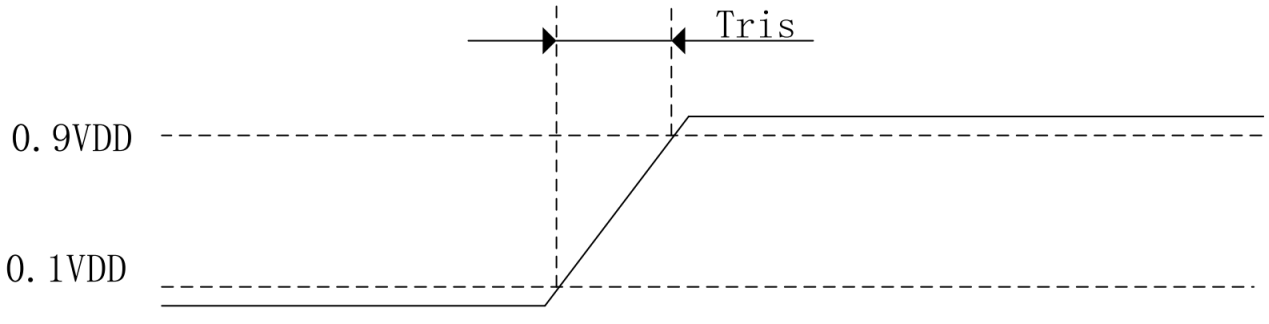
Data Transfer Format



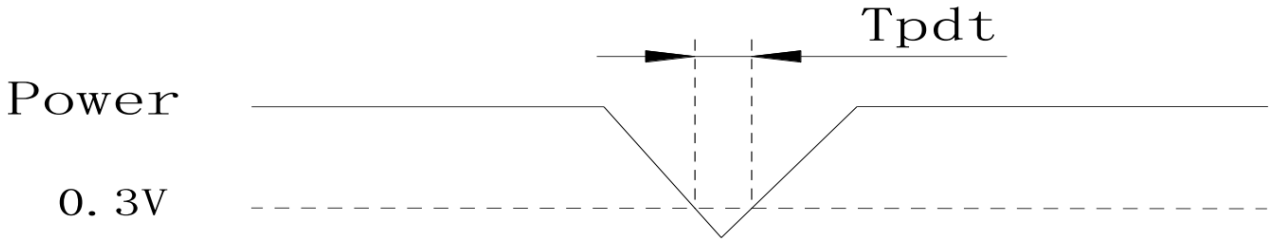
Parameter	Min	Max	Unit
SCL Frequency	0	400	KHz
Bus free time between a STOP & START condition	1.3	-	µs
Hold time Repeated START condition	0.6	-	µs
Data Setup Time	100	-	ns
Setup time for a repeated START condition	0.6	-	µs
Setup time for a STOP condition	0.6	-	µs



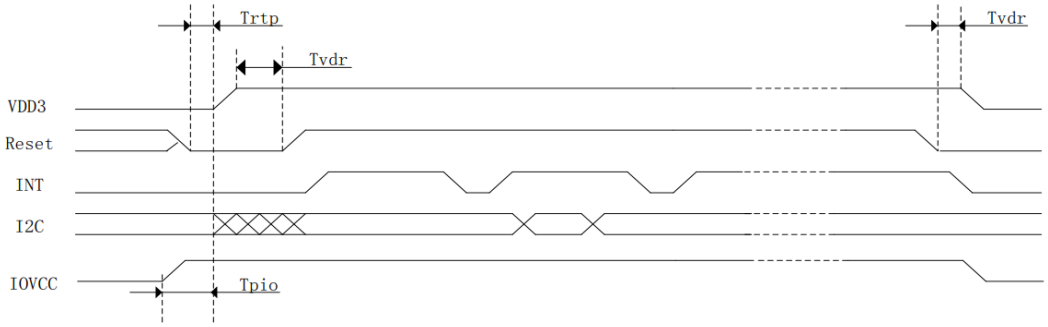
Power ON/Reset Sequence



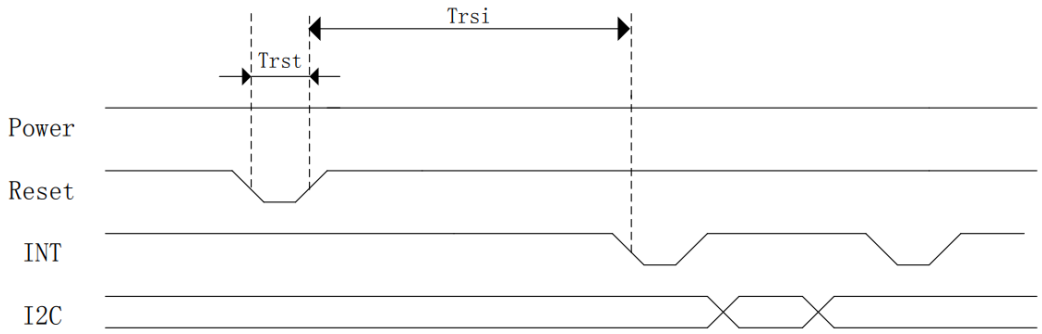
Power On Time



Power Cycle Requirement



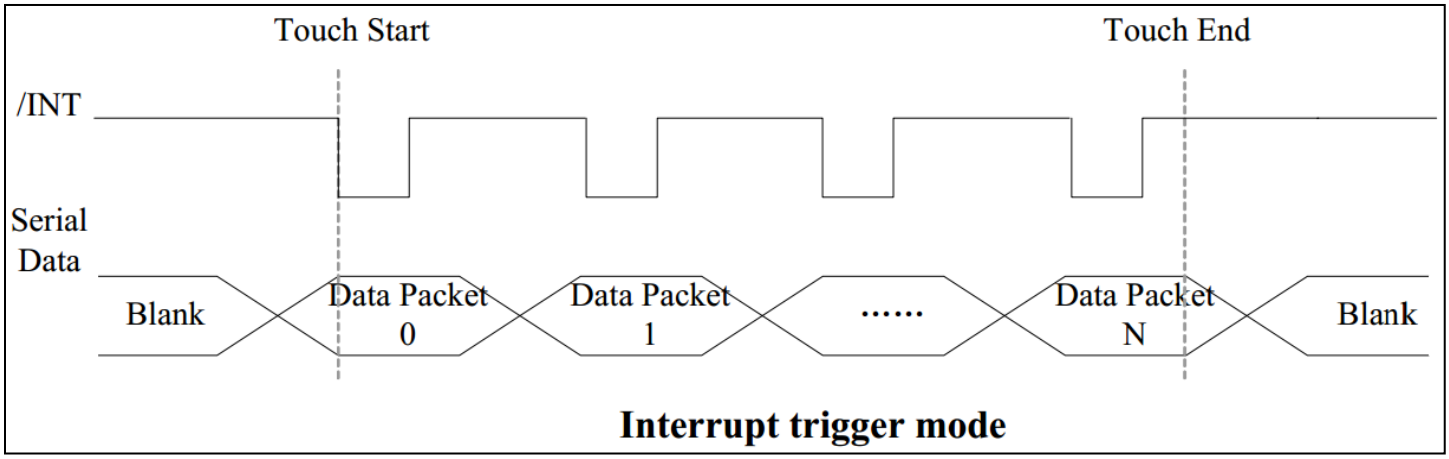
Power ON Sequence



Reset sequence

Parameter	Description	Min	Max	Unit
Tris	Rise time from 0.1V_{DD} to 0.9V_{DD}	-	5	ms
Tpdt	Time of the voltage of supply being below 0.3V	5	-	ms
Trtp	Time of resetting to be low before powering on	100	-	µs
Tpon	Time to start reporting after power on	-	200	ms
Tvdr*	Reset time after applying V_{DD}	1	-	ms
Trsi	Time to start reporting after reset	-	200	ms
Trst*	Reset Time	1	-	ms

*Note: If Reset is tied to V_{DD} data corruption can occur



Sample code to read touch data:

```
i2c_start();
i2c_tx(0x70);        //Slave Address (Write)
i2c_tx(0x00);        //Start reading address
i2c_stop();

i2c_start();
i2c_tx(0x71);        //Slave Address (Read)
for(i=0x00;i<0x1F;i++)
{touchdata_buffer[i] = i2c_rx(1);}
i2c_stop();
```

Sample code to overwrite default register values:

```
i2c_start();
i2c_tx(0x70);        //Slave Address (Write)
i2c_tx(0xA4);        //ID_G_Mode
i2c_tx(0x01);        //Disable interrupt status to host
i2c_stop();
```

Quality Information

Test Item	Content of Test	Test Condition	Note
High Temperature storage	Endurance test applying the high storage temperature for a long time.	+80°C , 96hrs	2
Low Temperature storage	Endurance test applying the low storage temperature for a long time.	-30°C , 96hrs	1,2
High Temperature Operation	Endurance test applying the electric stress (voltage & current) and the high thermal stress for a long time.	+70°C 96hrs	2
Low Temperature Operation	Endurance test applying the electric stress (voltage & current) and the low thermal stress for a long time.	-20°C , 96hrs	1,2
High Temperature / Humidity Storage	Endurance test applying the electric stress (voltage & current) and the high thermal with high humidity stress for a long time.	+50°C , 90% RH , 96hrs	1,2
Thermal Shock resistance	Endurance test applying the electric stress (voltage & current) during a cycle of low and high thermal stress.	-20°C,60min -> 70°C,60 min =20 cycles	
Vibration test	Endurance test applying vibration to simulate transportation and use.	Frequency range:10Hz~50Hz Acceleration of gravity:5G X, Y, Z 30 min for each direction	3
Static electricity test	Endurance test applying electric static discharge.	Air: ±4kV 150pF/330Ω ; Contact: ±2kV 150pF/330Ω For 5 times each.	

Note 1: No condensation to be observed.

Note 2: Conducted after 4 hours of storage at 25°C, 0%RH.

Note 3: Test performed on product itself, not inside a container.