RJS-SDS SERIES

SMART DISPLAY SWITCH

General Specifications of Switch

Circuit: SPST normally open
Contact Rating: 100mA@12VDC
Contact Resistance: 200 milliohms max. @ 20 mV 10mA
Insulation Resistance: 100 megaohms min. @ 100VDC
Dielectric Strength: Breakdown is not allowable, 125VAC for 1 minute min.
Actuation Force: 1.7N±0.5N
Total Travel: 1.8mm±0.3mm
Operating Life: 3000,000 cycles
Operating Temperature: -15°C ~ 50°C

General Specifications of Display

Face Size (Switch): 19.0mmx 18.0mm (horizontal x vertical)
Viewing Area: 14.5mmx 11.8mm (horizontal x vertical)
Pixel Format: 64 x 32 pixels (horizontal x vertical)
Display Mode: Black and White, FSTN Positive
LED Forward Voltage: 5 VDC
LED Forward Current: 10, 8.5, 8mA.
Backlight LED: Red - Green - Blue

Material:

Cover: Polycarbonate (PC)
Actuator: Polyoxymethylene(POM)
Base Frame : Polyamide(PA)+GF
Terminal: Brass with gold plating
Moving Contact: Phosphor Bronze with gold plating

Ordering Information

SERIES	RESOLUTION	ACTUATION TYPE	SCREEN	BACKLIGHT	SOUND	TOUCH	ACTIVE	SENSITIVITY	CABLE	CAPS SYMBOL
RJS-SDS	32	T	L	RGB						
	32=64*32 24=36*24 48=64*48 64=96*64 128=128*128 240=240*240 320=320*320 400=400*400 466=466*466 480=480*480	T=TACTILE TYPE -=NONE	L=LCD DISPLAY O=OLED TF=TFT AM=AMOLED -=NONE	RGB=FULL COLOR B=BLACK W=WHITE R=RED G=GREEN U=BLUE Y=YELLOW -= NONE	S1=S1TYPE S2=S2TYPE -=NOMAL	TH=TOUCH FUNCTION -=NONE	H=HIGH L=LOW -=NOMAL	H=HIGH L=LOW -=NOMAL	C200=L200mm -=NOMAL	

Demonstration Kit

Demonstration Kits 1 und 2 are shipped with a LCD Switch or LC Display, USB cable for PC connection, User Guide and CD with software. Optional Battery Box is available.



SDS-DEM KIT-1



SDS-DEM KIT-2

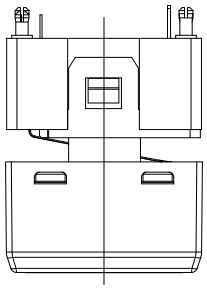
SDS-DEM KIT-1:Switch Demonstration Kit

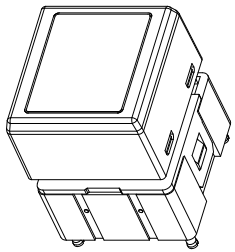
SDS-DEM KIT-2:Display Demonstration Kit

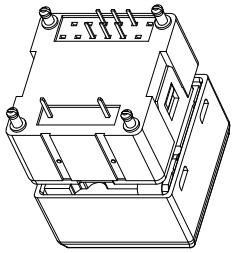
The demonstration kit is used for displaying bitmaps, up to 64, that have been created on your PC via the Easy Editor software and USB cable (supplied). This kit contains a LCD Switch or LC Display with RGB LED.

RJS-SDS SERIES

SMART DISPLAY SWITCH

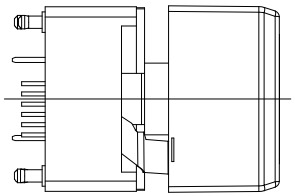


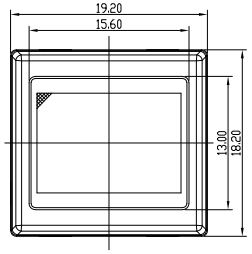


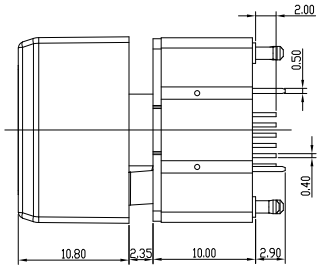


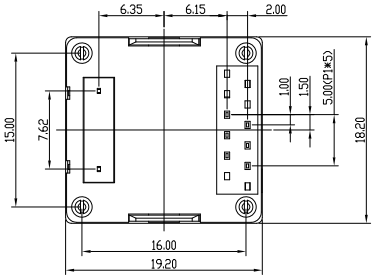
PIN 1	SWITCH Terminal
PIN 2	SWITCH Terminal
PIN 3	GND (Gorund)
PIN 4	V_{DD} (Power)
PIN 5	SDO (Data Out)
PIN 6	SDI (Data In)
PIN 7	SCK (Serial Clock)
PIN 8	$\overline{SS}$ (Slave Select)

Terminals Configuration







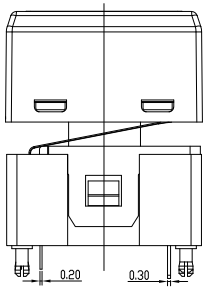


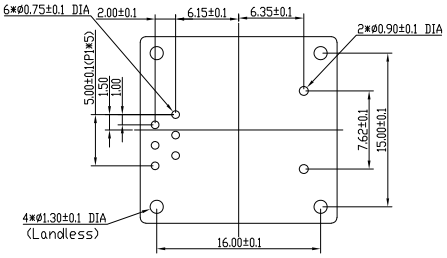


Terminals Configuration

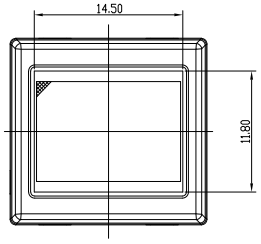
" RGB "

Backlight

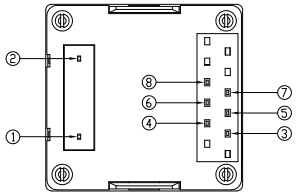




Terminal Hole Spacings
Top View



Viewing Area



Terminals Bottom View

NOTES:
1、SWITCH RATING:12VDC 100mA.
2、CONTACT RESISTANCE : 200 mΩ MAX .(Initial)
3、INSULATION RESISTANCE : 100 MΩ MIN(DC 250V)
4、WITHSTAND VOLTAGE : AC 125 V /1 MINUTE.
5、OPERATING TEMPERATURE :-25℃～70℃
6、OPERATING FORCE : 180±50gf
7、 FULL TRAVEL : 1.8±0.3mm
8、 LIFE CYCLE: 2,000,000 CYCLES
9、64(horizontal)X32(vertical) Pixel FORMAT
10、PIN1~PIN8 MUST CHECK THE TERMINALS CONFIGURATION

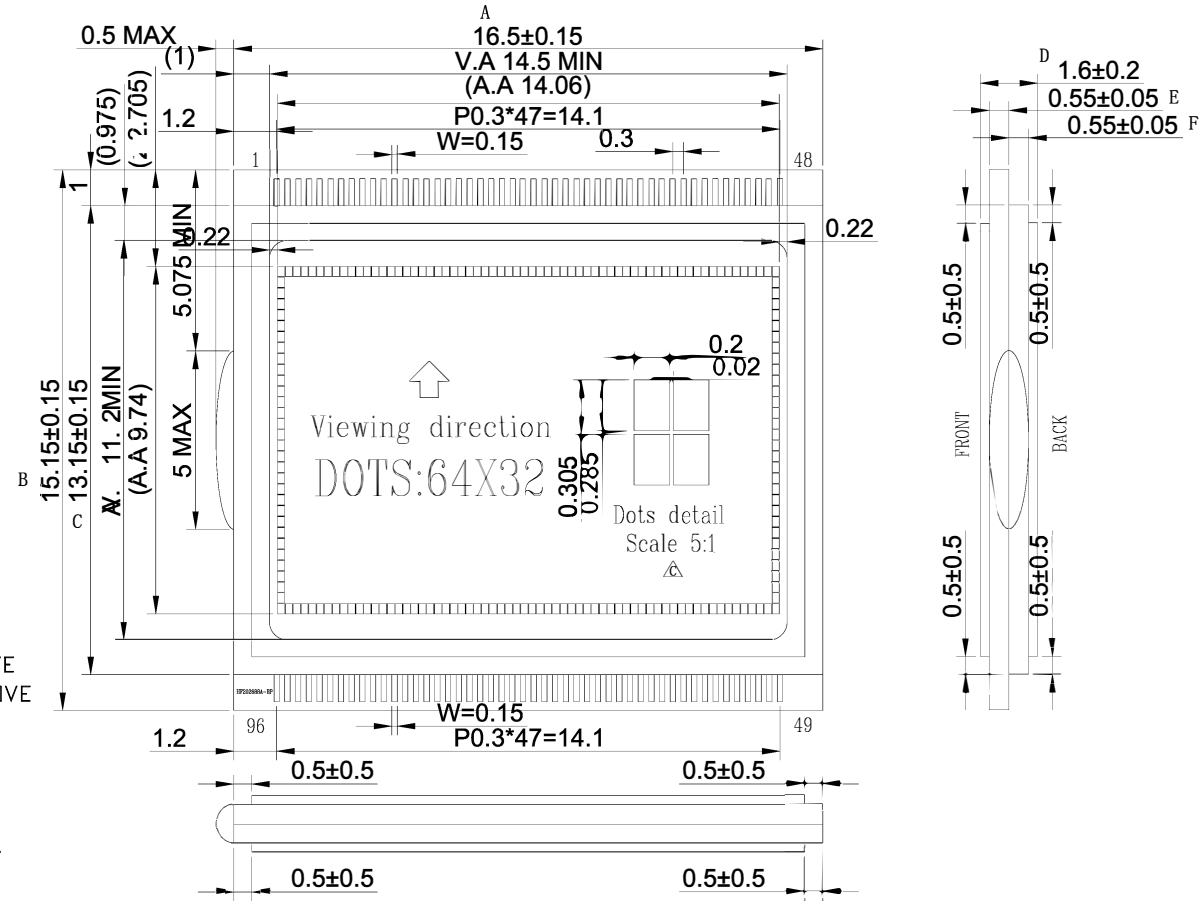
TOL. UNLESS OTHRWISE SPEC.		. ISSU.	DATE	REVISION	DESIGN
BASIC DIMENSIONS	TOL.	0			
L≤10	±0.3	1			
10<L	±0.5	2			
100≤L	±0.8	3			
ANGLE	±5°	4			

SCALE	UNIT
1.3:1	mm

MODEL:	RJS-SDS-32-T-L-RGB-JB
VERSION	A
DRAWING NO:	RJS-SDS-32-0001
	1/1

RJS-SDS SERIES

SMART DISPLAY SWITCH



1. DISPLAY MODE : FSTN,POSITIVE MODE
2. FRONT POLARIZER :TRANSMISSIVE,ADHESIVE
3. BACK POLARIZER :TRANSFLECTIVE,ADHESIVE
4. VIEWING ANGLE: 6 O'CLOCK
5. DRIVE METHOD: 1/32 DUTY 1/6 BIAS
6. OPERATING VOLTAGE: 5.5V
7. FRAME FREQUENCY:
8. TEMP: −20°C~+70°C, TST: −30°C~+80°C.
9. CUSTOMER NO.
10. CONNECTORS: ZEBRA
11. DRIVE IC:
12. ROHS COMPLIANT: YES

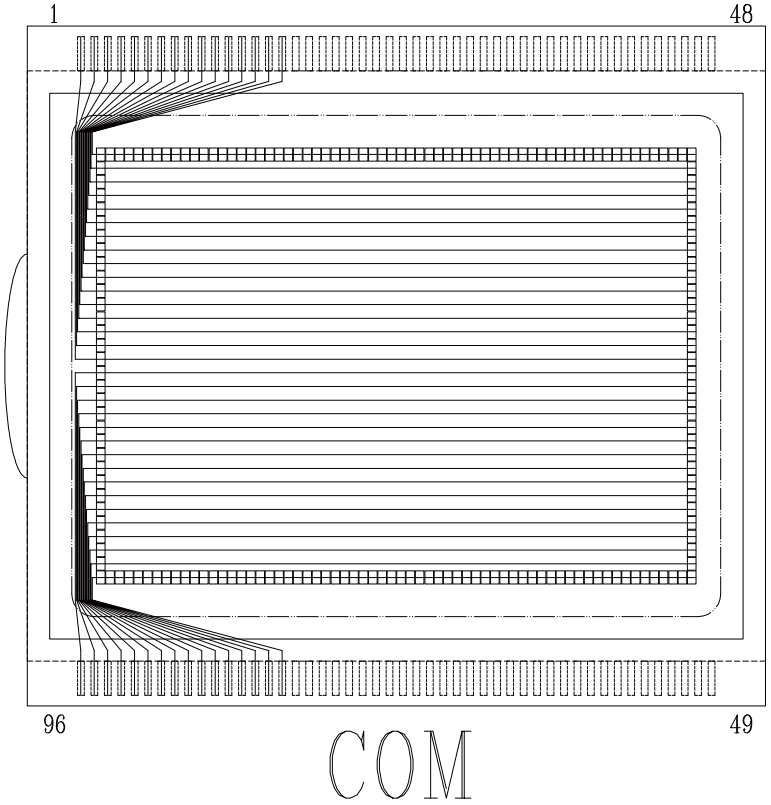
REV	DATE	DESCRIPTION
		NEW

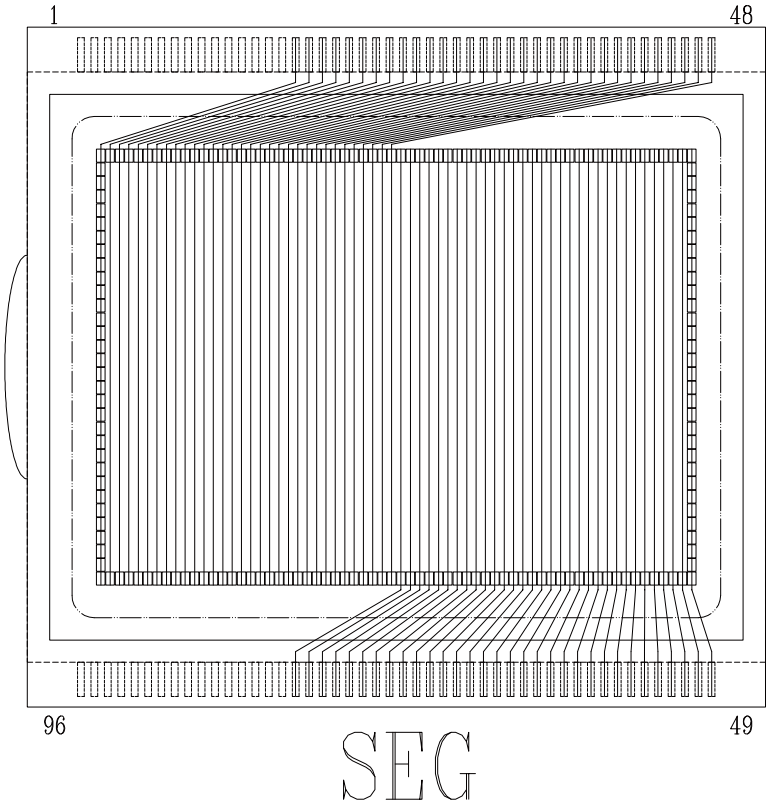
TOL.UNLESS OTHERWISE SPEC.	
BASIC DIMENSIONS	TOL.
L<10	±0.3
10<L	±0.5
100<L	±0.8
ANGLE	±3°

TITLE:	RJS-SDS-32-T-L-RGB-JB
TYPE NO	Smart Display Push Button Switch
DRAWING NO	
SCALE —	UNIT mm A4 A

RJS-SDS SERIES

SMART DISPLAY SWITCH

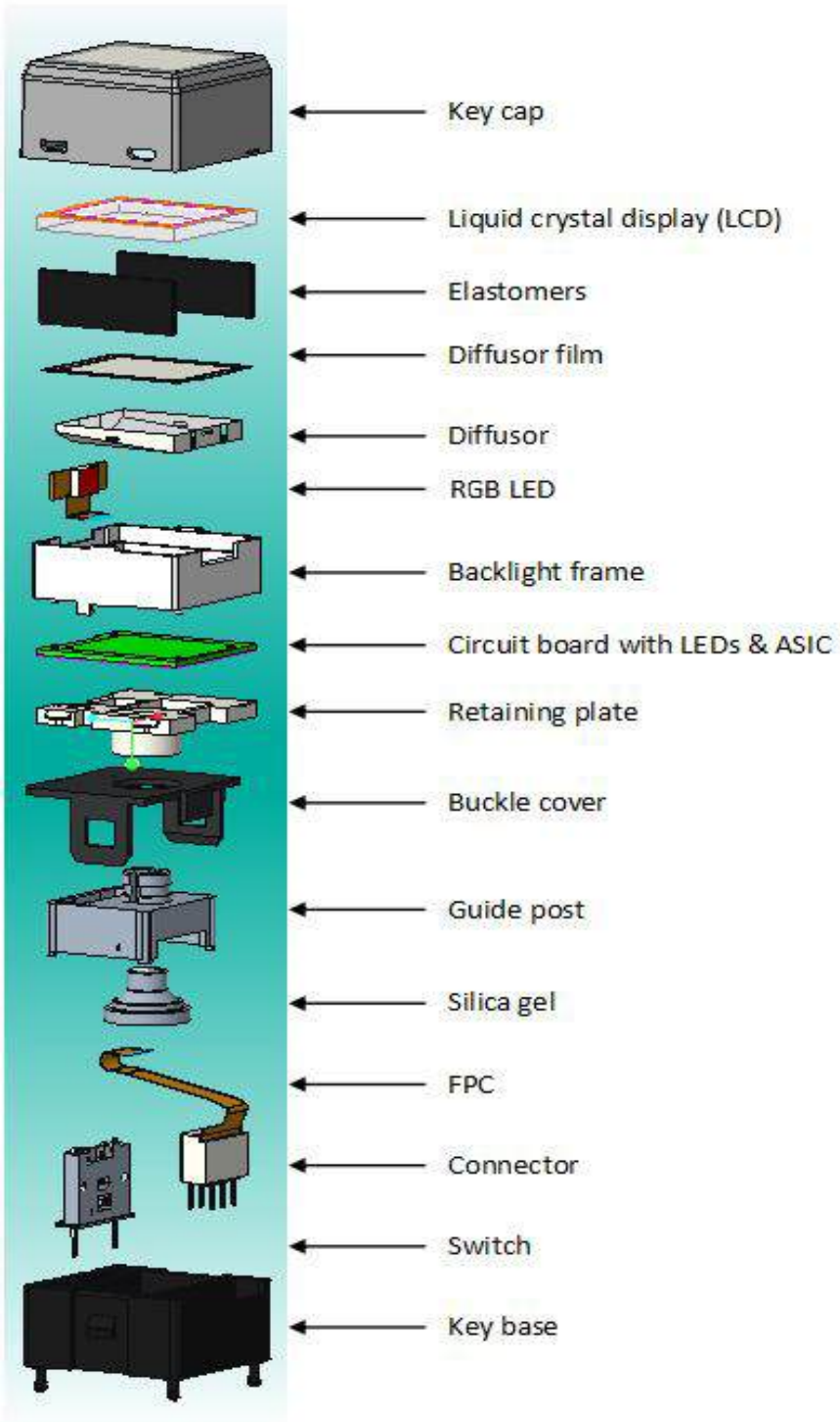




			TOL. UNLESS OTHERWISE SPEC.				
			BASIC DIMENSIONS	TOL.			
			L<10	±0.3			
		NEW	10<L	±0.5			
			100<L	±0.8			
REV	DATE	DESCRIPTION	ANGLE	±3°			

	TITLE: RJS-SDS-32-T-L-RGB-JB					
TYPE NO	Smart Display Push Button Switch					
DRAWING NO						
SCALE	—	UNIT	mm	A4	A	

Parts Drawing



1.General specification

1-1.Scope

This specification applies to programmable intelligent LCD display screen switches for low current circuits used in electronic devices

1-2.Standard atmospheric conditions

Unless otherwise specified ,the standard range of atmospheric conditions for making measurements and test is as following limits:

Ambient temperature :5℃ to 35℃

Relative humidity : 25% to 85%

Air pressure :86kpa to 106kpa

If doubt arises on the decision based on the measured values under the above-mentioned conditions,the following conditions shall be employed:

Ambient temperature : 20±2℃

Relative humidity : 60% to 70%

Air pressure :86kpa to 106kpa

1-3. Operating temperature range :-15℃ to+50℃

1-4. Storage temperature range : -20℃ to+60℃

2.Construction

2-1.Appearance

Switch shall have good finishing, and no rust, crack, or plating failures.

2-2.Dimensions

Refer to attached drawing

3. Rating

3-1.

Rated voltage and current of display screen backlight： DC 5V 20mA

3-2.

Rated voltage and current of the switch： DC 12V 100mA

The Multifunctional Intelligent Switch isconsisting of following functions:

4.1、

It is a switch with dot matrix LCD and RGB backlight. The display pattern information, backlight color, and backlight brightness of the LCD are set and changed through a four line SPI.

4.2、

This machine uses a four wire SPI full duplex communication protocol, consisting of four communication lines: SS (slave selection signal, input, low-level effective, provided by the host), SCK (synchronous clock, input, provided by the host), SDI (local SPI communication input data, input, provided by the host), SDO (local SPI communication output data, provided by the host).

4.3、LCD

LCD part is constructed as 64 segments and 32 commons.

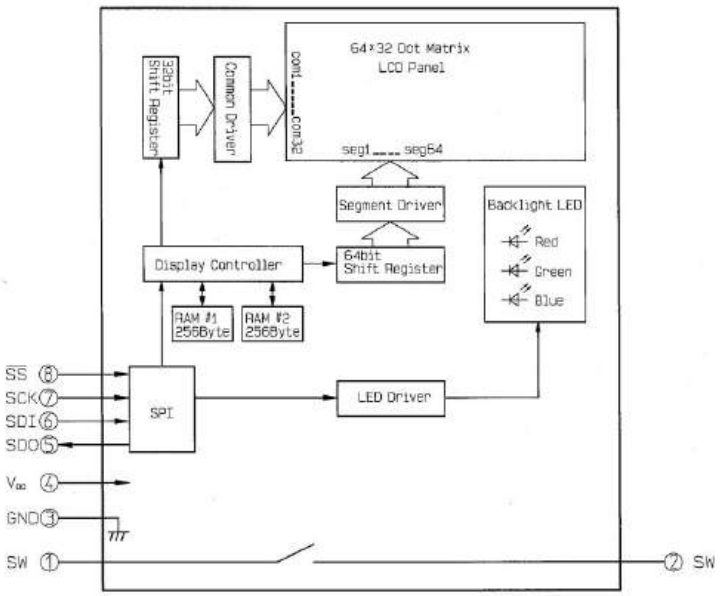
4.4、

Vdd and vlcd are single +5V.

4.5、

Backlight is a backlight composed of three primary colors: Red, Green, and Blue. It can be set to 64 backlight colors and 8 backlight brightness using specified commands in the SPI protocol.

5、Functional Block Diagram



6、 Pin Configuration

Pin NO.	Symbols	Pin Name	Function
1	SW	Terminal of Switch	N/O.
2	SW	Terminal of Switch	N/O.
3	GND	Ground	Ground
4	V_{DD}	Power	Power source for Logic Circuit and LCD
5	SDO	Data Out	Data output line for SPI
6	SDI	Data In	Data input line for SPI
7	SCK	Serial Clock	Clock line for SPI that synchronize command and data
8	$\overline{SS}$	Slave Select	Chipselect for SPI. This line is active low.

7、Specifications

Items	
Display Operation Mode	FSTN Positive,Back Ground Color: RGB
Display Condition	Full transparency (with built-in RGB backlight)
Viewing Angle Direction	6 O'Clock
Operating Temperature Range	-15℃ to 50℃ *1
Storage Temperature Range	-20℃ to 60℃
Current Consumption	10 to 20mA *2

*1 When the ambient temperature is too low (less than 0 ℃), the display refresh rate of the LCD pattern will decrease and the contrast of the LCD will also decrease. When the ambient temperature is too high (less than 50 ℃), the non displayed part of the pattern on the LCD will appear.

*2. 10mA: Backlight is off

60mA: Tri color (R/G/B) is fully lit and the backlight brightness is at its maximum.

Electronic specifications:

item	symbol	Nominal value	unit
Supply voltage	VDD	-0.3 to +7.0	V
Input voltage	VI	-0.3 to VDD+0.3	V
Output voltage	VO	-0.3 to VDD+0.3	V

Suggested operating conditions:

item	symbol	Minimum value	Typical value	Maximum value	unit
Supply voltage	VDD	4.9	5	5.1	V
Input voltage	VIH	0.7VDD			V
Output voltage	VIL			0.3VDD	V
SPI	Fsck			8	MHz

Optical properties:

item		symbol	Minimum value	Typical value	Maximum value	unit
Contrast		Cr	---	3	---	
View direction (Cr >= 1.1)	Above and below	θ	---	90	---	deg.
	Left and right	⌀	---	90	---	Deg.

Switching characteristics:

item	Description
circuit	Single Pole Single Throw (SPST)
Electric conductivity	100mA 12V DC(resistive load)
Conducting resistance	200mΩ Max.
Insulation impedance	100V DC 100M Ohm minimum
Insulation strength	Withstand more than 125V AC(1 minute)
Mechanical durability	3,000,000.00 cycles
Electronic durability	3,000,000.00 cycles
Operation strength	1.7±0.5 N
Total travel	1.8±0.3 mm

Communication command format:

*This component supports four types of commands:

*1. Image transfer command, format: command word (1 byte)+image data (256 bytes).

*2. Backlight setting command, format: command word (1 byte)+setting data (1 byte).

*3. Other control commands, format: command word (1 byte)+set data (1 byte).

*4. Customized command by the customer, format: command word (1 byte)+data length (1 byte)+data (n bytes).

*This component can only continue processing when the command sent by the host is a valid command word, otherwise cancel the current command processing and continue receiving new commands.

*After confirming that it is a valid command word, this component continues to receive the data required by this command until the required length of data is received, and ends receiving this command. It then switches to processing the relevant command, while the protocol receiving mechanism switches to receiving new commands.

*There is no time limit when receiving a command until it is completed.

*After receiving the command, start the execution of the command. During the command execution process, new commands can be received without waiting for the current command to complete.

*After powering on or executing a reset command, the LCD is in a no display state and the backlight is turned off (i.e. R/G/B is turned off and the brightness is at its lowest).

Image transfer command:

hexadecimal number	Binary number	data	Description
0x55	1010101	256 bytes of image data (32 * 64 = 2048)	See the description below for the LCD image points corresponding to the image data

Backlight color setting:

Command word		data	Description
hexadecimal number	Binary number		
0x40	1000000	|R|R|G|G|B|B|-|-| 2BITsX3	For each color (R/G/B) 00 - contact 01 = 1/4 10 = 1/2 11 - all

Backlight brightness setting:

Command word		data	Description
hexadecimal number	Binary number		
0x41	1000001	|*|*|*|-|-|-|-|-| *** = Brightness value	Brightness values for high 3 bits 000 = 1/20 001 = 1/10 010 = 1/7 010 = 1/5 010 = 1/3 010 = 1/2 010 = 2/3 010 = Full light (brightest)

Reset command:

Command word		data	Description
hexadecimal number	Binary number		
0x5e	1011110	00000011(Fixed value)	Return to the initial power-on state (LCD no display, backlight off, LCD and backlight new data immediately valid)

Refresh command:

Command word		data	Description
hexadecimal number	Binary number		
0x61	110001	00000011(Fixed value)	The LCD display and backlight status are refreshed

Refresh settings command:

Command word		data	Description
hexadecimal number	Binary number		
0x60	110000	|I|B|L|-|-|-|-|-|	I= Refresh mode after receiving LCD image data
			0: Immediate display (default)
			1: Displays by refreshing commands
			B= Color refresh mode after receiving the backlight color command
			0: Refresh immediately (default)
			1: Pass the refresh command
			L= Brightness refresh mode after receiving the backlight brightness command
			0: Refresh immediately (default)
			1: Pass the refresh command

Correspondence diagram between LCD pixels and LCD display data:

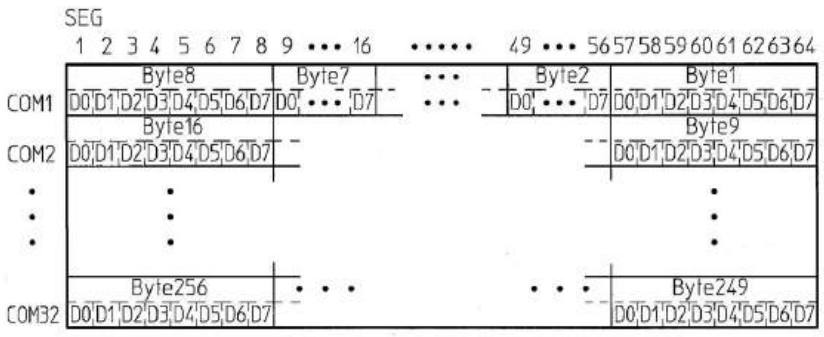


Image transmission command: Command word+display data transmission order:

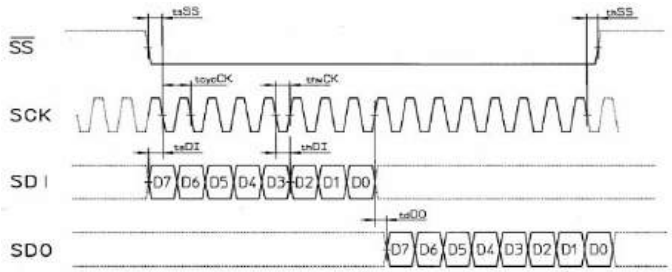
Command	Data (256Bytes)		
0x55	Byte1	Byte2•••Byte255	Byte256
0 1 0 1 0 1 0 1	D7 D6 D5 D4 D3 D2 D1 D0	D7 D6 ••• D1 D0	D7 D6 D5 D4 D3 D2 D1 D0

Note: This component opens up two display buffers for LCD display, one of which stores the image data currently displayed on the LCD, and the other stores new LCD display data sent by the receiving host. When the new display data is received (256 bytes), it automatically overwrites the current LCD display buffer with the new display data.

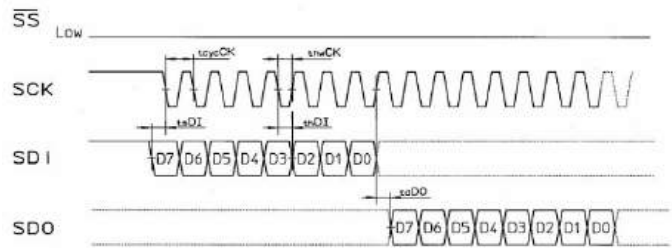
SPI: (Ta = -15 to +50℃, VDD = 5V±2%)

Items	Symbols	min.	typ.	max.	Unit
SPI_$\overline{SS}$ Set Up Time	tsSS	10			ns
SPI_$\overline{SS}$ Hold Time	thSS	10			ns
SPI_CLK Cycle	tcyc CK			8	MHz
SPI_CLK Width	thw CK	10			ns
SPI_DI Set Up Time	tsDI	10			ns
SPI_DI Hold Time	thDI	10			ns
SPI_DO Delay Time	tdDO	10			ns

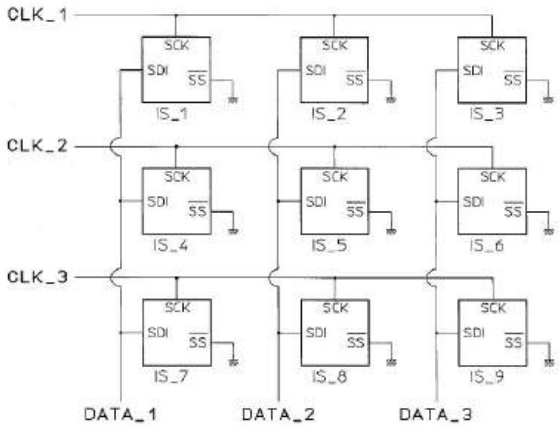
SPI SPI timing chart: (using SS control)



SPI timing diagram: (Without SS control, SS=Low fixed level)
*When there is no communication, SDI and SCK must maintain a high level.



Circuit Example:



The SS terminal must be connect with host controller instead of the earth.for initialized command and data that was executed with high signal during
non-communication

12.1 Handling

(1)To avoid damage to the IC only handle the keytops when properly isolated from static electricity.

(2)Operating force Shall not exeed 100N.Excessive force may cause damage to the LCD.

(3)Do not get the Liquid-Crystal into the mouth.Wash off any liquid spills on the skin or clothes.

(4) Recommended soldering time and temperature limits are below.PREHEAT TIME & PREHEAT TEMPERATURE:40 SECONDS MAX AT 110℃ MAX PEAK TIME & PEAK TEMPERATURE :6 SECONDS MAX AT 270℃ MAX Temperature exceeding 60℃ at the LCD must be avoided.The IS Series is not washable.

(5)Clean cap surface with dry cloth, If further cleaning is needed, wipe with dampened cloth using neutral cleanser and dry with clean cloth.Do not use organic solvent.

(6) If a noise was broken in a system, IS may be malfunction.
To prevent multifunction,execute command periodically.

(7)Excessive image will be occurred after the same image emitted continuously.

(8)Do not execute any commands that was no printed in specification sheet.

(9)Enter the protection circuit like fuse in power cord according the circumstance.If there is no appropriate protection circuit, the PCB may be damaged by adhered dust or circuit malfunction.

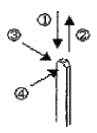
(10)There is some probability of malfunction because of sensitive devices.Consider safety design like redundancy, anti-conflagration, non-malfunction to prevent harm to human.

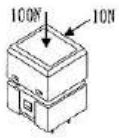
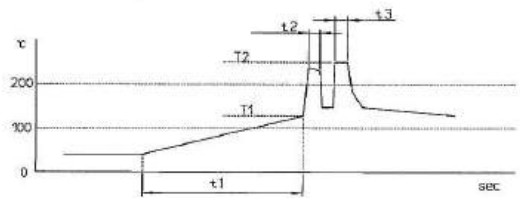
12.2 Storage

(1)When storing avoid excessively high and low temperatures, high humidity or gaseous substances,and all forms of chemical contamination.

(2)Do not store at the exposing condition to the intense ultraviolet ray from the direct sunlight and other things.

(3) Store only in the container supplied and keep away from static electricity.

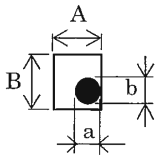
No.	Item	Conditions	Specifications
1	Appearance	Visual examination.	(1)Each part finish should be non-defective.Free of chips,cracks, broken spots,dirt,gaps,distortion,and defective plating and peeling off. (2)Marking should be legible.
2	Operating Force	Work out the maximum of the parallel force to the operating direction to the center of cap until the switch makes contact.	1.7± 0.5N
3	Travel	Measure the distance of specified stop position when applying the parallel force to the operating direction gradually to the center of cap.	approx:1.8mm
4	Functional Operation	Test is done in every switching position by using the continuity tester.	Meet the required function and movement specified in product drawing.
5	Contact resistance	Read the voltage drop under the test current and voltage of less than 10mA and less than 20mV AC (frequency:1kHz).	200mΩ max.
6	Insulation Resistance	Test voltage 100V DC is applied to the following parts for 1 minute : (1)Between terminals at the condition of open circuit.(between terminals) (2)Between live metallic part and insulated operating part.(between each terminal&frame)	100MΩ min.
7	Dielectric strength	Test voltage 125V AC (50Hz or 60Hz) is applied to the following parts for 1 minute: (1)Between terminals at the condition of open circuit.(between terminals) (2)Between live metallic part and insulated operating part.(between each terminal&frame)	(1)No abnormality such as short-circuit,burn and dielectric breakdown. (2)No leakage of current exceeding 1mA.
8	Terminal Strength	Following static load is applied of terminals for 1 minute. One test is conducted on one terminal.  ① 6N ② 6N ③ 1.2N ④ 0.5N	(1)No breakage and looseness of terminals. No breakage of switch. body.However, deformation of terminal is allowed, that does not affect the practical use. (2)Functional operation must meet the requirement specified in No.4.

9	Operational Part Strength & Mounting Part Strength	Following static load is applied to the mounting part for 1 minute. 	(1)No abnormal deformation, breakage and coming off on mounting and operating parts. (2)No failure in mounting status and switches shall be capable for operation. (3)Functional operation must meet the requirement specified in No.4.
10	Solder Ability	Terminals are dipped into soldering bath at 240 ℃ for 2 seconds.	At least, 90% of terminal surface dipped in the solder shall be covered with new solder.
11	Soldering Heat	Manual soldering Solder iron tip temperature :350℃ Time on terminal:4seconds Cycle :2(After returning to normal temperature)	(1)Contact resistance must meet the requirement specified in No.5. (2)Mechanical operation must be done without failure. (3)No mechanical failure such as blister and looseness, which will affect the practical use. (4)Indication of LCD shall be legible and LED must turn on.
		For wave soldering After making examination of No.10,soldering can be done following profile. T1:110℃ T2:270℃ t1:40seconds t2+t3:6seconds With PCB(without land pattern) Cycles :2(After returning to nomal temperature)	
12	Mechanical endurance	Rate of operation:50to 150 cycles per minute Without load Number of cycles : 3,000,000 cycles	(1)No abnormality such as looseness and shake on each part. (2)No mechanical failure. (3)Functional operation must meet the requirement specified in No.4. (4)Contact resistance :must 1Ω max. (5)Dielectric strength must meet the requirement specified in No.7. (6)Indication of LCD shall be legible and LED must turn on.
13	Electrical endurance	Rate of operation:50to 150 cycles per minute Load :100mA at 12V d.c.(Resistive load) Number of cycles : 3,000,000 cycles	(1)No stick and no miss. (2)No abnormality such as looseness and shake on each part. (3)No mechanical failure. (4)Make and break with the test current must be available and functional operation must meet the requirement specified in No. 4. (5)Contact resistance:must 1Ω max. (6)Insulation resistance must meet the requirement specified in No.6. (7)Dielectric strength must meet the requirement specified in No.7. (8)Indication of LCD shall be legible and LED must turn on.
14	Vibration (Mal function)	Vibration frequency :10 to 55 Hz Peak amplitude :0.35mm Condition :3 right angled directions for 1 hour and 45minutes.	(1)No abnormality such as looseness and shake on each part. (2)No mechanical failure. (3)Functional operation must meet the requirement specified in No.4. (4)Electrical contact must not exceed 10 micro seconds during the test. (5)Indication of LCD shall be legible and LED must turn on.
15	Shock (Mal function)	Shock wave :Sustained duration of the fundamental shock wave Shock wave time:11 milliseconds Acceleration :100m/s^2 Condition :6 right angled directions, with 5 shocks in each direction.	(1)No abnormality such as looseness and shake on each part. (2)No mechanical failure. (3)Functional operation must meet the requirement specified in No.4. (4)Electrical contact must not exceed 10 micro seconds during the test. (5)Indication of LCD shall be legible and LED must turn on.

16	Heat Resistance (Operating)	Test pieces shall LCD indicate, in a thermostatic chamber at 50℃ for 24 hours, and subjected to make and break test up to 600 operations at a rate of 10 operations per minute with 100mA at 12VDC.resistive load for the first 1 hour.	(1)Operation must be smooth, Free of deformation, discoloration, shake,cracks and burning. (2) Functional operation must meet the requirement specified in No.4. (3) Contact resistance :must 1Ω max. (4)Insulation resistance must meet the requirement specified in No.6 (5)Dielectric strength must meet the requirement specified in No.7. (6) Indication of LCD shall be legible and LED must turn on.
	Heat Resistance (Storage)	The pieces are kept in a thermostatic chamber at 60℃ for 240 hours, and then they are taken out from chamber and left at the condition of room temperature for 1 to 2 hours.	(1)No mechanical or electrical failure such as deformation, discoloration,shake,cracks and burning. (2)Functional operation must meet the requirement specified in No.4. (3)Contact resistance must meet the requirement specified in No.5. (4)Insulation resistance must meet the requirement specified in No.6. (5)Dielectric strength must meet the requirement specified in No.7. (6)Indication of LD shall be legible and LED must turn on.
17	Cold Proof (Operating)	Test pieces shall LCD indicate, in a thermostatic chamber at-15℃ for 24 hours, and subjected to make and break test up without load for the first 2 hours.	(1)Operation must be smooth. Capable of making and breaking operation. (2)Functional operation must meet the requirement specified in No.4. (3)Contact resistance must meet the requirement specified in No.5. (4)Insulation resistance:must 20 MΩ min. (5)Dielectric strength must meet the requirement specified in No.7. (6)Indication of LCD shall be legible and LED must turn on.
	Cold Proof (Storage)	Test pieces are kept in a thermostatic chamber at -20℃ for 240 hours, and then they are taken out from chamber and left at the condition of room temperature for 1 to 2 hours after cleaning off moisture at surface of switch.	(1)Operation must be smooth. (2)Functional operation must meet the requirement specified in No.4. (3)Contact resistance must meet the requirement specified in No.5. (4)Insulation resistance must meet the requirement specified in No.6. (5)Dielectric strength must meet the requirement specified in No.7. (6)Indication of LCD shall be legible and LED must turn on.
18	Moisture Proof (steady state)	Test pieces are kept in thermostatic/moisture chamber at the temperature of 40℃,relative humidity of 90% or over, for 240 hours.	(1)No failure in mechanical operations immediately after the test. (2)The test(1)finished, insulation resistance measured within 5 minutes after removing water-drops, must be more than 10MΩ. (3)Free of cracks, looseness of terminals, deformation, and rust which will affect the function after 1 to 2 hours since the test had finished. (4)Functional operation must meet the requirement specified in No.4. (5)Dielectric strength must meet the requirement specified in No.7. (6)Indication of LCD shall be legible and LED must turn on.

Defects on display surface:

The size of a defect inside of viewing area shall be defined as follows. Outside of viewing area shall be unquestioned.

No.	Item	Acceptance Criteria (V_{DD}=5.0V, Ta=25℃)
1	Defects for dot pinholl (round)	Average diameter:D=(a+b)/2 D [mm] / Pieces permitted D≦0.10 / N/A 0.10<D≦0.25 / 2 0.25<D / 0  ☆1 *Defects shall be 1 or less per a dot. *Adjacent dots shall be not in contact. *Defect area (square measure) shall be less than 1/3 of the dot area (square measure) ☆1:(axb)< (AxB)/3 *This item is limited to the defect factor of the electrode of the LCD element. In the case of other factors, the criteria of No.3 shall apply.
2	Defects(linear) Foreigh objects (linear)	Length: L, Width: W Pices permitted / L [mm] W [mm] / L≦1.0 / L≦2.0 / L≦3.5 / 3.5<L W≦0.02 / N/A / N/A / N/A / N/A 0.02<W≦0.03 / N/A / 2 / 2 / 0 0.03<W≦0.05 / 1 / 1 / 0 / 0 *Width shall be at widest part of the defects. *In the case of"W > 0.05mm", the criteria of No.3 shall apply. *Distance between defects shall be not less than 5mm.
3	Defects (round) Foreigh objects (round)	Average diameter:D=(a+b)/2 D [mm] / Pieces permitted D≦0.10 / N/A 0.10<D≦0.20 / 2 0.20<D≦0.35 / 1 0.35<D / 0 *Distance between defects shall be not less than 5mm.

Receiving Dept	GC/1	PZ/1			
Reclamation	Reclamation PCS Date:	Reclamation PCS Date:			

	Revision	Date	Approved by	Checked by	Prepared by