

## DISTINCTIVE CHARACTERISTICS

- Same outer dimensions of switch and footprint, enabling ease of replacement with current switches
- Programmable display graphics for alphanumeric characters and animated sequences
- 64 colors of backlighting can be controlled dynamically
- Pushbutton switch with LCD, RGB LED backlighting
- General brightness of backlight is dynamically controlled in eight steps from dark to bright
- Operated by commands and data supplied via serial communications (SPI)
- Incorporates bitmap display function
- Dual image VRAM for quick change of displayed images
- Short travel of 1.8mm
- Low energy consumption
- Dust tight construction

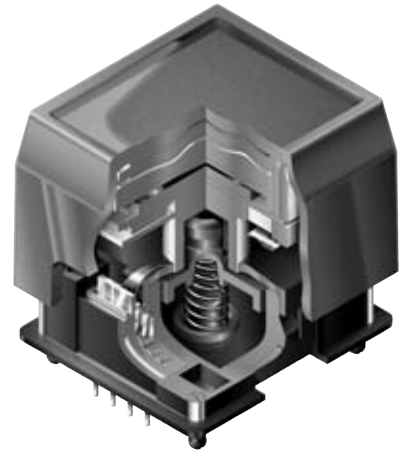
Viewing area: 17.0mm x 13.0mm (horizontal x vertical)

High reliability and long life of one million actuations

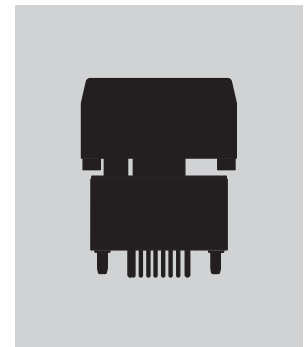
High resolution of 64 x 32 pixels

Epoxy sealed straight PC terminals

Snap-in standoff legs ensure secure mounting and alignment, and prevents dislodging during wave soldering.



Actual Size



## PART NUMBER &amp; DESCRIPTION



Part Number	Switch Description	LCD Mode	LED Color
IS15EBFP4RGB-09YN	SPST Momentary ON Gold Contacts Straight PC Terminals	Black & White FSTN Positive	Red/Green/Blue



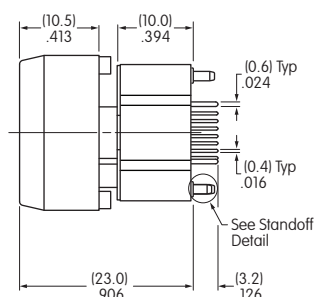
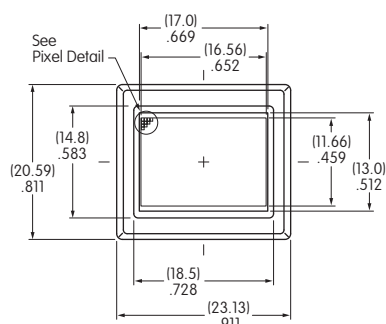
**IS15EBFP4RGB-09YN**

RGB LED Backlight  
Black and White LCD  
Short Travel

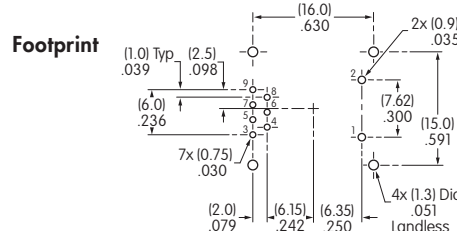
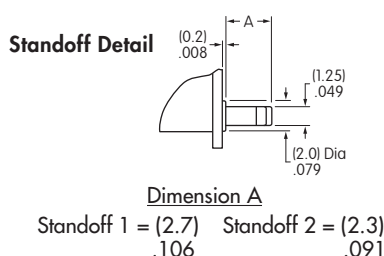
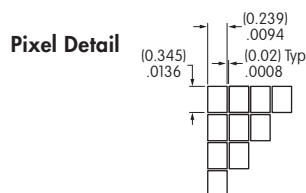
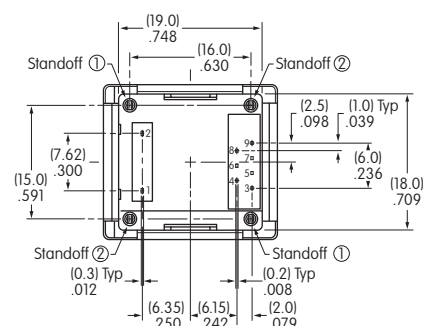
### SWITCH SPECIFICATIONS

Circuit	SPST normally open
Electrical Capacity (Resistive Load)	100mA @ 12V DC
Contact Resistance	200 milliohms maximum @ 20mV 10mA
Insulation Resistance	100 megohms minimum @ 100V DC
Dielectric Strength	125V AC for 1 minute minimum
Mechanical Endurance	1,000,000 operations minimum
Electrical Endurance	1,000,000 operations minimum
Operating Force	1.7 ± 0.5 Newtons
Total Travel	1.8mm (.071")

### TYPICAL SWITCH DIMENSIONS



Terminal numbers are not on the switch.



The Wide View Compact LCD 64 x 32 Pushbutton may utilize the same footprint as the Wide View/Short Travel LCD 64 x 32 Pushbutton.

## LCD SPECIFICATIONS

## Characteristics of Display

Display Operation Mode	FSTN positive; background colors, black & white
Display Condition	Transflective with built-in LED backlight
Viewing Angle Direction	6 o'clock
Viewing Area	17.0mm x 13.0mm (horizontal x vertical)
Pixel Format	64 x 32 pixels (horizontal x vertical)
Pixel Size	0.239mm x 0.345mm (horizontal x vertical)
* Operating Temperature Range	-15°C ~ +50°C (+5°F ~ +122°F)
Storage Temperature Range	-20°C ~ +60°C (-4°F ~ +140°F)
Backlight LED	RGB: red/green/blue

\* In a low temperature environment (below 0°C), speed and contrast decrease when image changes. The non-indicator dot may become dense in a high temperature environment (about +50°C). Highest backlight brightness level should not be used for temperatures above +35°C.

## Absolute Maximum Ratings (Temperature at 25°C)

Items	Symbols	Ratings
Supply Voltage	$V_{DD}$	-0.3V to +7.0V
Input Voltage	$V_I$	-0.3V to $V_{DD} + 0.3V$
Output Voltage	$V_O$	-0.3V to $V_{DD} + 0.3V$

## Optical Characteristics (Temperature at 25°C)

Items	Symbols	Min	Typical	Max
Contrast Ratio	Cr	—	3.0	—
Viewing Angle (Cr ≥ 1.1)	Up & Down	—	90°	—
	Right & Left	—	90°	—

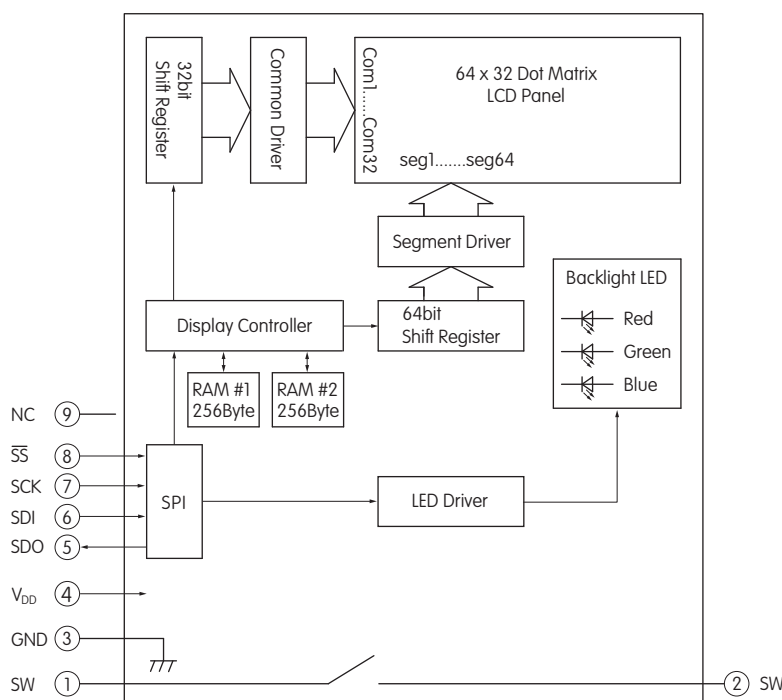
## Recommended Operating Conditions (Temperature at 25°C)

Items	Symbols	Minimum	Typical	Maximum
Supply Voltage	$V_{DD}$	4.9V	5.0V	5.1V
High Level Input Voltage	$V_{IH}$	0.8 $V_{DD}$	—	—
Low Level Input Voltage	$V_{IL}$	—	—	0.2 $V_{DD}$
SPI Clock Frequency	$f_{CLK}$	—	—	8MHz
Current Consumption	$I_{DD}$	** 10mA	—	*** 60mA

\*\* 10mA: Backlighting LED is off

\*\*\* 60mA: Backlighting LEDs (Red, Green, Blue) are maximum brightness

### SWITCH BLOCK DIAGRAM & PIN CONFIGURATIONS



Pin No.	Symbol	Name	Function
①	SW	Terminal of Switch	Normally open
②	SW	Terminal of Switch	Normally open
③	GND	Ground	
④	V <sub>DD</sub>	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 synchronizes commands and data
⑧	$\overline{SS}$	Slave Select	Chip select for SPI; line is active low
⑨	NC	None	No connection

### PRECAUTIONS FOR HANDLING & STORAGE OF LCD 64 x 32 DEVICES

#### Handling



1. The IS Series devices are electrostatic sensitive.
2. Limit operating force to keytop to 100.0N maximum, as excessive pressure may damage the LCD device.
3. The IS series devices are not process sealed.
4. If the LCD is accidentally broken, avoid contact with the liquid and wash off any liquid spills to the skin or clothing.
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. Recommended soldering time and temperature limits:  
Do not exceed 60°C at the LCD level.  
Wave Soldering: see Profile B in Supplement section.  
Manual Soldering: see Profile A in Supplement section.
7. Excessive images may result after the same image is emitted continuously for an extended period of time.
8. The highest backlight brightness level should not be used for temperatures above +35°C.

#### Storage

1. Store in original container and away from direct sunlight.
2. Keep away from static electricity.
3. Avoid extreme temperatures, high humidity, gaseous substances, and all forms of chemical contamination.