

# General Specifications

## Electrical Capacity (Resistive Load)

Low/Logic Level: 50mA @ 24V DC

## Other Ratings

**Contact Resistance:** 50 milliohms maximum

**Insulation Resistance:** 500 megohms minimum @ 250V DC

**Dielectric Strength:** 250V AC minimum for 1 minute minimum

**Mechanical Life:** 500,000 operations minimum

**Electrical Life:** 500,000 operations minimum

**Nominal Operating Force:** 3.0N for flush actuator

2.0N for sculptured actuator

**Total Travel:** Flush Actuators .016" (0.4mm); Sculptured Actuator: .031" (0.8mm)

## Materials & Finishes

**Actuator:** Polyamide for spot illuminated; polycarbonate for full face

**Case:** Glass fiber reinforced polyamide

**Seal:** Nitrile butadiene rubber

**Base:** Glass fiber reinforced polyester

**Movable Contact:** Phosphor bronze with silver plating

**Stationary Contacts:** Brass with silver plating

**Terminals:** Brass with silver plating

## Environmental Data

**Operating Temperature Range:** -25°C through +70°C (-13°F through +158°F)

**Humidity:** 90 ~ 95% humidity for 96 hours @ 40°C (104°F)

**Vibration:** 10 ~ 55Hz with peak-to-peak amplitude of 1.5mm traversing the frequency range & returning in 1 minute; 3 right angled directions for 2 hours

**Shock:** 50G (490m/s<sup>2</sup>) acceleration (tested in 6 right angled directions, with 5 shocks in each direction)

## PCB Processing

**Soldering:** Wave Soldering recommended. See Profile A in Supplement section.

Manual Soldering: See Profile A in Supplement section.

**Cleaning:** Automated cleaning. See Cleaning specifications in Supplement section.

Switches should not be operated or have any pressure on the actuators during cleaning.

Full face illuminated models suitable only for bottom board spray wash to avoid contamination of the 2-layered actuator, which may compromise the aesthetics.

## Standards & Certifications

The JF Series tactiles have not been tested for UL recognition or CSA certification.

These switches are designed for use in a low-voltage, low-current, logic-level circuit.

When used as intended in a logic-level circuit, the results do not produce hazardous energy.

# Distinctive Characteristics

Extremely low profile of .224" (5.7mm) from PCB to top of switch.

Red, green, or yellow LED with spot or full face illumination.

Rubber seal construction prevents contact contamination and allows automated soldering and cleaning.

Minimal operating force and short stroke permit light touch operation.

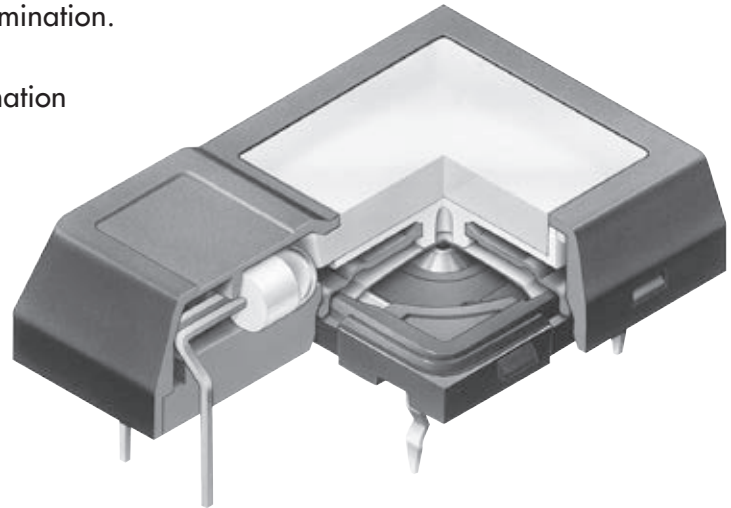
Dome contact gives crisp tactile and audible feedback to positively indicate circuit transfer and assures high reliability and long life.

Space saving body dimensions provide for compact, side-by-side mounting on a standard grid.

Crimped terminals ensure secure mounting and prevent dislodging during wave soldering.

Terminal spacing conforms to standard .100" (2.54mm) PCB grid.

Matching indicator available and shown at the end of Section M.

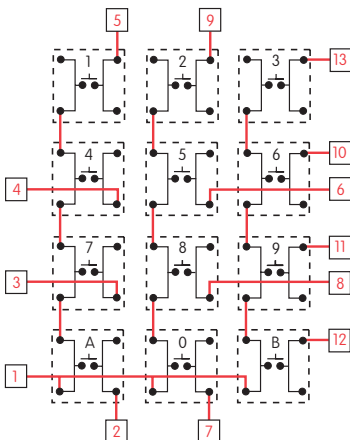


Actual Size



## Common Bus Matrix

These single pole, single throw switches can be used in a keyboard matrix and, using strapped terminals, achieve a common bus electrical configuration on a single-sided PC board.

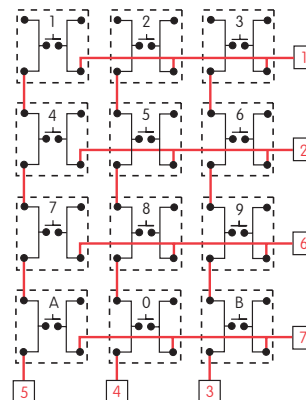


| PC Terminations |   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|-----------------|---|---|---|---|---|---|---|---|---|---|----|----|----|----|
| Keys (Switches) | 1 |   |   |   |   |   |   |   |   |   |    |    |    |    |
| 2               |   |   |   |   |   |   |   |   |   |   |    |    |    |    |
| 3               |   |   |   |   |   |   |   |   |   |   |    |    |    |    |
| 4               |   |   |   |   |   |   |   |   |   |   |    |    |    |    |
| 5               |   |   |   |   |   |   |   |   |   |   |    |    |    |    |
| 6               |   |   |   |   |   |   |   |   |   |   |    |    |    |    |
| 7               |   |   |   |   |   |   |   |   |   |   |    |    |    |    |
| 8               |   |   |   |   |   |   |   |   |   |   |    |    |    |    |
| 9               |   |   |   |   |   |   |   |   |   |   |    |    |    |    |
| 0               |   |   |   |   |   |   |   |   |   |   |    |    |    |    |
| A               |   |   |   |   |   |   |   |   |   |   |    |    |    |    |
| B               |   |   |   |   |   |   |   |   |   |   |    |    |    |    |

● = ON

## X-Y Matrix

These single pole, single throw switches can be arranged on a single-sided PC board matrix with strapped terminals to achieve an X-Y type electrical interconnection.



| PC Terminations |   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|-----------------|---|---|---|---|---|---|---|---|
| Keys (Switches) | 1 |   |   |   |   |   |   |   |
| 2               |   |   |   |   |   |   |   |   |
| 3               |   |   |   |   |   |   |   |   |
| 4               |   |   |   |   |   |   |   |   |
| 5               |   |   |   |   |   |   |   |   |
| 6               |   |   |   |   |   |   |   |   |
| 7               |   |   |   |   |   |   |   |   |
| 8               |   |   |   |   |   |   |   |   |
| 9               |   |   |   |   |   |   |   |   |
| 0               |   |   |   |   |   |   |   |   |
| A               |   |   |   |   |   |   |   |   |
| B               |   |   |   |   |   |   |   |   |

● = ON

Red = PCB Trace    Black = Switch Circuit

### TYPICAL SWITCH ORDERING EXAMPLE

**JF 15 R P 2 C C**

| Pole & Circuit  |      |     |      |
|-----------------|------|-----|------|
| 15              | SPST | OFF | (ON) |
| ( ) = Momentary |      |     |      |

| Terminals |             |
|-----------|-------------|
| P         | Straight PC |

| Actuator Types |            |
|----------------|------------|
| 1              | Square     |
| 2              | Round      |
| 3              | Sculptured |

| LED Colors |        |
|------------|--------|
| C          | Red    |
| E          | Yellow |
| F          | Green  |

| Illumination |                                       |
|--------------|---------------------------------------|
| R            | Spot                                  |
| A            | Full Face (with square actuator only) |

| Actuator Colors        |        |
|------------------------|--------|
| Spot Illuminated       |        |
| C                      | Red    |
| D                      | Orange |
| F                      | Green  |
| G                      | Blue   |
| H                      | Gray   |
| *Full Face Illuminated |        |
| C                      | Red    |
| E                      | Yellow |
| F                      | Green  |

\*LED color must match actuator color.

### DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

**JF15RP2CC**



### POLE & CIRCUIT

| Pole | Model | Actuator Position<br>( ) = Momentary |      | Switch Throw<br>& Schematic | LED Schematic | Notes: Terminal numbers are shown on switch. LED circuit is isolated & requires external power source. |
|------|-------|--------------------------------------|------|-----------------------------|---------------|--|
|      |       | Normal                               | Down |                             |               |  |
| SP   | JF15  | OFF                                  | (ON) |                             |               |  |

ILLUMINATION & ACTUATOR TYPES

**R** Spot Illumination

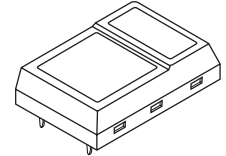
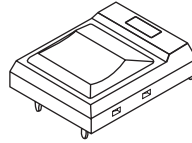
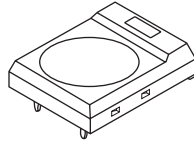
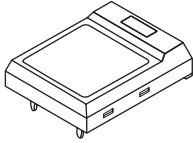
**A** Full Face Illumination

**1** Square Actuator

**2** Round Actuator

**3** Sculptured Actuator

**1** Square Actuator



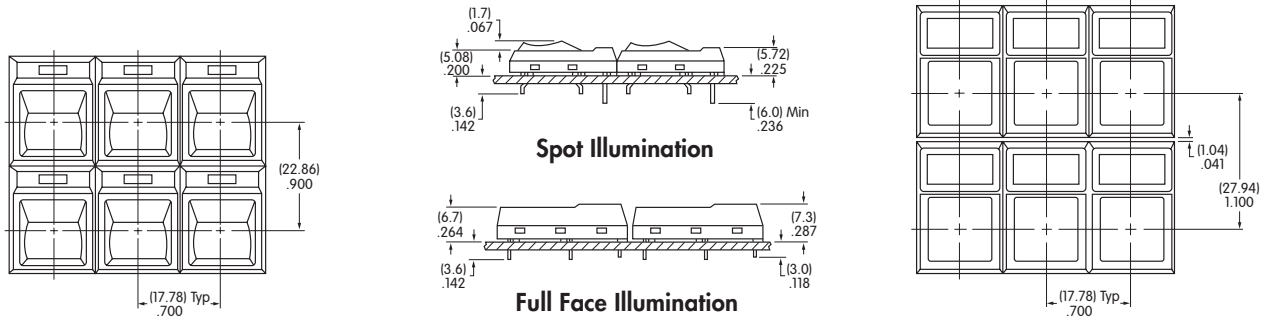
Actuator Colors Available: C, D, F, G, H  
Housing is black

Actuator Colors Available: C, E, F  
Housing is black

Color Codes: **C** Red   **D** Orange   **E** Yellow   **F** Green   **G** Blue   **H** Gray

Flexible Panel Design

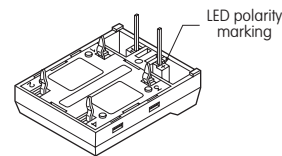
Versatile panel arrangements can be made to fit individual design needs.



TERMINALS

**P** Straight PC Terminals

With isolated lamp circuit  
Further details in Typical Switch Dimensions



LED COLORS & SPECIFICATIONS

LEDs are supplied as an integral part of the switch. The electrical specifications shown are determined at a basic temperature of 25°C. If the source voltage exceeds the rated voltage, a ballast resistor is required. The resistor value can be calculated by using the formula in the Supplement section.

| Color                             |              | Spot Illumination |                 |                | Full Face Illumination |                 |                |
|-----------------------------------|--------------|-------------------|-----------------|----------------|------------------------|-----------------|----------------|
|                                   |              | Red <b>C</b>      | Yellow <b>E</b> | Green <b>F</b> | Red <b>C</b>           | Yellow <b>E</b> | Green <b>F</b> |
| Maximum Forward Current           | $I_{FM}$     | 40mA              | 40mA            | 40mA           | 30mA                   | 30mA            | 30mA           |
| Typical Forward Current           | $I_F$        | 30mA              | 30mA            | 30mA           | 20mA                   | 20mA            | 20mA           |
| Forward Voltage                   | $V_F$        | 1.7V              | 2.2V            | 2.2V           | 1.77V                  | 2.1V            | 2.3V           |
| Maximum Reverse Voltage           | $V_{RM}$     | 4V                | 4V              | 4V             | 4V                     | 4V              | 4V             |
| Current Reduction Rate Above 25°C | $\Delta I_F$ | 0.67mA/°C         | 0.67mA/°C       | 0.67mA/°C      | 0.4mA/°C               | 0.4mA/°C        | 0.4mA/°C       |
| Ambient Temperature Range         |              | -25° ~ +70°C      |                 |                | -25° ~ +70°C           |                 |                |

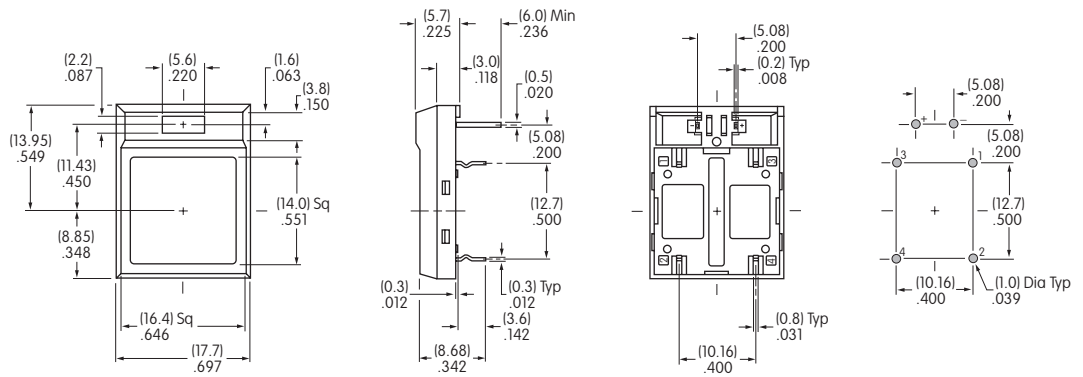
Toggles  
Rockers  
Pushbuttons  
Illuminated PB  
Programmable  
Keylocks  
Rotaries  
Slides  
Tactiles  
Tilt  
Touch  
Indicators  
Accessories  
Supplement

## TYPICAL SWITCH DIMENSIONS

### Spot Illuminated with Square Actuator



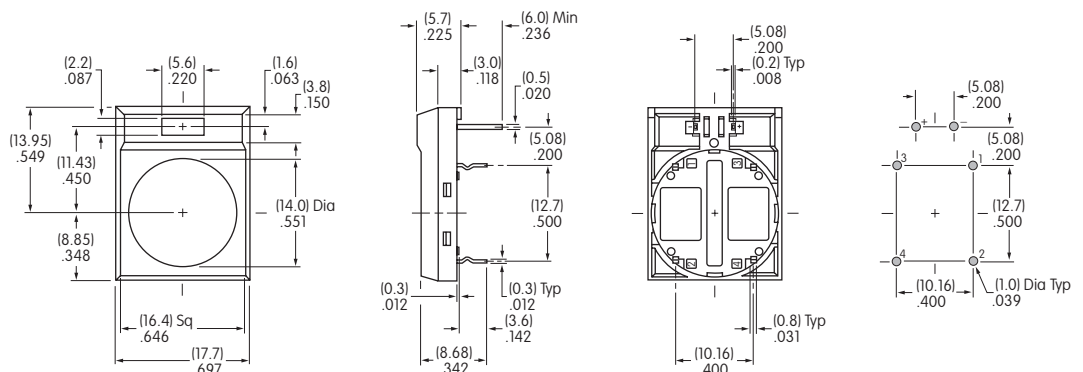
**JF15RP1CC**



### Spot Illuminated with Round Actuator



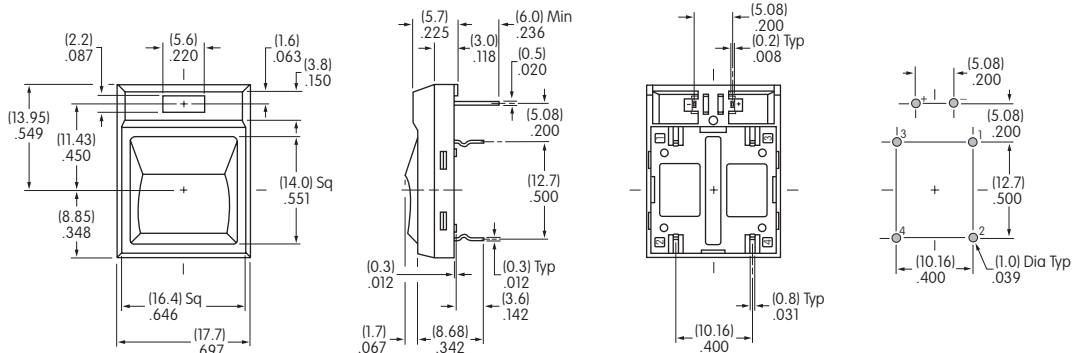
**JF15RP2CC**



### Spot Illuminated with Sculptured Actuator



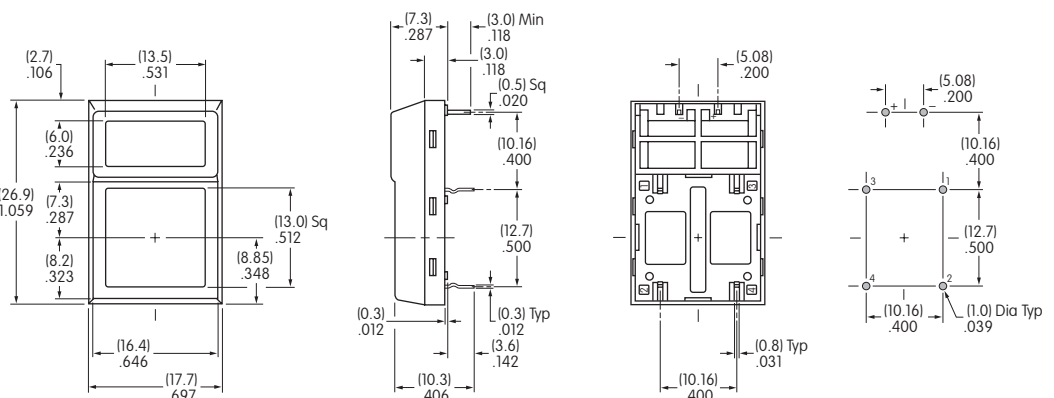
**JF15RP3CC**



### Full Face Illuminated with Square Actuator



**JF15AP1CC**



Toggles

Rockers

Pushbuttons

Illuminated PB

Programmable

Keylocks

Rotaries

Slides

Tactiles

Tilt

Touch

Indicators

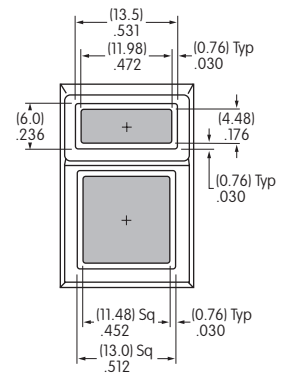
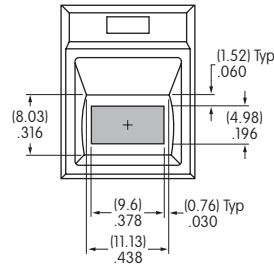
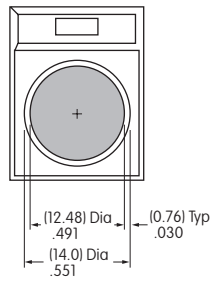
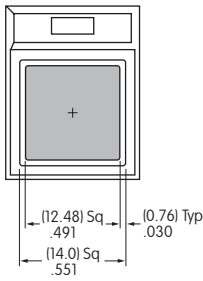
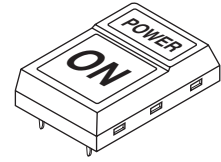
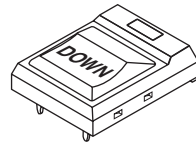
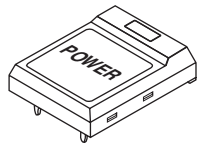
Accessories

Supplement

LEGENDS

NKK Switches can provide custom legends for caps. Contact factory for more information.

Suggested Printable Area



Recommended Print Method:

Screen Print or Pad Print

Epoxy based ink is recommended.

Shaded areas are printable areas.

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[JF15RP3HE](#) [JF15RP3GF](#) [JF15RP3HC](#) [JF15AP1CC](#) [JF15RP3GC](#) [JF15RP2FF](#) [JF15RP1CC](#) [JF15RP1DC](#)  
[JF15RP1GC](#) [JF15RP1HC](#) [JF15RP1HE](#) [JF15RP1FF](#) [JF15RP1GF](#) [JF15RP1HF](#) [JF15RP2CC](#) [JF15RP2DC](#)  
[JF15RP2FC](#) [JF15RP2GC](#) [JF15RP2HC](#) [JF15RP2GF](#) [JF15RP2HF](#) [JF15RP3DC](#) [JF15RP3FC](#) [JF15RP3DE](#)  
[JF15RP2CF](#) [JF15RP2FE](#) [JF15RP2CE](#) [JF15RP2GE](#) [JF15RP1CE](#) [JF15RP2DF](#) [JF15RP1FC](#) [JF15RP3DF](#)  
[JF15RP2HE](#) [JF15RP1DF](#) [JF15RP1CF](#) [JF15RP1FE](#) [JF15RP3FE](#) [JF15RP3CE](#)