

# SKRH

## 4-direction with Center-push Function (Surface Mount Type)

Body height of 1.85mm available with long-life of 1 million life cycles



### Typical Specifications



| Items         | Specifications |
|---------------|----------------|
| Rating (max.) | 50mA 12V DC    |
| Rating (min.) | 10μA 1V DC     |

### Product Line

| Product No. | Operating force |             | Travel (mm) |             | Operating life<br>(5mA 5V DC)                | Initial contact<br>resistance | Stem<br>color | Guide<br>bosses | Minimum order unit (pcs.) |        |
|-------------|-----------------|-------------|-------------|-------------|----------------------------------------------|-------------------------------|---------------|-----------------|---------------------------|--------|
|             | 4-direction     | Center-push | 4-direction | Center-push |                                              |                               |               |                 | Japan                     | Export |
| SKRHAAE010  | 1.23N           | 2.35N       | 0.25        | 0.15        | 200,000<br>cycles<br>for each<br>direction   | 500mΩ<br>max.                 | Black         | Without         | 1,300                     | 1,300  |
| SKRHABE010  |                 |             |             |             | 1,000,000<br>cycles<br>for each<br>direction | 100mΩ<br>max.                 | Natural       | With            |                           |        |
| SKRHACE010  | 1.2N            |             |             |             |                                              |                               |               | Without         |                           |        |
| SKRHADE010  |                 |             |             |             |                                              |                               |               | With            |                           |        |

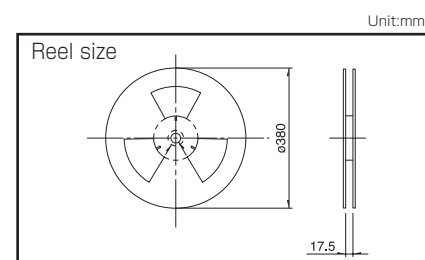
### Note

4-directional operating force and travel are measured at 4.3mm height from the bottom of the switch.

### Packing Specifications

#### Taping

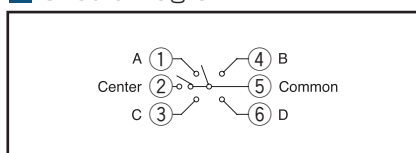
| Number of packages (pcs.) |                |                         | Tape width<br>(mm) | Export package<br>measurements (mm) |
|---------------------------|----------------|-------------------------|--------------------|-------------------------------------|
| 1 reel                    | 1 case / Japan | 1 case / export packing |                    |                                     |
| 1,300                     | 10,400         | 10,400                  | 16                 | 401×401×214                         |



### Dimensions

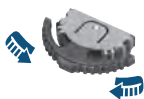
| Style      | PC board mounting hole and land dimensions<br>(Viewed from mounting face) |      |      |     |     |
|------------|---------------------------------------------------------------------------|------|------|-----|-----|
|            |                                                                           |      |      |     |     |
|            | x                                                                         | h    | a    | b   | c   |
| SKRHAAE010 | 7.35                                                                      | 1.8  | 2.14 | 1   | 8.6 |
| SKRHABE010 | 7.35                                                                      | 1.85 | 2.17 | 1.6 | 8.7 |
| SKRHACE010 | 7.45                                                                      | 1.85 | 2.17 | 1.6 | 8.7 |
| SKRHADE010 | 7.45                                                                      | 1.85 | 2.17 | 1.6 | 8.7 |

### Circuit Diagram



# Multi Control Devices

## List of Varieties

| Type                                               |                             | Switch type                                                                         |                                                                                   |                                                                                     |                                                                                       |
|----------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Series                                             |                             | SKRH                                                                                |                                                                                   | SRBE                                                                                | SLLB5<br>Compact type                                                                 |
|                                                    |                             | SKRHAA/AB                                                                           | SKRHAC/AD                                                                         |                                                                                     |                                                                                       |
| Photo                                              |                             |    |  |  |    |
| Dimensions<br>(mm)                                 | W                           | 7.35/7.45                                                                           |                                                                                   | —                                                                                   | 9.5                                                                                   |
|                                                    | D                           | 7.5                                                                                 |                                                                                   | —                                                                                   | 8.8                                                                                   |
|                                                    | H                           | 5                                                                                   |                                                                                   | —                                                                                   | 2.2                                                                                   |
| Shaft material                                     |                             | Resin                                                                               |                                                                                   |                                                                                     |                                                                                       |
| Directional resolution                             |                             | 4-direction                                                                         |                                                                                   | —                                                                                   | 2-direction                                                                           |
| Directional operating feeling<br>(tactile feeling) |                             | With                                                                                |                                                                                   | Without                                                                             | Without                                                                               |
| Lever return mechanism                             |                             | With                                                                                |                                                                                   | Without                                                                             | With                                                                                  |
| Center-push switch                                 |                             | With                                                                                |                                                                                   |                                                                                     |                                                                                       |
| Encoder                                            |                             | Without                                                                             |                                                                                   | With                                                                                | Without                                                                               |
| Operating temperature range                        |                             | -40°C to +85°C                                                                      |                                                                                   | -10°C to +60°C                                                                      |                                                                                       |
| Operating life                                     | Without load                | —                                                                                   | —                                                                                 | 100,000 cycles                                                                      |                                                                                       |
|                                                    | With load(10mA 5V DC)       | —                                                                                   | —                                                                                 | 100,000 cycles                                                                      |                                                                                       |
|                                                    | With load(5mA 5V DC)        | 200,000 cycles<br>for each direction                                                | 1,000,000 cycles<br>for each direction                                            | —                                                                                   | —                                                                                     |
| Automotive use                                     |                             | —                                                                                   |                                                                                   | —                                                                                   | —                                                                                     |
| Life cycle (availability)                          |                             |  |                                                                                   |  |  |
| Rating (max.) (Resistive load)                     |                             | 50mA 12V DC                                                                         |                                                                                   | 1mA 5V DC                                                                           | 10mA 5V DC                                                                            |
| Electrical performance                             | Output voltage              | —                                                                                   |                                                                                   | 1V max. at 1mA 5V DC<br>(Resistive load)                                            | —                                                                                     |
|                                                    | Encoder resolution          | —                                                                                   |                                                                                   | 6 pluses/360°                                                                       | —                                                                                     |
|                                                    | Insulation resistance       | 100MΩ min. 100V DC                                                                  |                                                                                   | 10MΩ min. 50V DC                                                                    | 100MΩ min. 100V DC                                                                    |
|                                                    | Voltage proof               | 100V AC for 1min.                                                                   |                                                                                   | 50V AC for 1min.                                                                    | 100V AC for 1min.                                                                     |
| Mechanical performance                             | Directional operating force | 1.23±0.69N                                                                          | 1.2±0.69N                                                                         | —                                                                                   | 0.65±0.3N                                                                             |
|                                                    | Push operating force        | 2.35±0.69N                                                                          |                                                                                   | 3.5±1.5N                                                                            | 2.5±1N                                                                                |
|                                                    | Encoder detent torque       | —                                                                                   |                                                                                   | 3±2mN·m                                                                             | —                                                                                     |
|                                                    | Terminal strength           | —                                                                                   |                                                                                   | 3N for 1min.                                                                        |                                                                                       |
|                                                    | Actuator strength           | —                                                                                   | —                                                                                 | 50N                                                                                 |                                                                                       |
| Environmental performance                          | Cold                        | -40°C 96h                                                                           |                                                                                   | -30°C 96h                                                                           | -20°C 96h                                                                             |
|                                                    | Dry heat                    | 90°C 96h                                                                            |                                                                                   | 85°C 96h                                                                            |                                                                                       |
|                                                    | Damp heat                   | 60°C, 90 to 95%RH 96h                                                               |                                                                                   | 40°C, 90 to 95%RH 96h                                                               |                                                                                       |
| Page                                               |                             | 405                                                                                 |                                                                                   | 406                                                                                 | 408                                                                                   |

|                                                        |     |
|--------------------------------------------------------|-----|
| Switch Type Multi Control Devices Soldering Conditions | 412 |
| Switch Type Multi Control Devices Cautions             | 413 |

# Switch Type Multi Control Devices / Soldering Conditions

## Reference for Manual Soldering

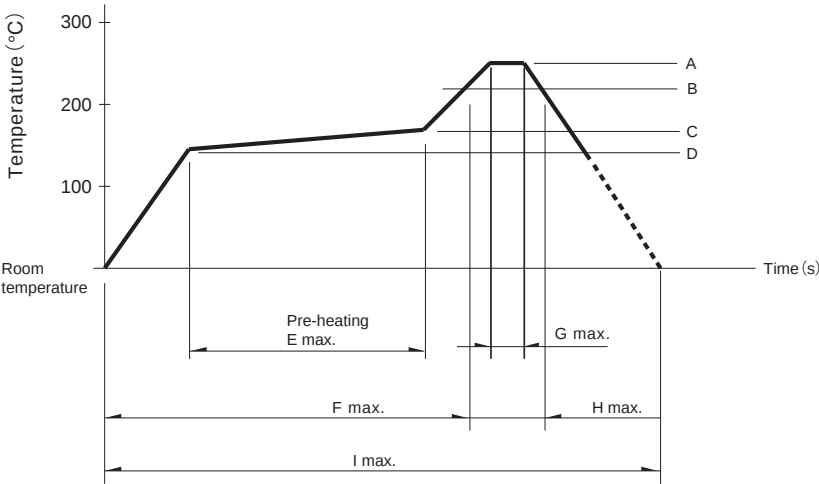
| Series                                         | Tip temperature | Soldering time | No. of solders |
|------------------------------------------------|-----------------|----------------|----------------|
| RKJXT1F, RKJXM, RKJXL, SLLB, SLLB5, SRBE, SKRH | 350±5℃          | 3s max.        | 1 time         |

## Reference for Dip Soldering

| Series         | Preheating                    |              | Dip soldering         |                | No. of solders |
|----------------|-------------------------------|--------------|-----------------------|----------------|----------------|
|                | Soldering surface temperature | Heating time | Soldering temperature | Soldering time |                |
| RKJXT1F, RKJXM | 100℃ max.                     | 2 min. max.  | 260±5℃                | 5±1s           | 2 time max.    |
| RKJXL          | 120℃ max.                     | 70s max.     | 260℃ max.             | 6s max.        | 2 time max.    |

## Example of Reflow Soldering Condition

1. Heating method: Double heating method with infrared heater.
2. Temperature measurement: Thermocouple  $\phi 0.1$  to  $0.2$  CA (K) or CC (T) at soldering portion (copper foil surface).  
A heat resisting tape should be used for fixed measurement.
3. Temperature profile



| Series     | A    | B    | C    | D    | E      | F      | G  | H   | I        | No. of reflows |
|------------|------|------|------|------|--------|--------|----|-----|----------|----------------|
| SLLB5      | 250℃ | 230℃ | 150℃ | 150℃ | —      | 2 min. | —  | 30s | —        | 1 time         |
| SLLB, SRBE | 260℃ | 230℃ | 180℃ | 150℃ | 2 min. | —      | —  | 40s | —        | 1 time         |
| SKRH       | 260℃ | 230℃ | 180℃ | 150℃ | 2 min. | —      | 3s | 40s | 3-4 min. | 2 times        |

## Notes

1. The above temperature shall be measured on the mounting surface of a PC board. There are cases where the PC board's temperature greatly differs from that of the switch, depending on the material, size thickness of PC boards and others. The above-stated conditions shall also apply to switch surface temperatures.
2. Soldering conditions differ depending on reflow soldering machines. Prior verification of soldering condition is highly recommended.