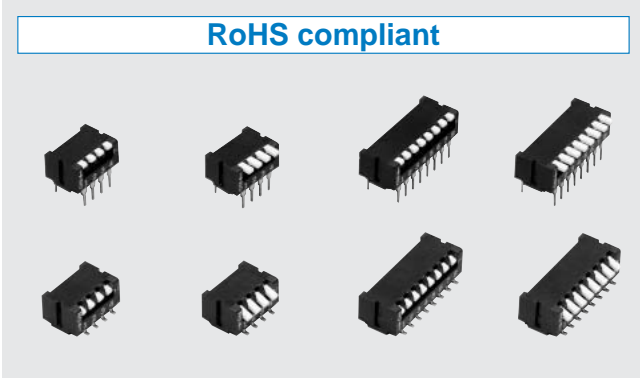


# CFP

## PIANO SWITCHES (FULL PITCH)

### RoHS compliant



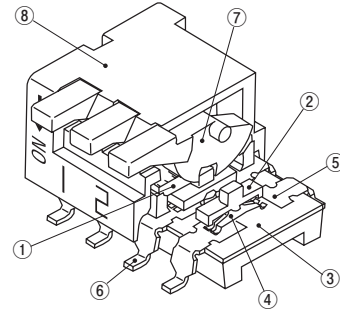
### FEATURES

- RoHS compliant
- High-reliability

### APPLICATIONS

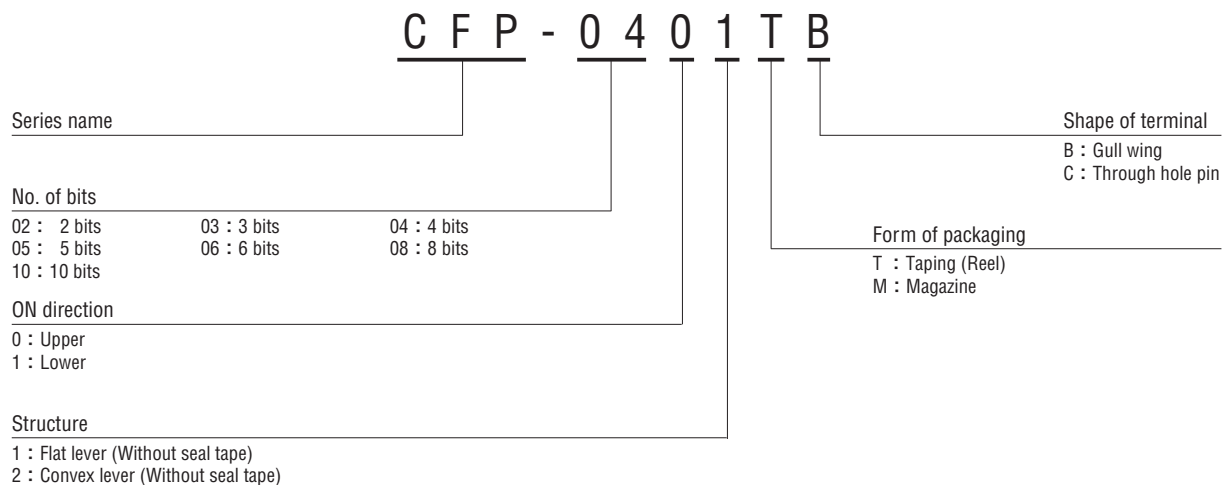
- Communication devices, Air-conditioning equipment, Vending machines and various control equipment

### INTERNAL STRUCTURE



| Part name        | Material                   | Flammability |
|------------------|----------------------------|--------------|
| ① Cover          | PPS(Polyphenylenesulphide) | UL-94V-0     |
| ② Slider         | PA(Polyamide)              |              |
| ③ Housing        | PPS(Polyphenylenesulphide) |              |
| ④ Slider contact | Copper alloy, Gold-plated  | -            |
| ⑤ Fixed contact  |                            |              |
| ⑥ Terminal pin   |                            |              |
| ⑦ Piano lever    | PA(Polyamide)              | UL-94V-0     |
| ⑧ Piano cover    | PPS(Polyphenylenesulphide) |              |

### PART NUMBER DESIGNATION



※Please refer to the LIST OF PART NUMBERS when placing orders.

**LIST OF PART NUMBERS**

| No. of bits                      | ON direction                     | Structure                      | Form of packaging | Shape of terminals |                       | Pieces in package |
|----------------------------------|----------------------------------|--------------------------------|-------------------|--------------------|-----------------------|-------------------|
|                                  |                                  |                                |                   | B (Gull wing)      | C (Through hole pins) |                   |
| 2                                | Upper                            | Flat lever (without seal tape) | Taping            | CFP-0201TB         |                       | 500 pcs./reel     |
|                                  |                                  |                                | Magazine          | CFP-0201MB         | CFP-0201MC            | 62 pcs./stick     |
|                                  | Convex lever (without seal tape) | Taping                         | CFP-0202TB        |                    | 500 pcs./reel         |                   |
|                                  |                                  | Magazine                       | CFP-0202MB        | CFP-0202MC         | 62 pcs./stick         |                   |
|                                  | Lower                            | Flat lever (without seal tape) | Taping            | CFP-0211TB         |                       | 500 pcs./reel     |
|                                  |                                  |                                | Magazine          | CFP-0211MB         | CFP-0211MC            | 62 pcs./stick     |
| Convex lever (without seal tape) | Taping                           | CFP-0212TB                     |                   | 500 pcs./reel      |                       |                   |
|                                  | Magazine                         | CFP-0212MB                     | CFP-0212MC        | 62 pcs./stick      |                       |                   |
| 3                                | Upper                            | Flat lever (without seal tape) | Taping            | CFP-0301TB         |                       | 500 pcs./reel     |
|                                  |                                  |                                | Magazine          | CFP-0301MB         | CFP-0301MC            | 46 pcs./stick     |
|                                  | Convex lever (without seal tape) | Taping                         | CFP-0302TB        |                    | 500 pcs./reel         |                   |
|                                  |                                  | Magazine                       | CFP-0302MB        | CFP-0302MC         | 46 pcs./stick         |                   |
|                                  | Lower                            | Flat lever (without seal tape) | Taping            | CFP-0311TB         |                       | 500 pcs./reel     |
|                                  |                                  |                                | Magazine          | CFP-0311MB         | CFP-0311MC            | 46 pcs./stick     |
| Convex lever (without seal tape) | Taping                           | CFP-0312TB                     |                   | 500 pcs./reel      |                       |                   |
|                                  | Magazine                         | CFP-0312MB                     | CFP-0312MC        | 46 pcs./stick      |                       |                   |
| 4                                | Upper                            | Flat lever (without seal tape) | Taping            | CFP-0401TB         |                       | 500 pcs./reel     |
|                                  |                                  |                                | Magazine          | CFP-0401MB         | CFP-0401MC            | 36 pcs./stick     |
|                                  | Convex lever (without seal tape) | Taping                         | CFP-0402TB        |                    | 500 pcs./reel         |                   |
|                                  |                                  | Magazine                       | CFP-0402MB        | CFP-0402MC         | 36 pcs./stick         |                   |
|                                  | Lower                            | Flat lever (without seal tape) | Taping            | CFP-0411TB         |                       | 500 pcs./reel     |
|                                  |                                  |                                | Magazine          | CFP-0411MB         | CFP-0411MC            | 36 pcs./stick     |
| Convex lever (without seal tape) | Taping                           | CFP-0412TB                     |                   | 500 pcs./reel      |                       |                   |
|                                  | Magazine                         | CFP-0412MB                     | CFP-0412MC        | 36 pcs./stick      |                       |                   |
| 5                                | Upper                            | Flat lever (without seal tape) | Taping            | CFP-0501TB         |                       | 500 pcs./reel     |
|                                  |                                  |                                | Magazine          | CFP-0501MB         | CFP-0501MC            | 30 pcs./stick     |
|                                  | Convex lever (without seal tape) | Taping                         | CFP-0502TB        |                    | 500 pcs./reel         |                   |
|                                  |                                  | Magazine                       | CFP-0502MB        | CFP-0502MC         | 30 pcs./stick         |                   |
|                                  | Lower                            | Flat lever (without seal tape) | Taping            | CFP-0511TB         |                       | 500 pcs./reel     |
|                                  |                                  |                                | Magazine          | CFP-0511MB         | CFP-0511MC            | 30 pcs./stick     |
| Convex lever (without seal tape) | Taping                           | CFP-0512TB                     |                   | 500 pcs./reel      |                       |                   |
|                                  | Magazine                         | CFP-0512MB                     | CFP-0512MC        | 30 pcs./stick      |                       |                   |
| 6                                | Upper                            | Flat lever (without seal tape) | Taping            | CFP-0601TB         |                       | 500 pcs./reel     |
|                                  |                                  |                                | Magazine          | CFP-0601MB         | CFP-0601MC            | 26 pcs./stick     |
|                                  | Convex lever (without seal tape) | Taping                         | CFP-0602TB        |                    | 500 pcs./reel         |                   |
|                                  |                                  | Magazine                       | CFP-0602MB        | CFP-0602MC         | 26 pcs./stick         |                   |
|                                  | Lower                            | Flat lever (without seal tape) | Taping            | CFP-0611TB         |                       | 500 pcs./reel     |
|                                  |                                  |                                | Magazine          | CFP-0611MB         | CFP-0611MC            | 26 pcs./stick     |
| Convex lever (without seal tape) | Taping                           | CFP-0612TB                     |                   | 500 pcs./reel      |                       |                   |
|                                  | Magazine                         | CFP-0612MB                     | CFP-0612MC        | 26 pcs./stick      |                       |                   |
| 8                                | Upper                            | Flat lever (without seal tape) | Taping            | CFP-0801TB         |                       | 500 pcs./reel     |
|                                  |                                  |                                | Magazine          | CFP-0801MB         | CFP-0801MC            | 20 pcs./stick     |
|                                  | Convex lever (without seal tape) | Taping                         | CFP-0802TB        |                    | 500 pcs./reel         |                   |
|                                  |                                  | Magazine                       | CFP-0802MB        | CFP-0802MC         | 20 pcs./stick         |                   |
|                                  | Lower                            | Flat lever (without seal tape) | Taping            | CFP-0811TB         |                       | 500 pcs./reel     |
|                                  |                                  |                                | Magazine          | CFP-0811MB         | CFP-0811MC            | 20 pcs./stick     |
| Convex lever (without seal tape) | Taping                           | CFP-0812TB                     |                   | 500 pcs./reel      |                       |                   |
|                                  | Magazine                         | CFP-0812MB                     | CFP-0812MC        | 20 pcs./stick      |                       |                   |
| 10                               | Upper                            | Flat lever (without seal tape) | Taping            | CFP-1001TB         |                       | 500 pcs./reel     |
|                                  |                                  |                                | Magazine          | CFP-1001MB         | CFP-1001MC            | 16 pcs./stick     |
|                                  | Convex lever (without seal tape) | Taping                         | CFP-1002TB        |                    | 500 pcs./reel         |                   |
|                                  |                                  | Magazine                       | CFP-1002MB        | CFP-1002MC         | 16 pcs./stick         |                   |
|                                  | Lower                            | Flat lever (without seal tape) | Taping            | CFP-1011TB         |                       | 500 pcs./reel     |
|                                  |                                  |                                | Magazine          | CFP-1011MB         | CFP-1011MC            | 16 pcs./stick     |
| Convex lever (without seal tape) | Taping                           | CFP-1012TB                     |                   | 500 pcs./reel      |                       |                   |
|                                  | Magazine                         | CFP-1012MB                     | CFP-1012MC        | 16 pcs./stick      |                       |                   |

☐: Not manufactured

※ Verify the above part numbers when placing orders.

Taping and magazine version can be supplied only in reel or stick units.

**CFP**  
**PIANO SWITCHES (FULL PITCH)**

**STANDARD SPECIFICATIONS**

|                       |  |   |
|-----------------------|--|---|
| Operating temp. range | - 40 ~ 85 °C   |   |
| Storage temp. range   |  |   |
| Sealing               | Non-washable   |   |
| Net weight            | Approx. 0.55 g (CFP-02)<br>Approx. 0.86 g (CFP-04)<br>Approx. 1.19 g (CFP-06)<br>Approx. 1.90 g (CFP-10) | Approx. 0.70 g (CFP-03)<br>Approx. 1.03 g (CFP-05)<br>Approx. 1.54 g (CFP-08) |

**ELECTRICAL CHARACTERISTICS**

|   |  |
|---|--|
| Contact rating<br>Non-switching<br>Switching<br>Minimum | DC50 V 100 mA<br>DC6 V, 100 mA DC24 V, 25 mA<br>DC20 mV 1 μA |
| Contact resistance                                      | 50 mΩ maximum  |
| Insulation resistance                                   | 1000 MΩ (DC100 V) minimum                                    |
| Dielectric strength                                     | AC500 V, 60 s  |

**MECHANICAL CHARACTERISTICS**

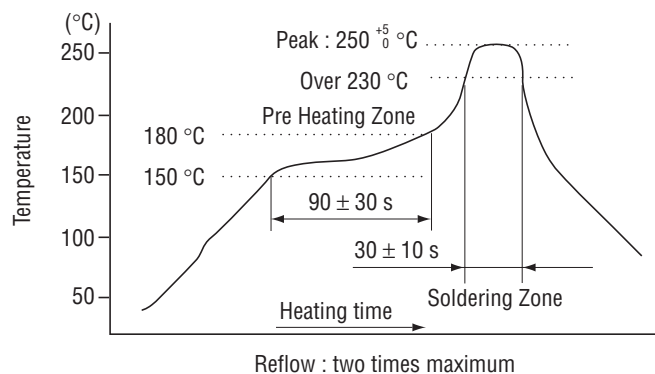
|                   |   |
|-------------------|---|
| Operation angle   | 21 °  |
| Operation force   | 7 N (0.71 kgf) maximum  |
| Stop strength     | 10 N (1.02 kgf) 60 s  |
| Solderability     | 245 ± 3 °C, 2 ~ 3 s   |
| Soldering heat    | Flow : 260 ± 3 °C, 5 ~ 6 s, two times maximum<br>Reflow : 255 °C (Peak temperature)<br>(Please refer to the profile below)<br>Manual soldering : 350 ± 10 °C, 3 ~ 4 s |
| Shear (Adhesion)  | 5 N (0.51 kgf) 10 s   |
| Substrate bending | Width 90 mm, bend 3 mm, 5 s, 1 time   |
| Pull-off strength | 5 N (0.51 kgf) 10 s   |

**ENVIRONMENTAL CHARACTERISTICS**

|                     |  |
|---------------------|--|
| Vibration           | Amplitude 1.5 mm or Acceleration 98 m/s <sup>2</sup> ,<br>10-500 Hz, 3 directions for 10 cycles each |
| Shock               | 490 m/s <sup>2</sup> , 11 ms, 6 directions for 3 times each  |
| Load life           | Continuous load 1000 cycles,<br>DC6 ± 0.5 V, 100 ± 10 mA   |
| Humidity            | -10 ~ 65 °C, Relative humidity 0 ~ 96 %, 24 h for 10 cycles  |
| High temp. exposure | 85 °C, 96 h  |
| Low temp. exposure  | -40 °C, 96 h   |
| Thermal shock       | -40 (0.5 h) ~ 85 °C (0.5 h), 5 cycles  |

{ } : Reference only

**<Reflow profile for soldering heat evaluation>**

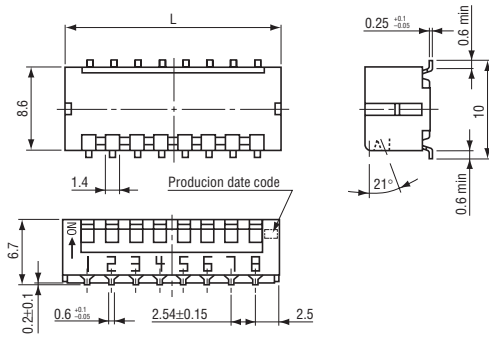


## CFP PIANO SWITCHES (FULL PITCH)

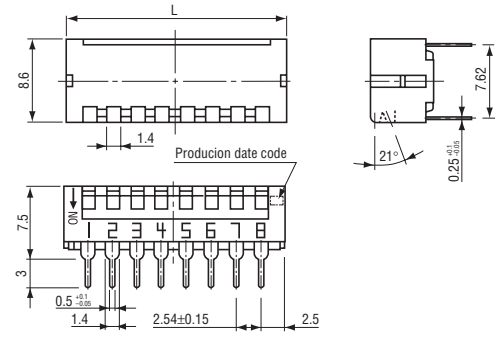
### OUTLINE DIMENSIONS

Unless otherwise specified, tolerance : ± 0.3 (Unit : mm)

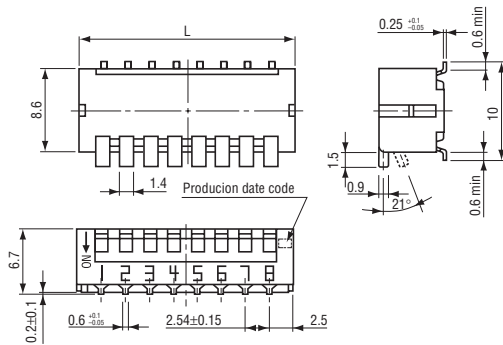
#### ● Flat lever, Gull wing



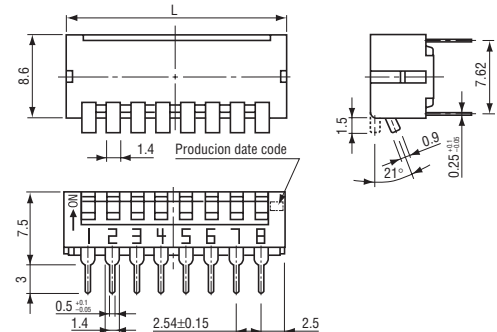
#### ● Flat lever, Through hole pin



#### ● Convex lever, Gull wing



#### ● Convex lever, Through hole pin

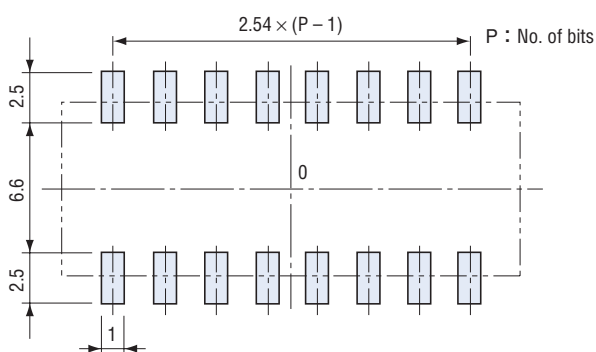


| Part number | Schematic | No. of bits. | L dimension |
|-------------|-----------|--------------|-------------|
| CFP-02      |           | 2            | 7.5         |
| CFP-03      |           | 3            | 10.05       |
| CFP-04      |           | 4            | 12.6        |
| CFP-05      |           | 5            | 15.15       |

| Part number | Schematic | No. of bits. | L dimension |
|-------------|-----------|--------------|-------------|
| CFP-06      |           | 6            | 17.7        |
| CFP-08      |           | 8            | 22.8        |
| CFP-10      |           | 10           | 27.9        |

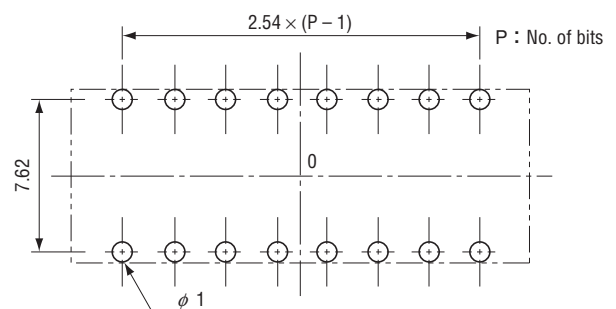
### RECOMMENDED P.C.B. PAD DIMENSIONS

(Unit : mm)



### SIZE OF P.C.B. PROCESSING

(Unit : mm)



**CFP**  
**PIANO SWITCHES (FULL PITCH)**

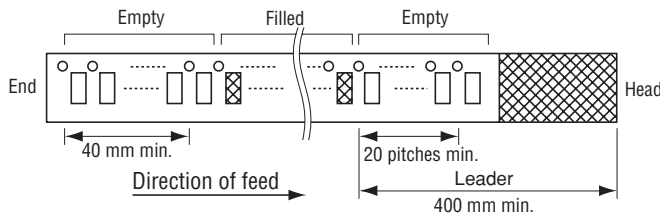
**PACKAGING SPECIFICATIONS**

**<Taping packaging specifications>**

- Taping version are packaged in 500 pcs. per reel. Orders will be accepted for units of 500 pcs., i.e., 500, 1000, 1500 pcs., etc.
- Taping version is boxed with 1 reel.

Maximum number of consecutive missing pieces = 2  
Leader length and reel dimension are shown in the diagrams below:

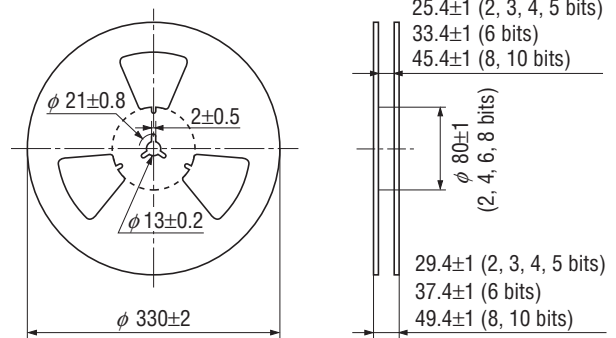
**● Embossed tape dimensions**



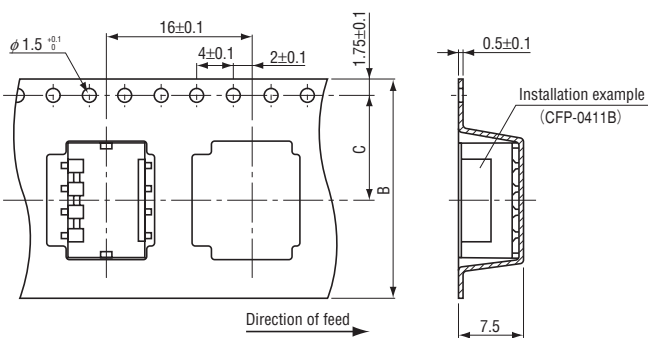
**● Reel dimensions**

(Unit: mm)

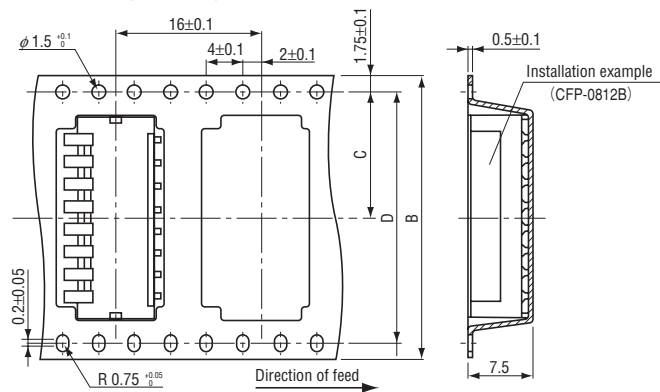
(Conforms to JIS C 0806-3)  
(In accordance with EIAJ ET-7200A)



**● 2 bits, 3 bits, 4 bits, 5 bits**



**● 6 bits, 8 bits, 10 bits**



| No. of bits | B  | C              | D              |
|-------------|----|----------------|----------------|
| 2, 3, 4, 5  | 24 | $11.5 \pm 0.1$ | —              |
| 6           | 32 | $14.2 \pm 0.1$ | $28.4 \pm 0.1$ |
| 8, 10       | 44 | $20.2 \pm 0.1$ | $40.4 \pm 0.1$ |

**<Magazine packaging specifications>**

- Packing quantities of magazines are different depending on the bit number of the switches. Please order the multiple numbers of the specific packing quantities. (e.g. 62 pcs., 124 pcs., 186 pcs., etc., in case of 2 bits version)

Pieces in package : 2 bits, 62 pcs./stick    3 bits, 46 pcs./stick  
 4 bits, 36 pcs./stick    5 bits, 30 pcs./stick  
 6 bits, 26 pcs./stick    8 bits, 20 pcs./stick  
 10 bits, 16 pcs./stick