

# Switches



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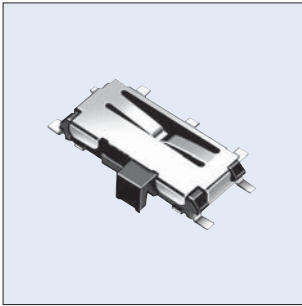
**Notice**

1. The contents of this catalog are applied to a product only that is not assembled in a customer's product. Please check and evaluate our product in condition that is assembled in your product before use. The contents in this catalog are only rough specification. Please request and approve our formal specification before you use.
2. The products are designed and manufactured for general electronic devices. Please do not use them for such devices (medical devices, security devices or aerospace instruments) that need advanced safety or high reliability.
3. This product is not splash-proof construction, and cannot be washed.
4. Storage Condition
  - (1) This product must be stored in normal temperature and humidity (5 to 35 degree-C, 45 to 85 %RH, no dew formation).
  - (2) This product must not be stored in atmosphere where a lot of salinities and sulfides exist. (Must not be stored in salinity density of 1% or more and sulfide of 0.03 ppm or more.)
  - (3) The product must not be stored with excessive load.
  - (4) Please use this product as soon as possible within 6 months after delivery.

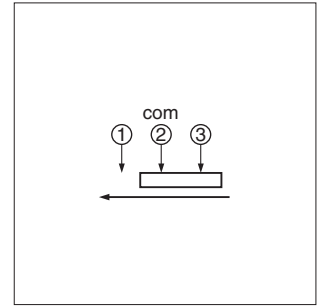
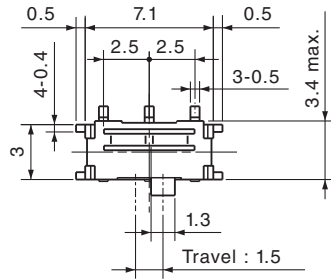
	Type	Position	Pole	Model No.	Operating Force	Terminal Pitch (mm)	Travel (mm)	Switching mode
SMT	Horizontal	2	1	HSW4512-310011	1.5±1N	2.5	1.5	Non-Shorting
DIP	Horizontal	2	1	HSW2060-210010	2±1.2N	2	2	Not Specified
		3	1	HSW2061-010019	Ⓐ, Ⓒ → Ⓑ 2±1N Ⓑ → Ⓐ, Ⓒ 3±2N	2	2	Not Specified
	Vertical	2	1 or 2	HSW0700 Series	3±1.5N	2	2	Not Specified

	SMT	DIP
<b>Rated</b>	0.1A 12V DC	0.5A 15V DC or 0.3A 30V DC
<b>Contact Resistance</b>	100mΩ max.	30mΩ max.
<b>Insulation Resistance</b>	100MΩ min. at 100V DC	100MΩ min. at 100V DC
<b>Withstanding Voltage</b>	250V AC / 1 minute	250V AC / 1 minute
<b>Operating Life</b>	10,000 cycles	10,000 cycles

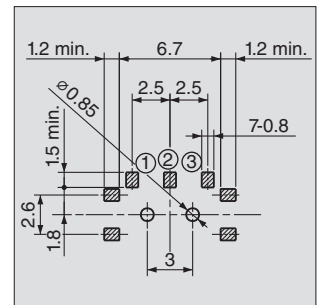
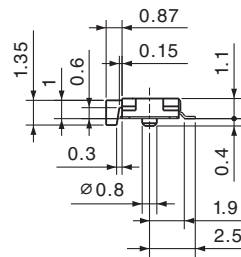
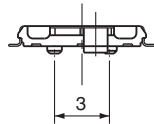
**HSW4512**



**HSW4512-310011  
SMT**



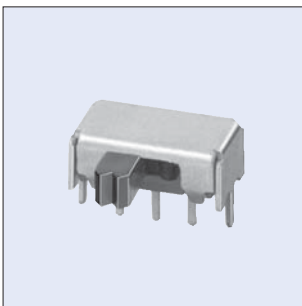
Circuit Diagram



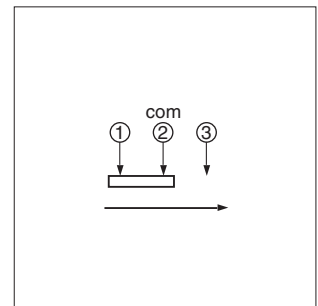
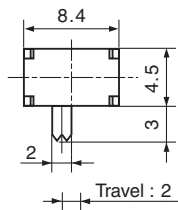
PCB Layout  
(Top View)

Pole-Position	Switching Mode
1P-2T	Non-Shorting

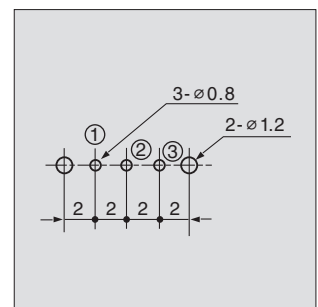
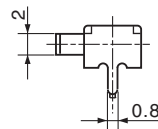
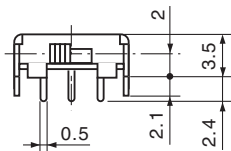
**HSW2060**



**HSW2060-210010  
DIP**



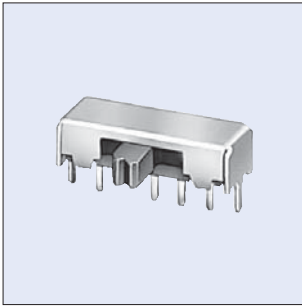
Circuit Diagram



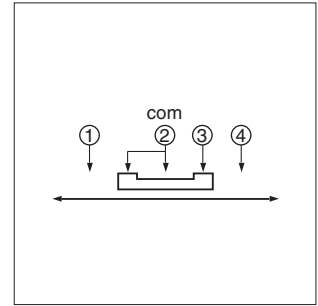
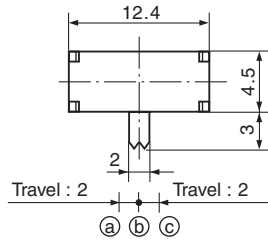
Hole Layout  
(Bottom View)

Pole-Position	Switching Mode
1P-2T	Not Specified

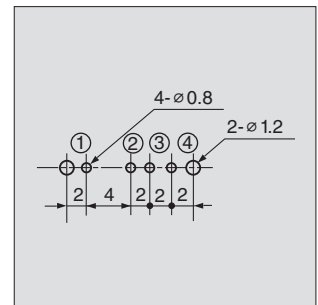
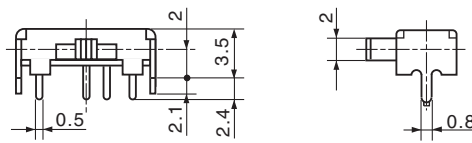
**HSW2061**



**HSW2061-010019**  
**DIP**



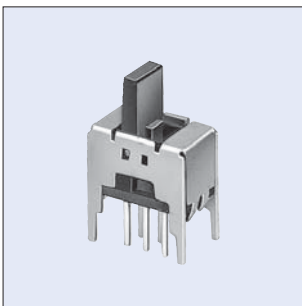
Circuit Diagram



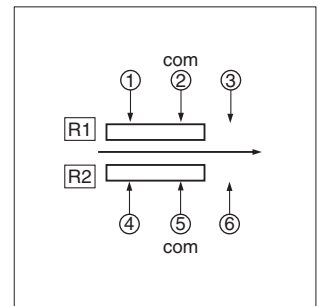
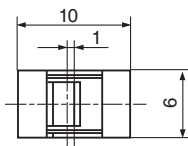
Hole Layout  
(Bottom View)

Pole-Position	Switching Mode
1P-3T	Not Specified

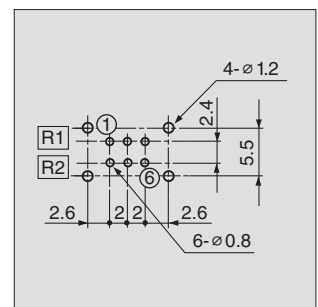
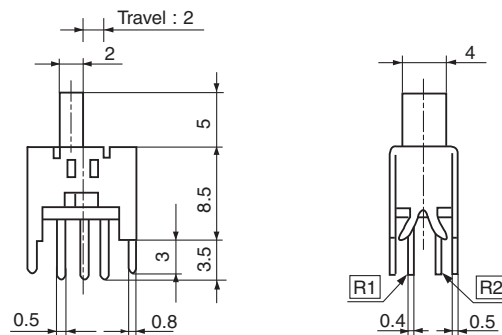
**HSW0700**



**HSW0700-01-019**  
**DIP**



Circuit Diagram



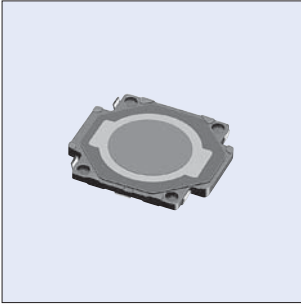
Hole Layout  
(Bottom View)

Model No.	Pole-Position	Switching Mode	Used Poles
HSW0700-01-019	2P-2T	Not Specified	R1 • R2
HSW0700-01-039	1P-2T		R1

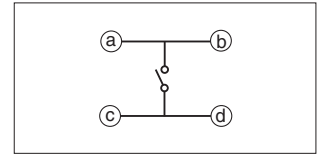
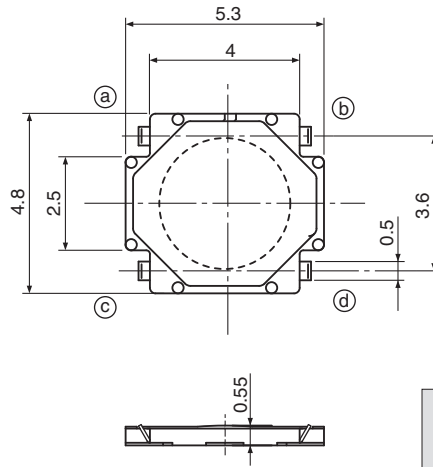
**Notice**

1. This product is not the drip proof structure.
2. Please don't push the snap plate by anything with sharp edge such as a needle (Less than a tip ball R1).
3. Please don't push the snapplate directly by fingers.
4. Please don't store the product in the atmosphere with many salt and sulfide.
5. This specification is applied to the switch only as a component.  
Please confirm and evaluate the switch that is assembled into your merchandise.
6. The storage period must be for six months after your delivery.  
(Storage condition:as shown in PACKING drawing)
7. Please store the product in normal temperature and humidity.  
(temperature : 5 to 35°C,humidity : 45 to 85%RH)  
because it causes the curve and deformation of the product in the high temperature and high humidity.

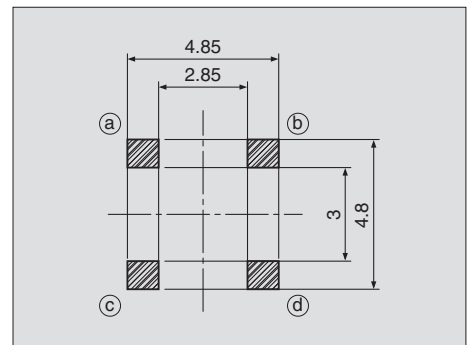
**HKW0763**



**HKW0763-010012**



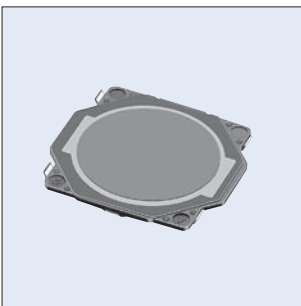
Circuit Diagram



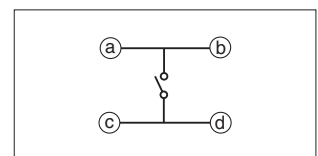
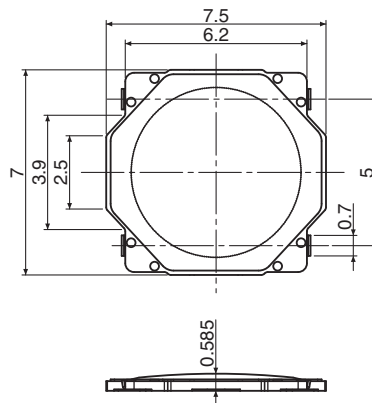
PCB Layout (Top View)

Rated	50mA 5V DC
Contact Resistance	100mΩ max.
Bounce	10msec max.
Operating Life	500,000 cycles
Operating Force	1.6±0.4N
Stroke	0.2±0.1mm

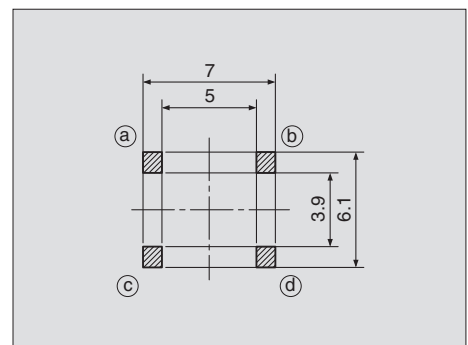
**HKW0766**



**HKW0766-010012**



Circuit Diagram



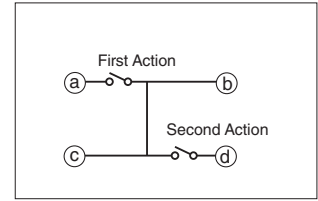
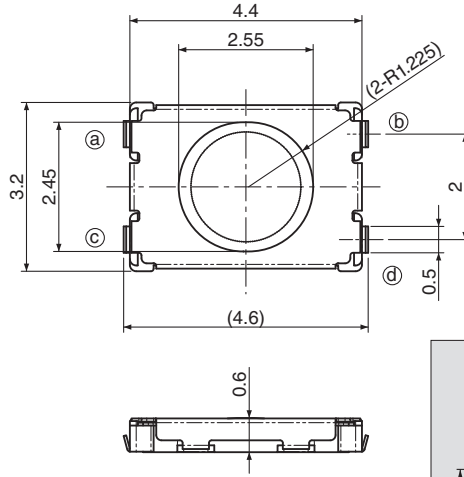
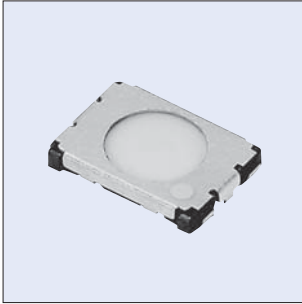
PCB Layout (Top View)

Rated	50mA 5V DC
Contact Resistance	100mΩ max.
Bounce	10msec max.
Operating Life	2,000,000 cycles
Operating Force	1.03±0.4N
Stroke	0.25±0.1mm

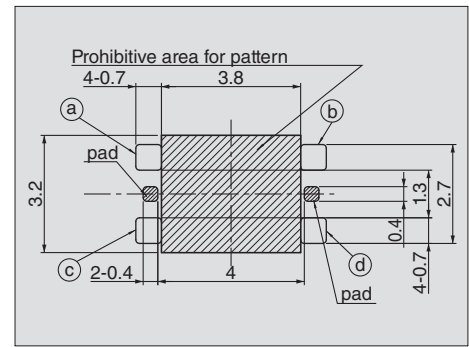


## HKW0773 Series\*

\*HKW1773 : See table.



Circuit Diagram



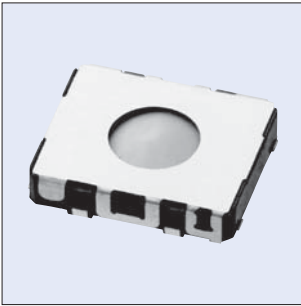
PCB Layout  
(Top View)

Rated	50mA 5V DC
Contact Resistance	1Ω max.
Insulation Resistance	100MΩ min. at 100V DC
Withstanding Voltage	100V AC / 1 minute
Operating Life	100,000 cycles

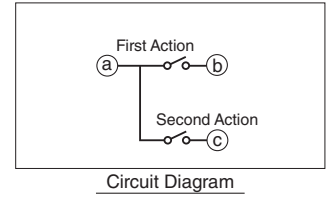
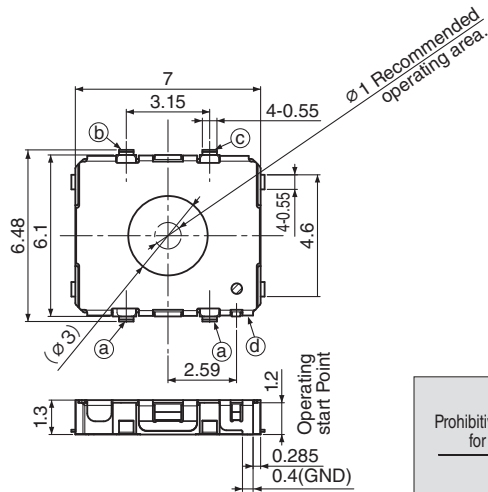
## HKW0773 Series

Model Number	Types	Operating Force	Stroke
HKW0773-010011	High load type(2nd tier)	1st 0.8N 2nd 2.2N	1st 0.17mm 2nd 0.35mm
HKW0773-310011	Standard type	1st 0.8N 2nd 1.7N	1st 0.20mm 2nd 0.35mm
HKW0773-510011	Low load type	1st 0.4N 2nd 1.35N	1st 0.16mm 2nd 0.28mm
HKW1773-310011	Non click-feeling type(1st tier)	1st 0.5N 2nd 1.9N	1st 0.16mm 2nd 0.30mm

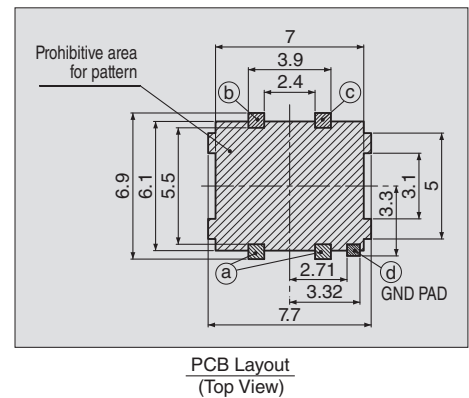
## HKW0820



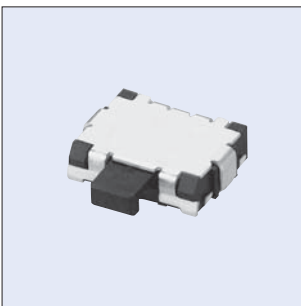
**HKW0820-010011**



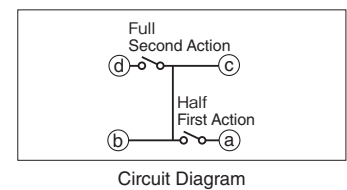
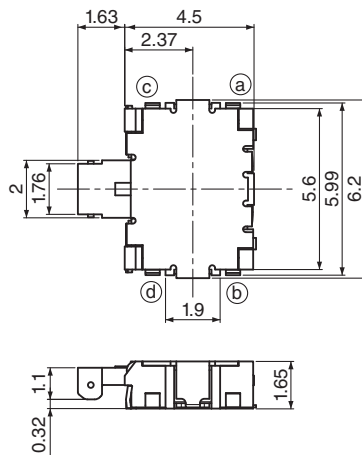
Rated	50mA 5V DC
Contact Resistance	1Ω max.
Insulation Resistance	100MΩ min. at 100V DC
Withstanding Voltage	100V AC / 1 minute
Stroke	First Action 0.50mm Second Action 0.73mm
Operating Force	First Action 1.0N Second Action 2.9N
Operating Life	200,000 cycles



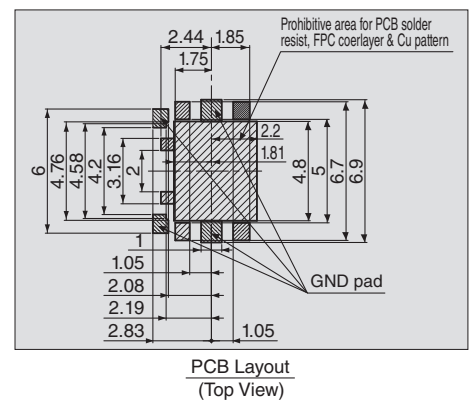
## HKW0730



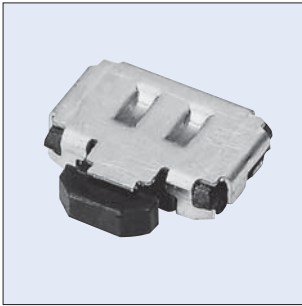
**HKW0730-010011**



Rated	10mA 5V DC max. 0.1mA 1V DC min.
Contact Resistance	300mΩ max.
Insulation Resistance	100MΩ min. at 100V DC
Withstanding Voltage	100V AC / 1 minute
Stroke	First Action 0.32mm Second Action 0.56mm
Operating Force	First Action 0.9N Second Action 2.2N
Operating Life	100,000 cycles



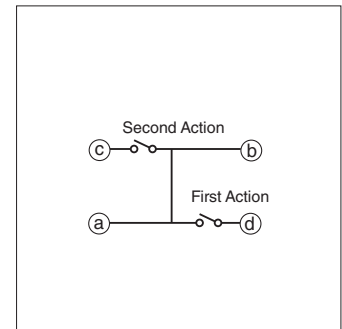
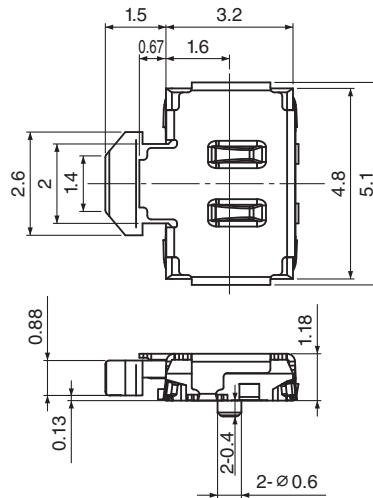
**HKW0731**



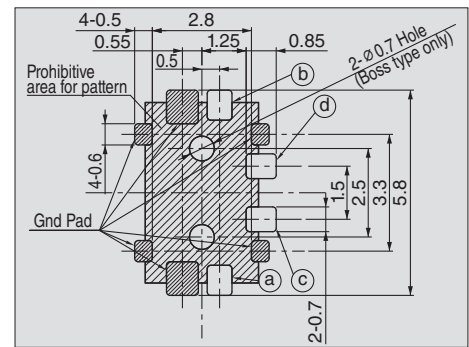
**HKW0731-010011**

Model No.	Boss
HKW0731-010011	without boss
HKW0731-210011	with boss

Rated	50mA 5V DC
Contact Resistance	10Ω max.
Insulation Resistance	100MΩ min. at 100V DC
Withstanding Voltage	100V AC / 1 minute
Stroke	First Action 0.21mm Second Action 0.45mm
Operating Force	First Action 0.9N Second Action 2.0N
Operating Life	100,000 cycles



Circuit Diagram



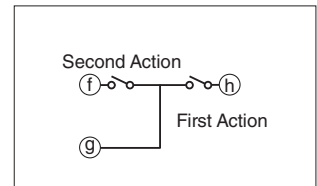
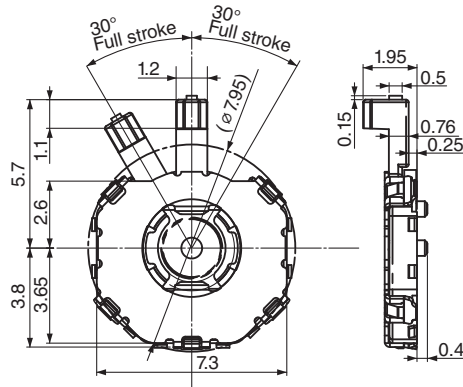
PCB Layout (Top View)

**HXW0840**

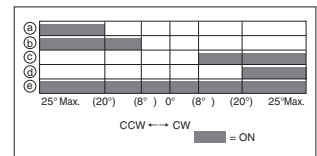


**HXW0840-210011**

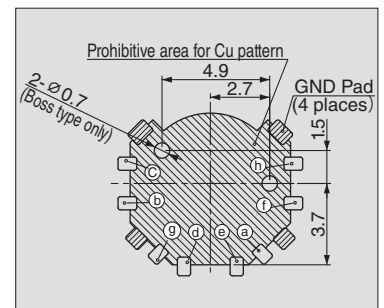
Rated	10mA 5V DC max. 0.1mA 1V DC min.
Contact Resistance	1Ω max.
Insulation Resistance	100MΩ min. at 100V DC
Withstanding Voltage	100V AC / 1 minute
Stroke	First Action 0.17mm Second Action 0.35mm
Operating Force	First Action 0.8N Second Action 2.2N
Operating Life	100,000 cycles



Circuit Diagram

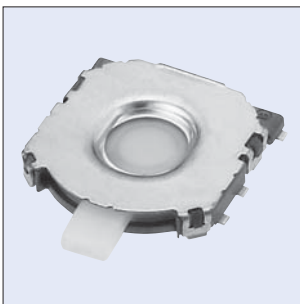


Shuttle Switch Output Codes



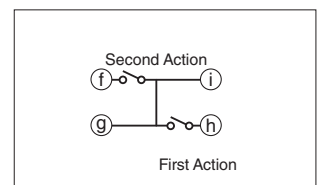
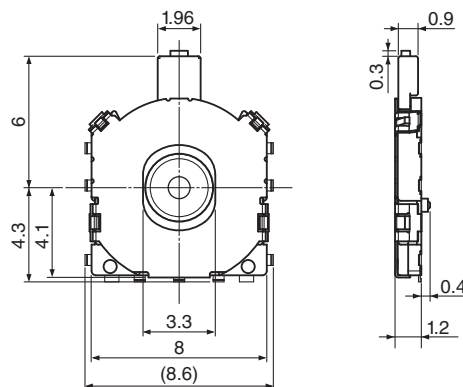
PCB Layout  
(Top View)

**HXW1774**

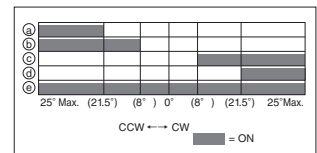


**HXW1774-210011**

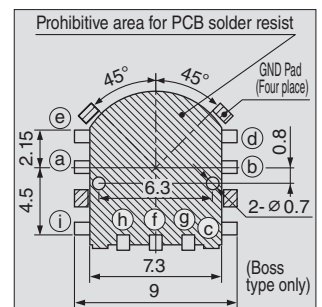
Rated	10mA 5V DC max. 0.1mA 1V DC min.
Contact Resistance	300mΩ max.
Insulation Resistance	100MΩ min. at 100V DC
Withstanding Voltage	100V AC / 1 minute
Stroke	First Action 0.17mm Second Action 0.35mm
Operating Force	First Action 0.7N Second Action 2.0N
Operating Life	100,000 cycles



Circuit Diagram



Shuttle Switch Output Codes



PCB Layout  
(Top View)

## Introduction

Hosiden has 20-years experience of process & assembly technology for Metal Dome (Snap Plate). Hosiden Metal Dome Assy developed by switch engineering section based on this experience is very suitable for compact equipment (mobile phone, PDA, etc.)

Only by sticking this Metal Dome Assy on PCB (or FPC), which has contact pattern good Tactile feeling & thin type switch Assy can be made.

Of course Switch Unit (Metal Dome Assy with PCB or FPC) is also available.

## Features

### Snap Plate

- Good tactile feeling by original design.
- Stable products with superior material, tooling and forming technology.
- Variation of the snap plate from 3.5mm dia to 6mm dia. (Standard made)  
6, 5.5, 5, 4.5, 4 and 3.5 dia type and Oval shape, light force type is available.

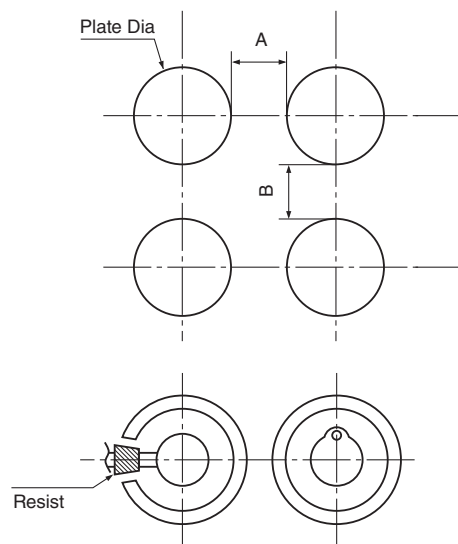
### Others

- High accuracy and easy assembly by original process technology. (Patented and Patent pending.)
- Standard color of a tape is white, but another colors are available on request.
- 4 different structures are available as shown next page.

■ Key pitch 1.0mm min. pitch on either side of A or B is available.

### ■ Recommended pattern

In case that there is the part of drawing line on the single sided printed board, please apply more than double resister coating.  
Recommended plating : 0.05 $\mu$ m Gold over 2 $\mu$ m Nickel



### Recommended Pattern

Unit:mm

Plate Dia (mm)	6	5.5	5	4.5	4
PCB Pattern					

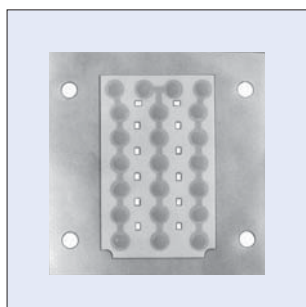
	Structures		Characteristic
A Type	1 Layer (Type usually)	Delivery form (Sheet / Reel)	<ul style="list-style-type: none"> <li>• Simple construction</li> <li>• Better click feeling due to soft tape.</li> <li>• Circle type or slit for air vent hole is available.</li> </ul>
B Type	2 Layer (With spacer)	Delivery form (Sheet / Reel)	<ul style="list-style-type: none"> <li>• Easy to design contact area on PCB.</li> <li>• Easy to handle due to double layer.</li> <li>• Circle type or slit for air vent hole is available.</li> </ul>
C Type	2 Layer (Sealing up and dustproof type)	Delivery form (Sheet / Reel)	<ul style="list-style-type: none"> <li>• Dust proof type</li> <li>• No air vent hole on the first layer tape</li> </ul>
D Type	2 Layer (Not sticking on the substrate side)	Delivery form (Sheet / Reel)	<ul style="list-style-type: none"> <li>• Easy to assemble due to no adhesive type on backside.</li> </ul>

- Reel package is available. (Standard Quantity per Reel : 1,000 pcs)
- High accuracy of positioning snap plates eliminates bad feeling due to displacement.

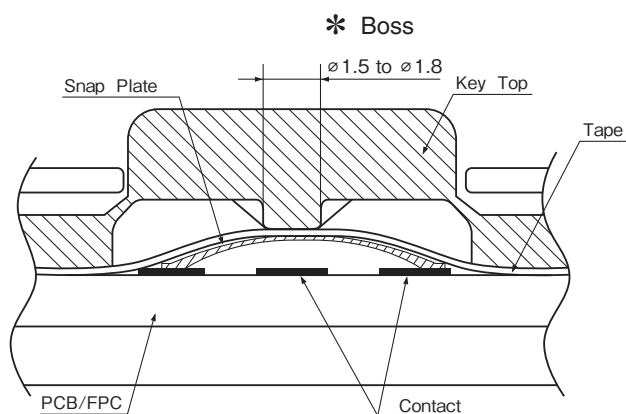
## Snap Plate Variation

Plate Dia. (mm)	Travel (mm)	Height (mm)	Operating Force (N)	Operating Life (Cycles)	Materials
ø 6.0	0.21	0.30	1.8	1,000,000	SUS
	0.20	0.26	1.7	1,000,000	SUS
	0.26	0.26	1.9	500,000	SUS
ø 5.5	0.22	0.28	1.3	1,000,000	SUS
	0.22	0.28	1.6	1,000,000	SUS
ø 5.0	0.18	0.23	1.6	1,000,000	SUS
	0.19	0.25	1.8	1,000,000	SUS
ø 4.5	0.17	0.23	1.5	500,000	SUS
ø 4.0	0.15	0.20	1.5	500,000	SUS
	0.17	0.20	1.8	500,000	SUS
5.4 × 4.2	0.23	0.30	1.75	500,000	SUS (Oval)
4 × 3.1	0.18	0.25	1.8	500,000	SUS (Oval)
3.5 × 2.5	0.16	0.21	1.6	500,000	SUS (Oval)

## HKW1116



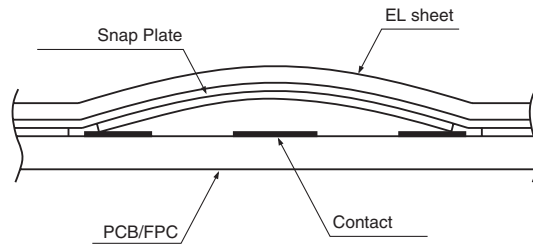
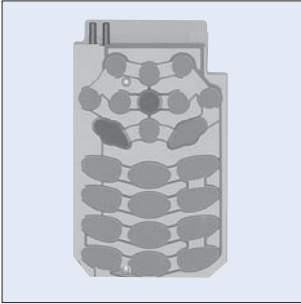
### Structure



Tape : PET 25 $\mu$ m (or 50 $\mu$ m) adhesive 30 $\mu$ m Color white · transparent  
· black · others

Snap Plate (mm)	* Boss of Key Top (mm)
ø 4	ø 1.5 to ø 1.8
ø 5	ø 1.5 to ø 1.8
ø 5.5 to ø 6	ø 1.5 to ø 1.8

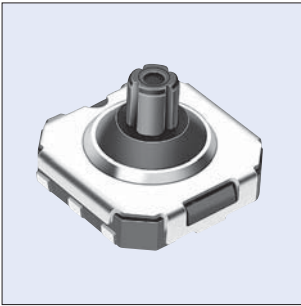
**HKW1540**



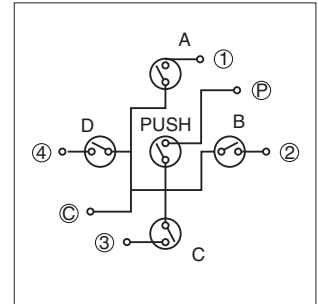
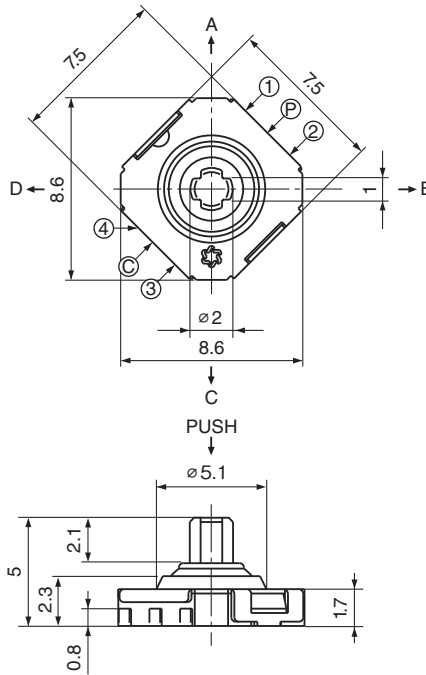
EL Luminance	65cd/m <sup>2</sup> (White)
Operating Life	300,000 cycles
Thickness	0.38mm ( EL Sheet : 0.1mm )



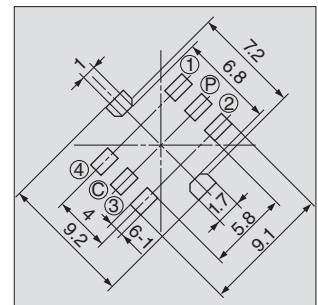
**HXW0767**



**HXW0767-610021**



Circuit Diagram

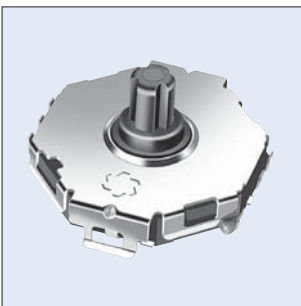


PCB Layout (Top View)

Rated	50mA 20V DC max.	
	10μA 1V DC min.	
Contact Resistance	100mΩ max.	
Insulation Resistance	100MΩ min. at 100V DC	
Withstanding Voltage	100V AC / 1 minute	
Operating Force	X / Y Axis 4-Direction	0.5N to 1.3N
	Push Direction	1.7N to 2.9N
Operating Life	500,000 cycles	

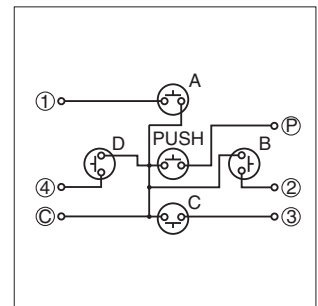
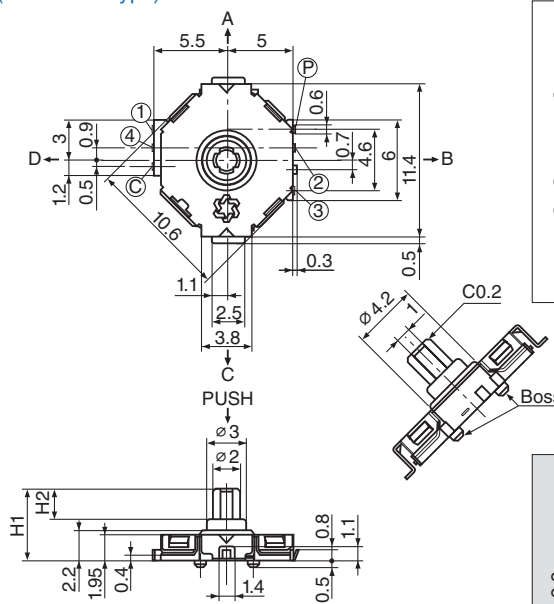
**HXW0768**

\*HXW1768 (8-direction type)

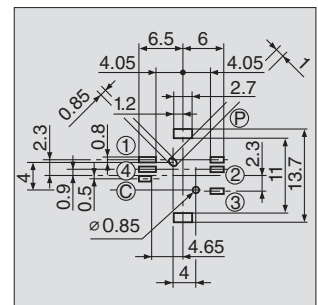


Model No.	H1 (mm)	H2 (mm)	Boss
HXW0768-010071	5.5	2.3	with
HXW0768-010571	5	1.8	with
HXW0768-610071	5.5	2.3	without
HXW0768-610571	5	1.8	without

Rated	50mA 5V DC max.	
	10μA 1V DC min.	
Contact Resistance	100mΩ max.	
Insulation Resistance	100MΩ min. at 100V DC	
Withstanding Voltage	100MΩ min. at 100V DC	
Operating Force	X / Y Axis 4-Direction	1.3N to 4N
	Push Direction	3.5N to 5.5N
Operating Life	200,000 cycles	

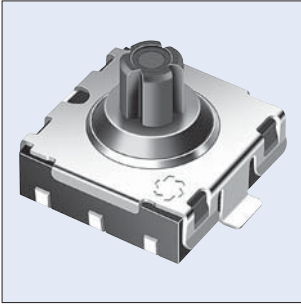


Circuit Diagram

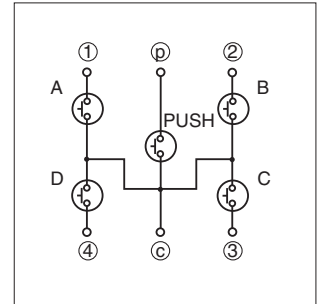
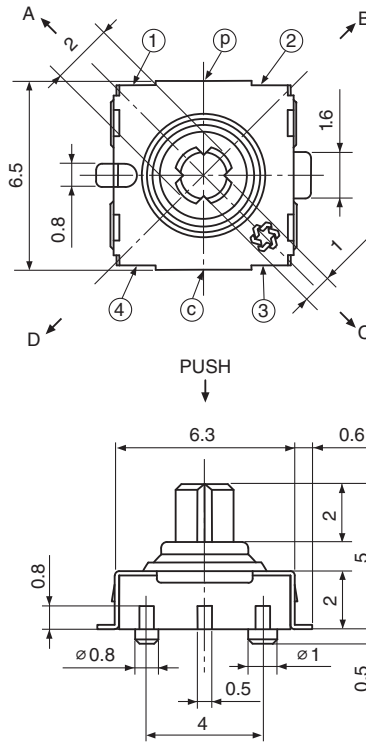


PCB Layout (Top View)

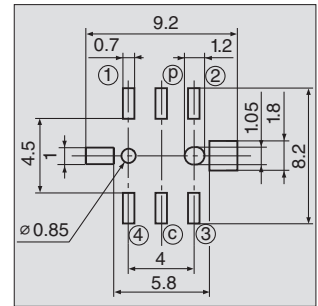
**HXW0801**



**HXW0801-010031**



Circuit Diagram

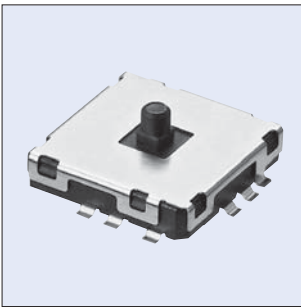


PCB Layout  
(Top View)

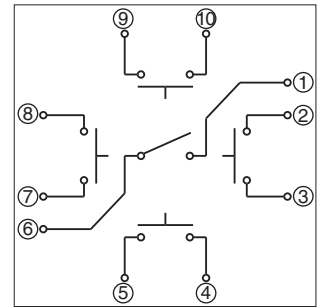
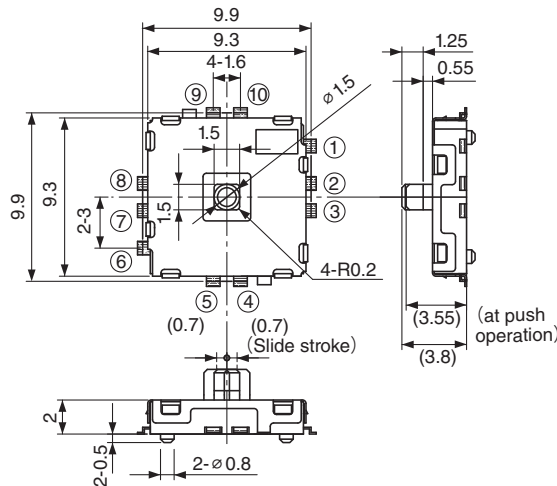
Rated	50mA 5V DC max.
	10μA 1V DC min.
Contact Resistance	100mΩ max.
Insulation Resistance	100MΩ min. at 100V DC
Withstanding Voltage	100V AC / 1 minute
Operating Force	X / Y Axis 4-Direction 1.2 <sup>+1.0</sup> <sub>-0.7</sub> N
	Push Direction 2.2 <sup>+1.4</sup> <sub>-1.1</sub> N
Operating Life	200,000 cycles

**TWK7018**

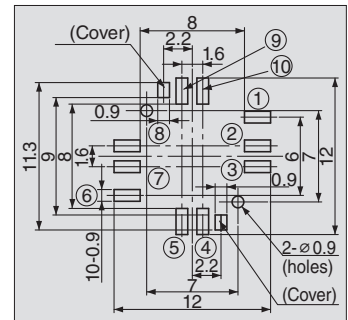
**Slide Operation Type**



**TWK7018-0110109**



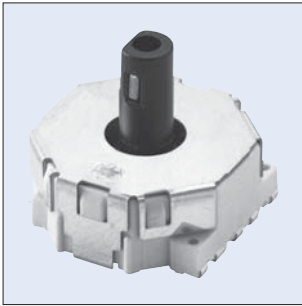
Circuit Diagram



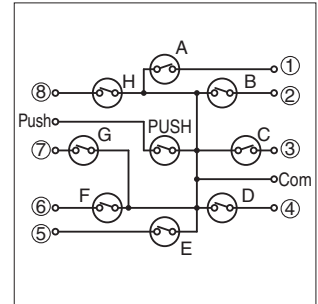
PCB Layout  
(Top View)

Rated	1mA 10V DC
Contact Resistance	500Ω max.
Insulation Resistance	100MΩ min. at 100V DC
Withstanding Voltage	100V AC / 1 minute
Operating Force	0.6±0.3N
Operating Life	500,000 cycles

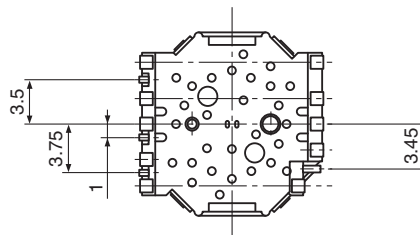
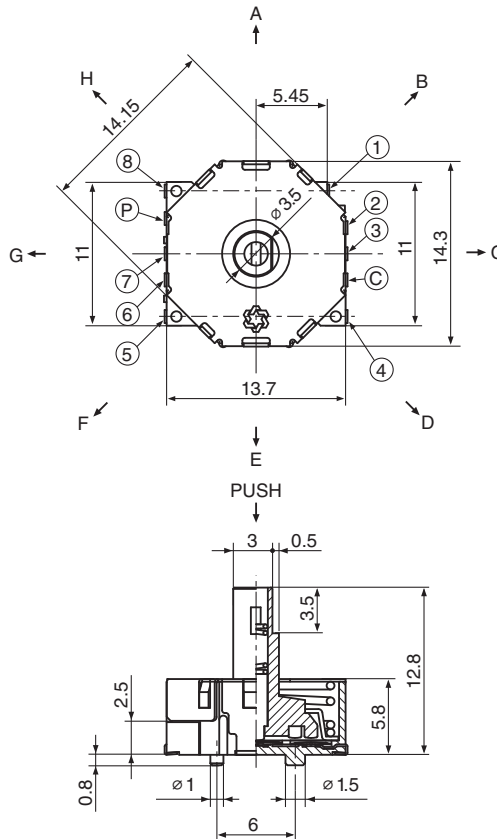
**HXW0805**



**HXW0805-01**



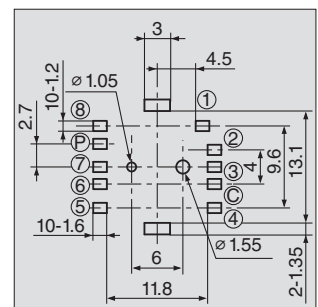
Circuit Diagram



Model No.	Operation Function
HXW0805-01	8 Directions (A to H) + Center Push
HXW0805-31	4 Directions (A · C · E · G) + Center Push

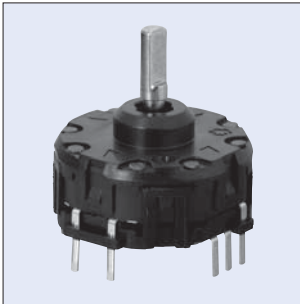
Withstand load	
Push Direction	400 N

Rated	10mA 5V DC max.	
	1mA 1V DC min.	
Contact Resistance	1Ω max.	
Insulation Resistance	10MΩ min. at 100V DC	
Withstanding Voltage	100V AC / 1 minute	
Operating Force	4 or 8 Directions	2±0.5N
	Push Direction	4.5±1N
Operating Life	1,000,000 cycles	

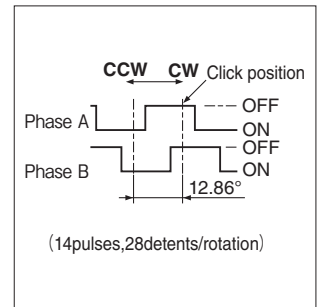


PCB Layout  
(Top View)

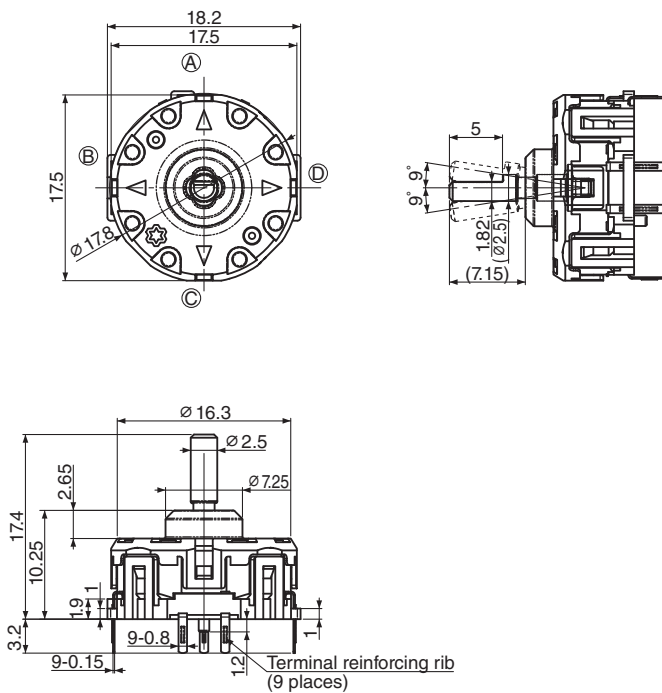
**HXW1723**



**HXW1723-210010**



Output signal of the encoder

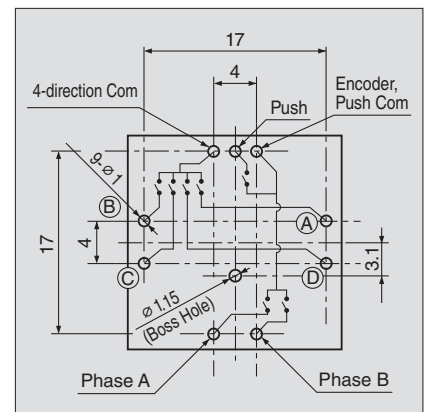


4 Directions + Push

Rated	10mA 5V DC	
Contact Resistance	200m Ω max.	
Push Direction	Operating Force	7.2±1.0N
	Stroke	0.39±0.18mm
4 Directions	Operating Force	3.6±1.0N (1.5mm from tip)
	Operating Range	9° max.
Operating Force	Direction	100,000 cycles
	4-Directions	100,000 cycles

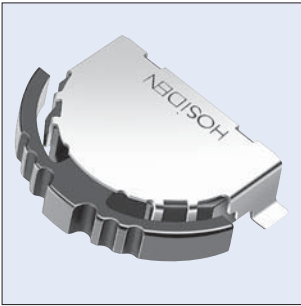
Encoder

Rated	10mA 5V DC
Number of Pulses	14
Number of clicks	28
Torque	11.5±4.5mN · m
Operating Life	(1Cycle : 360° both ways) 15,000 cycles

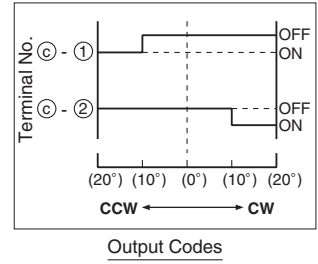
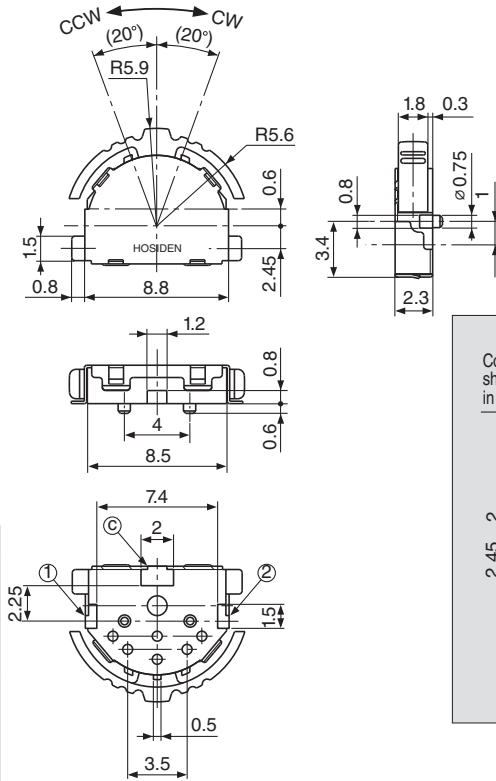


PCB Layout  
(Top View)

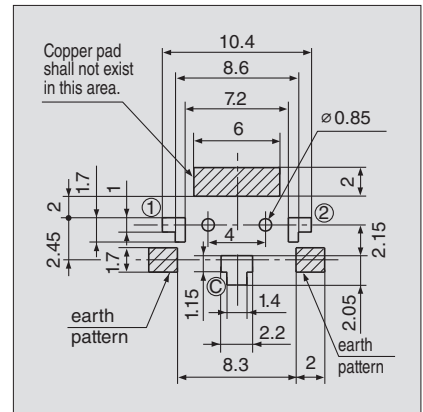
**HXW0783**



**HXW0783-510011**



Output Codes

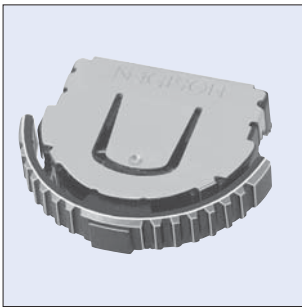


PCB Layout (Top View)

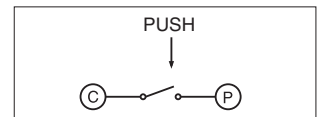
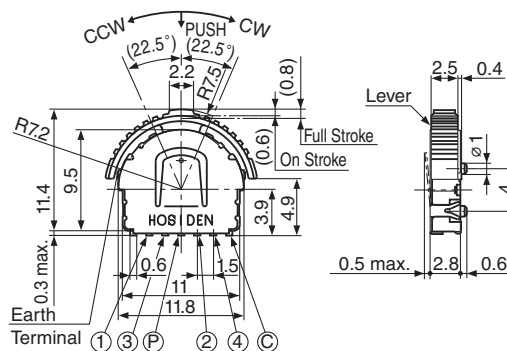
Rated	10mA 5V DC max. 0.1mA 1V DC min.
Output Voltage	1V max. at 1mA 5V DC
Insulation Resistance	100MΩ min. at 100V DC
Withstanding Voltage	100V AC / 1 minute
Operating Force	0.5 +0.3 -0.2 N
Operating Life	200,000 cycles

**HXW0780 / HXW0785**

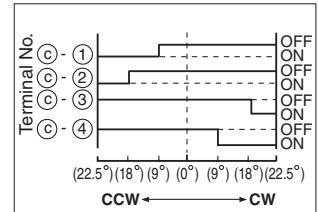
with Push Switch



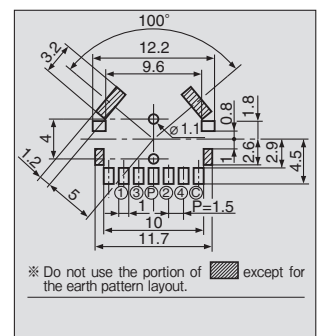
**HXW0780**



Circuit Diagram Push Direction



Output Codes

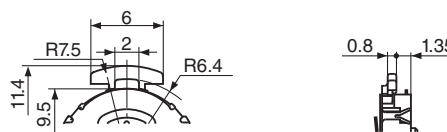


PCB Layout (Top View)

Model No.	Lever Color
HXW0780-010031	Dark gray
HXW0780-010041	Black

**HXW0785-010031**

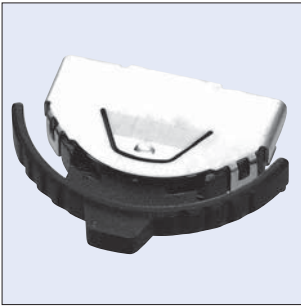
Non-actuator



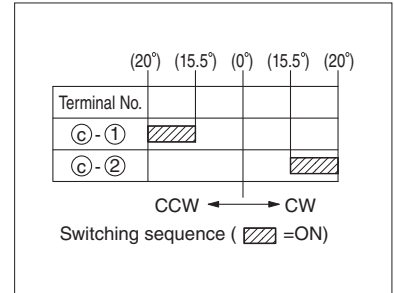
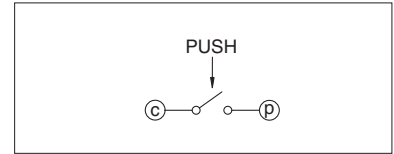
Rated	10mA 5V DC max. 0.1mA 1V DC min.	
Output Voltage	1V max. at 1mA 5V DC	
Insulation Resistance	100MΩ min. at 100V DC	
Withstanding Voltage	100V AC / 1 minute	
Operating Force	Shuttle Direction	0.65±0.3N
	Push Direction	2±1N
Operating Life	100,000 cycles	

**HXW0786**

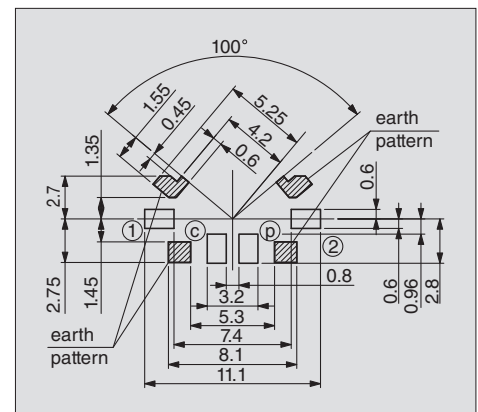
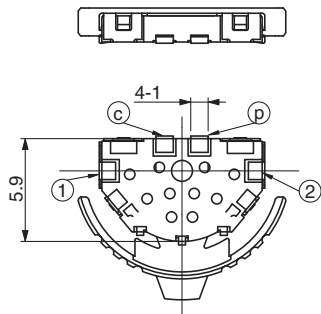
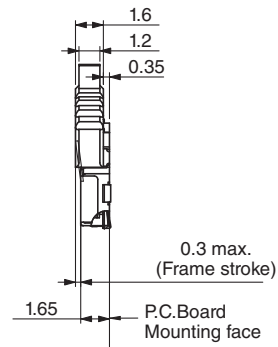
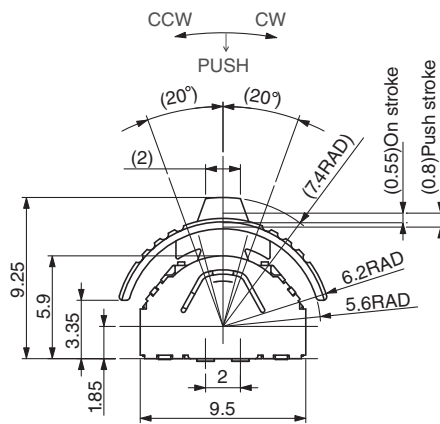
with Push Switch



**HXW0786-010011**



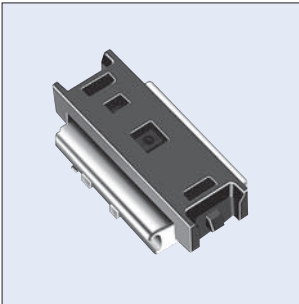
Output Codes



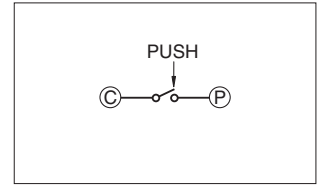
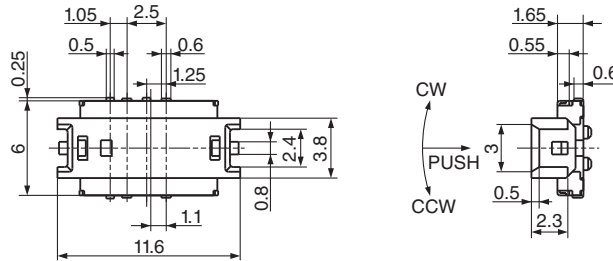
PCB Layout  
(Top View)

Rated	10mA 5V DC max.	
	0.1mA 1V DC min.	
Output Voltage	1V max. at 1mA 5V DC	
Insulation Resistance	100MΩ min. at 100V DC	
Withstanding Voltage	100V AC / 1 minute	
Operating Force	Shuttle Direction	0.65±0.3N
	Push Direction	2±1N
Operating Life	100,000 cycles	

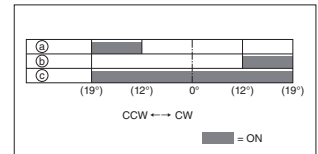
**HXW0741**



**HXW0741-010011**

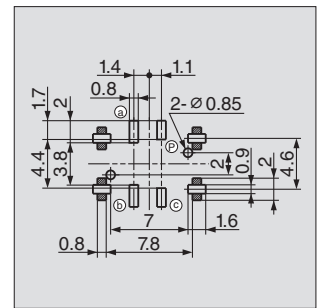


Circuit Diagram



Shuttle Switch Output Codes

Rated		0.1mA 5V DC 5mA 5V DC
Contact Resistance		100mΩ max.
Push Direction	Operating Force	2.6±1N
	Stroke	0.2 <sup>+0.15</sup> / <sub>0.1</sub> mm
	Operating Life	500,000 cycles
Rotary Direction	Operating Force	1±0.4N
	Operating Range	19±3°
	Operating Life	500,000 cycles



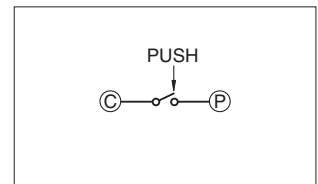
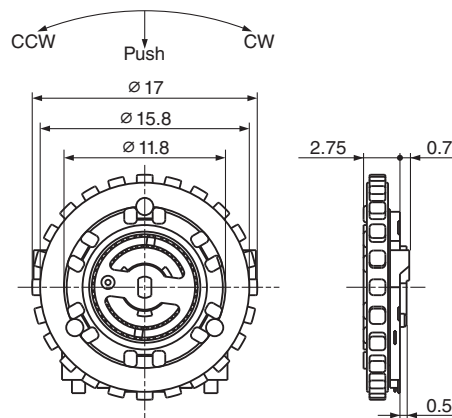
PCB Layout  
(Top View)

**HXW0735**

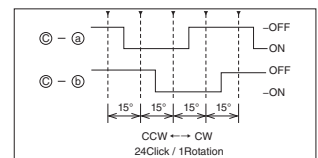
**Rotary Switch**



**HXW0735-210011**

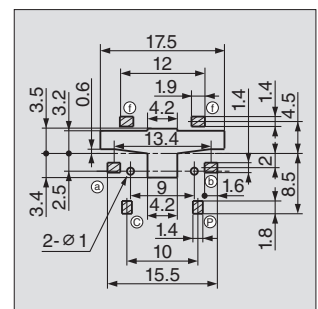


Circuit Diagram



Rotary Switch Output Codes

Rated		1mA 5V DC 5mA 5V DC
Contact Resistance		100Ω max.
Push Direction	Operating Force	3±1.5N
	Stroke	0.5±0.15mm
	Operating Life	100,000 cycles
Rotary Direction	Rotation torque	2 to 8mN·m
	Number of Click	24 click / 1 Rotation
	Operating Life	50,000 cycles



PCB Layout  
(Top View)

Model No. Table

Model No.	Page					
HKW0730	9	HSW0700	5	HXW0783	20	TWK7018
HKW0731	10	HSW2060	4	HXW0785	20	
HKW0763	7	HSW2061	5	HXW0786	21	
HKW0766	7	HSW4512	4	HXW0801	17	
HKW0773	8	HXW0735	22	HXW0805	18	
HKW0820	9	HXW0741	22	HXW0840	11	
HKW1116	14	HXW0767	16	HXW1723	19	
HKW1540	15	HXW0768	16	HXW1768	16	
HKW1773	8	HXW0780	20	HXW1774	11	



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- Every product in this catalog is compliant to RoHS directive.

**⚠ CAUTION FOR SAFETY**

Please use our products properly based on our  
Drawing and Specification.