

## Products Specifications

Series		Sharp feeling type	Soft feeling type
Items			
Operating temperature range		-20°C to +70°C	
Rating (max.)		50mA 12V DC (Except) SKRP : 50mA 16V DC	5mA 12V DC SKPL/PM/PN : 50mA 16V DC
Rating (min.)		10 $\mu$ A 1V DC	
Electrical performance	Insulation resistance	100M $\Omega$ SKEY/PD : 50M $\Omega$	
	Voltage proof	250V AC for 1 min. SKRB/RH/RM/RR/EY/PD : 100V AC for 1min.	
Durability	Vibration	10 to 55 to 10Hz/min., the amplitude is 1.5mm for all the frequencies, in the 3 direction of X, Y and Z for 2 hours respectively	
	Lifetime	Shall be in accordance with individual specifications.	
Environmental performance	Cold	-30 $\pm$ 2°C for 96h	
	Dry heat	80 $\pm$ 2°C for 96h	
	Damp heat	60 $\pm$ 2°C, 90 to 95%RH for 96h	

### Note

We can raise the working temperature range for in-vehicle applications upon request. Contact us if you have any requirements of this kind.

### Specifications of LED (SKHJ)

Color of light	Power dissipation P (mW)	Forward pulse peak current IFP (mA)	Forward current IFDC (mA)	Reverse voltage VR (V)	Forward voltage VF (V) IF=10mA	Reverse current IR ( $\mu$ A) VR=4V	Peak emission wave length $\lambda$ peak (nm) IF=10mA	Spectral line half width $\Delta \lambda$ (nm) IF=10mA	Luminous intensity IV (mcd) IF=10mA
Red	40	80	15	4	2.7 max. 2.05TYP	5 max.	700 TYP	100 TYP	0.4min. 1.0 TYP
Pure green					2.7 max. 2.0 TYP	10 max.	555 TYP	20 TYP	0.8min. 2.0 TYP
Amber							590 TYP	30 TYP	0.4min. 1.0 TYP
Orange (High brightness)				3			630 TYP	40 TYP	1.5min. 4.0 TYP
Green (High brightness)				4	2.7 max. 2.05TYP		565 TYP	30 TYP	2.0min. 5.0 TYP

Power

Push

Slide

Rotary

Encoders

Jog Shuttle

Telephone-hook

Detector

Vibration/  
Tilt SensorsDual-in-line  
Package TypeMulti Control  
Devices

TACT

Sharp  
FeelingSoft  
FeelingSnap-in  
TypeSurface  
Mount TypeRadial  
Type

# 4.5mm Square Type TACT Switch

## SKHR Series

Compact snap-in type suitable for high density mounting.



Lead Free

### Features

- Permits high density mounting on a PC board.
- Snap-in type, can be mounted directly on a PC board.
- Some of output terminals can be also used as jumper leads, thus making circuit arrangement easy.

### Applications

- Operating switches in all types of electronic equipment such as audio equipment, office equipment, communication devices, measuring instruments, TV sets, VCRs, etc.

### Products Line

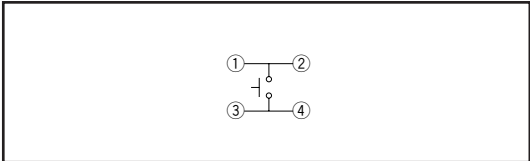
Products No.	Operating force	Operating direction	Travel (mm)	Rating (max.)	Operating life (5mA 5V DC)	Initial contact resistance	Stem color	Minimum packing unit (pcs.)
SKHRAAA010	0.98N	Vertical	0.25	50mA 12V DC	50,000cycles	100mΩ max.	Black	1,000
SKHRABA010	1.57N				30,000cycles		Dark gray	
SKHRAHA010	2.55N				50,000cycles		Red	

### Dimensions

Unit : mm

Style	PC board mounting hole dimensions (Viewed from switch mounting face)

### Circuit Diagram



### Note

Using a 1.6mm thick PC board is recommended.

Power

Push

Slide

Rotary

Encoders

Jog Shuttle

Telephone-hook

Detector

Vibration/Tilt Sensors

Dual-in-line Package Type

Multi Control Devices

TACT

Sharp Feeling

Soft Feeling

Snap-in Type

Surface Mount Type

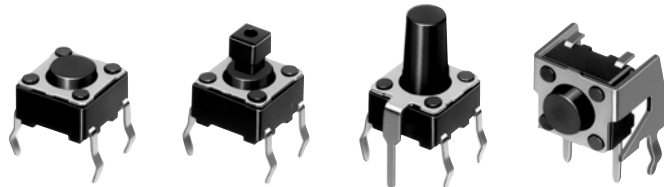
Radial Type

For detailed specifications, see **P.395**  
For soldering conditions, see **P.396**

# 6mm Square Type TACT Switch

SKHH Series

Easy to use 6mm square switches are available in wide varieties.



Lead Free



Car Use

## Features

- Snap-in type, can be mounted directly on a PC board.
- Some of output terminals can be also used as jumper leads, thus making circuit arrangement easy.
- Available with anti-ESD ground terminal.
- Although the recommended PC board thickness is 1.6mm, the models which can be mounted on PC boards of thickness 0.8 to 1mm are also available upon request.
- Standard knobs are available. (P.400) .

## Applications

- Operating switches in all types of electronic equipment such as audio equipment, office equipment, communication devices, measuring instruments, TV sets, VCRs, etc.

## Products Line

### Vertical Type

Products No.	Operating force	Operating direction	Travel (mm)	Rating (max.)	Operating life (5mA 5V DC)	Initial contact resistance	Stem color	Stem height	Minimum packing unit (pcs.)	Drawing No.
SKHHAJA010	0.98N	Vertical	0.25	50mA 12V DC	1,000,000cycles	100m Ω max.	Black	h=4.3mm	1,000	1
SKHHALA010	1.57N				500,000cycles		Dark gray			
SKHHAQA010	2.55N				200,000cycles		Red			
SKHHAKA010	0.98N				1,000,000cycles		Black	h=5mm		
SKHHAMA010	1.57N				500,000cycles		Dark gray			
SKHHARA010	2.55N				200,000cycles		Red			
SKHHCQA010	3.53N						Orange			
SKHHCRA010	5.10N						Yellow			
SKHHBVA010	0.98N				1,000,000cycles		Black	h=7mm		
SKHHBWA010	1.57N				500,000cycles		Dark gray			
SKHHBYA010	2.55N				200,000cycles		Red			
SKHHANA010	0.98N				1,000,000cycles		Black	h=9.5mm		
SKHHAPA010	1.57N				500,000cycles		Dark gray			
SKHHBSA010	2.55N				200,000cycles		Red			
SKHHDTA010	0.98N				1,000,000cycles		Black	h=13mm		
SKHHDUA010	1.57N				500,000cycles		Dark gray			
SKHHDHA010	0.98N				300,000cycles		Black	h=17mm		
SKHHDJA010	1.57N						Dark gray			

For detailed specifications, see **P.395**

For soldering conditions, see **P.396**

For standard knobs, see **P.400**

# Products Line

## Joint Stem Type

Products No.	Operating force	Operating direction	Travel (mm)	Rating (max.)	Operating life (5mA 5V DC)	Initial contact resistance	Stem color	Stem height	Minimum packing unit (pcs.)	Drawing No.
SKHHCWA010	0.98N	Vertical	0.25	50mA 12V DC	1,000,000cycles	100m Ω max.	Black	h=7.3mm	1,000	2
SKHHDAA010	1.57N				500,000cycles		Dark gray			
SKHHDGA010	2.55N				200,000cycles		Red			

## With Ground Terminal Type

Products No.	Operating force	Operating direction	Travel (mm)	Rating (max.)	Operating life (5mA 5V DC)	Initial contact resistance	Stem color	Stem height	Minimum packing unit (pcs.)	Drawing No.
SKHHPJA010	0.98N	Vertical	0.25	50mA 12V DC	1,000,000cycles	100m Ω max.	Black	h=4.3mm	1,000	3
SKHHPLA010	1.57N				500,000cycles		Dark gray			
SKHHPQA010	2.55N				200,000cycles		Red			
SKHHPKA010	0.98N				1,000,000cycles		Black	h=5mm		
SKHHPMA010	1.57N				500,000cycles		Dark gray			
SKHHPra010	2.55N				200,000cycles		Red			
SKHHQVA010	0.98N				1,000,000cycles		Black	h=7mm		
SKHHQWA010	1.57N				500,000cycles		Dark gray			
SKHHQYA010	2.55N				200,000cycles		Red			
SKHHPNA010	0.98N				1,000,000cycles		Black	h=9.5mm		
SKHHPPA010	1.57N				500,000cycles		Dark gray			
SKHHQNA010	2.55N				200,000cycles		Red			

## Horizontal Type

Products No.	Operating force	Operating direction	Travel (mm)	Rating (max.)	Operating life (5mA 5V DC)	Initial contact resistance	Stem color	Stem length	Minimum packing unit (pcs.)	Drawing No.
SKHHLMA010	0.98N	Horizontal	0.25	50mA 12V DC	1,000,000cycles	100m Ω max.	Black	ℓ =3.85mm	1,000	4
SKHHLNA010	1.57N				500,000cycles		Dark gray			
SKHHLPA010	2.55N				200,000cycles		Red			
SKHHLQA010	0.98N				1,000,000cycles		Black	ℓ =8.35mm		
SKHHLRA010	1.57N				500,000cycles		Dark gray			
SKHHLSA010	2.55N				200,000cycles		Red			
SKHHLUA010	0.98N				1,000,000cycles		Black	ℓ =5.85mm		
SKHHLVA010	1.57N				500,000cycles		Dark gray			
SKHHLWA010	2.55N				200,000cycles		Red			
SKHHNHA010	0.98N				500,000cycles		Black	ℓ =15.85mm		
SKHHNJA010	1.57N				300,000cycles		Dark gray			
SKHHNKA010	2.55N				200,000cycles		Red			

Power

Push

Slide

Rotary

Encoders

Jog Shuttle

Telephone-hook

Detector

Vibration/ Tilt Sensors

Dual-in-line Package Type

Multi Control Devices

TACT

Sharp Feeling

Soft Feeling

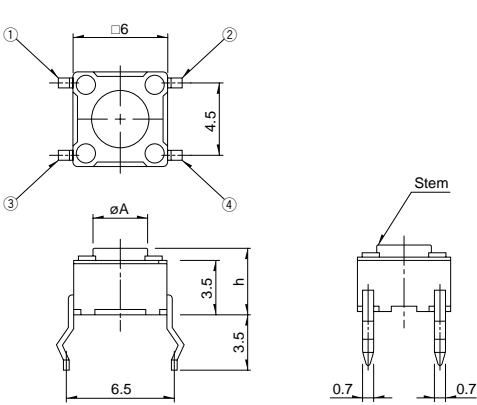
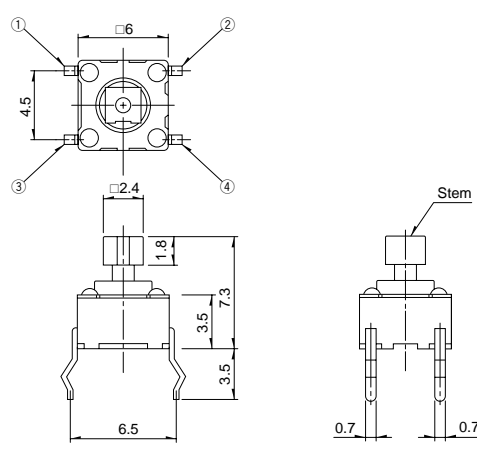
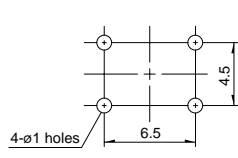
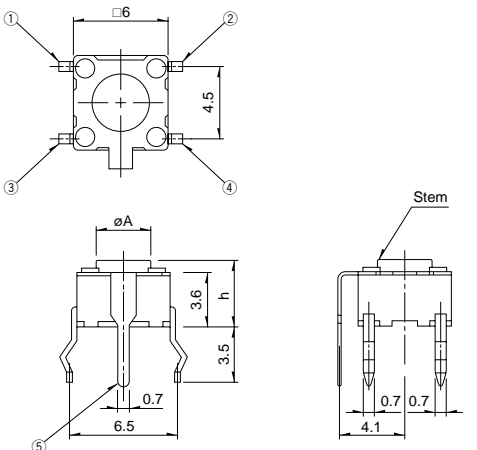
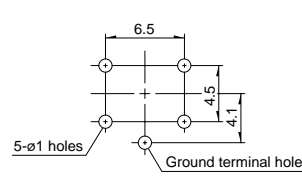
Snap-in Type

Surface Mount Type

Radial Type

Dimensions

Unit : mm

No.	Style	PC board mounting hole dimensions (Viewed from switch mounting face)	
1	<b>Vertical type</b> 	h	A
		4.3	3.5
		5	3.5
		7	3.3
		9.5	3
		13	3
		17	3
2	<b>Joint stem type SKHHCW/DA/DG</b> 		
3	<b>With ground terminal type</b> 	h	A
		4.3	3.5
		5	3.5
		7	3.3
		9.5	3
			

Unit : mm

Power
Push
Slide
Rotary
Encoders
Jog Shuttle
Telephone-hook
Detector
Vibration/Tilt Sensors
Dual-in-line Package Type
Multi Control Devices

### Note

Using a 1.6mm thick PC board is recommended.



Sharp Feeling
Soft Feeling
Snap-in Type
Surface Mount Type
Radial Type

# 6.2×6.5mm Square Type TACT Switch

SKHU Series

Surface mounting type for high density mounting and available in wide varieties, including a dust-proof type.



Lead Free



Car Use

## Features

- Dimensions: 6.2 x 6.5mm and a 2.5 to 3.1mm height. Good for high density mounting.
- Reflow solderable.
- Available with anti-ESD ground terminal.
- Packaged with a 12mm wide embossed taping.
- Dust-proof type is also available.

## Applications

- Operating switches in all types of electronic equipment such as audio equipment, office equipment, communication devices, measuring instruments, TV sets, VCRs, etc.

## Products Line

### Vertical Type

Products No.	Operating force	Operating direction	Travel (mm)	Rating (max.)	Operating life (5mA 5V DC)	Initial contact resistance	Stem color	Stem height	Drawing No.
SKHUABE010	0.98N	Vertical	0.25	50mA 12V DC	300,000cycles	100mΩ max.	Green	h=2.5mm	1
SKHUADE010	1.57N						Brown		
SKHUAFE010	2.55N						Red		

### With Ground Terminal Type

Products No.	Operating force	Operating direction	Travel (mm)	Rating (max.)	Operating life (5mA 5V DC)	Initial contact resistance	Stem color	Stem height	Drawing No.
SKHUPBE010	0.98N	Vertical	0.25	50mA 12V DC	300,000cycles	100mΩ max.	Green	h=2.5mm	2
SKHUPDE010	1.57N								
SKHUPFE010	2.55N								

### Dust-proof Type

Products No.	Operating force	Operating direction	Travel (mm)	Rating (max.)	Operating life (5mA 5V DC)	Initial contact resistance	Stem color	Stem height	Drawing No.
SKHUBBE010	1.57N	Vertical	0.25	50mA 12V DC	50,000cycles	100mΩ max.	Brown	h=3.1mm	3

### Dust-proof and With Ground Terminal Type

Products No.	Operating force	Operating direction	Travel (mm)	Rating (max.)	Operating life (5mA 5V DC)	Initial contact resistance	Stem color	Stem height	Drawing No.
SKHUQBE010	1.57N	Vertical	0.25	50mA 12V DC	50,000cycles	100mΩ max.	Brown	h=3.1mm	4
SKHUQEE010	2.55N						Red		

Power

Push

Slide

Rotary

Encoders

Jog Shuttle

Telephone -hook

Detector

Vibration/ Tilt Sensors

Dual-in-line Package Type

Multi Control Devices

TACT

Sharp Feeling

Soft Feeling

Snap-in Type

Surface Mount Type

Radial Type

Dimensions

Unit : mm

No.	Style	PC board land dimensions (Viewed from switch mounting face)
1	<b>Vertical type</b> 	
2	<b>With ground terminal type</b> 	
3	<b>Dust-proof type</b> 	
4	<b>Dust-proof and with ground terminal type</b> 	

Circuit Diagram

<b>Vertical type</b> 	<b>With ground terminal type</b> 
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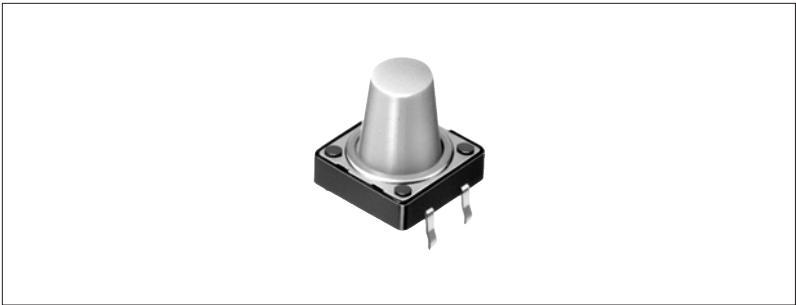
For detailed specifications, see **P.395**  
For soldering conditions, see **P.396**  
For specifications for the taping package, see **P.398**



# 12mm Square Long Stem Type TACT Switch

SKHK Series

Long stem type with height of 12mm for a stable operational feel.



Lead Free

## Features

- Stem height: 12mm.
- Snap-in type, can be mounted directly on PC board.
- Some of output terminals can be also used as jumper leads, thus making circuit arrangement easy.

## Applications

- All types of electronic control systems in audio products, business machines, communication equipment, measuring instruments, TV sets, VCRs, etc.

## Products Line

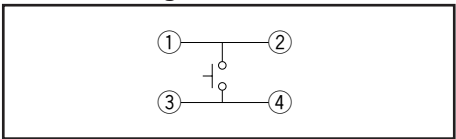
Products No.	Operating force	Operating direction	Travel (mm)	Rating (max.)	Operating life (5mA 5V DC)	Initial contact resistance	Stem color	Minimum packing unit (pcs.)
SKHKAAA010	1.27N	Vertical	0.3	50mA 12V DC	500,000 cycles	100mΩ max.	Light gray	1,000

## Dimensions

Unit : mm

Style	PC board mounting hole dimensions (Viewed from switch mounting face)

## Circuit Diagram



## Note

Using a 1.6mm thick PC board is recommended.

Power

Push

Slide

Rotary

Encoders

Jog Shuttle

Telephone-hook

Detector

Vibration/Tilt Sensors

Dual-in-line Package Type

Multi Control Devices

TACT

Sharp Feeling

Soft Feeling

Snap-in Type

Surface Mount Type

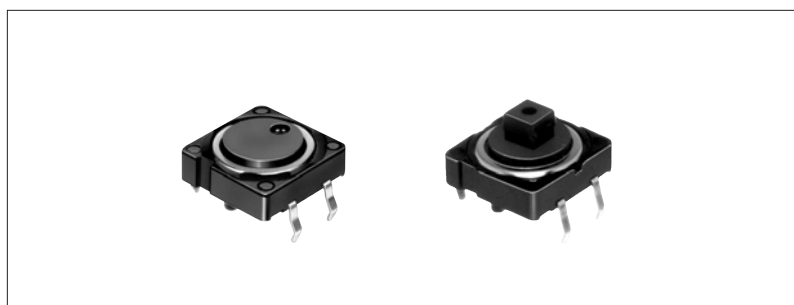
Radial Type

For detailed specifications, see P.395  
For soldering conditions, see P.396

# 12mm Square Type TACT Switch

SKHC Series

Two models with stable operational joints and a flat stem.



Lead Free

## Features

- Snap-in type, can be mounted directly on a PC board.
- Some of output terminals can be also used as jumper leads, thus making circuit arrangement easy.
- Standard knobs are available. (P.400).

## Applications

- All types of audio products, business machines, communication equipment, measuring instruments, TV sets, VCRs, etc.

## Products Line

Products No.	Operating force	Operating direction	Travel (mm)	Rating (max.)	Operating life (5mA 5V DC)	Initial contact resistance	Stem color	Variety	Minimum packing unit (pcs.)	Drawing No.
SKHCAEA010	0.74N	Vertical	0.3	50mA 12V DC	500,000cycles	100m Ω max.	Blue	Joint stem	1,000	1
SKHCAAA010	1.27N				1,000,000cycles		Black			
SKHCACA010	2.55N				500,000cycles		Dark gray			
SKHCAFA010	0.74N				500,000cycles		Blue	Flat stem		2
SKHCABA010	1.27N				1,000,000cycles		Black			
SKHCADA010	2.55N				500,000cycles		Dark gray			

Power

Push

Slide

Rotary

Encoders

Jog Shuttle

Telephone-hook

Detector

Vibration/Tilt Sensors

Dual-in-line Package Type

Multi Control Devices

TACT

Sharp Feeling

Soft Feeling

Snap-in Type

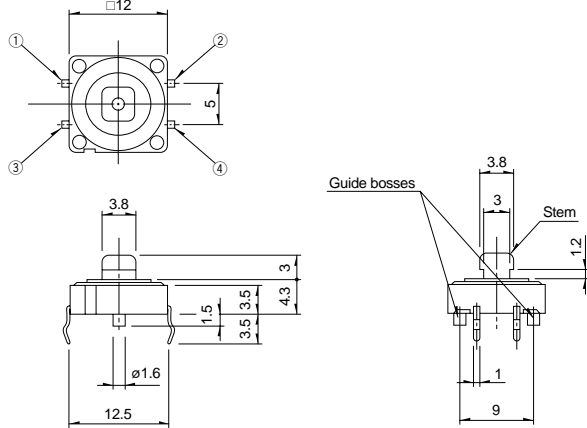
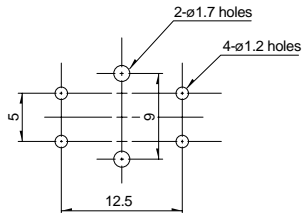
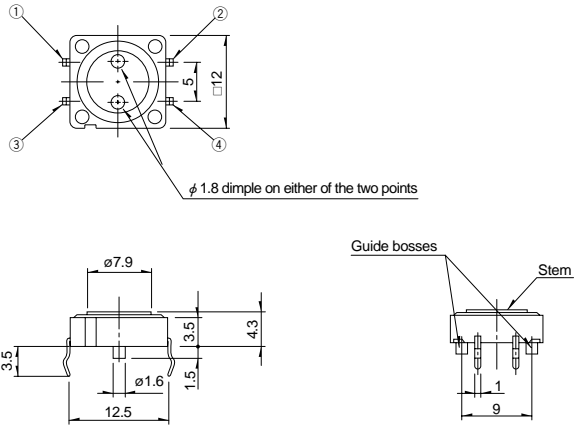
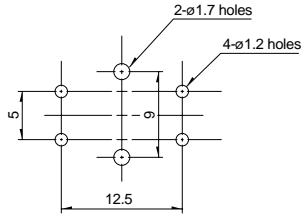
Surface Mount Type

Radial Type

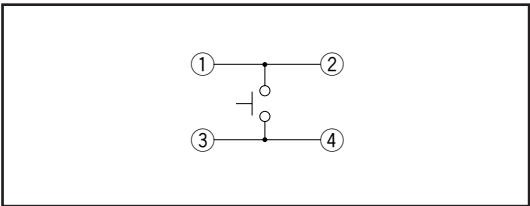
For detailed specifications, see **P.395**  
For soldering conditions, see **P.396**  
For standard knobs, see **P.400**

Dimensions

Unit : mm

No.	Style	PC board mounting hole dimensions (Viewed from switch mounting face)
1	<div><p><b>Joint stem type</b></p></div>	
2	<div><p><b>Flat stem type</b></p></div>	

Circuit Diagram



Note

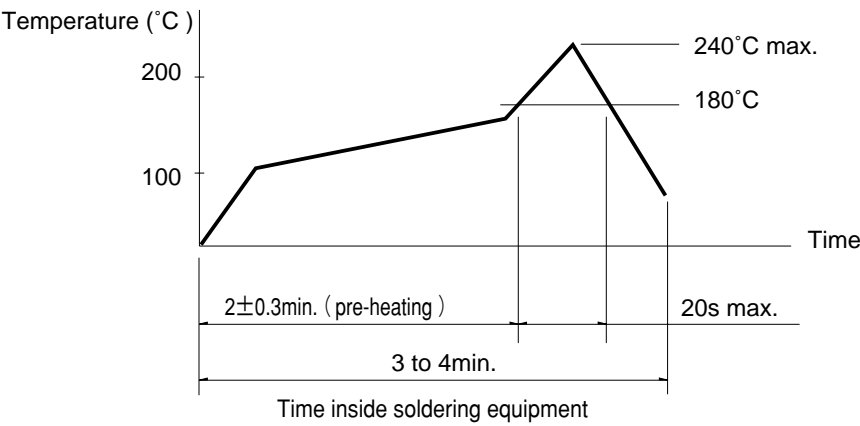
Using a 1.6mm thick PC board is recommended.

Soldering Conditions

Condition for Reflow

Available for Surface Mount Type. (Except SKHM Series)

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



Notes

- 1. The condition mentioned above is the temperature 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 PC board's material, size, thickness, etc. Care should be taken to prevent the switch's surface temperature from exceeding 260°C. (Except a part of Variety SKRM, SKRR Series)
- 2. Soldering conditions differ depending on reflow soldering machines. You are requested to verify the soldering conditions thoroughly beforehand.
- 3. Ask us for the specifications of lead-free products.

Conditions for Auto-dip

Available for Snap-in Type and Radial Type

Items	Condition
Flux built-up	Mounting surface should not be coated with flax
Preheating temperature	Ambient temperature of the soldered surface of PC board. 100°C max.
Preheating time	45s max.
Soldering temperature	255°C max.
Continuous dipping time	5s max.
Number of soldering	2times max.

Notes

- 1. Consult with us for TACT switch washing conditions.
- 2. Prevent flux penetration from the top side of the TACT switch.
- 3. Switch terminals and a PC board should not be coated with flux prior to soldering.
- 4. The second soldering should be done after the switch returns to normal temperature.
- 5. Use the flux with a specific gravity of at least 0.83. (MH-820V or CF220V by TAMURA Corporation, or their equivalents.)

Manual Soldering

Available for Manual Soldering Type

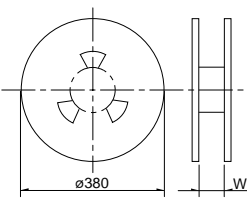
Items	Condition
Soldering temperature	350°C max.
Continuous soldering time	3s max.

## Specification of Embossed Taping Package

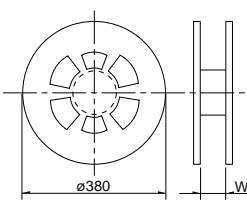
### Taping Packaging for Auto-insertion

Reel Size

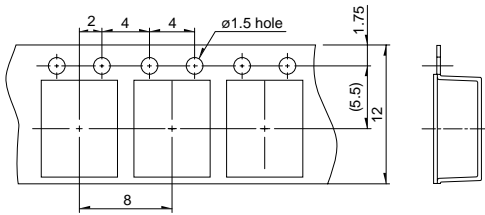
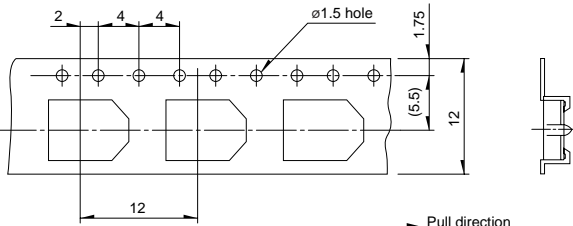
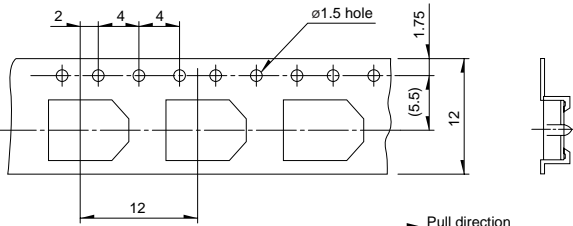
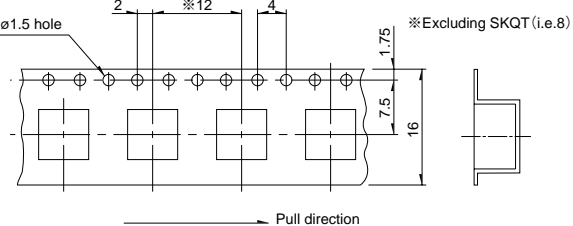
Unit : mm

Paper Reel	Applicable series	W
	SKHM, SKHU, SKQG SKQL, SKQM, SKQR SKQY, SKRB, SKRE SKRAAA, SKRAAB	12.4
	SKQT, SKRH SKRAAC, SKRAAF SKPG, SKPN	16.4
	SKQUBA, SKQADB	32.4

Unit : mm

Plastic Reel	Applicable series	W
	SKRK, SKRM SKRN, SKRP SKRT, SKPM	13.5
	SKRR	17.5

Unit : mm

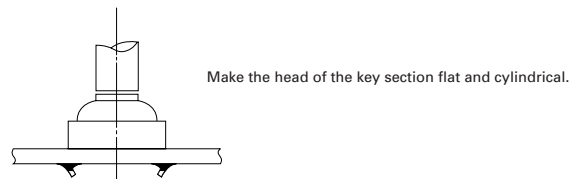
Applicable series	Qty / reel (pcs.) (Minimum packing unit)	Tape dimensions
SKQM, SKPMAM SKPMAN, SKPMAP SKPMAQ	2,000	
SKPMAR, SKPMAS SKPMAT	2,500	
SKHM, SKHU SKQY, SKRT SKRAAA, SKRAAB	3,000	
SKQG	5,000 (Without stem type) 4,000 (With stem type)	
SKRP	4,000	
SKRKA, SKRKAH	4,500	
SKQR, SKRB, SKRM	10,000	
SKRE, SKRN, SKRKAG	5,000	
SKQL	3,000	
SKPG	1,200	
SKRH	1,300	
SKRAAC, SKRAAF	1,400	
SKQT	3,000	
SKRR	7,000	
SKPN	1,100	
SKQUBA	750	
SKQADB	600	

### Note

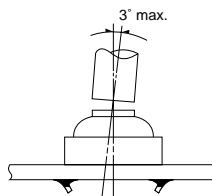
Consult with us for a  $\phi$  330 mm diameter reel.

## Caution

- Note that terminals might suffer deformation of the switch and the defects in electrical performance, if the load is applied to the terminals during soldering .
- If you use a through-hole PC board or a PC board thinner or thicker than the recommendation, here may be greater heat stress. Verify the soldering conditions thoroughly before use.
- When soldering twice, wait until the first soldered portion cools to normal temperature. Continuous heating will deform the external portions, loosen or dislodge terminals, or may deteriorate their electrical characteristics.
- Verify soldering conditions under actual mass production conditions.
- This product is designed and manufactured assuming that it is to be used with the resistance for direct current. If you use other kinds of resistance [inductive (L) or capacitive (C) ], consult with us beforehand.
- For the sizes of holes and patterns on a PC board for mounting a switch, refer to the recommended dimensions in the outline drawings.
- This switch is designed for manually operated units. Do not use this switch in a mechanical detection unit. For detection purposes, please use our detection switch.
- The switch will be break if you apply a greater stress than that specified. Take great care not to let the switch be subject to greater stress than specified.
- Do not press the side of the stem.
- Be sure to push the center position of a flat stem switch. Extreme care is required for a hinge structure type because the stem press position moves when it is pressed.
- If you put the board with the switch in the oven so as to harden adhesive for other parts, consult with us.
- When corrosive gas is generated by a peripheral material of a product using the TACT switch, malfunctions such as imperfect contacts can occur. Check this point thoroughly in advance.
- The contact resistance of a rubber contact type changes depending on pressure load. Confirm that it functions sufficiently when you use this TACT switch with a voltage divider circuit.
- Be aware of dust intrusion into an unsealed-type TACT switch.
- Storage methods
  - If you do not use the product immediately, store it just as delivered in the following environment: with neither direct sunshine nor corrosive gas and in normal temperatures. However, it is recommended that you should use it as soon as possible or within six months from the date of delivery at the most.
  - After you break the seal, you should put the remainder in a plastic bag to shut out outside air, and store it in the same environment mentioned above. You should use it up as soon as possible.
  - Do not stack too many switches for safety.
  - Store the key switches with the switch in the released position.
- Design the rubber dome key section in SKEY and SKPD Series as illustrated below:



- Design the inclination of the rubber dome key section in SKEY and SKPD Series within the angle shown below:



Power

Push

Slide

Rotary

Encoders

Jog Shuttle

Telephone -hook

Detector

Vibration/ Tilt Sensors

Dual-in-line Package Type

Multi Control Devices

TACT

Sharp Feeling

Soft Feeling

Snap-in Type

Surface Mount Type

Radial Type