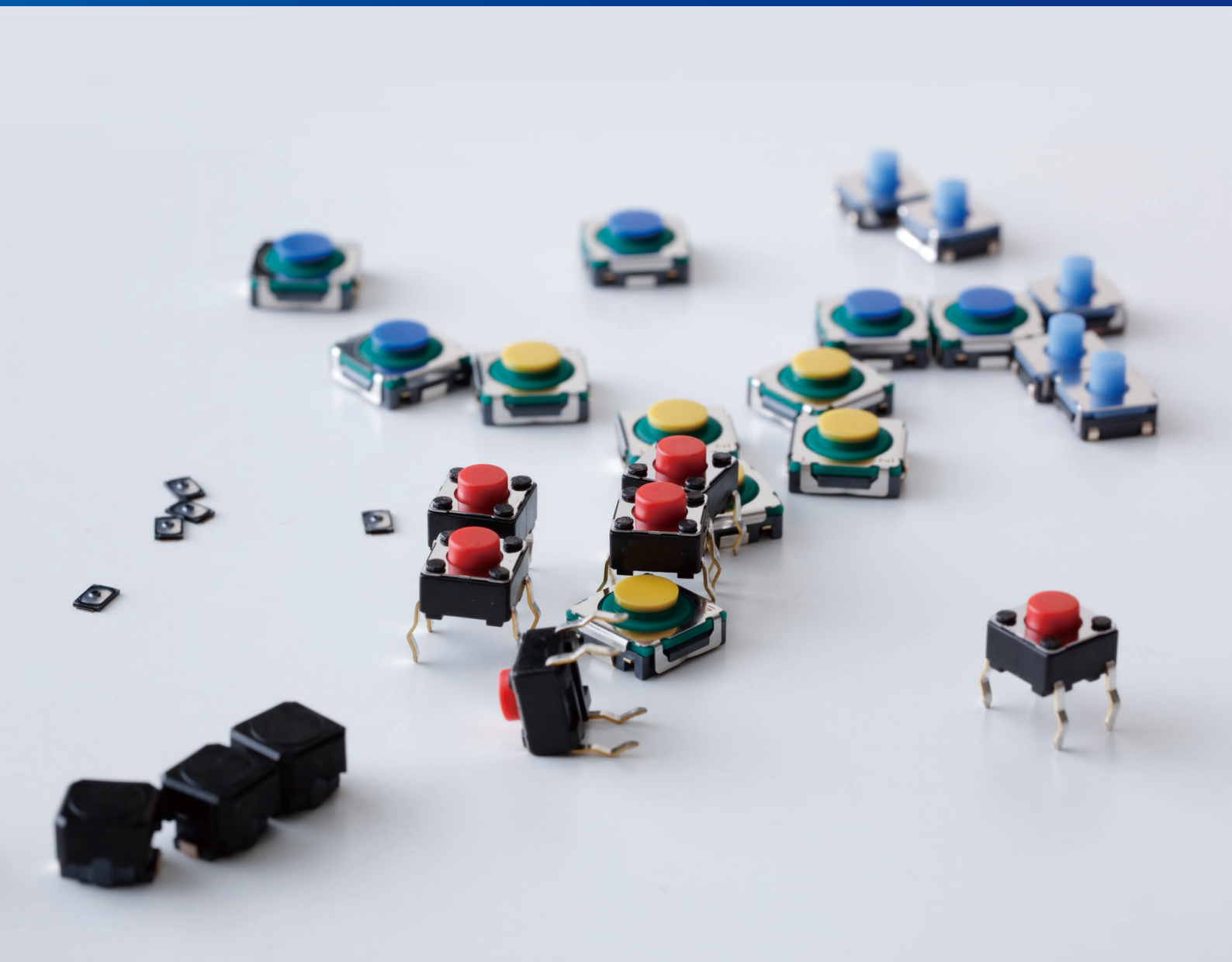
ALPSALPINE
Perfecting the Art of Electronics

Reference Edition

TACT Switch™ Selection Guide

Ver 1.0



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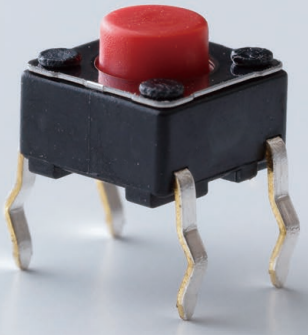
TACT Switch™ is an Alps Alpine registered trademark

Alps Alpine (formerly Alps Electric) started TACT Switch™ production in 1976.

More than **155 billion TACT Switch™ units** were produced by 2024.
That comes to **5 billion units** per year, or approximately 160 every second.
Alps Alpine supplies over **2,000 customers**, enjoying a world top-class share for this type of switch in a packed market.

Need help selecting a TACT Switch™? Contact us!

Product Inquiries
https://tech.alpsalpine.com/e/inquiry/catalog/



CHAPTER
01

TACT Switch™ Basics

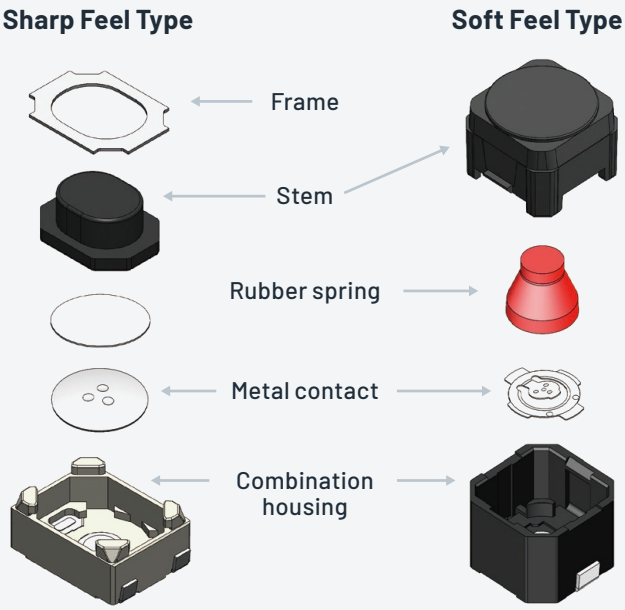
What is a TACT Switch™?

A TACT Switch™ is a push-button switch that delivers distinct tactile feedback (a click feel) when operated. As human-machine interfaces for consumer electronics, automotive systems, industrial electrical equipment and other applications, TACT Switch™ products have many different uses. They are also referred to as “tactile switches.”

TACT Switch™ Structure

TACT Switch™ products using metal in the contact and stem produce a sharp feel. Those employing rubber have a soft feel. The operating force (the load required to activate a switch) and travel of a TACT Switch™ will depend on where it will be installed and its purpose.

Although the structure is very simple – the circuit closes when a metal contact moves vertically to touch a fixed contact – the feel produced varies according to the shape and material combinations of the parts.



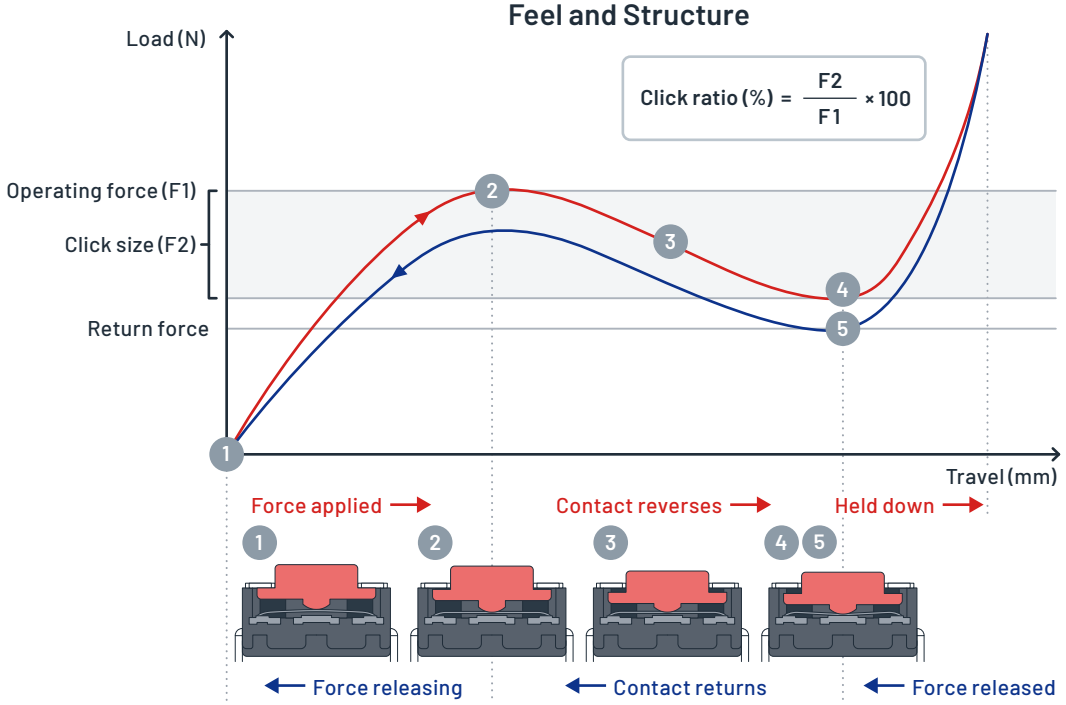
Feeling Curves

A feeling curve is a numerical representation of the load on the finger and switch travel from the moment the switch is pushed to the point the circuit closes.

Feel-Determining Factors

Operating force	The load required to turn the switch on, measured in Newtons (N)
Return force	The force returning the switch to its initial position
Travel	The distance the switch moves with application of a given force; also called "stroke"
Click ratio	The feel experienced on pressing the switch, expressed as a numerical value

Feel and Structure



Dust and Water Resistance

Dust and water resistance specifications indicate the following.

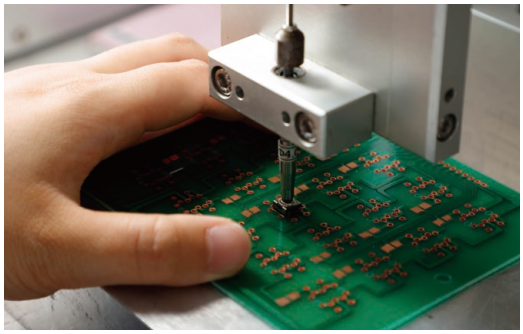
IP67	No ingress of water when immersed in water up to 1 meter for 30 minutes
	No ingress of dust when left in a dusty environment for 8 hours
IP68	No ingress of water even when operated while immersed in water (The number of operations is not specified; refer to individual specification sheets)

CHAPTER
02

Why Customers Choose Alps Alpine

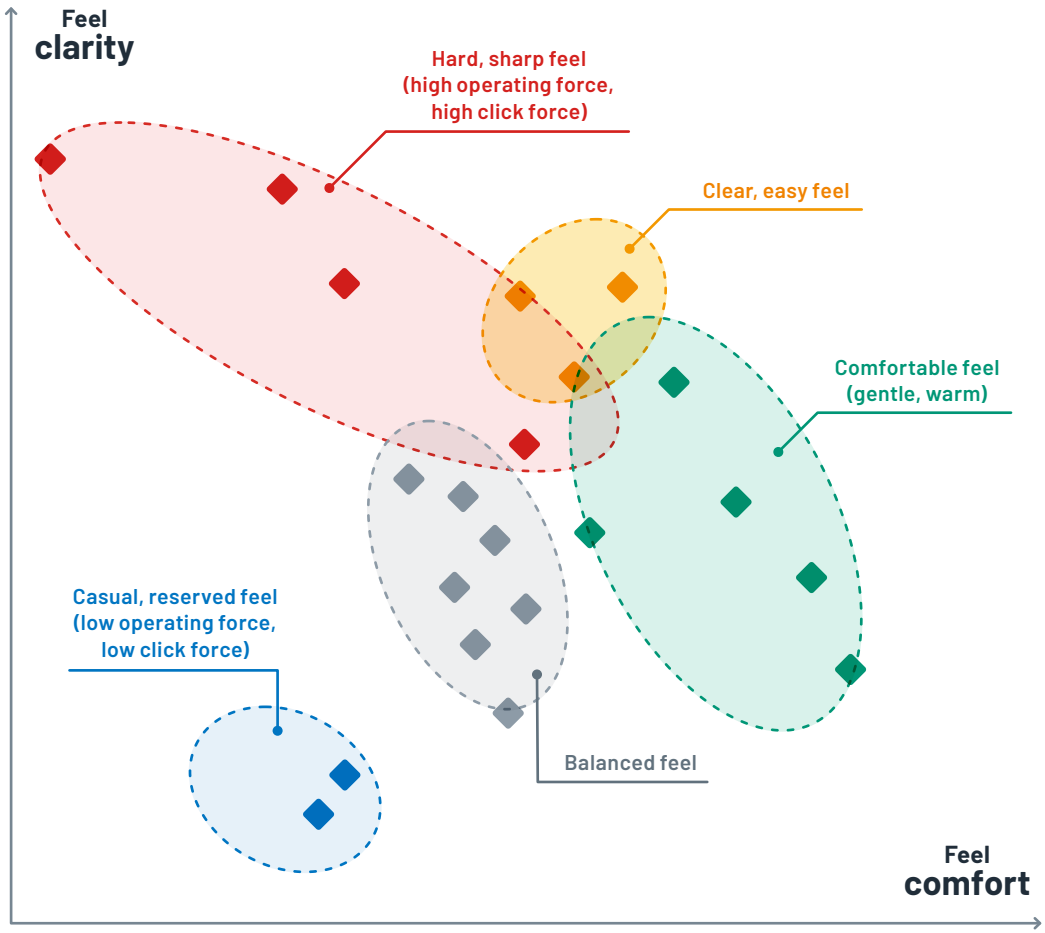
Alignment with Customer Needs – Products for Every Kind of Feel

The feel of a switch when pushed has a direct influence on a device's brand image.



If you are unsure about the specifications required to achieve a desired feel, ask Alps Alpine. We are **feel professionals**.

Alps Alpine also leverages half a century of design expertise to **analyze how emotional language and product specifications correspond**. We can even **tailor products to your needs to achieve the feel you require**.



Exceptional Market Performance

Alps Alpine has pioneered development in this domain, supplying TACT Switch™ products to some of the world's leading manufacturers since 1976. **Around 155 billion units** have been produced to date.

Unbeatable Product Variety

Alps Alpine **deploys a standard lineup of more than 250 models**.

An enormous array of options tends to every requirement, including variations of size, dust and water resistance, compatibility with automotive use, short travel, and stiff push feel, as appropriate for the end product.

Alps Alpine's TACT Switch™ selection is unbeatable.

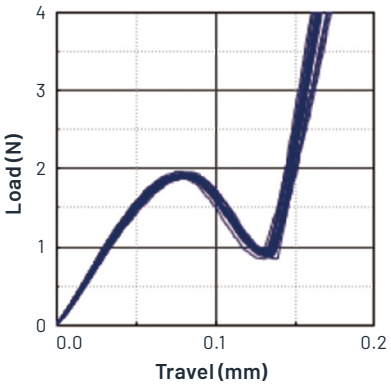
Force-Travel Maps of
TACT Switch™ Varieties

Stable Production and Low Variability Enabled by Self-Developed Automatic Machinery

Alps Alpine manufactures **around 5 billion units** per year using automatic machinery designed in-house. This enables a stable supply of products with low quality variability.

We are also actively deploying our own self-developed AI to bring about improvements to production lines. While readily embracing cutting-edge technology, we realize quality, cost and delivery (QCD) performance allowing us to flexibly adapt to customer requirements. The graph on the right is an example showing the variation of operating feel, expressed as feeling curves, within the same batch of products.

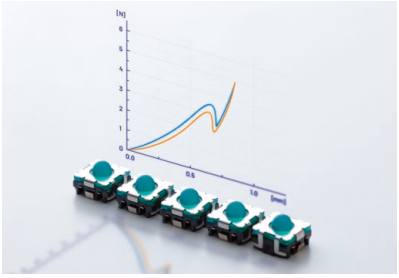
Example: Alps Alpine SKSW Series



100% Inspections Every Day for Peace of Mind

Alps Alpine endeavors to minimize the number of TACT Switch™ products supplied to customers with poor feel.

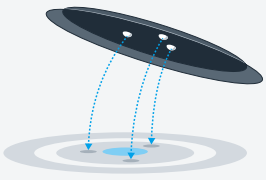
We do this by **inspecting all TACT Switch™ units** prior to shipment, using automatic machinery to measure feel.



Original Structure Realizing High Contact Reliability

Resilience to continuity issues caused by ingresses of foreign matter inside a switch is improved through either the inclusion of three protuberances, or dots, on the metal dome, or the insertion of a groove in the fixed contact. (See diagrams below)

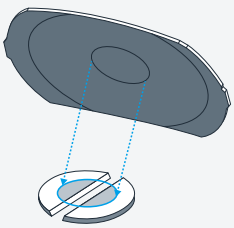
Three Dots (on the Metal Dome)



If board debris or other dust gets caught under one of the dots, contact occurs via the other dots.

If board debris or other dust gets caught under the dome, contact occurs via the dots.

Groove (in the Fixed Contact)



If foreign matter adheres to the surface, contact occurs on the other side of the groove.

If foreign matter enters the center, it falls into the groove, allowing contact to remain stable.

More Information Here

In Pursuit of Sound and Feel – Examples

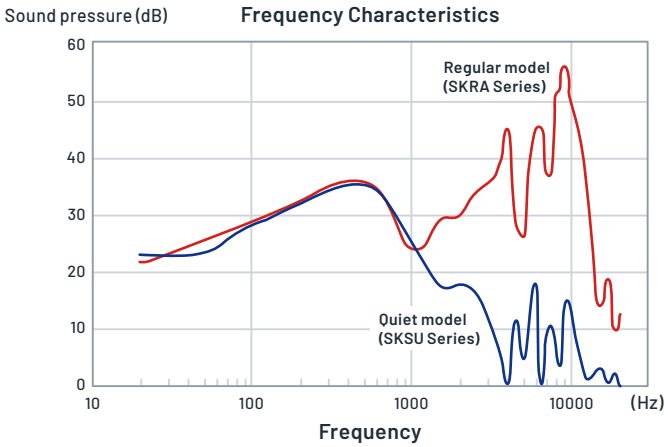
Alps Alpine is constantly looking to improve products so they are of a better quality when delivered to customers. One way we do this is by crafting sound and feel.

Example 1 Crafting Click Feel While Minimizing Operating Sound

Achieving a distinct click feel with a TACT Switch™ usually coincides with a proportionate increase in operating sound.

At Alps Alpine, we are developing ways to minimize operating sound while retaining the click feel.

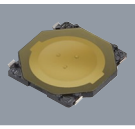
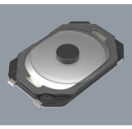
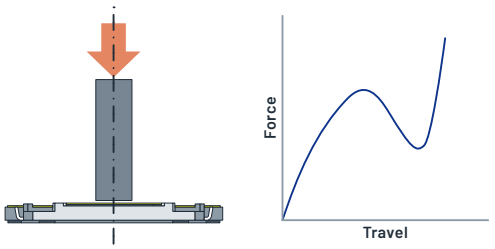
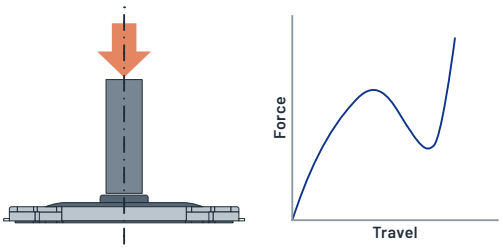
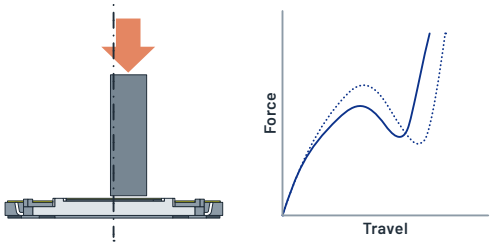
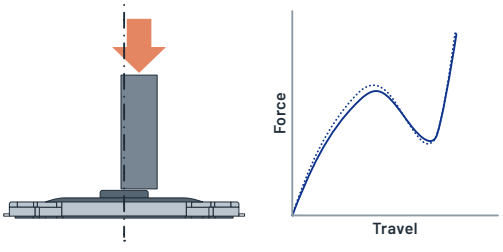
More Information Here



Example 2 Adding a Projection to Prevent Deterioration of Feel

Smaller end products have led to the development of smaller switches, inevitably resulting in a deterioration of feel due to even the slightest positional deviation during integration. The reason? Deviation of the position of the press action relative to the center of the switch. Our answer to this is to add a projection.

Adding a projection to a switch helps to reduce deterioration of feel as the projection will push down the center of the switch even if some degree of deviation has occurred during integration into the end product.

Press position	 Without projection	 With projection
Center		
Off-center		

CHAPTER
03

Product Guide 1
Application Examples

Here are some examples of applications that employ Alps Alpine products. Please use it as a guide when selecting a product.

Home Electronics

Home TVs

SKRH
4-way control

Specifications
- 7.35×7.5mm
- h=1.8mm
- 200k/1,000k cycles/direction
- Dust/water resistance=N/A
- N=1.2/1.23(4-way); 2.35 (center)
- Surface mount

Home Audio Systems

SKHH
Enduring bestseller

Specifications
- 6.0×6.0mm
- h=4.3-17.0mm
- 200k/300k/500k/1,000k cycles
- Dust/water resistance=N/A
- N=0.98-5.1
- Snap-in

Home Household Appliances

SKHH
Enduring bestseller

Specifications
- 6.0×6.0mm
- h=4.3-17.0mm
- 200k/300k/500k/1,000k cycles
- Dust/water resistance=N/A
- N=0.98-5.1
- Snap-in

SKHM
With ground terminal

Specifications
- 6.2×6.5mm
- h=3.1mm
- 200k/300k/500k cycles
- Dust/water resistance=N/A
- N=0.98/1.57/2.35
- Surface mount

SKHU
Dust-proof, drip-proof

Specifications
- 6.2×6.3mm
- h=2.5mm/3.1mm
- 100k/300k cycles
- Dustproof=- /IP6X equivalent
- N=0.98/1.57/2.55
- Surface mount

Home Water Appliances

SKHU
Dust-proof, drip-proof

Specifications
- 6.2×6.3mm
- h=2.5mm/3.1mm
- 100k/300k cycles
- Dustproof=- /IP6X equivalent
- N=0.98/1.57/2.55
- Surface mount

SKRC
Dust-proof, water-proof

Specifications
- ø9mm
- h=13.0mm
- 100k cycles
- Dustproof=IP6X equivalent
- Waterproof=IPX7
- N=1.57/2.55
- Radial

SKQB
Dust-proof, water-proof

Specifications
- 10.0×10.0mm/11.1×11.9mm
- h=5.0mm/11.0mm/13.0mm/23.2mm
- 100k cycles
- Dust/water resistance=With individual conditions
- N=1.57/2.55
- Snap-in

SKHW
Dust-proof, drip-proof

Specifications
- 6.0×6.0mm
- h=4.3mm/5.0mm
- 500k/1,000k cycles
- Dustproof=IP6X equivalent
- N=1.57/2.55
- Snap-in

Home Electronic Cigarettes

TIP
For portable devices, go for a compact type

SKRP
Compact, high operating force

Specifications
4.2×3.2mm
h=2.5mm
50k/100k/300k/1,000k cycles
Dust/water resistance=N/A
N=1.0/1.57/2.55/3.0/4.0/5.0
Surface mount

SKQG
Low-profile

Specifications
5.2×5.2mm
h=1.5mm
100k/500k/1,000k cycles
Dust/water resistance=N/A
N=0.98/1.57/2.55/3.43
Surface mount

SKRB
Low-profile

Specifications
4.8×4.8mm
h=0.55mm
200k/500k/1,000k/2,000k cycles
Dust/water resistance=N/A
N=1.1/1.57/2.55/3.5
Surface mount

SKUB
Smallest class, dust-/water-proof

Specifications
2.4×1.4mm
h=0.55mm
500k cycles
Waterproof=IPX8
Dustproof=IP6X equivalent
N=1.6
Surface mount

Home Smart Speakers

TIP
Go for a low-height, slim profile

SKRB
Low-profile

Specifications
4.8×4.8mm
h=0.55mm
200k/500k/1,000k/2,000k cycles
Dust/water resistance=N/A
N=1.1/1.57/2.55/3.5
Surface mount

SKRW
Low-profile

Specifications
3.7×3.7mm
h=0.35mm
50k/500k/1,000k cycles
Dust/water resistance=N/A
N=1.27/1.57/2.35
Surface mount

SKRM
Low-profile

Specifications
4.5×4.5mm
h=0.4mm
100k/500k cycles
Dust/water resistance=N/A
N=1.57/2.55
Surface mount

Home Intercom Systems

TIP
Go for a dust-proof, drip-proof type

SKHW
Dust-proof, drip-proof

Specifications
6.0×6.0mm
h=4.3mm/5.0mm
500k/1,000k cycles
Dustproof=IP6X equivalent
N=1.57/2.55
Snap-in

SKHU
Dust-proof, drip-proof

Specifications
6.2×6.3mm
h=2.5mm/3.1mm
100k/300k cycles
Dustproof=－/IP6X equivalent
N=0.98/1.57/2.55
Surface mount

SKRP
Compact, high operating force

Specifications
4.2×3.2mm
h=2.5mm
50k/100k/300k/1,000k cycles
Dust/water resistance=N/A
N=1.0/1.57/2.55/3.0/4.0/5.0
Surface mount

Home Game Consoles

TIP
For gaming devices, go for a long operating life

SKUA
6-million-cycle long life

Specifications
7.0×7.5mm
h=0.7mm
6,000k cycles
Waterproof=IPX7
Dustproof=IP6X equivalent
N=2.0
Surface mount

SKRR
5-million-cycle long life

Specifications
7.5×7.0mm
h=0.6mm
5,000k cycles
Dust/water resistance=N/A
N=1.0
Surface mount

SKSJ
Half-mount type

Specifications
4.8×3.25mm
h=3.3mm
1,000k cycles
Dust/water resistance=N/A
N=1.6
Surface mount

Mobile Devices

Mobile Smartphones

TIP
Go for dust and water resistance

SKSV
Compact, dust-/water-proof

Specifications
2.8×1.9mm
h=0.55mm
100k/300k cycles
Waterproof=IPX7
Dustproof=IP6X equivalent
N=1.0/1.6/2.2
Surface mount

SKSW
Compact, dust-/water-proof

Specifications
3.0×2.0mm
h=0.6mm
300k/500k cycles
Waterproof=IPX7/8
Dustproof=IP6X equivalent
N=1.8/2.4/3.1/3.3
Surface mount

SKTA
Compact, dust-/water-proof

Specifications
2.6×1.6mm
h=0.53mm
300k cycles
Waterproof=IPX7
Dustproof=IP6X equivalent
N=1.0/1.6
Surface mount

SKUB
Smallest class, dust-/water-proof

Specifications
2.4×1.4mm
h=0.55mm
500k cycles
Waterproof=IPX8
Dustproof=IP6X equivalent
N=1.6
Surface mount

Mobile Headsets

TIP
Go for a low operating force

SKSV
Compact, dust-/water-proof

Specifications
2.8×1.9mm
h=0.55mm
100k/300k cycles
Waterproof=IPX7
Dustproof=IP6X equivalent
N=1.0/1.6/2.2
Surface mount

SKSW
Compact, dust-/water-proof

Specifications
3.0×2.0mm
h=0.6mm
300k/500k cycles
Waterproof=IPX7/8
Dustproof=IP6X equivalent
N=1.8/2.4/3.1/3.3
Surface mount

SKTA
Compact, dust-/water-proof

Specifications
2.6×1.6mm
h=0.53mm
300k cycles
Waterproof=IPX7
Dustproof=IP6X equivalent
N=1.0/1.6
Surface mount

SKUB
Smallest class, dust-/water-proof

Specifications
2.4×1.4mm
h=0.55mm
500k cycles
Waterproof=IPX8
Dustproof=IP6X equivalent
N=1.6
Surface mount

Mobile Tablets

TIP
Go for a side-push type

SKTD
Low-profile, side-mount type

Specifications
3.9×2.9mm
h=1.55mm
200k cycles
Waterproof=IPX7
Dustproof=IP6X equivalent
N=1.6
Surface mount

SKSN
Mid-mount type

Specifications
6.2×3.0mm
h=3.5mm
100k/500k/1,000k cycles
Dust/water resistance=N/A
N=1.6/2.4/4.5/5.0
Surface mount

SKSL
Half-mount type

Specifications
4.5×2.6mm
h=2.2mm
100k/600k cycles
Dust/water resistance=N/A
N=1.6/2.2/3.5
Surface mount

Mobile Notebook PCs

TIP
Go for balance of compact size, low profile and strength

SKQG
Low-profile

Specifications
5.2×5.2mm
h=1.5mm
100k/500k/1,000k cycles
Dust/water resistance=N/A
N=0.98/1.57/2.55/3.43
Surface mount

SKSG
Compact, high operating force

Specifications
3.0×2.7mm
h=1.4mm
200k cycles
Dust/water resistance=N/A
N=1.6/2.0/2.8/4.0
Surface mount

Healthcare Equipment

Healthcare Pedometers

TIP
Go for a low-profile side-push type

SKUB
Smallest class, dust-/water-proof

Specifications
2.4×1.4mm
h=0.55mm
500k cycles
Waterproof=IPX8
Dustproof=IP6X equivalent
N=1.6
Surface mount

SKTD
Low-profile, side-mount type

Specifications
3.9×2.9mm
h=1.55mm
200k cycles
Waterproof=IPX7
Dustproof=IP6X equivalent
N=1.6
Surface mount

SKSL
Half-mount type

Specifications
4.5×2.6mm
h=2.2mm
100k/600k cycles
Dust/water resistance=N/A
N=1.6/2.2/3.5
Surface mount

Healthcare Blood Pressure Monitors

TIP
Go for a popular, easy-to-use square type

SKHH
Enduring bestseller

Specifications
6.0×6.0mm
h=4.3-17.0mm
200k/300k/500k/1,000k cycles
Dust/water resistance=N/A
N=0.98-5.1
Snap-in

SKHM
With ground terminal

Specifications
6.2×6.5mm
h=3.1mm
200k/300k/500k cycles
Dust/water resistance=N/A
N=0.98/1.57/2.35
Surface mount

Healthcare Other Healthcare Equipment

Ultra-shortwave therapy device

Electro-cardiograph

SKQG
Low-profile

Specifications
5.2×5.2mm
h=1.5mm
100k/500k/1,000k cycles
Dust/water resistance=N/A
N=0.98/1.57/2.55/3.43
Surface mount

SKRA
Middle-stroke type

Specifications
6.2×6.2mm
h=3.5mm/5.1mm
100k/2,000k/3,000k/4,000k cycles
Waterproof=－/IPX7
Dustproof=IP6X equivalent
N=0.6/1.2/1.96/2.0/2.45/3.43/3.92
Surface mount

SKRT
Side-push type with excellent feel

Specifications
4.5×3.4mm
h=3.3mm
100k cycles
Dust/water resistance=N/A
N=1.6
Surface mount

SKRP
Compact, high operating force

Specifications
4.2×3.2mm
h=2.5mm
50k/100k/300k/1,000k cycles
Dust/water resistance=N/A
N=1.0/1.57/2.55/3.0/4.0/5.0
Surface mount

SKHH
Enduring bestseller

Specifications
6.0×6.0mm
h=4.3-17.0mm
200k/300k/500k/1,000k cycles
Dust/water resistance=N/A
N=0.98-5.1
Snap-in

Healthcare Automated External Defibrillators (AEDs)

SKHM
With ground terminal

Specifications
6.2×6.5mm
h=3.1mm
200k/300k/500k cycles
Dust/water resistance=N/A
N=0.98/1.57/2.35
Surface mount

SKRA
Middle-stroke type

Specifications
6.2×6.2mm
h=3.5mm/5.1mm
100k/2,000k/3,000k/4,000k cycles
Waterproof=－/IPX7
Dustproof=IP6X equivalent
N=0.6/1.2/1.96/2.0/2.45/3.43/3.92
Surface mount

SKHU
Dust-proof, drip-proof

Specifications
6.2×6.3mm
h=2.5mm/3.1mm
100k/300k cycles
Dustproof=－/IP6X equivalent
N=0.98/1.57/2.55
Surface mount

SKHW
Dust-proof, drip-proof

Specifications
6.0×6.0mm
h=4.3mm/5.0mm
500k/1,000k cycles
Dustproof=IP6X equivalent
N=1.57/2.55
Snap-in

Industrial Equipment

Industrial Manufacturing Equipment

TIP
Go for a long operating life

SKQE
10-million-cycle long life

Specifications
12.0×12.0mm
h=4.3mm/7.3mm
10,000 cycles
Dustproof=IP6X equivalent
N=1.57/2.55
Snap-in

SKHC
Stem with excellent feel

Specifications
12.0×12.0mm
h=4.3mm/7.3mm
500k/1,000k/3,000k cycles
Dust/water resistance=N/A
N=0.74/1.27/2.55
Snap-in

SKHH
Enduring bestseller

Specifications
6.0×6.0mm
h=4.3-17.0mm
200k/300k/500k/1,000k cycles
Dust/water resistance=N/A
N=0.98-5.1
Snap-in

SKHM
With ground terminal

Specifications
6.2×6.5mm
h=3.1mm
200k/300k/500k cycles
Dust/water resistance=N/A
N=0.98/1.57/2.35
Surface mount

Industrial Inverters/Programmable Logic Controllers (PLCs)

SKHU
Dust-proof, drip-proof

Specifications
6.2×6.3mm
h=2.5mm/3.1mm
100k/300k cycles
Dustproof=- /IP6X equivalent
N=0.98/1.57/2.55
Surface mount

SKHM
With ground terminal

Specifications
6.2×6.5mm
h=3.1mm
200k/300k/500k cycles
Dust/water resistance=N/A
N=0.98/1.57/2.35
Surface mount

SKQB
Dust-proof, water-proof

Specifications
10.0×10.0mm/11.1×11.9mm
h=5.0mm/11.0mm/13.0mm/23.2mm
100k cycles
Dust/water resistance=With individual conditions
N=1.57/2.55
Snap-in

SKRP
Compact, high operating force

Specifications
4.2×3.2mm
h=2.5mm
50k/100k/300k/1,000k cycles
Dust/water resistance=N/A
N=1.0/1.57/2.55/3.0/4.0/5.0
Surface mount

Industrial Power Systems

TIP
Go for a compact type

SKRB
Low-profile

Specifications
4.8×4.8mm
h=0.55mm
200k/500k/1,000k/2,000k cycles
Dust/water resistance=N/A
N=1.1/1.57/2.55/3.5
Surface mount

SKRK
Compact, low-profile

Specifications
3.9×2.9mm
h=1.5mm/2.0mm
200k cycles
Dust/water resistance=N/A
N=0.98/1.57
Surface mount

SKRP
Compact, high operating force

Specifications
4.2×3.2mm
h=2.5mm
50k/100k/300k/1,000k cycles
Dust/water resistance=N/A
N=1.0/1.57/2.55/3.0/4.0/5.0
Surface mount

Industrial Circuit Breakers

SKRK
Compact, low-profile

Specifications
3.9×2.9mm
h=1.5mm/2.0mm
200k cycles
Dust/water resistance=N/A
N=0.98/1.57
Surface mount

SKRA
Middle-stroke type

Specifications
6.2×6.2mm
h=3.5mm/5.1mm
100k/2,000k/3,000k/4,000k cycles
Waterproof=- /IPX7
Dustproof=IP6X equivalent
N=0.6/1.2/1.96/2.0/2.45/3.43/3.92
Surface mount

SKRP
Compact, high operating force

Specifications
4.2×3.2mm
h=2.5mm
50k/100k/300k/1,000k cycles
Dust/water resistance=N/A
N=1.0/1.57/2.55/3.0/4.0/5.0
Surface mount

SKHW
Dust-proof, drip-proof

Specifications
6.0×6.0mm
h=4.3mm/5.0mm
500k/1,000k cycles
Dustproof=IP6X equivalent
N=1.57/2.55
Snap-in

Industrial Smart Meters

SKHW
Dust-proof, drip-proof

Specifications
6.0×6.0mm
h=4.3mm/5.0mm
500k/1,000k cycles
Dustproof=IP6X equivalent
N=1.57/2.55
Snap-in

SKHH
Enduring bestseller

Specifications
6.0×6.0mm
h=4.3-17.0mm
200k/300k/500k/1,000k cycles
Dust/water resistance=N/A
N=0.98-5.1
Snap-in

SKHM
With ground terminal

Specifications
6.2×6.5mm
h=3.1mm
200k/300k/500k cycles
Dust/water resistance=N/A
N=0.98/1.57/2.35
Surface mount

SKRC
Dust-proof, water-proof

Specifications
ø9mm
h=13.0mm
100k cycles
Dust/water resistance=IP67
N=1.57/2.55
Radial

Industrial Temperature Controllers

SKQG
Low-profile

Specifications
5.2×5.2mm
h=1.5mm
100k/500k/1,000k cycles
Dust/water resistance=N/A
N=0.98/1.57/2.55/3.43
Surface mount

SKRM
Low-profile

Specifications
4.5×4.5mm
h=0.4mm
100k/500k cycles
Dust/water resistance=N/A
N=1.57/2.55
Surface mount

SKHW
Dust-proof, drip-proof

Specifications
6.0×6.0mm
h=4.3mm/5.0mm
500k/1,000k cycles
Dustproof=IP6X equivalent
N=1.57/2.55
Snap-in

SKTH
Compact, dust-proof

Specifications
3.5×3.2mm
h=1.75mm/1.8mm/2.5mm
100k/200k cycles
Dustproof=IP6X equivalent
N=1.4/3.0/5.0
Surface mount

Industrial Data Loggers

SKHH
Enduring bestseller

Specifications
6.0×6.0mm
h=4.3-17.0mm
200k/300k/500k/1,000k cycles
Dust/water resistance=N/A
N=0.98-5.1
Snap-in

SKRB
Low-profile

Specifications
4.8×4.8mm
h=0.55mm
200k/500k/1,000k/2,000k cycles
Dust/water resistance=N/A
N=1.1/1.57/2.55/3.5
Surface mount

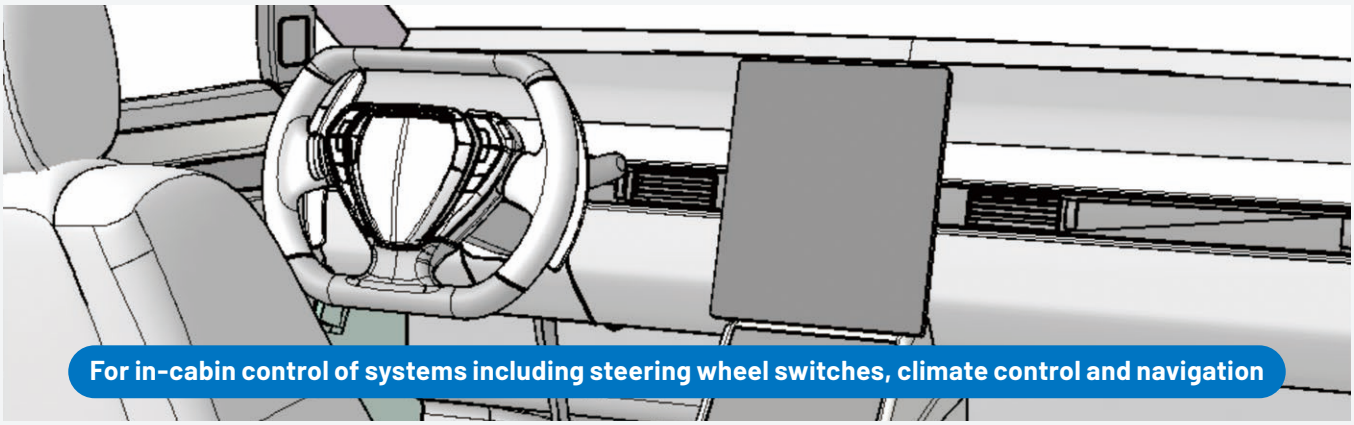
SKRP
Compact, high operating force

Specifications
4.2×3.2mm
h=2.5mm
50k/100k/300k/1,000k cycles
Dust/water resistance=N/A
N=1.0/1.57/2.55/3.0/4.0/5.0
Surface mount

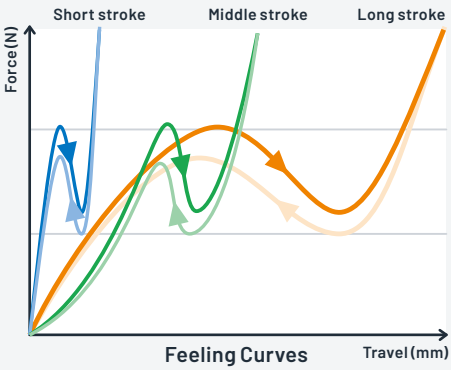
SKTH
Compact, dust-proof

Specifications
3.5×3.2mm
h=1.75mm/1.8mm/2.5mm
100k/200k cycles
Dustproof=IP6X equivalent
N=1.4/3.0/5.0
Surface mount

Automobiles



Auto Long Stroke (1.0 mm or longer)



SKPS
Low contact resistance, soft feel

Specifications
5.9×6.0mm
h=5.0mm
300k cycles
Dust/water resistance=N/A
N=2.5/3.0/3.3/3.6
Surface mount

SKPM
Low contact resistance, soft feel

Specifications
5.9×6.0mm
h=5.0mm
100k cycles
Dust/water resistance=N/A
N=1.57/1.96/2.45/3.0
Surface mount

SKPR
High operating force, low contact resistance

Specifications
7.5×7.8mm
h=6.5mm
100k cycles
Dust/water resistance=N/A
N=5.0
Surface mount

Auto Middle Stroke (0.3 – 0.9 mm)

SKSU
Dust-/water-proof quiet type

Specifications
5.3×5.4mm
h=3.85mm/4.34mm
250k cycles
Waterproof=IPX7
Dustproof=IP6X equivalent
N=3.0/3.5/5.0
Surface mount

SKST
Refined feel

Specifications
8.5×8.5mm
h=3.95mm
200k/500k/1,000k cycles
Dust/water resistance=N/A
N=4.0/4.5/7.0/10.0
Surface mount

SKRA
Middle-stroke type

Specifications
6.2×6.2mm
h=3.5mm/5.1mm
100k/2,000k/3,000k/4,000k cycles
Waterproof=- -/IPX7
Dustproof=IP6X equivalent
N=0.6/1.2/1.96/2.0/2.45/3.43/3.92
Surface mount

SKTQ
Distinct operating feel

Specifications
5.3×5.4mm
h=4.25mm
200k/500k/1,000k cycles
Dust/water resistance=N/A
N=2.5/3.0/3.5/5.0
Surface mount

SKTR
Quiet with distinct operating feel

Specifications
6.1×6.1mm
h=4.1mm
200k cycles
Dustproof=IP6X equivalent
N=3.8/4.0
Surface mount

SKTT
Refined feel

Specifications
6.2×6.2mm
h=4.4mm
500k cycles
Dust/water resistance=N/A
N=4.0
Surface mount

Auto Short Stroke (up to 0.3 mm)

SKTH
Compact, dust-proof

Specifications
3.5×3.2mm
h=1.75mm/1.8mm/2.5mm
100k/200k cycles
Dustproof=IP6X equivalent
N=1.4/3.0/5.0
Surface mount

SKSG
Compact, high operating force

Specifications
3.0×2.7mm
h=1.4mm
200k cycles
Dust/water resistance=N/A
N=1.6/2.0/2.8/4.0
Surface mount

SKRP
Compact, high operating force

Specifications
4.2×3.2mm
h=2.5mm
50k/100k/300k/1,000k cycles
Dust/water resistance=N/A
N=1.0/1.57/2.55/3.0/4.0/5.0
Surface mount

SKQG
Low-profile

Specifications
5.2×5.2mm
h=1.5mm
100k/500k/1,000k cycles
Dust/water resistance=N/A
N=0.98/1.57/2.55/3.43
Surface mount

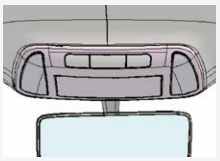
SKRB
Low-profile

Specifications
4.8×4.8mm
h=0.55mm
200k/500k/1,000k/2,000k cycles
Dust/water resistance=N/A
N=1.1/1.57/2.55/3.5
Surface mount

SKSN
Mid-mount type

Specifications
6.2×3.0mm/7.5×3.0mm
h=3.5mm
100k/500k/1,000k cycles
Dust/water resistance=N/A
N=1.6/2.4/4.5/5.0
Surface mount

Auto Overhead Consoles



SKQG
Low-profile

Specifications

5.2×5.2mm
h=1.5mm
100k/500k/1,000k cycles
Dust/water resistance=N/A
N=0.98/1.57/2.55/3.43
Surface mount

SKRP
Compact, high operating force

Specifications

4.2×3.2mm
h=2.5mm
50k/100k/300k/1,000k cycles
Dust/water resistance=N/A
N=1.0/1.57/2.55/3.0/4.0/5.0
Surface mount

SKTQ
Distinct operating feel

Specifications

5.3×5.4mm
h=4.25mm
200k/500k/1,000k cycles
Dust/water resistance=N/A
N=2.5/3.0/3.5/5.0
Surface mount

SKRA
Middle-stroke type

Specifications

6.2×6.2mm
h=3.5mm/5.1mm
100k/2,000k/3,000k/4,000k cycles
Waterproof=- /IPX7
Dustproof=IP6X equivalent
N=0.6/1.2/1.96/2.0/2.45/3.43/3.92
Surface mount

Auto Remote Keyless Entry Systems

SKRB
Low-profile

Specifications

4.8×4.8mm
h=0.55mm
200k/500k/1,000k/2,000k cycles
Dust/water resistance=N/A
N=1.1/1.57/2.55/3.5
Surface mount

SKQG
Low-profile

Specifications

5.2×5.2mm
h=1.5mm
100k/500k/1,000k cycles
Dust/water resistance=N/A
N=0.98/1.57/2.55/3.43
Surface mount

SKSG
Compact, high operating force

Specifications

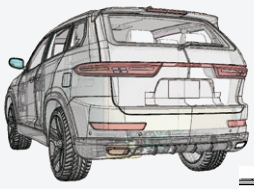
3.0×2.7mm
h=1.4mm
200k cycles
Dust/water resistance=N/A
N=1.6/2.0/2.8/4.0
Surface mount

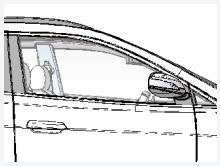
SKRP
Compact, high operating force

Specifications

4.2×3.2mm
h=2.5mm
50k/100k/300k/1,000k cycles
Dust/water resistance=N/A
N=1.0/1.57/2.55/3.0/4.0/5.0
Surface mount

Auto Trunk/Door Release Buttons





SKQB
Dust-proof, water-proof

Specifications

10.0×10.0mm/11.1×11.9mm
h=5.0mm/11.0mm/13.0mm/23.2mm
100k cycles
Dust/water resistance=With individual conditions
N=1.57/2.55
Snap-in

SKSU
Dust-/water-proof quiet type

Specifications

5.3×5.4mm
h=3.85mm/4.34mm
250k cycles
Waterproof=IPX7
Dustproof=IP6X equivalent
N=3.0/3.5/5.0
Surface mount

SKRA
Middle-stroke type

Specifications

6.2×6.2mm
h=3.5mm/5.1mm
100k/2,000k/3,000k/4,000k cycles
Waterproof=- /IPX7
Dustproof=IP6X equivalent
N=0.6/1.2/1.96/2.0/2.45/3.43/3.92
Surface mount

Also see this force-travel map to see where products for automotive use are positioned ↓

Others

Others Fire Detectors

TIP
For long-term use, go for a dust-proof type

SKRB
Low-profile

Specifications
4.8×4.8mm
h=0.55mm
200k/500k/1,000k/2,000k cycles
Dust/water resistance=N/A
N=1.1/1.57/2.55/3.5
Surface mount

SKHM
With ground terminal

Specifications
6.2×6.5mm
h=3.1mm
200k/300k/500k cycles
Dust/water resistance=N/A
N=0.98/1.57/2.35
Surface mount

SKHW
Dust-proof, drip-proof

Specifications
6.0×6.0mm
h=4.3mm/5.0mm
500k/1,000k cycles
Dustproof=IP6X equivalent
N=1.57/2.55
Snap-in

Others Fire Alarm Receivers

TIP
For long-term use, go for a dust-proof type

SKHM
With ground terminal

Specifications
6.2×6.5mm
h=3.1mm
200k/300k/500k cycles
Dust/water resistance=N/A
N=0.98/1.57/2.35
Surface mount

SKHH
Enduring bestseller

Specifications
6.0×6.0mm
h=4.3-17.0mm
200k/300k/500k/1,000k cycles
Dust/water resistance=N/A
N=0.98-5.1
Snap-in

SKHW
Dust-proof, drip-proof

Specifications
6.0×6.0mm
h=4.3mm/5.0mm
500k/1,000k cycles
Dustproof=IP6X equivalent
N=1.57/2.55
Snap-in

Others Vending Machines

TIP
Go for a product with a stem

SKRK
Compact, low-profile

Specifications
3.9×2.9mm
h=1.5mm/2.0mm
200k cycles
Dust/water resistance=N/A
N=0.98/1.57
Surface mount

SKRP
Compact, high operating force

Specifications
4.2×3.2mm
h=2.5mm
50k/100k/300k/1,000k cycles
Dust/water resistance=N/A
N=1.0/1.57/2.55/3.0/4.0/5.0
Surface mount

SKTH
Compact, dust-proof

Specifications
3.5×3.2mm
h=1.75mm/1.8mm/2.5mm
100k/200k cycles
Dustproof=IP6X equivalent
N=1.4/3.0/5.0
Surface mount

Others Elevators

TIP
If expecting long-term use, go for an ultra-long life of 10 million cycles or more

SKQE
10-million-cycle long life

Specifications
12.0×12.0mm
h=4.3mm/7.3mm
10,000 cycles
Dustproof=IP6X equivalent
N=1.57/2.55
Snap-in

SKRA
Middle-stroke type

Specifications
6.2×6.2mm
h=3.5mm/5.1mm
100k/2,000k/3,000k/4,000k cycles
Waterproof=－/IPX7
Dustproof=IP6X equivalent
N=0.6/1.2/1.96/2.0/2.45/3.43/3.92
Surface mount

Others Drone Controllers

TIP
Go for a compact type

SKSW
Compact, dust-/water-proof

Specifications
3.0×2.0mm
h=0.6mm
300k/500k cycles
Waterproof=IPX7/8
Dustproof=IP6X equivalent
N=1.8/2.4/3.1/3.3
Surface mount

SKRP
Compact, high operating force

Specifications
4.2×3.2mm
h=2.5mm
50k/100k/300k/1,000k cycles
Dust/water resistance=N/A
N=1.0/1.57/2.55/3.0/4.0/5.0
Surface mount

SKRW
Low-profile

Specifications
3.7×3.7mm
h=0.35mm
50k/500k/1,000k cycles
Dust/water resistance=N/A
N=1.27/1.57/2.35
Surface mount

SKTH
Compact, dust-proof

Specifications
3.5×3.2mm
h=1.75mm/1.8mm/2.5mm
100k/200k cycles
Dustproof=IP6X equivalent
N=1.4/3.0/5.0
Surface mount

Others Time Recorders

SKRK
Compact, low-profile

Specifications
3.9×2.9mm
h=1.5mm/2.0mm
200k cycles
Dust/water resistance=N/A
N=0.98/1.57
Surface mount

SKRA
Middle-stroke type

Specifications
6.2×6.2mm
h=3.5mm/5.1mm
100k/2,000k/3,000k/4,000k cycles
Waterproof= - /IPX7
Dustproof=IP6X equivalent
N=0.6/1.2/1.96/2.0/2.45/3.43/3.92
Surface mount

SKHH
Enduring bestseller

Specifications
6.0×6.0mm
h=4.3-17.0mm
200k/300k/500k/1,000k cycles
Dust/water resistance=N/A
N=0.98-5.1
Snap-in

SKRB
Low-profile

Specifications
4.8×4.8mm
h=0.55mm
200k/500k/1,000k/2,000k cycles
Dust/water resistance=N/A
N=1.1/1.57/2.55/3.5
Surface mount

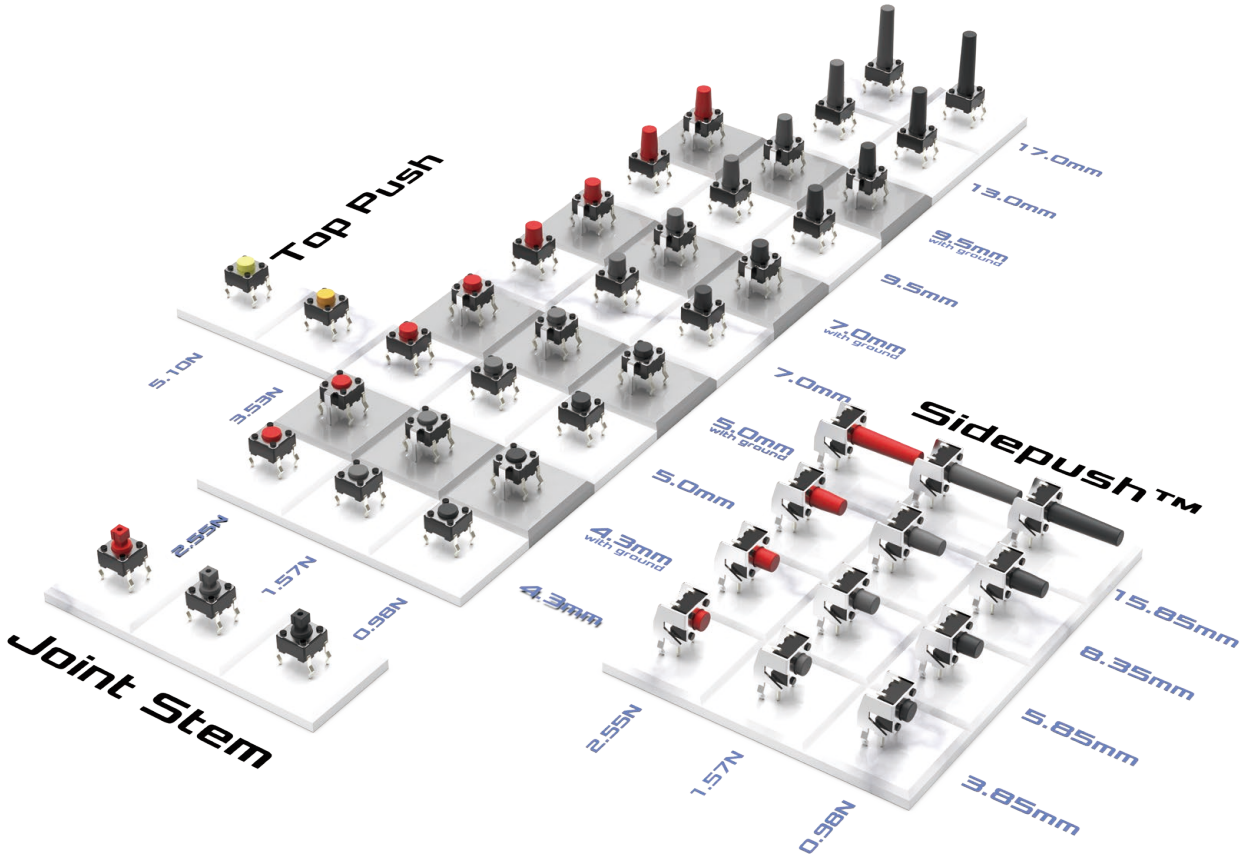
Product Inquiries

https://tech.alpsalpine.com/e/inquiry/catalog/

Please use the contact form to inquire about Alps Alpine TACT Switch™ products.

Long-time Bestselling Snap-in Type

SKHH Product Lineup



Feature 1

Industry-leading market performance

+

Feature 2

Extensive product variety

The SKHH Series is one of our long-time bestselling products. The snap-in type TACT Switch™, inserted into holes in a printed circuit board, has been around for 40 years.

There are many varieties to choose from according to the application to achieve the most suitable size and a satisfactory feel. A popular series, this is the go-to product for inserting into PC boards.

The potential applications of the SKHH Series are diverse.

SKHH Series Information
https://tech.alpsalpine.com/e/products/category/tact-switch/sub/01/series/skhh/

CHAPTER
04

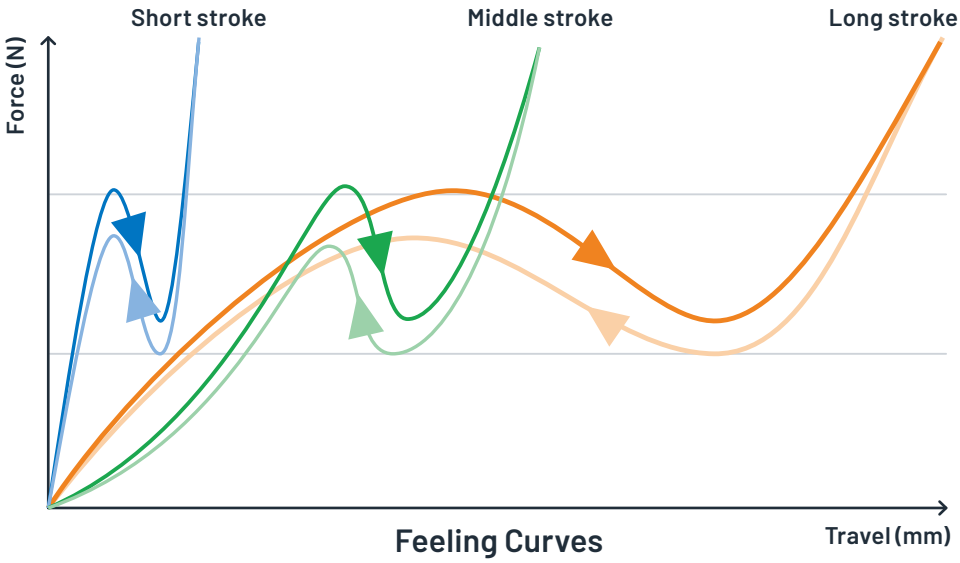
Product Guide 2

Product Maps (Operating Force-Travel)

On the following pages, we have mapped Alps Alpine products according to travel and operating force. The maps should assist your search for the product closest to what you have in mind.

Three Categories of Stroke (Travel)

Alps Alpine divides the distance a switch travels when pushed into three categories: **short stroke (up to 0.3 mm)**, **middle stroke (0.3 – 0.9 mm)** and **long stroke (1.0 mm or longer)**



How Stroke (Travel) Influences Feel

A TACT Switch™ with a given operating force (load characteristics) will **feel sharp and satisfying when pushed if the travel is short**. A **longer travel delivers a softer and smoother feel** with the same operating force.

Website Version

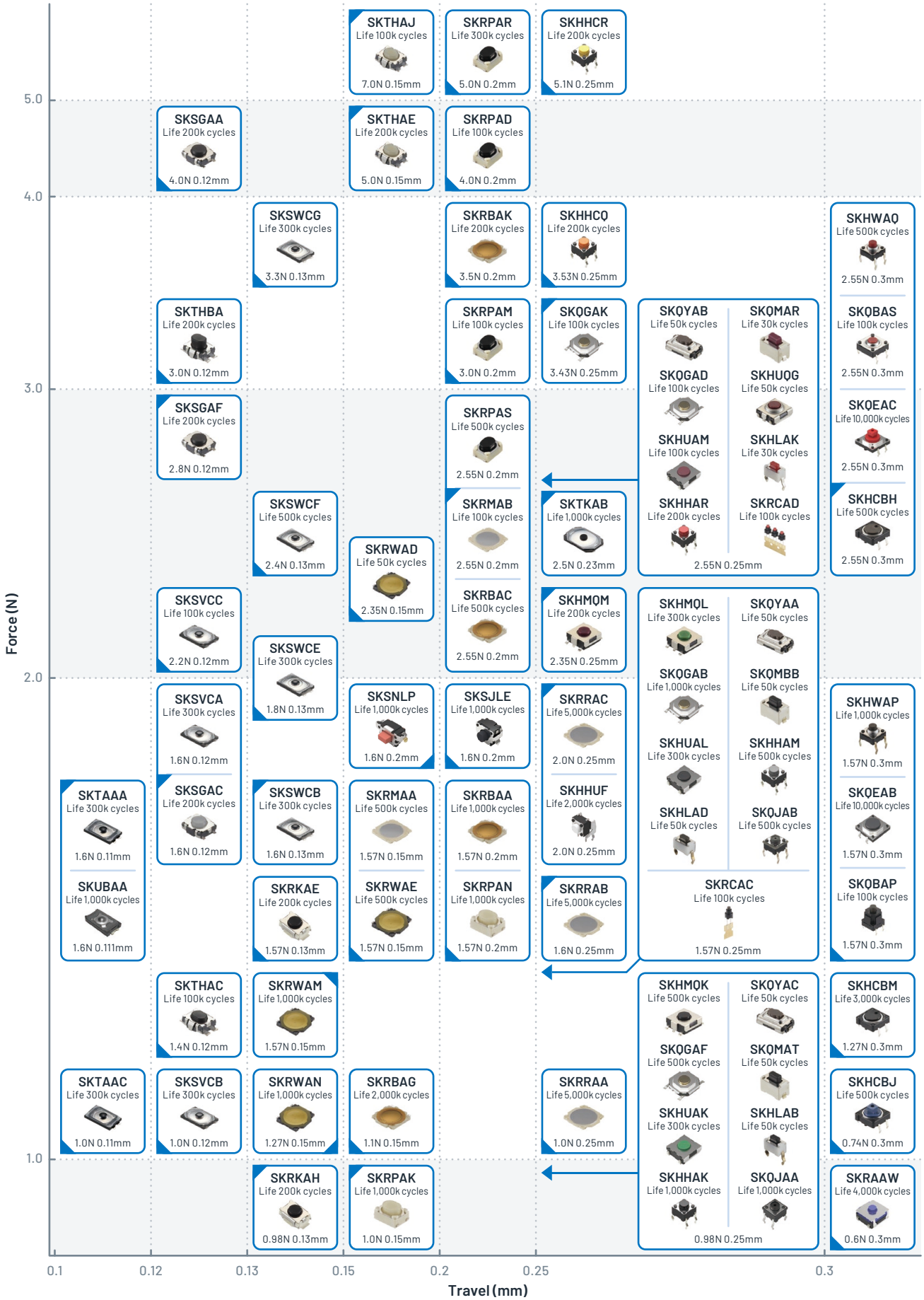
Display force-travel maps after specifying the size

https://tech.alpsalpine.com/e/products/category/tact-switch/map/

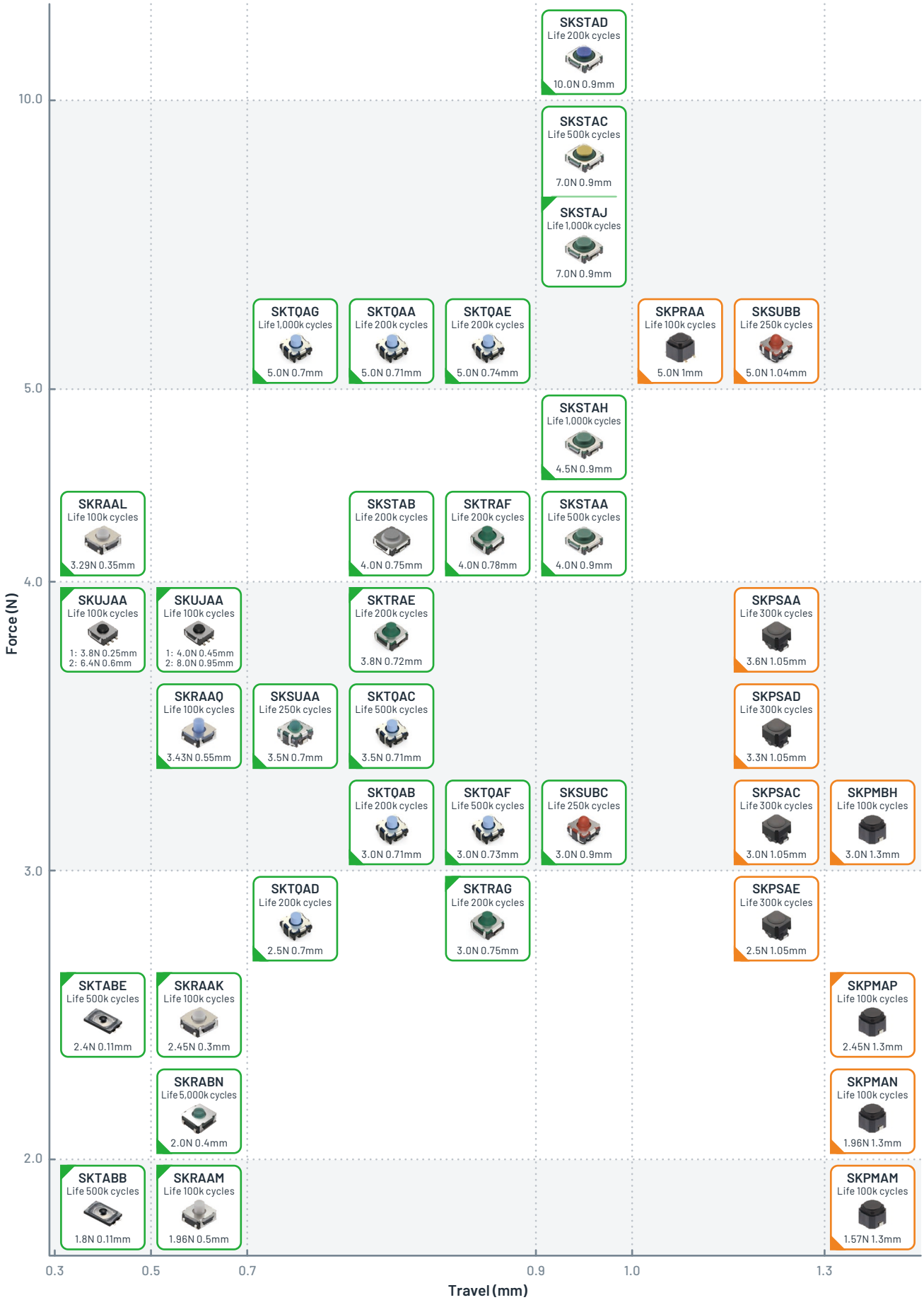
More About Travel and Structural Differences

https://tech.alpsalpine.com/e/products/faq/tact-switch/middle-stroke/

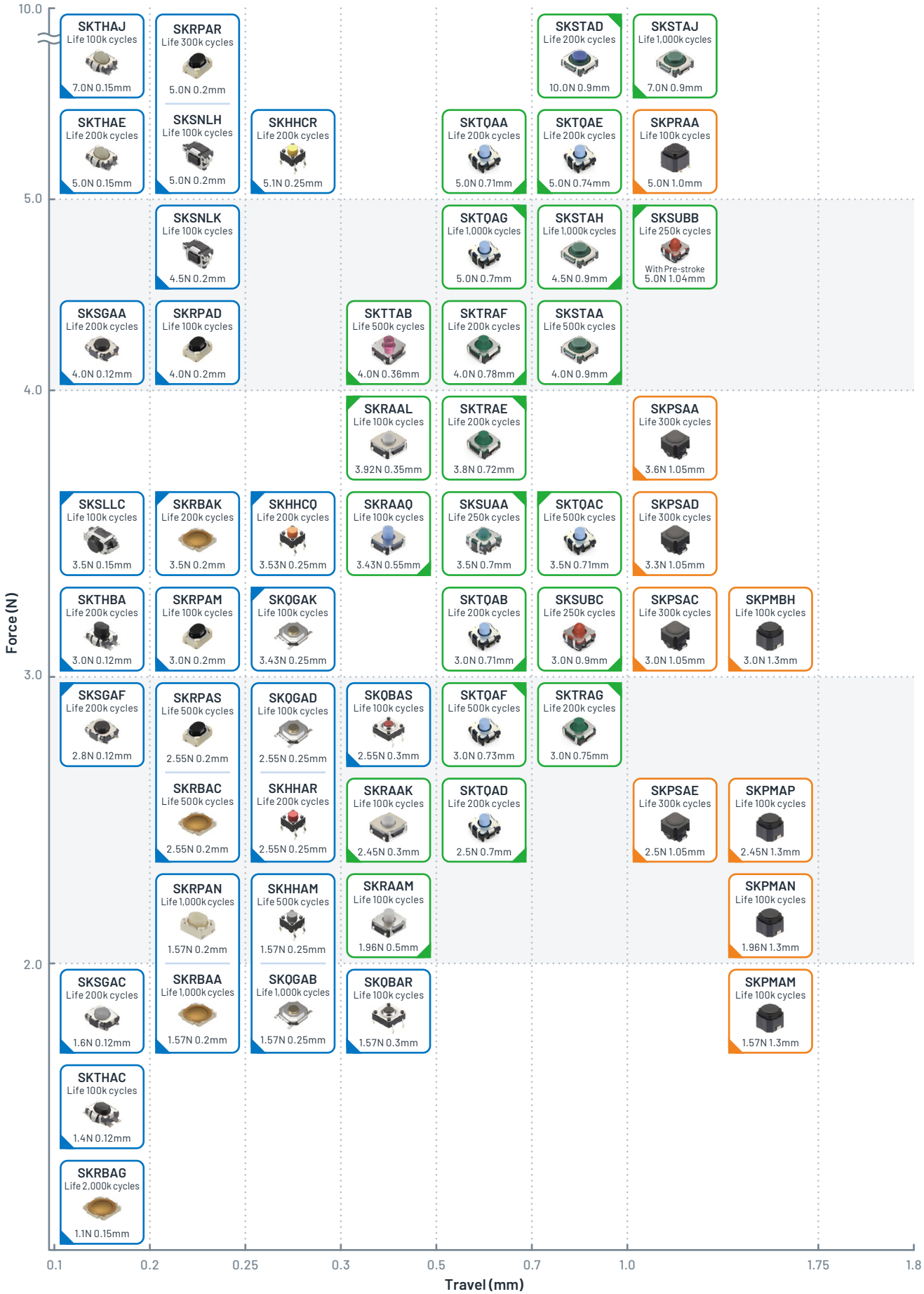
Short-Stroke Product Lineup



Middle-Stroke/Long-Stroke Product Lineup



Lineup of Products for Automotive Use



CHAPTER
05

Design Guide 1

Solution Case Examples

Here are some examples of solutions that helped customers resolve their issues.

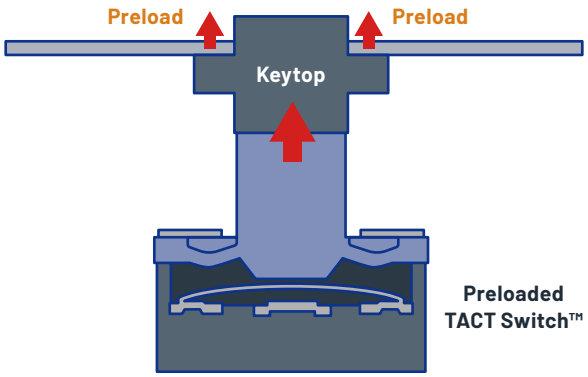
Rattling Prevention Using a TACT Switch™ with Preloading

⚠ Issue with Existing TACT Switch™ Products

In automobiles and other applications involving vibrations, any contact between parts, including TACT Switch™ products, can cause rattling. When the cabin is quiet, as is more often the case these days with the spread of electric vehicles, rattling is irritating and can even be detrimental to a brand, particularly in the case of luxury vehicles.

☑ Solution Case Example

Rattling was prevented by closing the gaps between TACT Switch™, keytop and housing in advance, making active use of preloading, one of the features of Alps Alpine's middle-stroke type TACT Switch™ models.



Solution Benefits

☑ **Rattling prevention**
Rattling caused, for example, by vibrations is prevented by closing the gap between the keytop and housing, with the keytop already pushed, making use of the preload.

☑ **Adjustment of push feel**
Preloading allows adjustment of the push feel by reducing the load applied at the start of the push.

More About Preloading Here

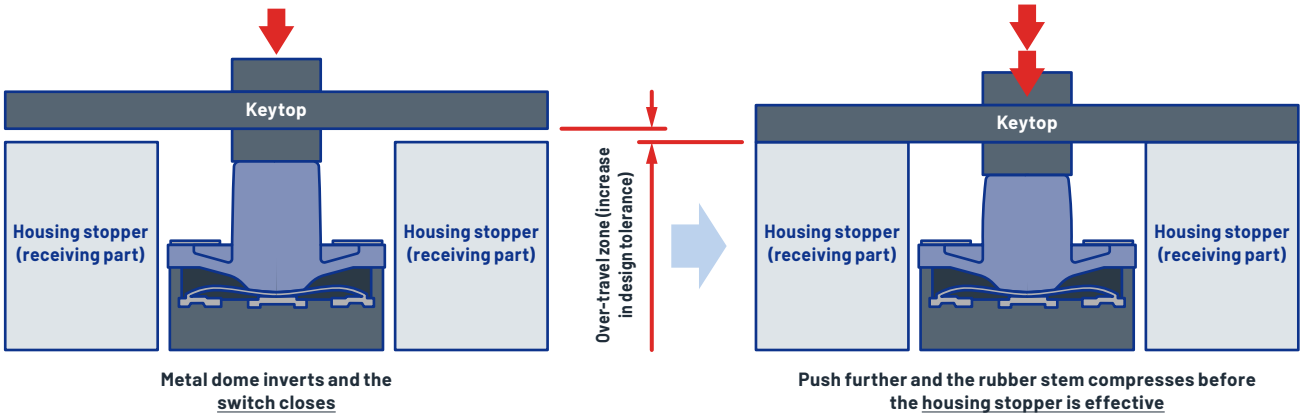
Increase of Stopper Position Tolerance Using a TACT Switch™ with Over-Travel

Issue with Existing TACT Switch™ Products

Stoppers need to be incorporated into the TACT Switch™ housing to prevent damage when too heavy a load is applied to the circuit board to which the TACT Switch™ is mounted. Different types of variations, including variations of the TACT Switch™, may reduce the positional tolerance of the stoppers.

Solution Case Example

Active use of over-travel, a feature of middle-stroke type TACT Switch™ models, made it possible to increase the tolerance of the stopper position setting by the amount of the deflection of the rubber stem.



Metal dome inverts and the switch closes

Push further and the rubber stem compresses before the housing stopper is effective

Solution Benefits

Larger design tolerance for stoppers inside the housing

The over-travel zone can be used to increase the tolerance of the TACT Switch™ housing design.

Adjustment of push feel

Over-travel allows adjustment to the feeling of a hard stop after the TACT Switch™ is fully pushed.

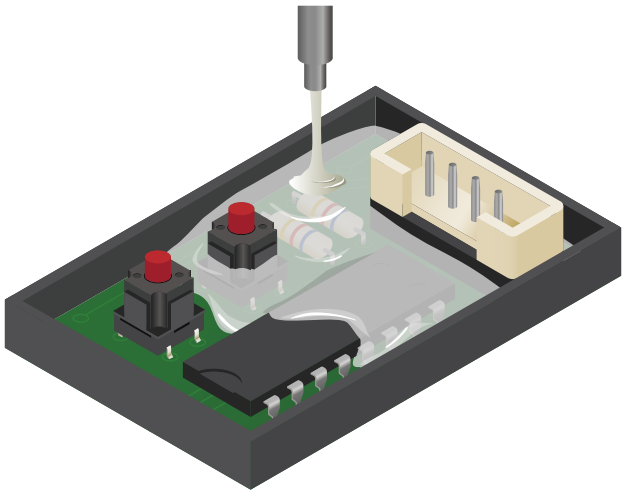
Waterproofing Using a TACT Switch™ Compatible with Resin Potting

Issue with Existing TACT Switch™ Products

While in some TACT Switch™ products, contacts are covered with insulators or spacers to enhance dust and water resistance, there is no way to completely prevent infiltration through the terminal end.

Solution Case Example

To enhance water resistance, the PC board needed to undergo resin potting. Though with normal TACT Switch™ models, the operating part would become submerged in resin. Instead, resin potting was enabled using Alps Alpine potting-compatible type TACT Switch™ models.



Solution Benefits

Improved sealing performance

Dust and water resistance of PC boards mounted with TACT Switch™ products can be achieved.

Products Compatible with Resin Potting

 SKQBAPA010 Information

 SKQBAJA010 Information

CHAPTER
06

Design Guide 2

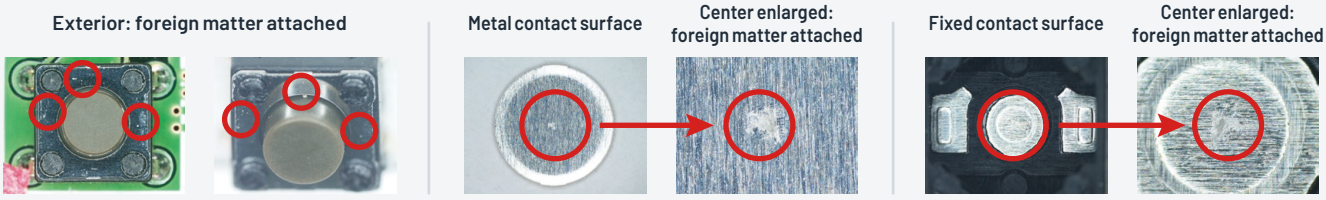
Failure Prevention Considerations

This chapter introduces scenarios that might lead to product failure and ways to prevent such failure.

Ingress of Foreign Matter

Foreign matter can get into gaps between the stem, frame, housing, and other parts of a TACT Switch™. If this interferes with the sliding of the moving part, it can cause tactile problems. If the TACT Switch™ is not a dust-resistant model and the foreign matter reaches the contact, it can cause continuity problems – the circuit will not close if the foreign matter is an insulator and will not open if the foreign matter is a conductor.

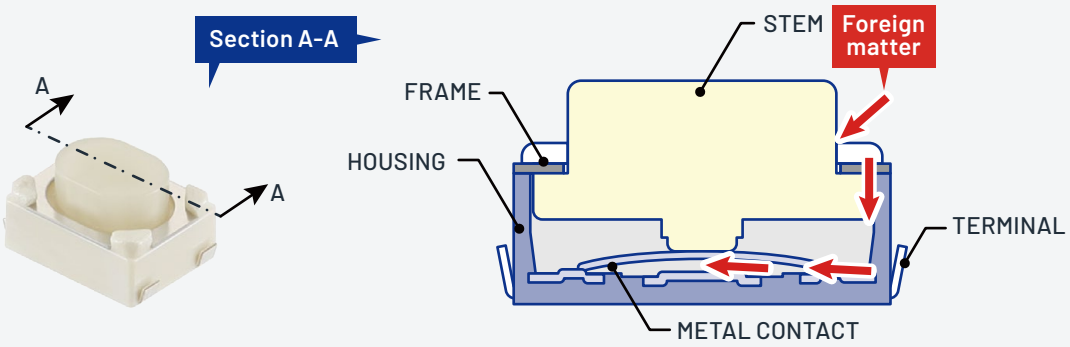
Example: SKHH Series



The mechanism by which foreign matter reaches the contact is as follows.

1. Foreign matter lands on the TACT Switch™. When the stem is pressed, the foreign matter enters the gap between stem and frame.
2. The metal contact rises and falls whenever the stem is pressed. As the metal contact returns, air blows the foreign matter toward the contact area.
3. The foreign matter attaches between the metal and fixed contacts.

Example: SKRP Series



Case-Specific Countermeasures

1 Ingress of foreign matter into the TACT Switch™ of a product while the product is in use

If the product is envisaged for use in environments where there is a high likelihood of foreign matter ingress, consider using one of our dust-resistant TACT Switch™ models.

2 Ingress of circuit board debris when dividing TACT Switch™-mounted circuit boards

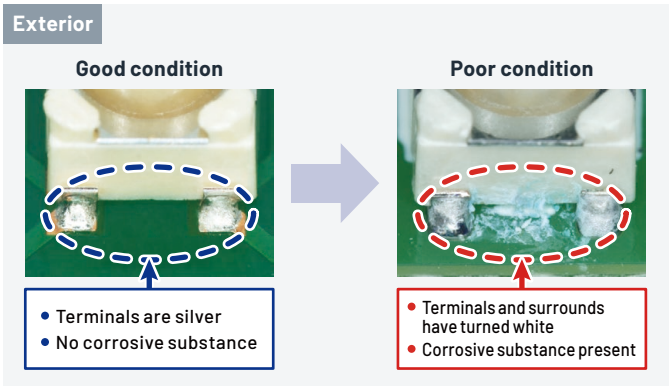
Circuit board debris created when dividing circuit boards to which a TACT Switch™ has been mounted may make its way inside a TACT Switch™. When dividing circuit boards, take steps to ensure that board debris does not remain on the board. For example, use a dust collector.

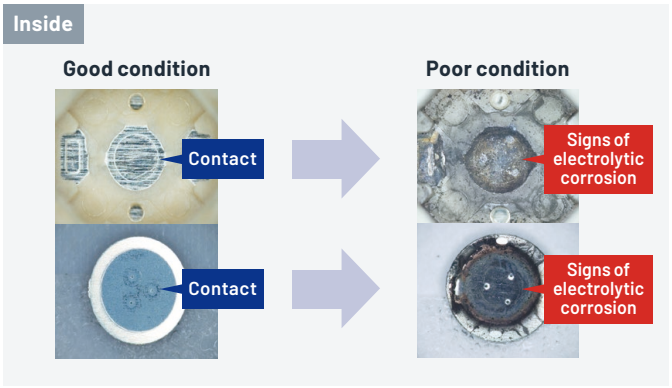
More Information:
Video About Failure Sequences and Specifications Checklist

Liquid Intrusion

Water or another liquid inside a TACT Switch™ may prevent on/off function

Water, solvent, flux, coating agent, or another liquid inside a TACT Switch™ that is not a water-resistant model may lead to corrosion (electrolytic corrosion) of the contact, causing the circuit to either not close or not open.

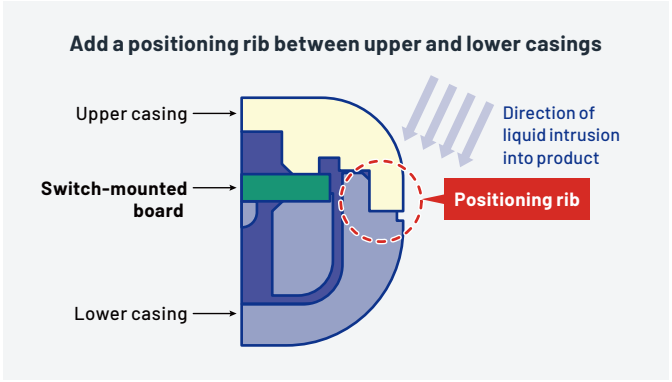


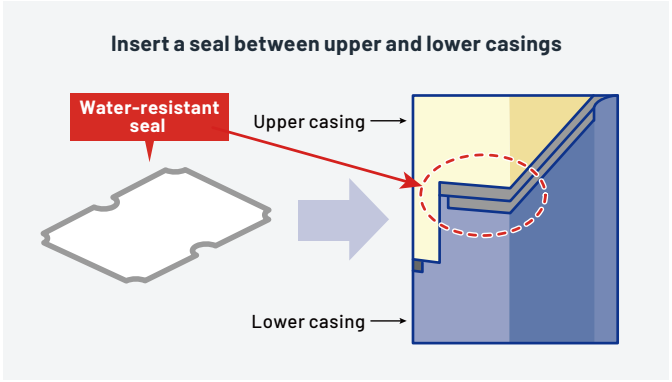


Case-Specific Countermeasures

1 Liquid intrusion from outside the enclosure of your product

Explore options for preventing liquid intrusion, such as changing the enclosure design or using a water-resistant seal.





2 Liquid intrusion during manufacturing of the mounting board for the TACT Switch™

- **Intrusion during the washing process**

With the exception of some series, please refrain from washing mounting boards.

- **Intrusion during the dip soldering process**

Flux applied prior to soldering can sometimes infiltrate the TACT Switch™; for example, via through-holes. Please adhere to the TACT Switch™ mounting hole dimensions and position the switch away from through-holes not used for switch mounting and from board ends. Also make sure to adhere to conditions for auto dip soldering in the Product Specifications.

- **Intrusion during the reflow soldering process**

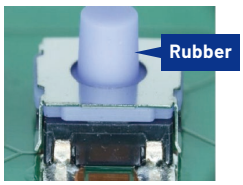
Flux in cream solder can sometimes infiltrate the TACT Switch™ during the reflow process. Before mounting, check soldering cautions in the Production Specifications.

- **Intrusion during application of coating agent**

Inquire with Alps Alpine prior to using a coating agent. Do not use adhesives or coating agents that produce corrosive gas, or that are of low viscosity and may seep inside the switch. Before use, also check, using an actual model, that the required adhesive strength and water resistance is achieved.

⚠ CAUTION

Please note with the SKRA Series and other TACT Switch™ models that employ rubber materials, if a substance like grease attaches to the rubber material, the rubber may expand and cause the switch to malfunction even when the substance does not infiltrate the inside of the TACT Switch™.



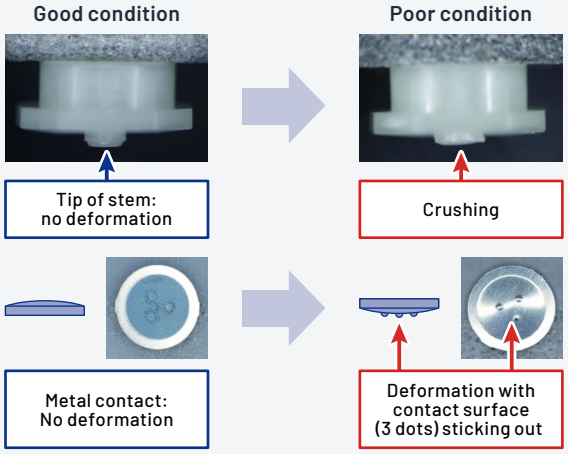
Abnormal External Force

An abnormal force applied to a TACT Switch™ from the outside may prevent on/off function or diminish feel

If a TACT Switch™ is operated with strong force or subjected to the load of an impact, such as by being dropped, it might cause on/off function defects or tactile problems.

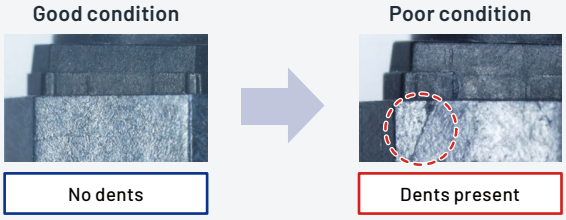
Example: SKRP Series

Deformation of parts inside the switch (cause: pushed with too heavy a load)



Example: SKPM Series

Dents and scratches found around the outside of the switch

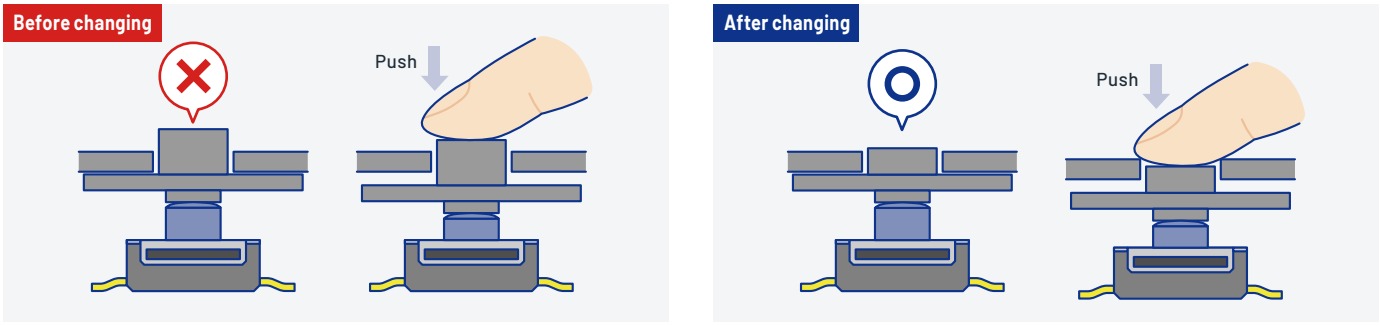


Do not reassemble for reuse a TACT Switch™ that has come apart after being subjected to an abnormal external force.

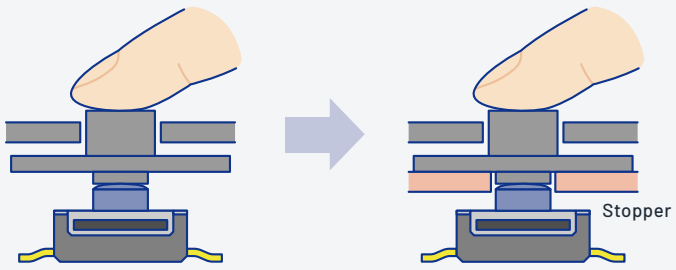
Case-Specific Countermeasures

1 Dropping of the product or application of an abnormal external force during use

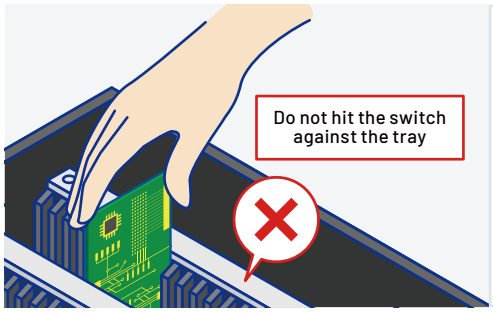
Design the end product so that when the switch is pushed in, the tip of the key top sinks below the external surface of the product.



Or insert a stopper on the end product side so the TACT Switch™ is not subjected to a direct impact.

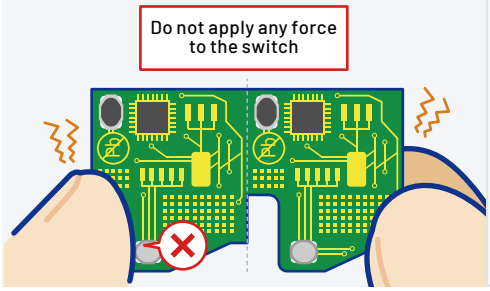


2 Application of an abnormal external force during handling of the circuit board with mounted TACT Switch™



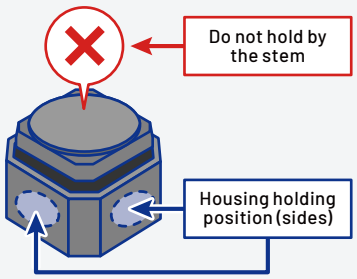
Example 1

When inserting or removing the board from the storage tray, hold the edges of the board and be careful not to hit the switch against the tray.



Example 2

Be careful not to push a TACT Switch™ when dividing circuit boards. When dividing circuit boards, we recommend using a jig rather than doing it by hand.



Example 3

When handling a switch while repairing parts on a circuit board, hold the sides of the housing to perform soldering.

More Information:
Video About Failure Sequences and Specifications Checklist

Product Inquiries

https://tech.alpsalpine.com/e/inquiry/catalog/

Please use the contact form to inquire about Alps Alpine TACT Switch™ products.

ALPSALPINE

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