

Surface Mount Switches

NKK has many options for customers requiring dependable surface mount switches. Several actuators within the SMT group are offered that will enhance applications, including toggles, pushbuttons, rotaries, slides and tactiles. The process sealed series simplify automated processing and cleaning techniques. DIP switches are represented in both rotaries and slides. Tape-reel, stick-tube or partitioned tray packaging is offered. Benefits of each series are presented to assist in the selection of the most appropriate device for the project. If assistance is needed, our skilled engineers are available for consultation and support. The customer can confidently move forward with the design, equipped with excellent products and outstanding service.



PROCESS SEALED SMT TOGGLE

Characteristics & Specifications

G3T Series Process Sealed Ultra-Miniature Toggle

- Ultra-miniature size facilitates high density mounting; light weight of 0.6 gram ideal for use in handheld equipment
- Gull-wing terminals with upright, upright with bracket, and right angle mounting options provide stability during soldering
- Heat resistant resin used for housing, base and lever permits vapor phase and infrared convection reflow soldering
- Rapid automated placement enabled by tape-reel and stick-tube packaging. Tape-reel packaging meets EIA-481-D Standard.
- Design features achieve total seal, allowing automated processing techniques to include flux cleaning procedures: one-piece bushing and housing, rubber seals surrounding actuator and base, epoxy at joint of case and base, and molded-in, epoxy sealed terminals
- Coplanarity: all considered surfaces must lie between two parallel planes that are a maximum distance apart of .0059" (0.15mm)



Resistive Load Logic Level: 0.4VA max @ 28V AC/DC max (Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)
Contact Resistance: 80 milliohms max
Insulation Resistance: 500 megohms min @ 500V DC
Dielectric Strength: 500V AC min for 1 minute min
Mechanical Life: 50,000 operations min
Electrical Life: 50,000 operations min
Nominal Operating Force: 1.6N for momentary; 1.7N for maintained
Angle of Throw: 28°
Operating Temperature Range: -30°C ~ +85°C (-22°F ~ +185°F)

PROCESS SEALED SMT PUSHBUTTON

Characteristics & Specifications

G3B Series Process Sealed Ultra-Miniature Pushbutton

- Ultra-miniature size perfect for high density mounting; light weight of 0.6 gram ideal for use in handheld equipment
- Gull-wing terminals with upright, upright with bracket, and right angle mounting options provide stability during soldering
- Heat resistant resin used for housing, base and plunger permits vapor phase and infrared convection reflow soldering
- Variety of cap options and colors
- Rapid automated placement enabled by tape-reel and stick-tube packaging. Tape-reel packaging meets EIA-481-D Standard.
- Benefits of STC contact mechanism include smoother, positive detent actuation, increased contact stability, logic-level reliability
 - Design features achieve total seal, allowing automated processing techniques to include flux cleaning procedures: one-piece bushing and housing, rubber seals surrounding actuator and base, epoxy at joint of case and base, and molded-in, epoxy sealed terminals
 - Coplanarity: all considered surfaces must lie between two parallel planes that are a maximum distance apart of .0059" (0.15mm)



Resistive Load Logic Level: 0.4VA max @ 28V AC/DC max (Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)
Contact Resistance: 80 milliohms max
Insulation Resistance: 500 megohms min @ 500V DC
Dielectric Strength: 500V AC min for 1 minute min
Mechanical Life: 50,000 operations min
Electrical Life: 50,000 operations min
Nominal Operating Force: 2.0N
Travel: Pretravel .024" (0.6mm); Overtravel .019" (0.5mm); Total Travel .043" (1.1mm)
Operating Temperature Range: -30°C ~ +85°C (-22°F ~ +185°F)

ULTRA-THIN SMT DIP ROTARY

Characteristics & Specifications

FR02 Series 10mm Subminiature Rotary

- Slim body of only .150" (3.8mm) has extremely low profile, allowing close stacking of PC boards
- Highly visible legends and screwdriver or shaft actuator options with arrow position indication provide trouble-free code setting
- Detent mechanism gives crisp, positive action for accurate switch setting
- Circuit options are real coded with orange actuator or complement coded with yellow actuator. Decimal or hexadecimal positions.
- Cam activated movable contact and gold contacts assure contact reliability and continuity
- Use of heat resistant resin accommodates infrared convection reflow soldering
 - Gull-wing terminals for upright mounting ensure mechanical stability during soldering and simplify solder joint inspection
 - Tape-reel and stick-tube packaging. Tape-reel packaging meets EIA-481-D Standard.
 - Coplanarity: all considered surfaces must lie between two parallel planes that are a maximum distance apart of .0059" (0.15mm)



Resistive Load Switching Rating: 100mA @ 5V DC Nonswitching Rating: 100mA @ 50V DC
Contact Resistance: 100 milliohms max for circuit; 30 milliohms max for contact point
Insulation Resistance: 1,000 megohms min @ 250V DC
Dielectric Strength: 250V AC min for 1 minute min
Mechanical Life: 10,000 detent operations min
Electrical Life: 10,000 detent operations min
Nominal Operating Torque: 0.008Nm for decimal devices; 0.01Nm for hexadecimal devices
Contact Timing: Nonshorting
Operating Temperature Range: -25°C ~ +85°C (-13°F ~ +185°F)

PROCESS SEALED SMT DIP ROTARY

Characteristics & Specifications

ND3 Series 8mm Ultra-Miniature Tactile

- Sealed construction prevents contact contamination and allows vapor phase and IR reflow soldering. Seals between actuator and housing, and between housing and base.
- Trouble-free code setting with highly visible legends and screw-driver or shaft actuation. Detent mechanism designed for crisp, positive action for accurate switch setting
- Bifurcated, spring loaded contacts provide unmatched logic-level reliability
- Gull-wing terminals with upright mount, upright with bracket mount, or right angle mount options reinforce mechanical stability during soldering and simplified solder joint inspection
- Industry standard terminal grid spacing of .100" (2.54mm) between pin centers, plus 3-by-3 terminal arrangement for pad layout pattern
- Heat tolerant resin used for body meets UL flammability rating of 94V-0, maintains switch reliability through vapor phase and infrared convection reflow soldering



- Tape-reel or partitioned tray packaging options. Tape reel packaging meets EIA-481-D Standard.
- Coplanarity: all considered surfaces must lie between two parallel planes that are a maximum distance apart of .0059" (0.15mm)

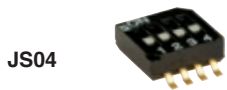
Resistive Load
Switching Rating: 100mA @ 5V DC
Nonswitching Rating: 100mA @ 50V DC
Contact Resistance: 80 milliohms max for circuit; 30 milliohms max for contact point
Insulation Resistance: 1,000 megohms min @ 250V DC
Dielectric Strength: 250V AC min for 1 minute min
Mechanical Life: 20,000 detent operations min
Electrical Life: 20,000 operations min
Nominal Operating Torque: 0.006Nm
Contact Timing: Nonshorting (break-before-make)
Operating Temperature Range: -25°C ~ +85°C (-13°F ~ +185°F)

EXTENDED OR FLUSH ACTUATOR SMT DIP SLIDES

Characteristics & Specifications

JS02 & JS04 Series Ultra-Miniature Slides

- Extended (JS02) and flush (JS04) actuator options available
- JS02 has twin sliding contact mechanism with self-cleaning action for smooth actuation and high contact reliability
- Gold plated contacts prevent oxidation and sulfide effect and provide stable contact resistance
- Gull-wing terminals ensure secure PCB mounting and prevent dislodging during vapor phase and infrared convection reflow soldering
- Terminal spacing conforms to standard PCB grid:
JS02 .100: (2.54mm); **JS04** .050" (1.27mm)



- Use of self-extinguishing UL 94V-0 certified material in cover and base provides high arc resistance and high insulation resistance
- End-to-end stackable
- Packaging in tape-reel or stick-tube. Tape reel packaging meets EIA-481-D Standard.
- Coplanarity: all considered surfaces must lie between two parallel planes that are a maximum distance apart of .0059" (0.15mm)

Resistive Load
Switching Rating: 25mA @ 24V DC
Nonswitching Rating: 0.1A @ 50V DC
Contact Resistance: JS02 & JS04 50 milliohms max
Insulation Resistance: JS02 100 megohms min @ 500V DC; JS04 100 megohms min @ 100V DC
Dielectric Strength: JS02 500V AC min for 1 minute min; JS04 300V AC min for 1 minute min
Mechanical Life: JS02 & JS04 2,000 operations min
Electrical Life: JS02 & JS04 2,000 operations min
Total Travel: JS02 .031" (0.8mm) JS04 .026" (0.65mm)
Operating Temperature Range: JS02 Extended Actuator -25°C ~ +70°C (-13°F ~ +158°F) JS04 Flush Actuator -30°C ~ +85°C (-22°F ~ +185°F)

SIDE ACTUATED SMT SLIDE

Characteristics & Specifications

SS3 Series Ultra-Miniature Slide

- High density mounting and close stacking of PC boards credited to compact dimensions and low profile
- Crisp actuation positively indicates circuit status
- Smoother, positive detent actuation, increased contact stability, and unparalleled logic-level reliability benefits of STC mechanism
- Heat resistant resin permits vapor phase and infrared convection reflow soldering
- Gull-wing terminals provide mechanical stability during soldering and simplified solder joint inspection
- Insert molded terminals, with metric spacing for standard PC board grid (2.0mm x 2.0mm), lock out flux and contaminants



- Tape-reel or partitioned tray packaging. Tape reel packaging meets EIA-481-D Standard.
- Coplanarity: all considered surfaces must lie between two parallel planes that are a maximum distance apart of .0059" (0.15mm)

Resistive Load
Logic Level: 0.4VA max @ 28V AC/DC max (Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)
Contact Resistance: 50 milliohms max
Insulation Resistance: 100 megohms min @ 500V DC
Dielectric Strength: 500V AC min for 1 minute min
Mechanical Life: 10,000 operations min
Electrical Life: 10,000 operations min
Contact Timing: SS312S - Shorting (make-before-break)
Total Travel: .079" (2.0mm)
Operating Temperature Range: -25°C ~ +85°C (-13°F ~ +185°F)

PROCESS SEALED SMT TACTILE

Characteristics & Specifications

CB3 Series 6mm Ultra-Miniature Tactile

- Sealed construction prevents contact contamination and allows automated soldering and cleaning
- .244" (6.2mm) square body facilitates compact mounting
- Heat tolerant resin for actuator and base meets flammability rating of UL 94V-0 and maintains switch reliability through vapor phase and infrared convection reflow soldering
- Dome contact delivers crisp tactile feedback, positively indicating circuit transfer and assuring high reliability and long life of over 100,000 operations
- Gull-wing terminals ensure mechanical stability during soldering and simplify solder joint inspection
- Insert molded terminals lock out flux, solvents and contaminants



- Packaging in tape-reel or partitioned tray. Tape reel packaging meets EIA-481-D Standard.
- Coplanarity: all considered surfaces must lie between two parallel planes that are a maximum distance apart of .0059" (0.15mm)

Resistive Load
Low/Logic Level: 50mA @ 24V DC max
Contact Resistance: 100 milliohms max
Insulation Resistance: 100 megohms min @ 250V DC
Dielectric Strength: 250V AC min between contacts & between contacts & case for 1 minute min
Mechanical Life: 100,000 operations min
Electrical Life: 100,000 operations min
Nominal Operating Force: 1.57N
Total Travel: .010" (0.25mm)
Operating Temperature Range: -25°C ~ +70°C (-13°F ~ +158°F)

FLAT BUTTON SMT TACTILE

Characteristics & Specifications

HP03 Series 6mm Ultra-Miniature Tactile

- Compact body dimension of .244" (6.2mm) square benefits high density mounting
- Heat resistant resin body meets lead-free solder processing requirements and flammability rating for UL 94V-0
- Gold plated contacts option for very low voltage/current applications offers advantages of little or no oxidization or sulfurization and stable contact resistance
- Gull-wing terminals provide mechanical stability during soldering and simplified solder joint inspection
- Insert molded terminals lock out flux, solvents and other contaminants, and allow automated soldering
 - Stick-tube and tape-reel packaging promote rapid automated placement. Tape reel packaging meets EIA-481-D Standard.
 - Coplanarity: all considered surfaces must lie between two parallel planes that are a maximum distance apart of .0039" (0.10mm)



Resistive Load
Power Level for Silver: 3VA max @ 28V DC max (Applicable Range 10mA ~ 125mA @ 0.1V ~ 28V)
Logic Level for Gold: 0.4VA max @ 28V AC/DC max (Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)
Contact Resistance: 100 milliohms max
Insulation Resistance: 100 megohms min @ 100V DC
Dielectric Strength: 250V AC min for 1 minute min between contacts & between contacts & case
Mechanical Life: 500,000 operations min
Electrical Life: 500,000 operations min
Nominal Operating Force: 1.6N
Total Travel: .008" (0.2mm)
Operating Temperature Range: -20°C ~ +70°C (-4°F ~ +158°F)