

General Specifications

Electrical Capacity (Resistive Load)

Logic Level: 0.4VA maximum @ 28V AC/DC maximum
(Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)
Note: Find additional explanation of operating range in Supplement section.

Other Ratings

Contact Resistance: 80 milliohms maximum
Insulation Resistance: 500 megohms minimum @ 500V DC
Dielectric Strength: 500V AC minimum for 1 minute minimum
Mechanical Life: 100,000 operations minimum for On-None-On & On-Off-On
50,000 operations minimum for other circuits
Electrical Life: 100,000 operations minimum for On-None-On & On-Off-On
50,000 operations minimum for other circuits

Nominal Operating Force: 0.93N for momentary & 1.20N for maintained
Angle of Throw: 28°

Materials & Finishes

Actuator: Glass fiber reinforced polyamide
Case: Glass fiber reinforced polyamide
Sealing Rings: Nitrile butadiene rubber
Movable Contacts: Phosphor bronze with gold plating
Stationary Contacts: Phosphor bronze with gold plating
Base: Glass fiber reinforced polyamide
Terminals: Phosphor bronze with gold plating
Support Bracket: Phosphor bronze with tin plating

Environmental Data

Operating Temperature Range: -25°C through +85°C (-13°F through +185°F)
Humidity: 90 ~ 95% humidity for 96 hours @ 40°C (104°F)
Vibration: 10 ~ 55Hz with peak-to-peak amplitude of 1.5mm traversing the frequency range & returning in 1 minute; 3 right angled directions for 2 hours
Shock: 50G (490m/s²) acceleration (tested in 6 right angled directions, with 5 shocks in each direction)

PCB Processing

Soldering: Wave Soldering recommended: See Profile A in Supplement section.
Manual Soldering: See Profile A in Supplement section.
Cleaning: Automated cleaning. See Cleaning specifications in Supplement section.

Standards & Certifications

The G Series toggles have not been tested for UL recognition or CSA certification. These switches are designed for use in a low-voltage, low-current, logic-level circuit. When used as intended in a logic-level circuit, the results do not produce hazardous energy.

Distinctive Characteristics

Ultra-miniature size allows high density mounting, and extremely light weight of 0.25 gram makes these switches ideal for handheld equipment.

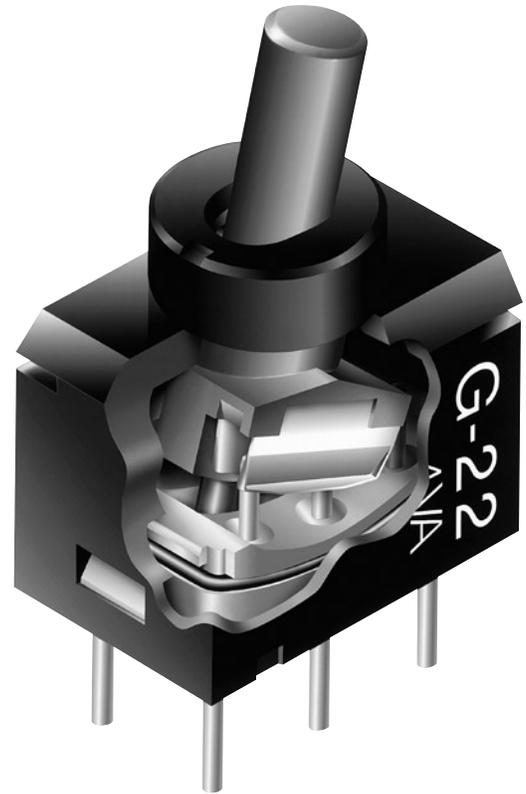
Totally sealed body construction prevents contact contamination and allows time- and money-saving automated soldering and cleaning.

Molded-in, epoxy sealed terminals lock out flux, solvents, and other contaminants.

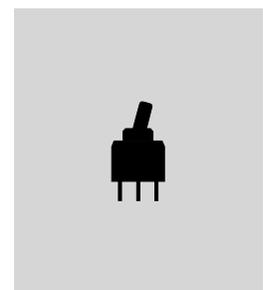
Award-winning STC contact mechanism with benefits unavailable in conventional mechanisms: smooth, positive detent actuation, increased contact stability, and unparalleled logic-level reliability. (Additional STC details in Terms & Acronyms; see Supplement section.)

.100" x .100" (2.54mm x 2.54mm) terminal spacing conforms to standard PC board grid spacing. Round terminals facilitate easier through-hole mounting on PC boards.

Matching indicators available.



Actual Size



| | |
|---|----------------|
| A | Toggles |
| | Rockers |
| | Pushbuttons |
| | Illuminated PB |
| | Programmable |
| | Keylocks |
| | Rotaries |
| | Slides |
| | Tactiles |
| | Tilt |
| | Touch |
| | Indicators |
| | Accessories |
| | Supplement |

TYPICAL SWITCH ORDERING EXAMPLE

G **1** **3** **A** **H**

| Poles | | Circuits | | | Actuator | | PC Terminals | | |
|-------|------|----------|------|------|----------|---|--------------------------------|---|-------------|
| 1 | SPDT | 2 | ON | NONE | ON | A | .150" (3.8mm) Column Toggle | P | Straight |
| 2 | DPDT | 3 | ON | OFF | ON | | | H | Right Angle |
| | | 5 | ON | NONE | (ON) | | | V | Vertical |
| | | 8 | (ON) | OFF | (ON) | | | | |
| | | 9 | ON | OFF | (ON) | | | | |

() = Momentary

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

G13AH



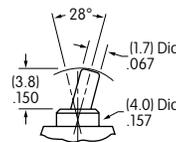
POLES & CIRCUITS

| Pole | Model | Toggle Position () = Momentary | | | Connected Terminals | | | Throw & Schematics |
|------|---------------------------------|------------------------------------|-----------------------------------|----------------------------------|---------------------|--------|---------|--------------------|
| | | Up | Center | Down | Up | Center | Down | |
| SP | G12 G13 G15 G18 G19 | ON ON ON (ON) ON | NONE OFF NONE OFF OFF | ON ON (ON) (ON) (ON) | 5-6 | OPEN | 5-4 | SPDT |
| DP | G22 G23 G25 G28 G29 | ON ON ON (ON) ON | NONE OFF NONE OFF OFF | ON ON (ON) (ON) (ON) | 5-6 2-3 | OPEN | 5-4 2-1 | DPDT |

Note: Terminal numbers are not actually on the switch.

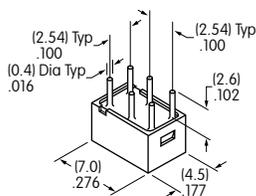
ACTUATOR

A .150" (3.8mm) Column Toggle

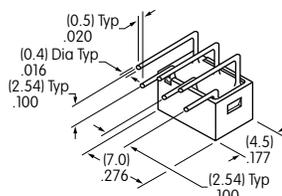


PC TERMINALS

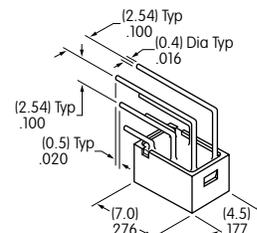
P Straight



H Right Angle

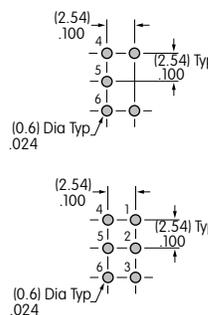
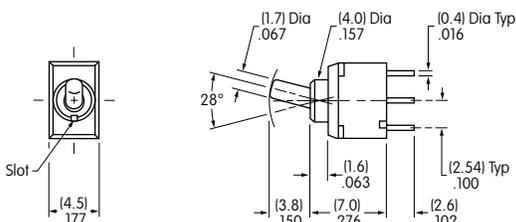


V Vertical



TYPICAL SWITCH DIMENSIONS

Single & Double Pole



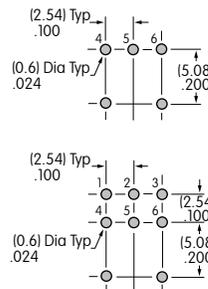
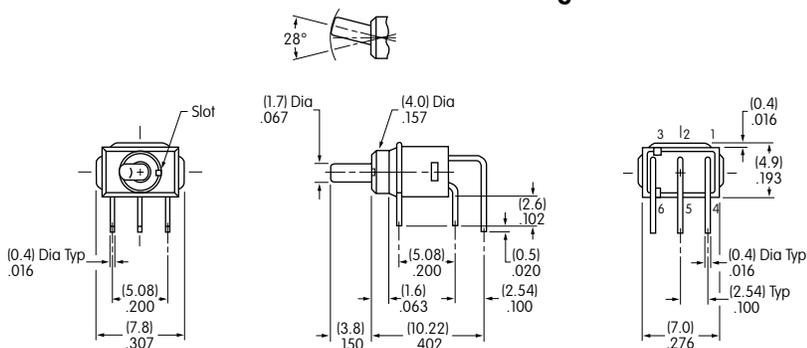
Straight PC



G19AP

On single pole models, locations 1 & 3 are for support pins.

Single & Double Pole

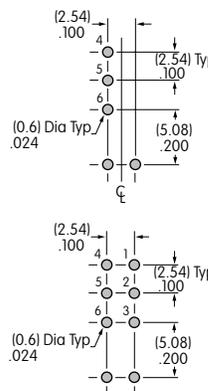
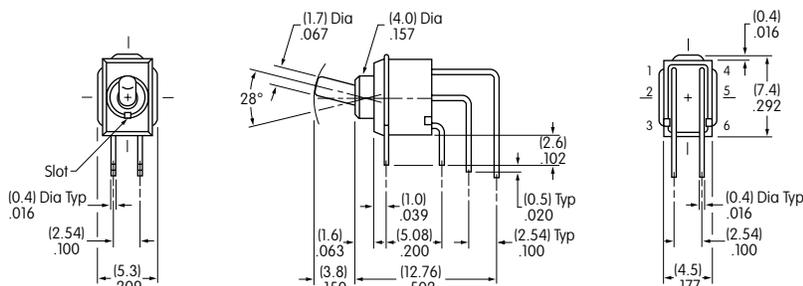


Right Angle PC



G19AH

Single & Double Pole



Vertical PC



G22AV

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

NKK Switches:

[G29AP](#) [G12AP](#) [G22AV](#) [G22AP](#) [G25AP](#) [G23AP](#) [G23AH](#) [G13AV](#) [G13AP](#) [G22AH-RO](#) [G18AP-RO](#) [G28AV](#)
[G28AH](#) [G25AV](#) [G28AP](#) [G19AV](#) [G25AH](#) [G15AV](#) [G18AP](#) [G15AP](#) [G29AV](#) [G15AH](#) [G18AV](#) [G13AW](#) [G13AH](#)
[G23AV](#) [G12AV](#) [G18AH](#) [G19AH](#) [G19AP](#) [G12AH](#) [G29AH](#) [G22AH](#)