

General Specifications

Electrical Capacity (Resistive Load)

Logic Level: 0.4VA maximum @ 28V AC/DC maximum
(Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)

Other Ratings

Contact Resistance: 50 milliohms maximum
Insulation Resistance: 500 megohms minimum @ 250V DC
Dielectric Strength: 250V AC minimum between contacts for 1 minute minimum
Mechanical Life: 500,000 operations minimum
Electrical Life: 500,000 operations minimum
Nominal Operating Force: **Standard:** 1.5 ±0.5 Newtons
High: 2.5N ±0.8 Newtons
Stroke: 1.5mm (.059")

Materials & Finishes

Actuator: Silicon rubber
Case: Polycarbonate resin
Base: Glass fiber reinforced polyamide resin
Movable Contact: Silver over nickel with gold plating
Stationary Contacts: Brass with gold plating
Switch Terminals: Brass with gold plating

Environmental Data

Operating Temperature Range: -25°C through +50°C (-13°F through +122°F) for Illuminated
-25°C through +70°C (-13°F through +158°F) for Nonilluminated
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)

Installation

Cap Installation Force: 5.0N maximum downward force on actuator

PCB Processing

Soldering: Wave Soldering: 270°C maximum @ 6 seconds maximum
Manual Soldering: 390°C maximum @ 4 seconds maximum
Cleaning: These devices are not process sealed. Hand clean locally using alcohol based solution.

Standards & Certifications

The NP01 Series pushbuttons 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

Soft touch actuation achieved by mechanical silicon rubber structure.

Distinct, long stroke of 1.5mm (.059").

Entire cap is fully illuminated with single or bicolor LED.

Compact design with dimension of 12.5mm (.492") from PC board to top of cap.

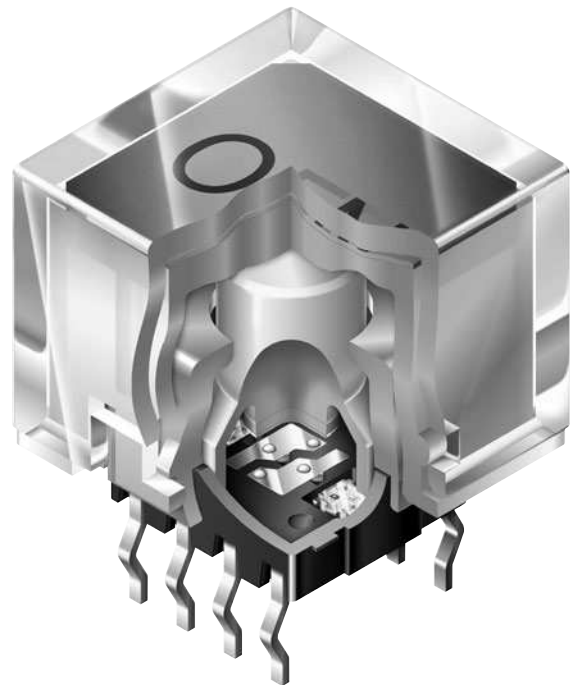
Alternating legend options (patent pending) with bicolor LED.

Available in both high (2.5N) or standard (1.5N) operating force.

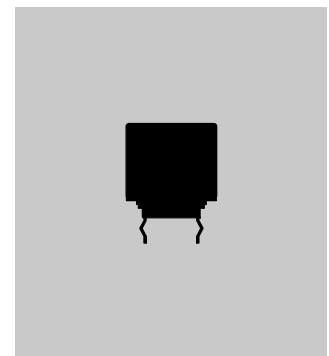
Gold plated contacts provide high reliability.

Crimped terminals ensure secure PC mounting and prevent dislodging during soldering.

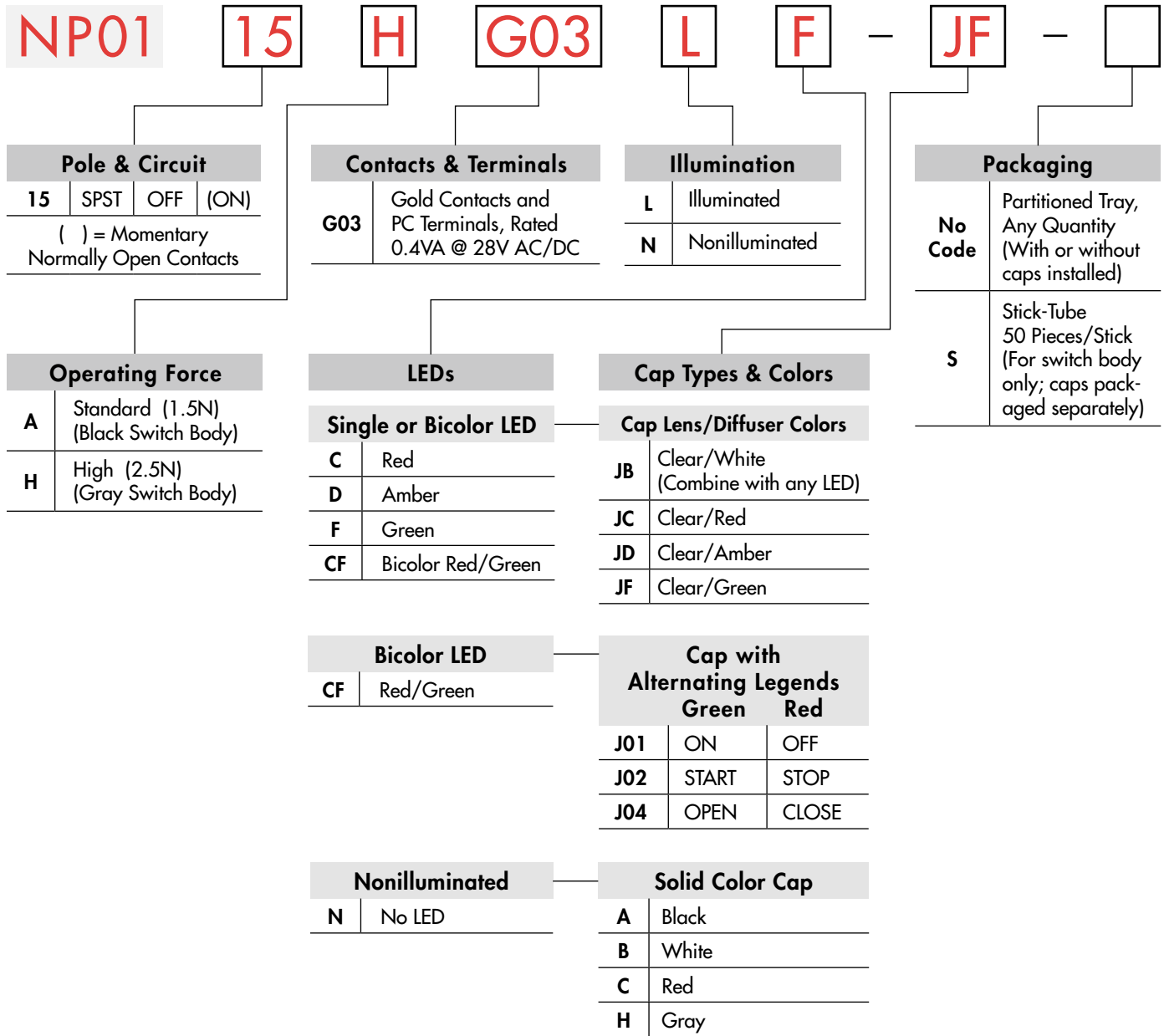
Molded-in terminals prevent entry of flux, solvents, and other contaminants.



Actual Size

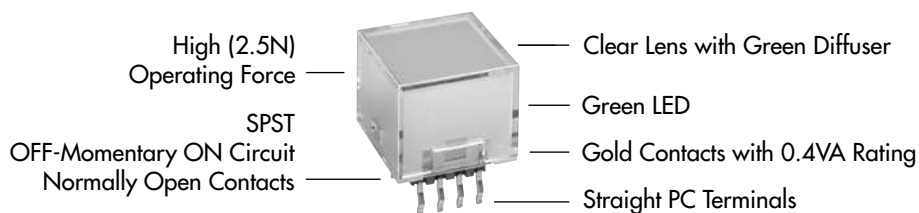


TYPICAL SWITCH ORDERING EXAMPLE



DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

NP0115HG03LF-JF



POLE & CIRCUIT

Illuminated Models

		Plunger Position () = Momentary		Connected Terminals		Throw & Switch Schematic
Pole	Model	Normal	Down			
						Notes: Switch is marked with LC1, 1, L3, L4, L1, L2, 2, LC2. Lamp circuit is isolated and requires an external power source.
SP	NP0115AG03L NP0115HG03L	OFF	(ON)	Normally Open	1-2	

Nonilluminated Models

		Plunger Position () = Momentary		Connected Terminals		Throw & Switch Schematic
Pole	Model	Normal	Down			
						Note: Switch is marked with LC1, 1, L3, L4, L1, L2, 2, LC2.
SP	NP0115AG03N NP0115HG03N	OFF	(ON)	Normally Open	1-2	

OPERATING FORCE

A Standard Nominal Operating Force
 1.5 ±0.5N
 Switch base is Black

H High Nominal Operating Force
 2.5 ±0.8N
 Switch base is Gray

CONTACTS, TERMINALS, & RATING

G03 Gold Contacts Straight PC Terminals 0.4VA maximum @ 28V AC/DC maximum

ILLUMINATION

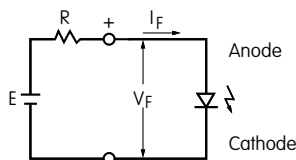
L Illuminated

N Nonilluminated

LED COLORS & SPECIFICATIONS

LEDs are an integral part of the switch and not available separately. The electrical specifications shown are determined at a basic temperature of 25°C.

If the source voltage exceeds the forward voltage, a ballast resistor is required.



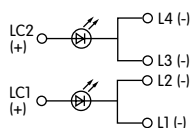
$$R = \frac{E - V_F}{I_F}$$

Where: R = Resistor Value (Ohms)
E = Source Voltage (V)
V_F = Forward Voltage (V)
I_F = Forward Current (A)

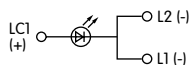
Single Color LED				Bicolor LED				
Color	Symbol	C	D	F	Color	Symbol	CF	
		Red	Amber	Green			Red	Green
Forward Peak Current	I _{FM}	50mA	50mA	30mA	Forward Peak Current	I _{FM}	50mA	30mA
Typical Forward Current	I _F	20mA	20mA	20mA	Typical Forward Current	I _F	20mA	20mA
Forward Voltage	V _F	2.0V	2.1V	3.5V	Forward Voltage	V _F	2.0V	3.5V
Reverse Peak Voltage	V _{RM}	5V	5V	5V	Reverse Peak Voltage	V _{RM}	5V	5V
Current Reduction Rate	ΔI _F	0.88mA/°C above 40°C	0.88mA/°C above 40°C	0.48mA/°C above 30°C	Current Reduction Rate	ΔI _F	0.88mA/°C above 40°C	0.48mA/°C above 30°C
Ambient Temperature Range		-25° ~ +50°C			Ambient Temperature Range		-25° ~ +50°C	

The electrical specifications shown are determined at a basic temperature of 25°C.

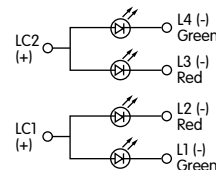
Amber LED



Red or Green LEDs



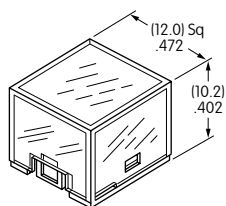
Red/Green Bicolor LED



CAP TYPES & COLORS

Cap for Single or Bicolor LED

AT3022
12mm Square Cap



Material:
Polycarbonate Resin

JB

Clear Lens/White Diffuser

JD

Clear Lens/Amber Diffuser

JC

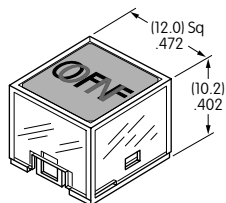
Clear Lens/Red Diffuser

JF

Clear Lens/Green Diffuser

Alternating Legend Cap for Bicolor LED

AT3023
12mm Square Cap



Material:
Polycarbonate Resin

Clear Lens
Alternating Legend Filter

Standard Alternating Legend Pairs

J01

ON

Green

OFF

Red

J02

START

Green

STOP

Red

J04

OPEN

Green

CLOSE

Red

Cap illumination is alternating Green/Red; legend text is black.

Contact factory for other Alternating Legends.

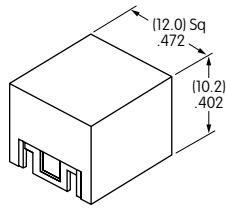
Legend illustrations are approximate representations of the actual characters on the filters.

CAP TYPES & COLORS (CONTINUED)

Solid Color Cap for Nonilluminated

AT3024
12mm Square Cap

Material:
Polycarbonate Resin



Black



White



Red



Gray

TYPICAL SWITCH DIMENSIONS



Illuminated • Straight PC



NP0115HG03LF-JF

PACKAGING



Partitioned Tray

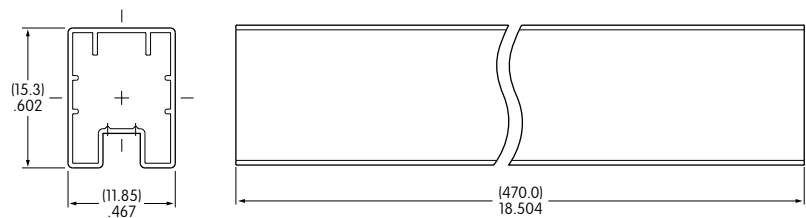
Any quantity. No code is required. Switches may be packaged with or without caps installed.



Stick-Tube Packaging

50 pieces per stick

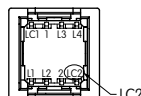
Switches must be ordered in 50-piece increments when stick-tube packaging is selected. This packaging is for the switch body only. Caps will be packaged separately.



LEGEND ORIENTATION

Top View

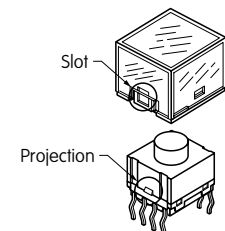
Bottom View



Orient cap with legend as shown here, and "LC2" at lower right of switch body. Orders for switches with legends will be assembled as illustrated.

PRECAUTIONS FOR HANDLING & STORAGE

- NP01 Pushbuttons are electrostatically sensitive. To prevent damage to LED, devices must be properly isolated from static electricity.
 - Once the cap is installed onto the switch body, it cannot be removed.
 - When assembling cap, align projection on switch body to slot on inside of cap. (Refer to illustration at right.)
 - * Legends may be printed on the lens with laser etch, screen print or pad print methods. Epoxy based ink is recommended.
 - Do not use excessive force during installation on PC board or for cap installation.
- * NKK Switches can provide custom legends for caps. Contact factory for more information.



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