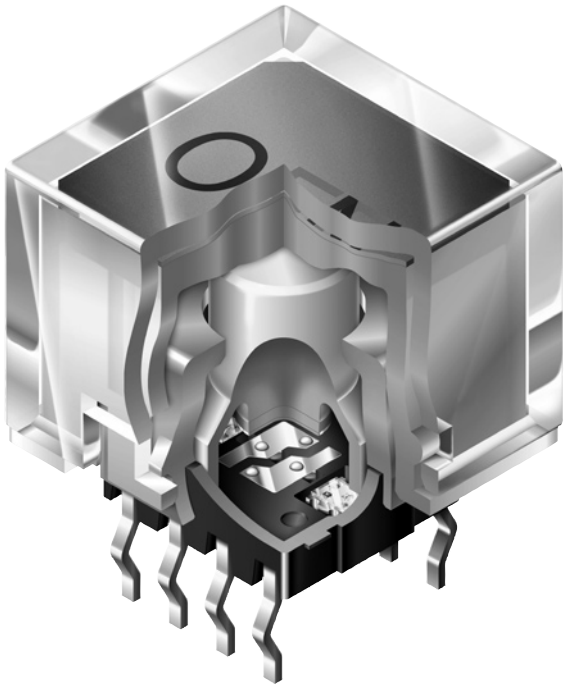
Distinctive Characteristics

Soft touch actuation achieved by mechanical silicon rubber structure (patent pending).

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.

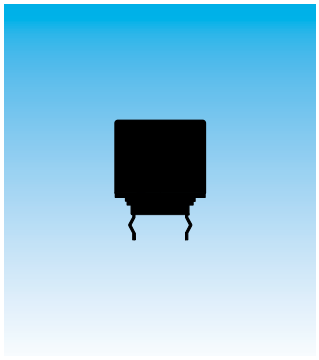
Gold plated contacts provide high reliability.

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

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

Nonilluminated models available.

Actual Size



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: **Illuminated:** –25°C through +50°C (–13°F through +122°F)
Nonilluminated: –25°C through +70°C (–13°F through +158°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/s^2) 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

UL Recognition or CSA Certification: 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.

TYPICAL SWITCH ORDERING EXAMPLE

NP01 [15] [H] [G03] [L] [F] – [JF] – [ ]

POLE & CIRCUIT

15	SPST	OFF	(ON)

( ) = Momentary Normally Open Contacts

CONTACTS & TERMINALS

G03	Gold Contacts and PC Terminals, Rated 0.4VA @ 28V AC/DC

ILLUMINATION

L	Illuminated
N	Nonilluminated

PACKAGING

No Code	Partitioned Tray, Any Quantity (With or without caps installed)
S	Stick-Tube 50 Pieces/Stick (For switch body only; caps packaged separately)

OPERATING FORCE

A	Standard (1.5N) (Black Switch Body)
H	High (2.5N) (Gray Switch Body)

LEDS

Single or Bicolor LED

C	Red
D	Amber
F	Green
CF	Bicolor Red/Green

Bicolor LED

CF	Red/Green

Nonilluminated

N	No LED

CAP TYPES & COLORS

Cap Lens/Diffuser Colors

JB	Clear/White (Combine with any LED)
JC	Clear/Red
JD	Clear/Amber
JF	Clear/Green

Cap with ALTERNATING LEGENDS

	GREEN	RED
J01	ON	OFF
J02	START	STOP
J04	OPEN	CLOSE

Solid Color Cap

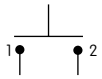
A	Black
B	White
C	Red
H	Gray

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

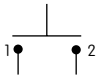
NP0115HG03LF-JF

POLE & CIRCUIT

Illuminated Models

Pole	Model	Plunger Position ( ) = Momentary: Normal	Plunger Position ( ) = Momentary: Down	Connected Terminals		Throw & Switch Schematic
						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	SPST  

Nonilluminated Models

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

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

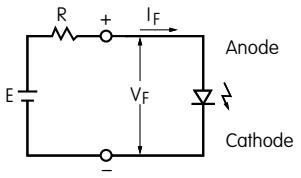
L **Illuminated**

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.



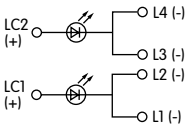
$$R = \frac{E - V_F}{I_F}$$

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

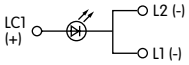
Single Color LED					Bicolor LED			
Attention Electrostatic Sensitive Devices	Color	C Red	D Amber	F Green	Attention Electrostatic Sensitive Devices	Color	CF Red	CF Green
Forward Peak Current	I_{FM}	50mA	50mA	30mA	Forward Peak Current	I_{FM}	50mA	30mA
Continuous Forward Current	I_F	20mA	20mA	20mA	Continuous 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.

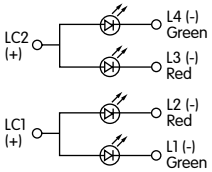
Amber LED



Red or Green LEDs



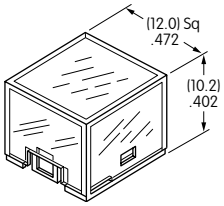
Red/Green Bicolor LED



CAP TYPES & COLORS

AT3022
12mm Square Cap

Material:
Polycarbonate Resin

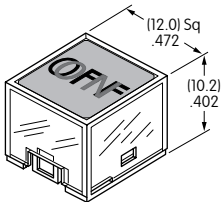


Cap for Single or Bicolor LED

JB	Clear Lens/White Diffuser	JD	Clear Lens/Amber Diffuser
JC	Clear Lens/Red Diffuser	JF	Clear Lens/Green Diffuser

AT3023
12mm Square Cap

Material:
Polycarbonate Resin



Alternating Legend Cap for Bicolor LED

Clear Lens
Alternating Legend Filter

Standard Alternating Legend Pairs

J01	ON	OFF	J02	START	STOP	J04	OPEN	CLOSE
	Green	Red		Green	Red		Green	Red

Cap illumination is alternating Green/Red; legend text is black.
Contact factory for other Alternating Legends.

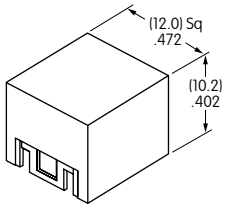
Legend illustrations are approximate representations of the actual characters on the filters.

CAP TYPES & COLORS (CONTINUED)

Solid Color Cap for Nonilluminated

AT3024
12mm Square Cap

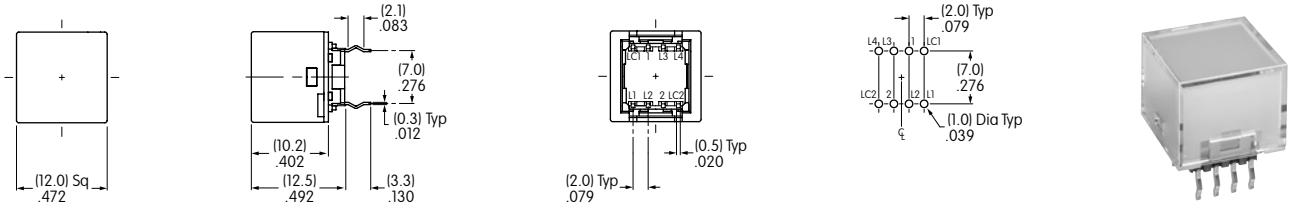
Material:
Polycarbonate Resin



A	Black	C	Red
B	White	H	Gray

TYPICAL SWITCH DIMENSIONS

Illuminated • Straight PC



NP0115HG03LF-JF

PACKAGING

No Code

Partitioned Tray

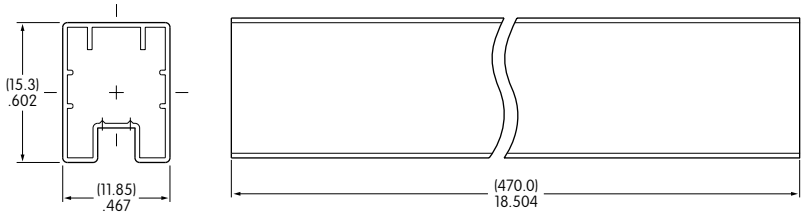
Any quantity. No code is required. Switches may be packaged with or without caps installed.

S

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.



PRECAUTIONS FOR HANDLING & STORAGE

1. NP01 Pushbuttons are electrostatically sensitive. To prevent damage to LED, devices must be properly isolated from static electricity.
2. Once the cap is installed onto the switch body, it cannot be removed.
3. When assembling cap, align projection on switch body to slot on inside of cap. (Refer to illustration at right.)
4. Legends may be printed on the lens with laser etch, screen print or pad print methods. Epoxy based ink is recommended.
5. Do not use excessive force during installation on PC board or for cap installation.