Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

Toggles

Rockers

Pushbuttons

Illuminated PB   D

Programmable

Keylocks

Rotaries

Slides

Tactiles

Tilt

Touch

Indicators

Accessories

Supplement

Distinctive Characteristics

Brilliant illumination for highly visible status indication with LEDs and caps in red, green, or amber; subdued illumination for low light requirements with white cap over red, green, or amber LEDs.
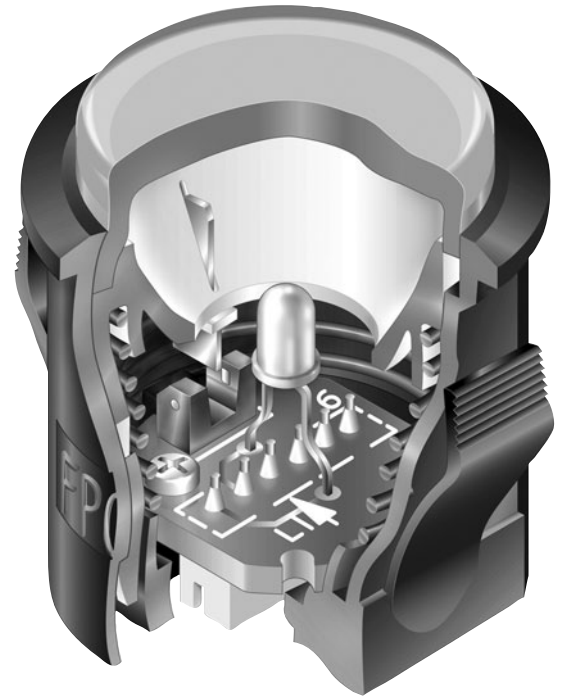
Photo interrupter, rather than contacts, ensures high reliability and long life of 3 million operations minimum.

Rugged construction and smooth actuation allow repeated, rapid actuation force anywhere on cap surface.
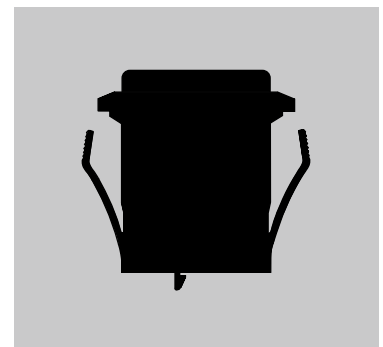
Snap-in mounting for easy installation.

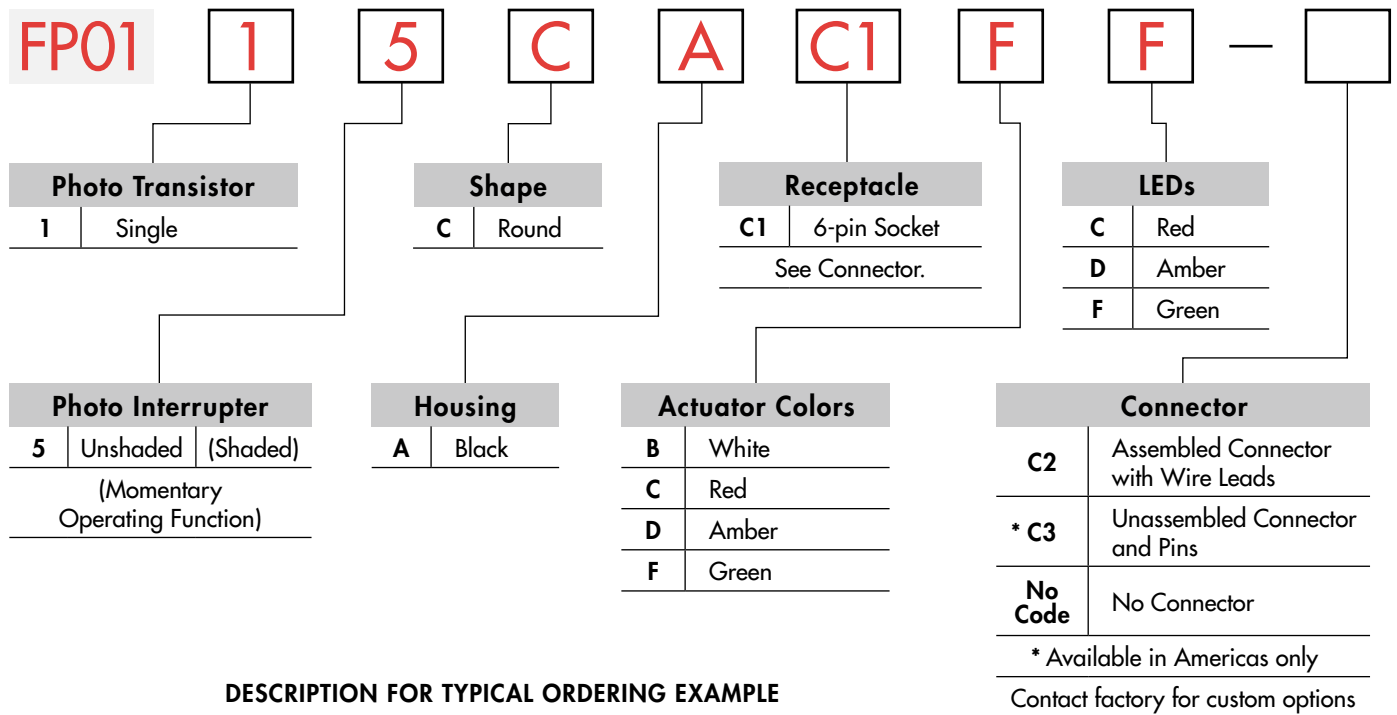Connector socket with 6 pins for simple connection.

Well suited for gaming and vending machines, as well as equipment exposed to corrosive gases used in environments such as chemical or steel manufacturing plants.

Actual Size

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

TYPICAL SWITCH ORDERING EXAMPLE

FP01 1 5 C A C1 F F — ☐

Photo Transistor

1	Single

Shape

C	Round

Receptacle

C1	6-pin Socket
See Connector.	

LEDs

C	Red
D	Amber
F	Green

Photo Interrupter

5	Unshaded (Shaded)

(Momentary Operating Function)

Housing

A	Black

Actuator Colors

B	White
C	Red
D	Amber
F	Green

Connector

C2	Assembled Connector with Wire Leads
* C3	Unassembled Connector and Pins
No Code	No Connector

* Available in Americas only

Contact factory for custom options

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

FP0115CAC1FF

Green Actuator with Green LED

Single Photo Transistor with Normally Unshaded Photo Interrupter

Round, Black Housing

ACTUATOR & INTERRUPTER

Model		Actuator Position		Photo Interrupter		Schematics
		Normal	**Down**	**Unshaded**	**Shaded**	LED connector pins are 5 & 6; interrupter connector pins are 3-4 & 1-2.
	1			**5**	Normally Unshaded with Momentary Shaded status	
FP0115	Single Photo Transistor	When shaded, the photo transistor momentarily activates electrical function which signals the external device to change its state.				6 ○ ─ ○ 5 4 ○ ─ ○ 3 2 ○ ─ ○ 1

HOUSING SHAPE & COLOR

C	Round Shape

A	Black Housing

RECEPTACLE

C1	6-pin Socket
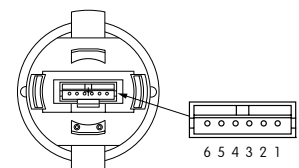
6 5 4 3 2 1

Toggles

Rockers

Pushbuttons

Illuminated PB   D

Programmable

Keylocks

Rotaries

Slides

Tactiles

Tilt

Touch

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SWITCH SPECIFICATIONS

	Actuator Up	Actuator Down
Status of Photo Interrupter:	Unshaded	Shaded
Collector Current I_C:	0.8mA minimum	10µA maximum
Status of Photo Transistor:	On	Off
Output Condition of Photo Transistor:	$I_F = 20mA$ & $V_{CE} = 5V$	

MECHANICAL SPECIFICATIONS

Total Travel:	.079" (2.0mm)
Operating Force:	0.75 N (.169 lbf)
Mechanical Life:	3,000,000 operations minimum
Operating Temperature Range:	−25°C through +50°C (−13°F through +122°F)

MATERIALS

**Actuator:** Polyacetal   **Housing:** Polyamide

PHOTO INTERRUPTER SPECIFICATIONS   (Temperature @ 25°C)

Electrical & Optical Characteristics	Typical	Maximum	Condition
Input			
Forward Voltage V_F:	1.3V	1.6V	$I_F = 50mA$
Reverse Current I_R:		10µA	$F_R = 5V$
Transmission			
Collector-Emitter Saturation Voltage V_{CE} sat:		0.4V	$I_F = 20mA$ & $I_C = 0.1mA$

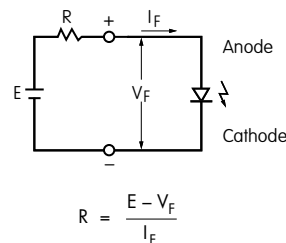| Absolute Maximum Ratings			
Input LED		**Output Photo Transistor**	
Forward Current I_F:	50mA	Collector-Emitter Voltage V_{CEO}:	30V
Reverse Voltage V_R:	5V	Emitter-Collector Voltage V_{ECO}:	4.5V
Power Dissipation P_D:	80mW	Collector Current I_C:	30mA
		Collector Dissipation P_C:	80mW

Circuit Design Considerations

Output of the infrared LED in the photo interrupter decreases approximately 50% after 100,000 hours.

Recommended load resistance (RL) is 40k ~ 120kΩ for the illustrated circuit.

Vcc = 5V

180   RL

O Vout

4   2

3   1

Threshold Voltage
V_{HI}: 3.8V
V_{LO}: 1.0V

GND
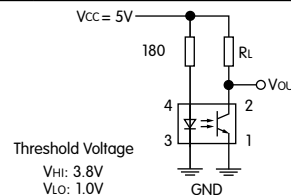
LED COLORS & SPECIFICATIONS

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 rated voltage, a ballast resistor is required.

R   + I_F Anode

E V_F

Cathode

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

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

Single Element LED		C	D	F
	Color	Red	Amber	Green
Forward Peak Current	I_{FM}	30mA	25mA	25mA
Typical Forward Current	I_F	20mA	20mA	20mA
Forward Voltage	V_F	1.85V	2.0V	2.25V
Reverse Peak Voltage	V_{RM}	5V	5V	5V
Current Reduction Rate Above 25°C	ΔI_F	0.38mA /°C	0.28mA /°C	0.40mA /°C
Ambient Temperature Range		−25° ~ +50°C		

NKK SWITCHES

Series FP01

Toggles

Rockers

Pushbuttons

D Illuminated PB

Programmable

Keylocks

Rotaries

Slides

Tactiles

Tilt

Touch

Indicators

Accessories

Supplement

ACTUATOR COLORS

| B | White | C | Red | D | Amber | F | Green |

CONNECTOR OPTIONS
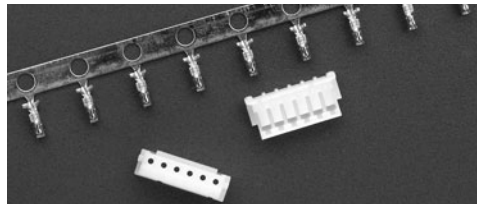
C2 AT021
**Assembled Connector
with Wire Leads**

Connector body: JST model ZHR-6
Crimp connector pins: JST model SZH-002T-P0.5
Wire leads: 28-26AWG; 12-inch, unstripped;
   Blue for Pin 1

C3 AT022
**Unassembled Connector
and Pins**

1 connector and 8 crimp connector pins
only (no wire leads provided).
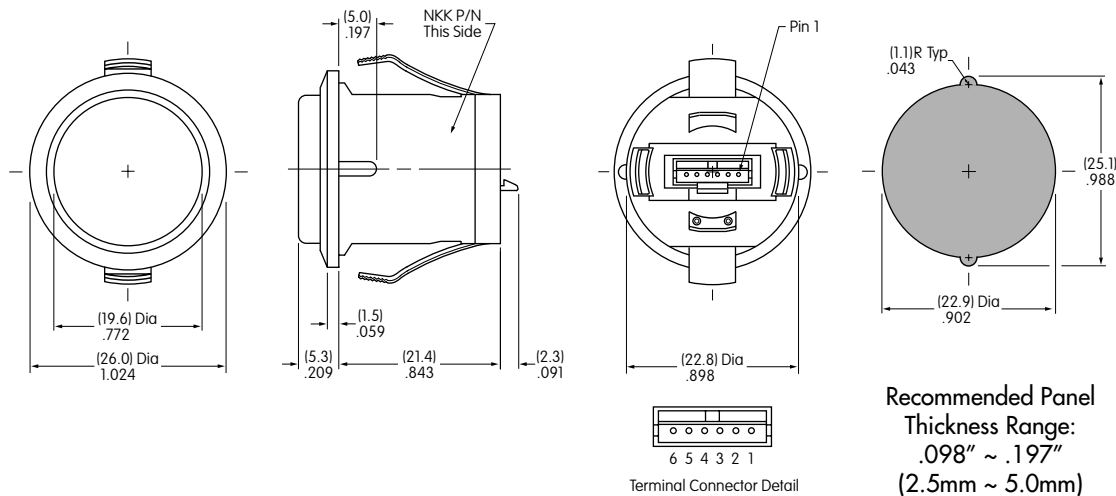
Matching wire leads: 28-26AWG

No Code

No Connector

Recommended connector
for assembly:
JST model number ZHR-6

Recommended crimp
connector pins:
JST model SZH-002T-P0.5
for 28-26AWG wire leads
or SZH-003T-P0.5 for
32-28AWG wire leads.

TYPICAL SWITCH DIMENSIONS

(5.0) .197
NKK P/N This Side

(19.6) Dia .772
(26.0) Dia 1.024

(1.5) .059
(5.3) .209
(21.4) .843
(2.3) .091

Pin 1

(22.8) Dia .898

6 5 4 3 2 1
Terminal Connector Detail

(1.1)R Typ .043
(25.1) .988
(22.9) Dia .902

Recommended Panel
Thickness Range:
.098" ~ .197"
(2.5mm ~ 5.0mm)
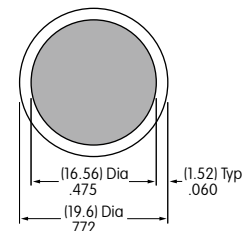
FP0115CAC1FF

LEGENDS

NKK Switches can provide custom legends for caps. Contact factory for more information.

Suggested Printable Area for FP01 Cap

ALERT

Recommended Methods:

Screen Print on cap.

Epoxy based ink is recommended.

(16.56) Dia .475
(1.52) Typ .060
(19.6) Dia .772

Shaded area is printable area.

NKK SWITCHES