General Specifications

Electrical Capacity (Resistive Load)

Low Level: 100mA maximum @ 12V DC

Other Ratings

Contact Resistance: 200 milliohms maximum
Insulation Resistance: 100 megohms minimum @ 250V DC
Dielectric Strength: 1,000V AC minimum between contacts for 1 minute minimum
1,500V AC minimum between contacts & case for 1 minute minimum
Mechanical Life: 5,000,000 operations minimum;
1,000,000 operations minimum for custom Rectangular Switch/Cap Assembly (at center of cap)
Electrical Life: 5,000,000 operations minimum
Nominal Operating Force: **KP01:** 1.9N maximum for Tactile & Nontactile models (at center of cap)
KP02: 1.6N maximum for Tactile, Nontactile & Tactile/Audible models (at center of cap)
Travel: **KP01:** Pretravel .122" (3.1mm); Overtravel .055" (1.4mm); Total Travel .177" (4.5mm)
KP02: Pretravel .091" (2.3mm); Overtravel .047" (1.2mm); Total Travel .138" (3.5mm)

Materials & Finishes

Plunger/Upper Housing: Polyacetal
Lower Housing: Glass fiber reinforced PBT (UL94V-0)
Movable Contact: Stainless steel with gold plating
Stationary Contacts: Gold over copper alloy
Switch Terminals: Brass with tin plating

Environmental Data

Operating Temperature Range: –25°C through +50°C (–13°F through +122°F)
Humidity: 90-95% humidity for 240 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: 51G (500m/s^2) acceleration (tested in 6 right angled directions, with 5 shocks in each direction)

Installation

Cap Installation Force : 50.0N maximum downward force on actuator

PCB Processing

Soldering: Wave Soldering. See Profile A in Supplement section.
Manual Soldering: See Profile A in Supplement section.
Cleaning: These devices are not process sealed. Hand clean locally using alcohol based solution.

Standards & Certifications

Flammability Standards: UL94V-0 lower housing

The KP 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

KP series offers a complete switch solution for all broadcast panel needs, including home keys and the custom rectangular switch/cap assembly.

Distinct, long total travel of .177" (4.5mm) for KP01 or shorter stroke of .138 (3.5mm) for KP02.

Available with super bright red/green bicolor LED and RGB LEDs. The RGB LED full color spectrum in a switch package provides unlimited color combinations.

Specially designed snap-in standoff for simple and secure PC board mounting and alignment.

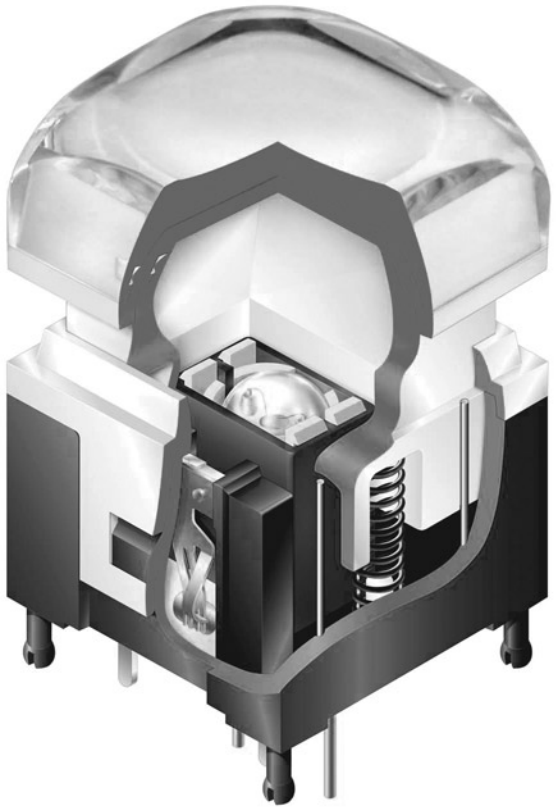
Unique actuation guide gives positive indication of circuit transfer as well as smooth and silent operation. (Patent pending).

Choices of tactile, nontactile or tactile/audible actuation.

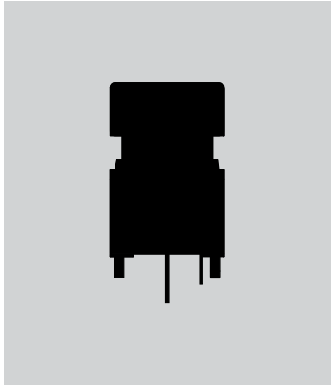
Compact design with height of .906" (23.0mm) from PC board to top of cap. (Same height as programmable SmartSwitch™.)

Flat, sculptured or home key square caps in three common sizes for design flexibility in audio/video applications.

Twin contacts with gold plating assure high reliability and long life of 5,000,000 operations minimum.



Actual Size



TYPICAL SWITCH ORDERING EXAMPLE

KP | 01 | 15A | N | B | K | G03 | 6CF | – | 2 | S | JB

Pole & Circuit

15A	SPST	OFF	(ON)

( ) = Momentary
Normally Open Contacts

Travel & Force

01	Stroke: 4.5mm (.177″) Actuation Force: 1.9N
02	Stroke: 3.5mm (.138″) Actuation Force: 1.6N

Actuation

01

C	Tactile
N	Nontactile

02

C	Tactile
N	Nontactile
S	Tactile/Audible

Housing

K	Black only

Plungers

A	9.2mm Plunger for 12.0mm Cap
B	11.6mm Plunger for 15.0mm & 17.4mm Caps

LEDs

6CF	Super Bright Red/Green Bicolor
RGB	Red/Green/Blue (Custom)

* See Note

Contacts & Terminals

G03	Gold Contacts and Straight PC Terminals; 100mA @ 12V DC

Cap Colors

JB	Clear Lens & White Diffuser

Cap Types

F	Flat
S	Sculptured
T	Home Key

Cap Sizes

1	12.0mm Square
2	15.0mm Square
3	17.4mm Square

** See Note

Notes

* Custom RGB LED Page D42

** Custom Rectangular Cap Page D43

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

KP0115ANBKG036CF-2SJB

11.6mm Plunger and
15.0mm Sculptured Cap
Clear Lens and White Diffuser

SPST
OFF-Momentary ON Circuit
Normally Open Contacts

Super Bright
Red/Green Bicolor LED

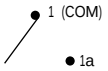
Nontactile Actuation

Black Housing

Gold Contacts with 100mA Rating

Straight PC Terminals

POLE & CIRCUIT

Pole	Model	Plunger Position ( ) = Momentary: Normal	Plunger Position ( ) = Momentary: Down	Connected Terminals: Normal	Connected Terminals: Down	Throw & Switch Schematic
						Note: Switch terminals "1" & "1a" are actually marked on the switch.
SP	**KP0115A** **KP0215A**	OFF	(ON)	Normally Open	1-1a	SPST 

ACTUATION

C **Tactile**
KP01 or KP02

N **Nontactile**
KP01 or KP02

S **Tactile/Audible**
KP02 only

HOUSING

K **Black only**

CONTACTS, TERMINALS, & RATING

G03 **Gold Contacts** | **Straight PC Terminals** | **100mA @ 12V DC**

SUPER BRIGHT BICOLOR LED SPECIFICATIONS

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

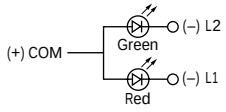
ATTENTION
ELECTROSTATIC SENSITIVE DEVICES

LEDs are an integral part of the switch and are not available separately.

LED circuit is isolated and requires an external power source.

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

The resistor value can be calculated by using the formula in the Supplement section.

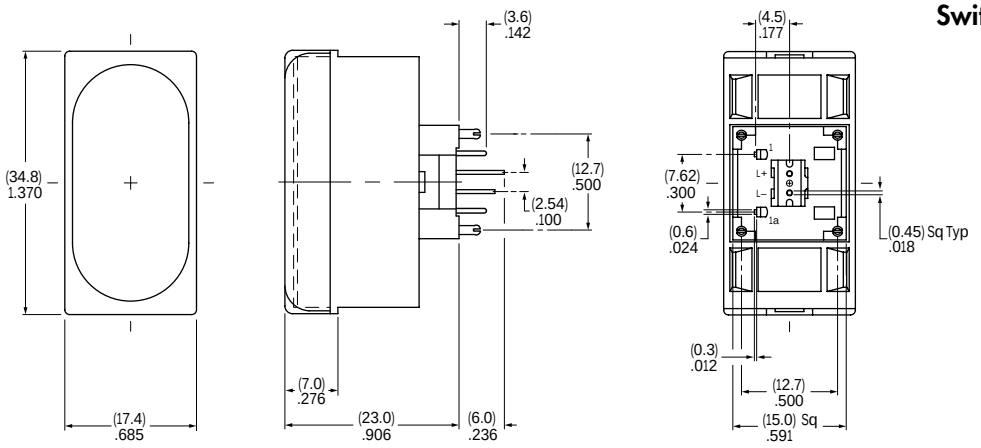


Colors		6CF Red	6CF Green	Unit
Minimum Luminous Intensity	I_V	450	820	mcd
Standard Luminous Intensity	I_V	700	1100	mcd
Forward Peak Current	I_{FM}	30 (25 for amber)	25 (22 for amber)	mA
Continuous Forward Current	I_F	15	15	mA
Forward Voltage	V_F	2.1	3.2	V
Power Peak Dissipation	P_D	63	80	mW
Reverse Peak Voltage	V_{RM}	5	5	V
Wavelength at Peak Emission	λ	630 ~ 640	520 ~ 535	nm
Current Reduction Rate Above 25°C	ΔI_F	0.40	0.36	mA/°C
Ambient Temperature Range		–25 ~ +50		°C

Amber can be achieved by simultaneous illumination of Red & Green.

CUSTOM RECTANGULAR CAP ASSEMBLY

CAP ASSEMBLY DIMENSIONS



See below for complete assembly of switch, LEDs and LED holders.

Switch/Rectangular Cap Assembly

KP0115ACBKG03CJB for Tactile
KP0115ANBKG03CJB for Nontactile

LED SPECIFICATIONS

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

Center LED is an integral part of the switch. LEDs are not sold separately.

LED circuits are isolated and require an external power source.

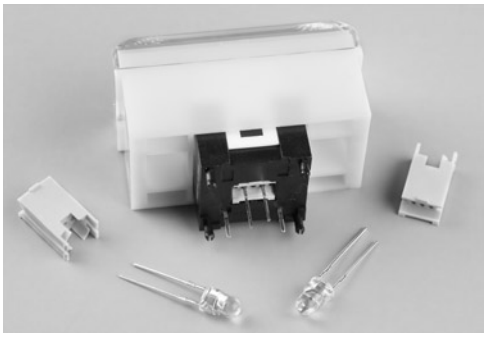
If the source voltage exceeds the rated voltage, a ballast resistor is required.

The resistor value can be calculated by using the formula in the Supplement Section.

(+) (-)	Color	Red	Unit
Forward Peak Current	I_{FM}	30	mA
Continuous Forward Current	I_F	20	mA
Forward Voltage	V_F	2.0	V
Reverse Peak Voltage	V_{RM}	4	V
Dominant Wavelength	λ_d	623	nm
Current Reduction Rate Above 25°C	ΔI_F	0.32	mA/°C
Ambient Temperature Range		–25 ~ +50	°C

Contact factory for other LED colors.

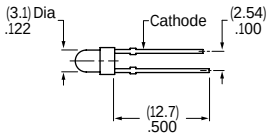
ASSEMBLY & INSTALLATION INSTRUCTIONS



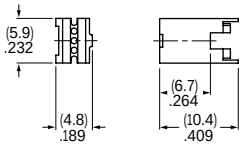
Switch/Rectangular Cap assembly has 3 LEDs to achieve bright and even illumination.

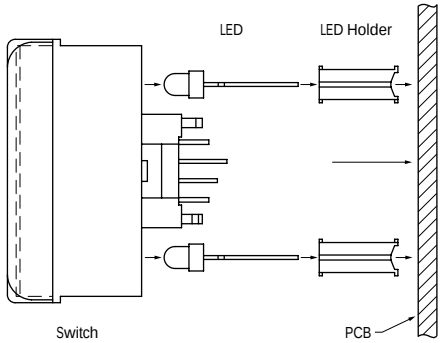
One LED (in center of switch bottom) is an integral part of the switch; the other 2 LEDs and 2 LED Holders are packaged separately.

LED

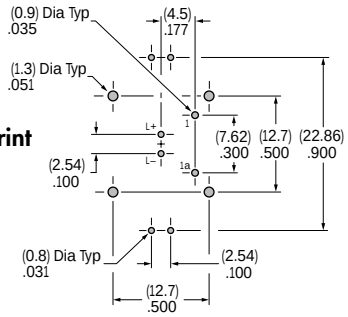


LED Holder





Footprint

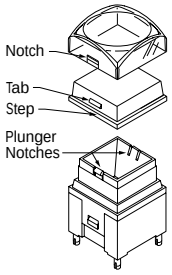


1. Install LED into LED Holder (quantity 2).
2. Solder LEDs and LED Holders into PCB.
3. Solder switch into PCB making sure that the two outer LEDs and LED Holders clear the bottom side opening of the cap.

ASSEMBLY INSTRUCTIONS FOR SQUARE CAPS

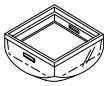
ATTENTION
ELECTROSTATIC
SENSITIVE DEVICES

Cap Orientation



As shown in the accompanying illustration, the cap and plunger are designed with tabs and notches to assure proper orientation of the cap on the switch.

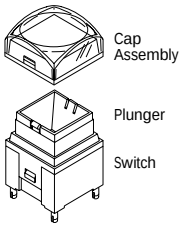
Removal of Cap Assembly & Separation of Lens & Diffuser



Holding the switch tightly, pull the cap off the switch. Once the cap assembly is released from the plunger, the lens and diffuser can be separated.

Pry up the lens with fingernail or flat tip screwdriver inserted at the step on the diffuser.

Installation or Replacement of Cap



After aligning notches with tabs, join the lens and diffuser. Hold the switch tightly without touching the terminals. Firmly press the cap onto the plunger by applying pressure from one side to the other until both are snapped together.

LEGENDS

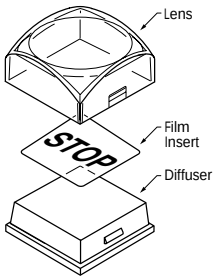
NKK Switches can provide custom legends for caps. Contact factory for more information.

Suggested Printable Areas for KP Lens

Recommended Methods:

Laser Etch on clear lens, Screen Print, or Pad Print on lens.
Laser Print on film insert.
Epoxy based ink is recommended.

Printing on Diffuser is not advisable.

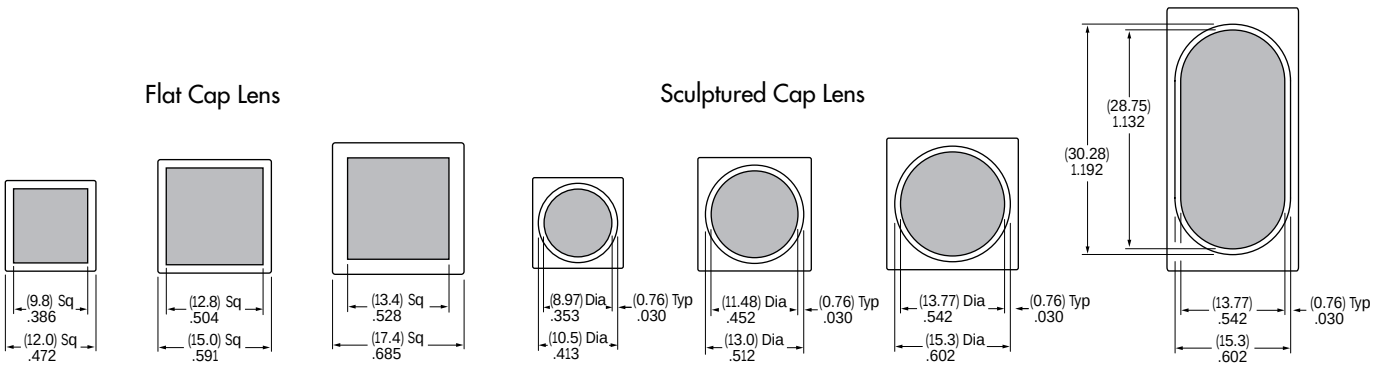


Shaded areas are suggested printable areas for Lens.

Custom Rectangular Cap Lens

Flat Cap Lens

Sculptured Cap Lens



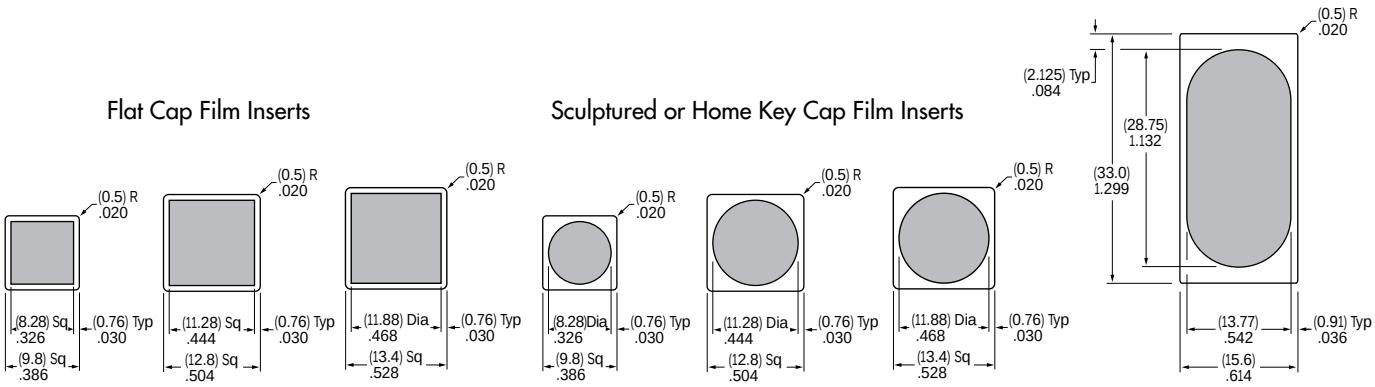
Suggested Printable Areas for KP Film Insert

Shaded areas are suggested printable areas for Film Insert.

Custom Rectangular Film Insert

Flat Cap Film Inserts

Sculptured or Home Key Cap Film Inserts



Film Insert Material and Thickness: Clear Polyester; 4 mil (100µ) maximum thickness