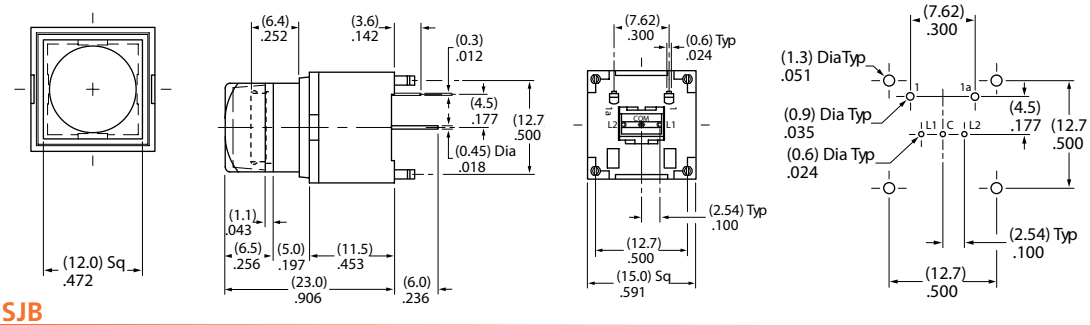
Miniature Audio/Video Pushbuttons

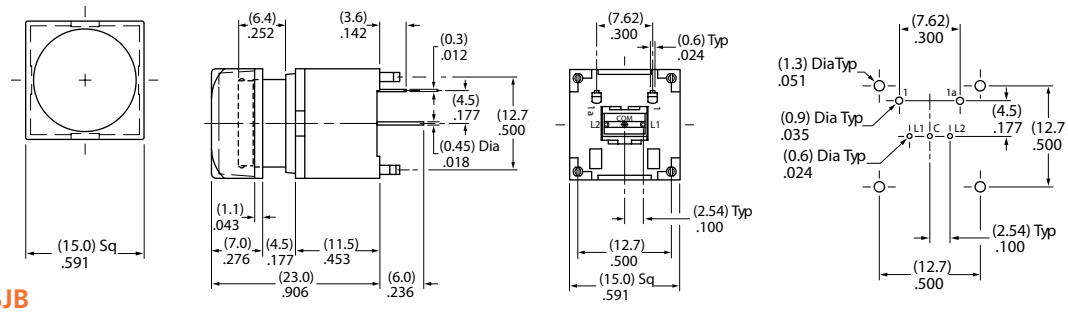
KP Series

12.0mm Square Cap



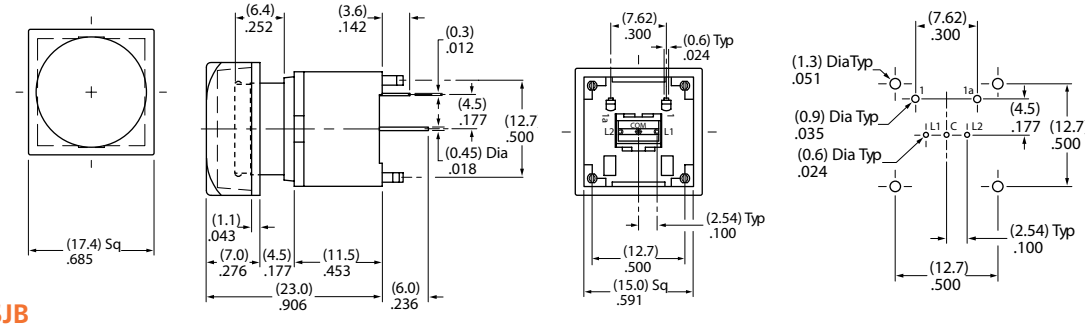
KP0115ACAKG03CF-1SJB

15.0mm Square Cap



KP0115ANBKG03CF-2SJB

17.4mm Square Cap



KP0115ANBKG03CF-3SJB

How to order:

KP [1] [2] [3] [4] [5] [6] [7] – [8] [9] [10]

1 TRAVEL & FORCE:
- 01 Stroke: 4.5mm (.177") Actuation Force: 1.9N
- 02 Stroke: 3.5mm (.138") Actuation Force: 1.6N

2 POLE & CIRCUITS:
- 15A SPST OFF-(ON) Normally Open Contacts

3 ACTUATION:
- C Tactile
- N Nontactile
- S Tactile/Audible (just for 02 type)

4 PLUNGERS:
- A 9.2mm Plunger for 12.0mm Cap
- B 11.6mm Plunger for 15.0mm and 17.4mm Caps

5 HOUSING:
- K Black Only

6 CONTACTS & TERMINALS:
- G03 Gold Contacts and Straight PC Terminals; 100mA @ 12V DC

7 LEDS:
- CF Red/Green Bicolor
- RGB Red/Green/Blue

8 CAPS SIZES:
- 1 12.0mm Square
- 2 15.0mm Square
- 3 17.4mm Square

9 CAP TYPES:
- F Flat
- S Sculpured
- T Home Key

10 CAPS COLORS:
- JB Clear Lens & White Diffuser

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
Movable Contact: Stainless steel with gold plating
Stationary Contacts: Gold over copper alloy
Switch Terminals: Brass with tin plating

Environmental Data

Operating Temp 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

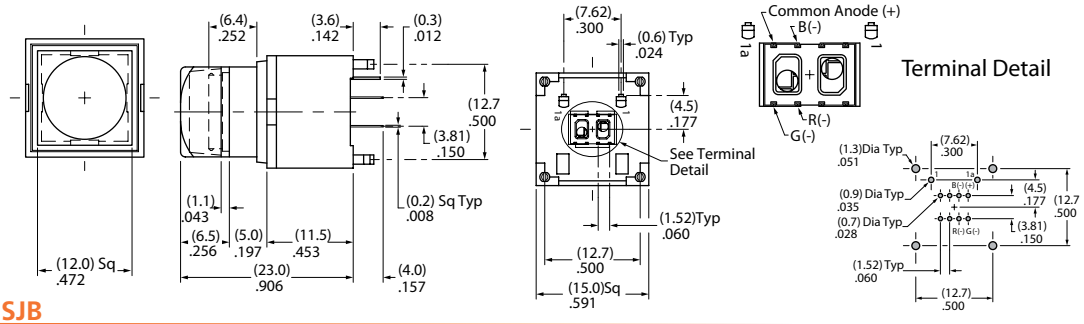
PCB Processing

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

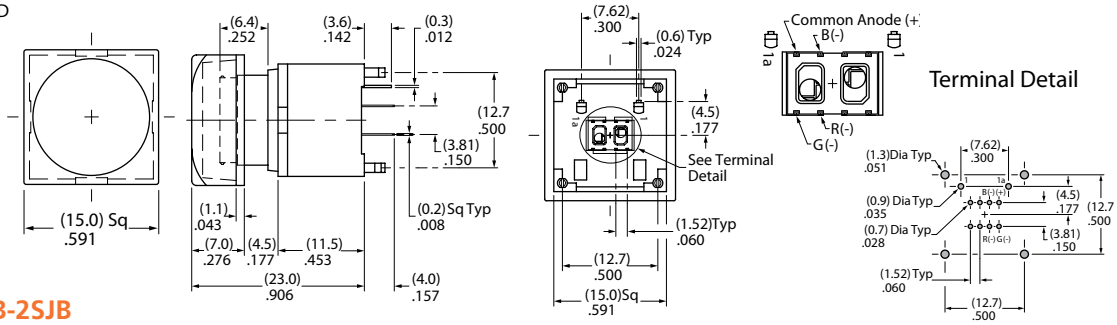
UL Recognition or CSA Certification: The KP Series pushbuttons have not been tested for UL recognition or CSA certification.
These switches are designed for use in a low-voltage, low-current, logic-level circuit.
When used as intended in a logic-level circuit, the results do not produce hazardous energy.

12.0mm Square Cap with RGB LED



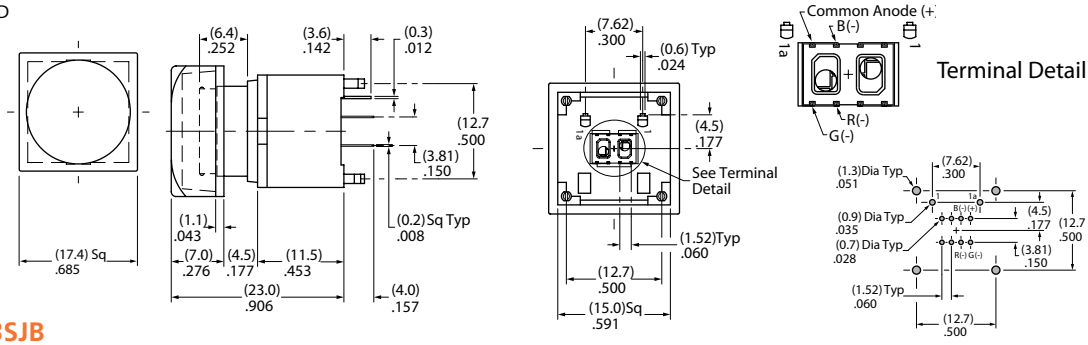
KP0115ACAKG03RGB-1SJB

15mm Square Caps with RGB LED



KP0115ANBKG03RGB-2SJB

17.4mm Square Caps with RGB LED



KP0115ANBKG03RGB-3SJB

POLE & CIRCUIT

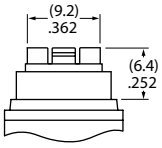
POLE & CIRCUIT		Plunger Position ( ) = Momentary		Connected Terminals		Throw & Switch Schematic
Pole	Model	Normal	Down	Normal	Down	Note: Switch terminals "1" & "1a" are actually marked on the switch.
SP	KP0115A KP0215A	OFF	(ON)	Normally Open	1-1a	SPST 

CUTAWAY

PLUNGERS

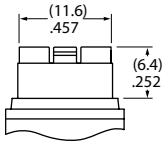
A 9.2mm Plunger for 12.0mm Cap

9.2mm Plunger is designed with a narrower neck to hold the 12.0mm Cap.



B 11.6mm Plunger for 15.0mm & 17.4mm Caps

11.6mm Plunger is designed with a wider neck to hold both the 15.0mm and 17.4mm Caps.



BICOLOR LED SPECIFICATIONS

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

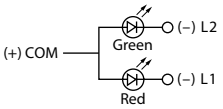
Attention Electrostatic Sensitive Devices

LEDs are an integral part of the switch and are not avail - able 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.



CF

Colors		Red	Green	Unit
Minimum Luminous Intensity	I_V	30	50	mcd
Standard Luminous Intensity	I_V	60	115	mcd
Forward Peak Current	I_{FM}	30 (25 for amber)	25 (22 for amber)	mA
Continuous Forward Current	I_F	20	20	mA
Forward Voltage	V_F	2.1	3.5	V
Power Peak Dissipation	P_D	75	100	mW
Reverse Peak Voltage	V_{RM}	4	4	V
Wavelength at Peak Emission	λ	619 ~ 630	520 ~ 535	nm
Current Reduction Rate Above 25°C	ΔI_F	0.38	0.32	mA/°C
Ambient Temperature Range		–25 ~ +50		°C

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

CUSTOM RGB LED SPECIFICATIONS

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

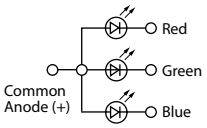
LEDs are an integral part of the switch and are not available separately.

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.

Note: For applications that require white illumination, contact factory.



Attention Electrostatic Sensitive Devices

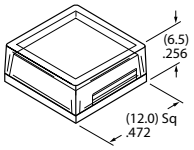
RGB

Color		Red	Green	Blue	Unit
Forward Peak Current	I_{FM}	30	30	30	mA
Continuous Forward Current	I_F	20	15	15	mA
Forward Voltage	V_F	2.0	3.3	3.4	V
Power Peak Dissipation	P_D	40	80	80	mW
Reverse Peak Voltage	V_{RM}	5	5	5	V
Dominant Wavelength	λ_d	625	525	470	nm
Current Reduction Rate Above 25°C	Δ_{IF}	0.50	0.50	0.50	mA/°C
Ambient Temperature Range		–25 ~ +50			°C

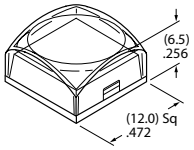
CAP TYPES & COLORS

1 12.0mm Square Used on A Plunger

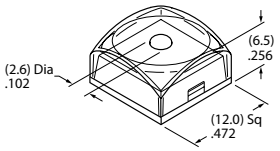
F AT3083 Flat Cap



S AT3078 Sculptured Cap

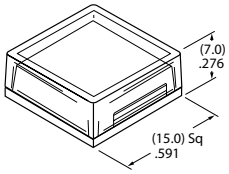


T AT3086 Home Key Cap

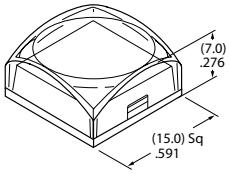


2 15.0mm Square Used on B Plunger

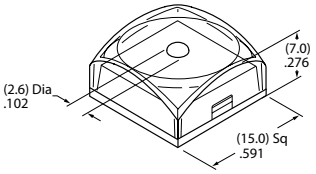
F AT3084 Flat Cap



S AT3079 Sculptured Cap

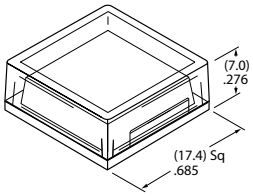


T AT3087 Home Key Cap

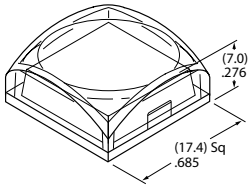


3 17.4mm Square Used on B Plunger

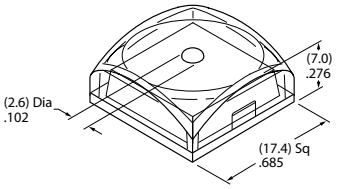
F AT3085 Flat Cap



S AT3080 Sculptured Cap

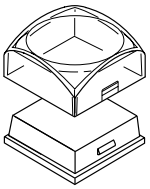


T AT3088 Home Key Cap



JB Lens & Diffuser Colors Available:

Clear/White



Clear Lens

White Diffuser

Materials & Finishes: Lens - Palycarbonate with glossy finish; Diffuser - Polycarbonate with textured finish

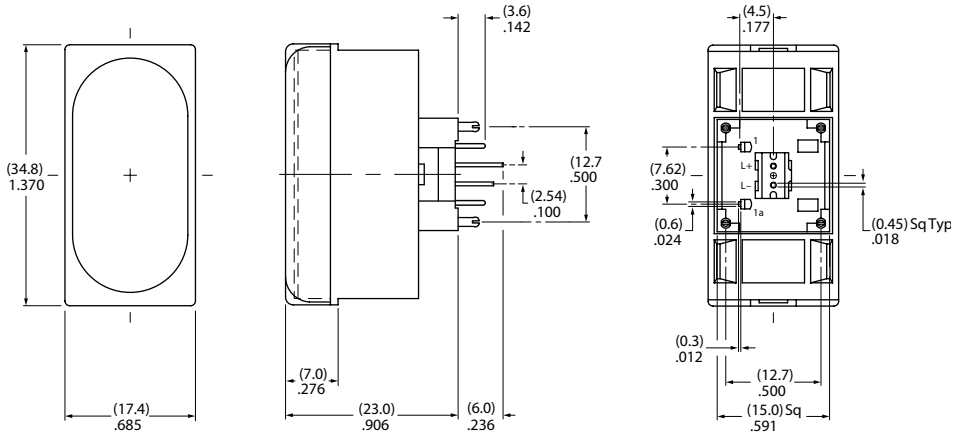
Optional Protective Guard AT4170 available; contact factory.

CUSTOM RECTANGULAR CAP ASSEMBLY

CAP ASSEMBLY DIMENSIONS

Switch/Rectangular Cap Assembly

KP0115ACBKG03CJB for Tactile
KP0115ANBKG03CJB for Nontactile



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

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.

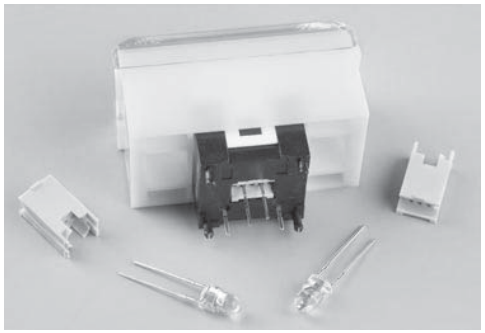
If the source voltage exceeds the rated voltage, a ballast resistor is required.

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

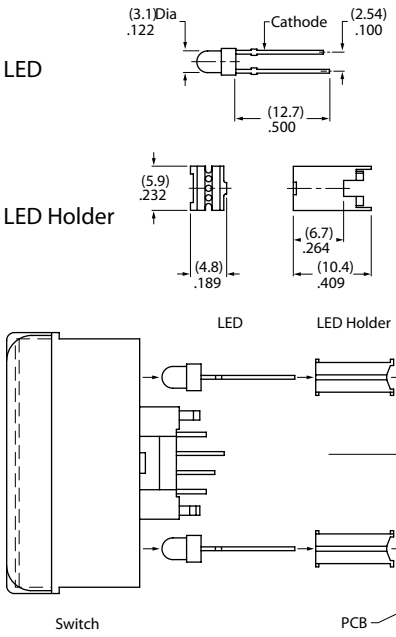
Contact factory for other LED colors.

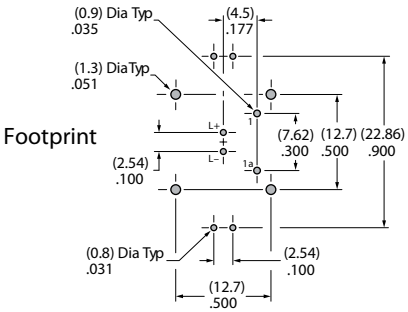
ASSEMBLY & INSTALLATION INSTRUCTIONS



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.





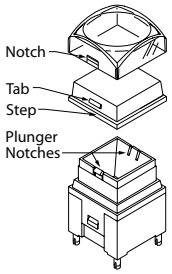
1. Install LED into LED Holder (quantity 2).
2. Solder LEDs and LED Holders into PCB.
3. Solder switch into PCB making sure that the two outer LEDs and LED Holders clear the bottom side opening of the cap.

ASSEMBLY INSTRUCTIONS FOR SQUARE CAPS

Attention
Electrostatic
Sensitive Devices

Cap Orientation

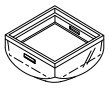
As shown in the accompanying illustration, the cap and plunger are designed with tabs and notches to assure proper orientation of the cap on the switch.



Removal of Cap Assembly & Separation of Lens & Diffuser

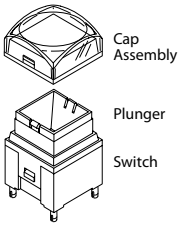
Holding the switch tightly, pull the cap off the switch. Once the cap assembly is released from the plunger, the lens and diffuser can be separated.

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.

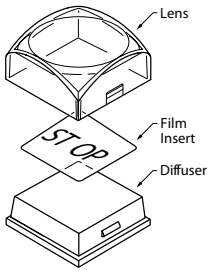


LEGENDS

General information and basic specifications are presented here for customers who want to do their own legends.

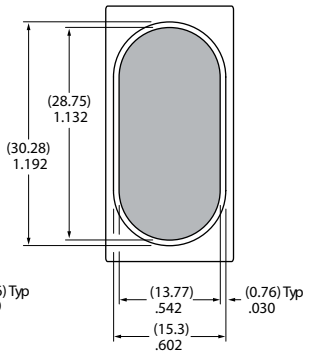
Recommended Methods:
Laser Etch, Screen Print, or Pad Print on lens;
Screen Print on film insert.
Epoxy based ink is recommended.

Shaded areas are suggested printable areas for Lens & Film Inser t.

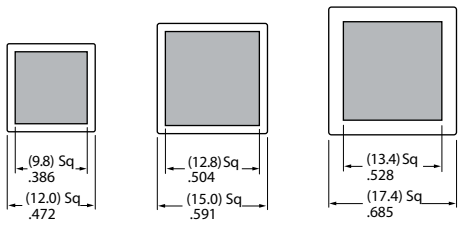


Printing on Diffuser is not advisable.

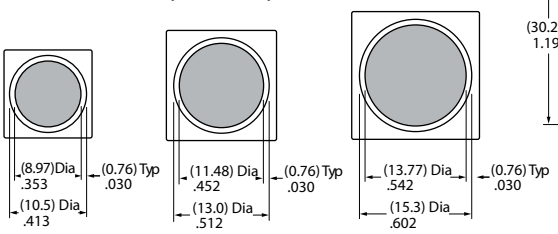
Custom Rectangular Cap Lens



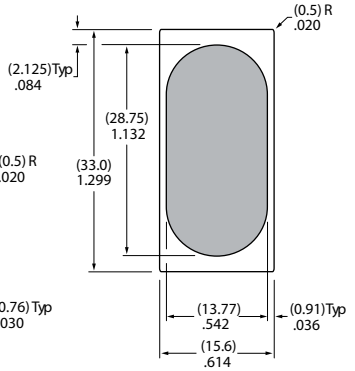
Flat Cap Lens



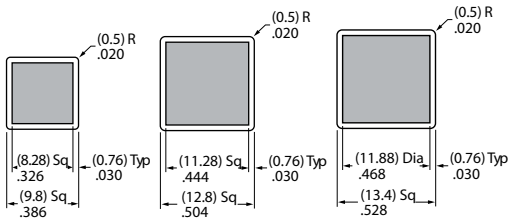
Sculptured Cap Lens



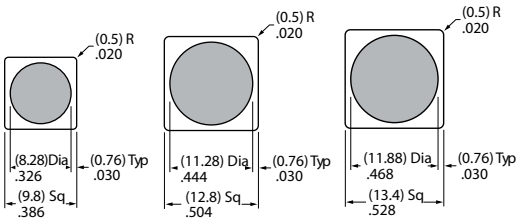
Custom Rectangular Film Insert



Flat Cap Film Inserts



Sculptured or Home Key Cap Film Inserts



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