

NKK®

SERIES JB

DOME CONTACT/LOW PROFILE/WASHABLE

A-25-21

DISTINCTIVE FEATURES

Low profile dimension from PCB to top of cap.

Bright, full surface illumination with red, green, or yellow LEDs.

270 gram operating force and short stroke of .300mm (.012") permit light touch operation.

Dome contact gives crisp tactile feedback to positively indicate circuit transfer and assures high reliability and long life of 1,000,000 operations.

Space saving body dimensions, 12.0mm (.472") square, provide for compact, side-by-side mounting on a standard grid.

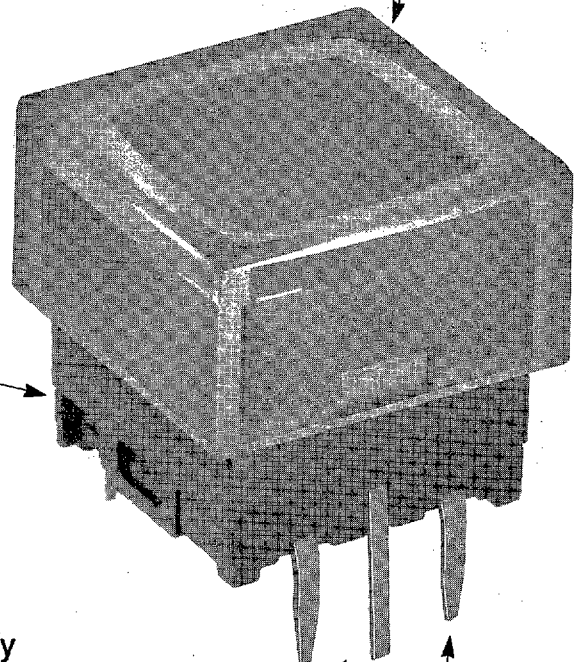
Single-pole, single-throw contacts with strapped terminals allow X-Y coding on a single-sided PC board and simplify external circuit arrangement.

Actual Size



Terminal spacing conforms to standard .100" PCB grid.

Slanted terminals provide a spring type action which ensures secure mounting and prevents dislodging during wave soldering.



Keypads

DOME CONTACT/LOW PROFILE/WASHABLE

GENERAL SPECIFICATIONS

	Short Actuator	Extended Actuator
Electrical Capacity: (Resistive Load)	50mA @ 24V DC maximum	125mA @ 24V DC maximum
Contact Resistance:	50 milliohms maximum	50 milliohms maximum
Insulation Resistance:	500 megohms minimum @ 250V DC	500 megohms minimum @ 250V DC
Dielectric Strength:	250V AC minimum	250V AC minimum
Mechanical Life:	5,000,000 operations minimum	1,000,000 operations minimum
Electrical Life:	5,000,000 operations minimum	1,000,000 operations minimum
Total Travel:	.254mm (.010")	.300mm (.012")
Ambient Temp Range:	-25°C through +70°C (-13°F ~ +158°F)	-25°C through +70°C (-13°F ~ +158°F)
Nominal Operating Force:	180 grams	270 grams
Contact Bounce:	0.1 millisecond maximum	0.1 millisecond maximum

Key pads

MATERIALS & FINISHES	
Plunger	Polyacetal
Case	Glass fiber reinforced polyamide
Seal	Nitrile butadiene rubber
Base	Glass fiber reinforced polybutylene terephthalate (UL 94V-0)
Movable Contact	Beryllium copper with silver plating
Stationary Contacts	Brass with silver plating
Terminals	Brass with silver plating

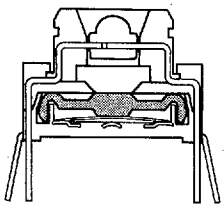
APPLICATIONS

These single pole single throw, momentary devices offer bright illumination with red, yellow or green LEDs.

Being single keys, these tact switches offer customers flexibility of key arrangement and pitch when placed in sets to meet specific panel design requirements. JB switches are ideal for numerous data input and control applications existing in today's products; such as, office automation equipment - copy machines, facsimiles and calculators, consumer electronics - VCRs, microwaves, televisions and remote controls; as well as, for cash registers and industrial equipment control panels.

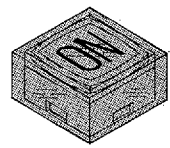
DOME CONTACT

Spring action of the dome shaped movable contact gives the distinctive tactile feedback for which tact switches are known. This mechanical operation along with the use of copper alloy material assures a highly reliable device and provides long life, short stroke, plus light touch.



LEGENDS

Several methods of placing legends on the face of caps are available. The preferred method is pad printing due to its increased legend life. Hot stamping and engraving are also available. Details regarding these methods may be obtained from the factory.



NKK® SERIES JB KEYPAD SWITCHES

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TYPICAL SWITCH ORDERING EXAMPLE

JB

15

F

P

POLE & CIRCUIT

15	SPST	OFF	(ON)
() = Momentary			

15H	SPST	OFF	(ON)
() = Momentary			

ACTUATOR TYPES

Flat & Short	
F	Flat Blue Button
K	For Nonilluminated
L	For Illuminated

Extended	
A	For Nonilluminated
B	For Illuminated

TERMINALS

P	Straight PC
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SNAP-ON CAPS

NO CODE	No Cap for F Actuator
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Nonilluminated	
1	Sculptured
2	Flat

Illuminated	
3	Flat

CAP COLORS

Nonilluminated Sculptured & Flat Caps	
A	Black
B	White
C	Red
E	Yellow
F	Green
G	Blue
H	Gray

Illuminated LED/Diffuser Colors	
CB	Red/White
CC	Red/Red
EB	Yellow/White
EE	Yellow/Yellow
FB	Green/White
FF	Green/Green

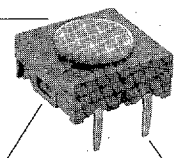
DESCRIPTION FOR TYPICAL ORDERING EXAMPLE (JB15FP):

SERIES JB KEYPAD

Nonilluminated with Flat Blue Button

SPST OFF-(ON) Circuit

Straight PC Terminals



Keypads



SERIES JB KEYPAD SWITCHES

DOME CONTACT/LOW PROFILE/WASHABLE

POLE AND CIRCUIT		ACTUATOR POSITION & TERMINAL NUMBERS	
		() = Momentary	
POLE & THROW	MODEL	Normal	Down
		SPST	JB15 JB15H
SCHEMATICS			
Terminal numbers are actually on switch. LED circuit is isolated & requires external switch.			

TERMINALS	
P Straight PC Terminals	
Nonilluminated	Illuminated
Further dimensions appear at the end of this section.	
Soldering time & temp: 3 sec. @ 350°C/5 sec. @ 270°C.	

ACTUATOR TYPES

Nonilluminated			Illuminated	
A Extended Actuator Polyacetal	F Flat Blue Button Polyacetal	K Short Actuator Polyacetal	B Extended Actuator Polyacetal	L Short Actuator Polyacetal
	Flat button, an integral part of the switch, cannot be ordered separately.		LED is an integral part of the switch and cannot be ordered separately.	LED is an integral part of the switch and cannot be ordered separately.

SNAP-ON CAPS

Nonilluminated		Illuminated	
1 AT4058 Sculptured Polyamide	2 AT4059 Flat Polycarbonate	3 AT4060 Flat Polycarbonate	
Colors: A B C E F G H	Colors: A B C E F G H	LED Colors: C E F Diffuser Colors: B C E F	
Clear cover with white or colored translucent diffuser in a white frame.			
Colors Codes: A Black B White C Red E Yellow F Green G Blue H Gray			

LED SPECIFICATIONS

LEDs are supplied as an integral part of illuminated devices and are not available separately. LED polarity markings are on the bottom of the switch. 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. The resistor value can be calculated by using the formula in the Supplement at the end of this catalog.		Red	Yellow	Green	
	Forward Peak Current	I_{FM}	30mA	20mA	20mA
	Continuous Forward Current	I_F	20mA	15mA	15mA
	Forward Voltage	V_F	2.0V	1.9V	1.95V
	Reverse Peak Voltage	V_{RM}	5V	5V	5V
	Current Reduction Rate Above 25°C	ΔI_F	0.40mA/°C	0.27mA/°C	0.27mA/°C

Keypads

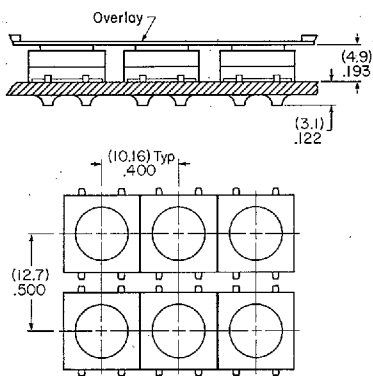
NKK® SERIES JB KEYPAD SWITCHES

DOME CONTACT/LOW PROFILE/WASHABLE

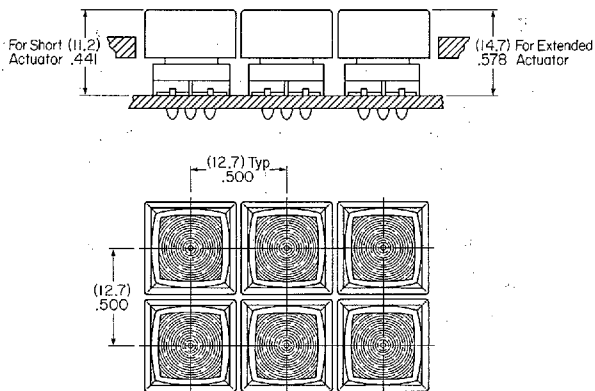
SIDE-BY-SIDE MOUNTING

Customers may custom design a keyboard to meet their specific needs by using these single keypad switches. Flat blue button switches may be mounted beneath an overlay. Switches with sculptured or flat caps may be mounted in a panel cutout.

With Flat Blue Buttons



With Snap-on Caps



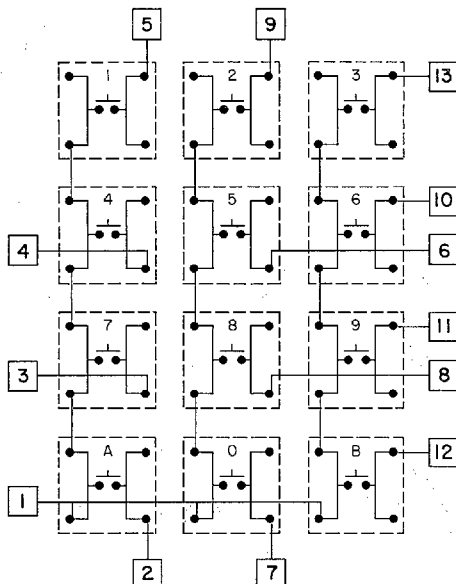
DECODING SCHEMES & SCHEMATICS

COMMON BUS MATRIX ON A SINGLE-SIDED PC BOARD

		PC Terminations												
		1	2	3	4	5	6	7	8	9	10	11	12	13
Keys	1	●				●								
	2		●								●			
	3	●												●
	4	●		●										
	5	●				●								
	6	●										●		
	7	●		●										
	8	●					●							
	9	●											●	
	0	●						●						
	A	●		●										
	B	●												●

● = ON

On the schematic, blue indicates PC board trace and black represents switch and its internal circuit.

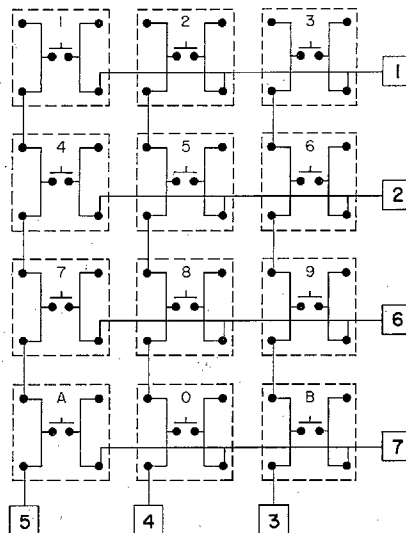


X-Y MATRIX ON A SINGLE-SIDED PC BOARD

		PC Terminations						
		1	2	3	4	5	6	7
Keys	1	●				●		
	2		●					
	3	●		●				
	4		●		●			
	5	●		●	●			
	6		●	●				
	7						●	
	8					●	●	
	9			●				●
	0							●
	A		●					●
B			●				●	

● = ON

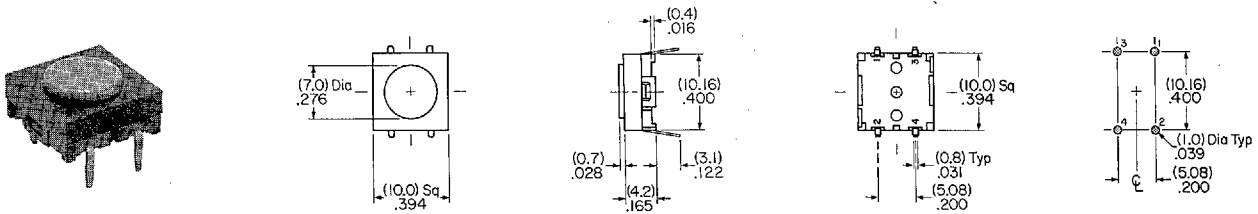
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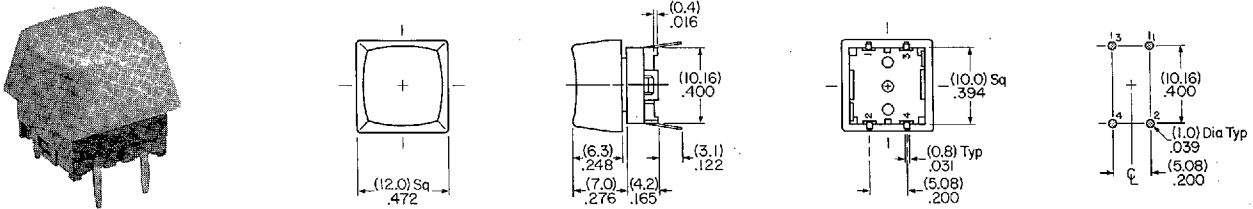
Nonilluminated/with Flat Blue Button



JB15FP Model Shown

Spring action terminals conform to .100" PCB spacing.

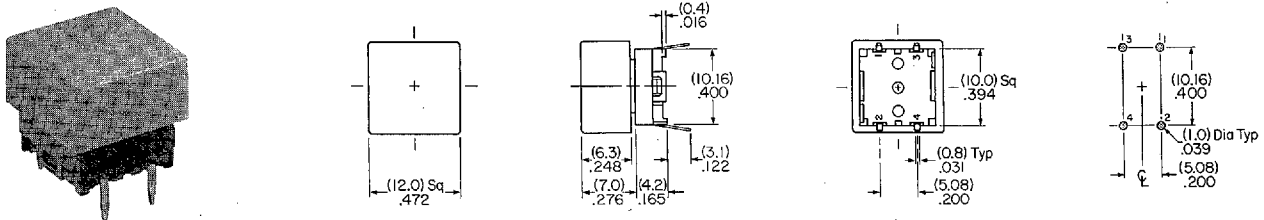
Nonilluminated/with Sculptured Snap-on Cap



JB15KP-1C Model Shown

Spring action terminals conform to .100" PCB spacing.

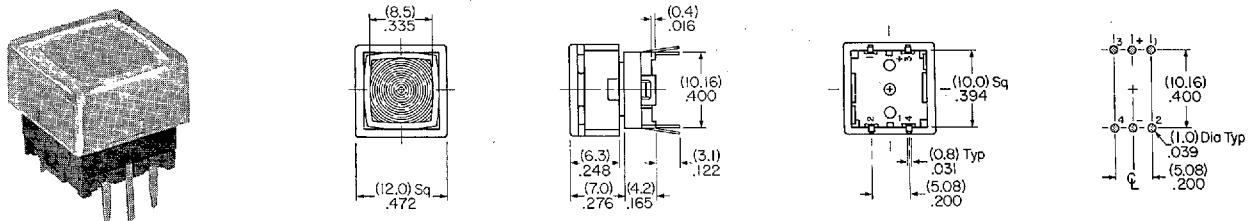
Nonilluminated/with Flat Snap-on Cap



JB15KP-2C Model Shown

Spring action terminals conform to .100" PCB spacing.

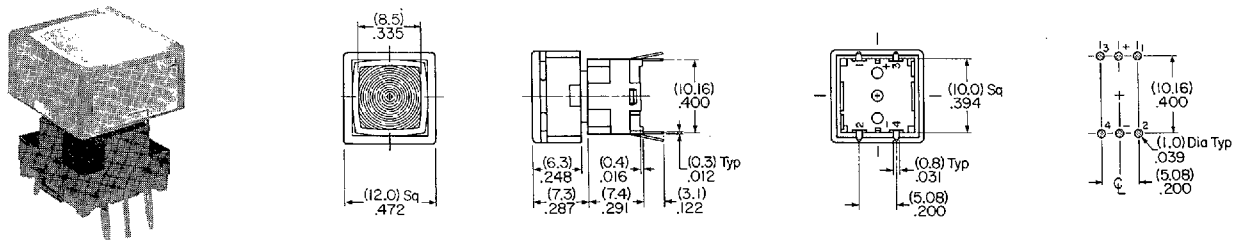
Illuminated/with Flat Snap-on Cap



JB15LP-3CC Model Shown

Spring action terminals conform to .100" PCB spacing.

Illuminated/with Flat Snap-on Cap



JB15HBP-3CC Model Shown

Spring action terminals conform to .100" PCB spacing.

Nonilluminated models do not have lamp terminals.