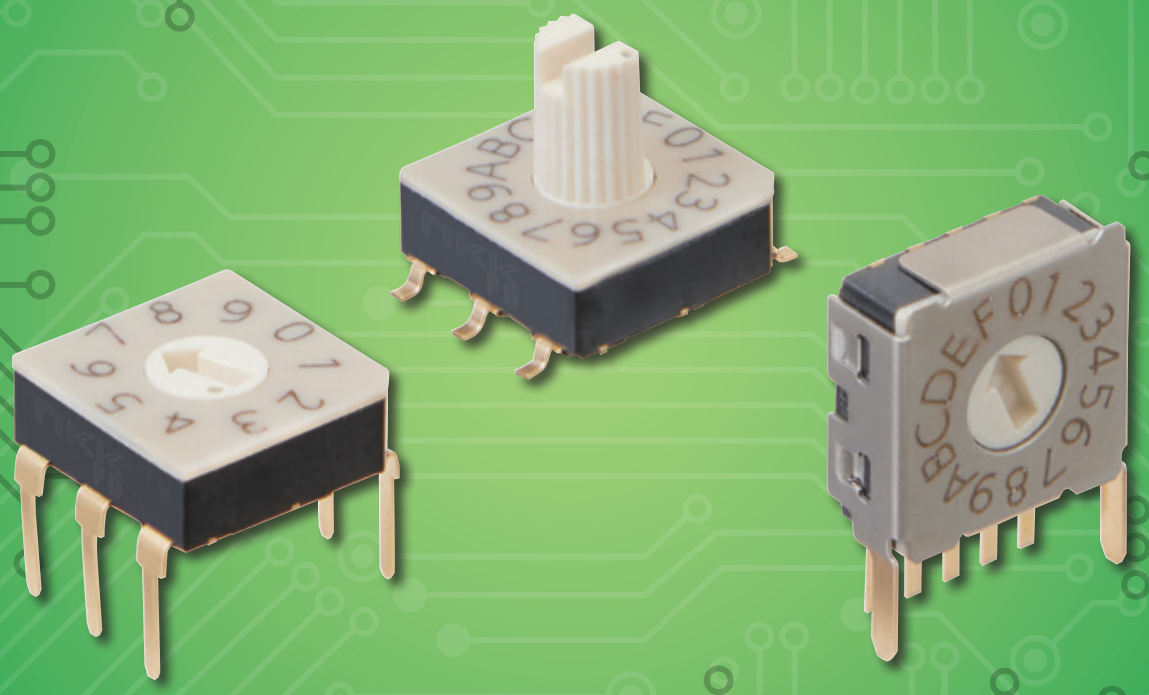
New Products

CN-0408

Series FD01 & FD02

Ultra-Thin DIP Rotary Switches

Through-Hole & Surface Mount



Compact 7.2mm & 7.7mm Square
Low Profile 3.1 - 3.3mm

2024-01-24

NKK SWITCHES
Innovation Driving Quality

General Specifications

Electrical Capacity (Resistive Load)

Rating: 0.4VA maximum, 20V maximum, AC/DC

Other Ratings

Contact Resistance: 100 milliohms maximum (at 20mV, 10mA)
Insulation Resistance: 250V DC, 1 GΩ minimum
Dielectric Strength: 250V AC minimum for 1 minute minimum
Mechanical Life: 10,000 operations minimum
Electrical Life: 10,000 operations minimum
Nominal Operating Torque: 0.002Nm ± 0.02Nm

Materials & Finishes

Rotor: LCP resin
Case Cover & Base: PPS resin
O-ring: Fluoro rubber
Movable Contacts: Corson alloy with gold plating
Terminals: Brass with gold plating

Environmental Data

Operating Temperature Range: –25°C through +85°C (–13°F through +185°F)

PCB Processing

Wave Soldering: Preheat temperature: 110°C @ 40 seconds maximum
Peak temperature: 270°C @ 6 seconds maximum; Cycles: 2

Reflow Soldering (FD02 Series): Preheat temperature: 180° ~ 200°C @ 2 minutes maximum
Heating temperature: 230°C @ 60 seconds maximum
Peak temperature: 250°C; Cycles: 2

Manual Soldering: 390°C @ 4 seconds maximum; Cycles: 2

Series FD01	Series FD02
During soldering process, set the switch to the following position: FD01FR10P, FD01FR16P, FD01FR10H, FD01FR16H, FD01KR10P, FD01KR16P: 0 position; FD01FC10P, FD01FC10H: 7 position; FD01FC16P, FD01FC16H: F position	During soldering process, set the switch to the following position: FD02FR10P, FD02FR16P, FD02FR10H, FD02FR16H, FD02KR10P, FD02KR16P: 0 position; FD02FC10P, FD02FC10H: 7 position; FD02FC16P, FD02FC16H: F position

Cleaning: These devices are not process sealed. Hand clean locally using alcohol based solution.

TRUTH TABLES (CIRCUITS & POSITIONS)

Actuator Position ● = ON

Terminal No. (Output)		10 Decimal										16 Hexadecimal															
		0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
R Real Coded Model Numbers: FD01FR, FD01KR, FD02FR, FD02KR	1		●		●		●		●		●		●		●		●		●		●		●		●		●
	2			●	●			●	●					●	●			●	●			●	●			●	●
	4					●	●	●	●							●	●	●	●					●	●	●	●
	8									●	●									●	●	●	●	●	●	●	●
C Complement Coded Model Numbers: FD01FC, FD02FC	1	●		●		●		●		●		●		●		●		●		●		●		●		●	
	2	●	●			●	●			●	●	●	●			●	●			●	●			●	●		
	4	●	●	●	●					●	●	●	●	●	●					●	●	●	●				
	8	●	●	●	●	●	●	●	●			●	●	●	●	●	●	●	●								

Terminal numbers are actually on the switch.

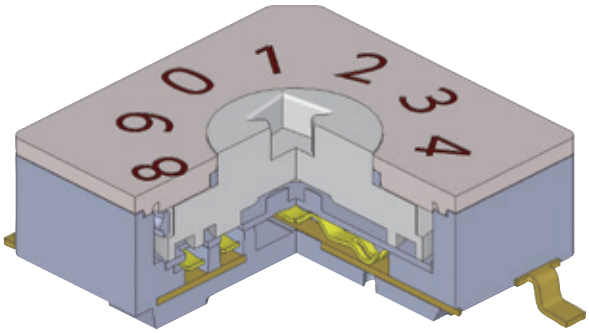
Distinctive Characteristics

Compact dimensions of 7.2mm (.283″) or 7.7mm (.303″) square, with a height of 3.1 to 3.3mm (.122″ to .130″), accommodates high density mounting.

Internal construction incorporating metal springs promotes smooth, crisp operation.

Reaction force is evenly distributed by movable contact components, ensuring consistent connection. Advanced contact reliability is achieved through gold plated contacts.

Heat resistant resin used for Series FD02 body maintains switch reliability through vapor phase and infrared convection reflow soldering.



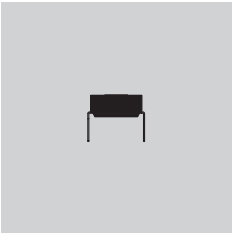
Series FD01 features through-hole terminals with inch terminal grid spacing.

Surface mount (gull wing) terminals on Series FD02 provide mechanical stability during soldering and simplified solder joint inspection.

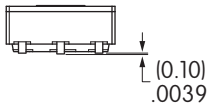
Packaging in tape-reel for Series FD02 meets EIA-481-D Standard.

Remarkably precise coplanarity: all considered surfaces lying between two parallel planes are a maximum distance apart of .0039″ (0.1mm).

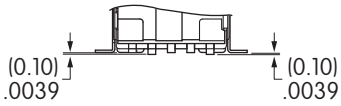
Actual Size: FD01



Series FD02 Surface Mount Coplanarity

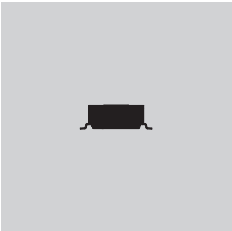


For Upright



For Right Angle

Actual Size: FD02



TYPICAL SWITCH ORDERING EXAMPLE

FD 01 F R 10 P — S

Mounting

01	Through-hole
02	Surface Mount (Gull Wing)

Positions

10	Decimal
16	Hexadecimal

Actuation

F	Screwdriver
*K	Plastic Shaft

*Available with Codes R (Real Coded) and P (Straight or Gull Wing for Upright Mount)

Circuits

R	Real Coded
C	Complement Coded

Terminals

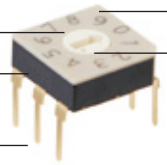
P	Straight or Gull Wing for Upright Mount
H	Right Angle or Gull Wing for Right Angle Mount

Packaging

S	**FD01:** Stick-Tube 60 Pieces per Stick for P & H. **FD02:** Stick-Tube 60 Pieces per Stick for P; 45 Pieces per Stick for H
R	**FD02:** Tape-Reel 1,000 Pieces per Reel for P with Screwdriver Actuation; 500 Pieces per Reel for H with Screwdriver Actuation; 500 Pieces per Reel for P with Shaft Actuation

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

FD01FR10P-S



Screwdriver Actuated
Gold Plated Contacts
Straight Terminals
Decimal Positions
Real Coded
Packaged in Stick-Tube

ACTUATION

F **Screwdriver Actuated**

Adjusted with flat tipped screwdriver

K **Shaft Actuated**

Adjusted by hand or with flat tipped screwdriver

Actuators are fully rotational in either direction.

TERMINALS

P **Straight or Gull Wing for Upright Mount**

Straight

Gull Wing

H **Right Angle or Gull Wing for Right Angle Mount**

Right Angle

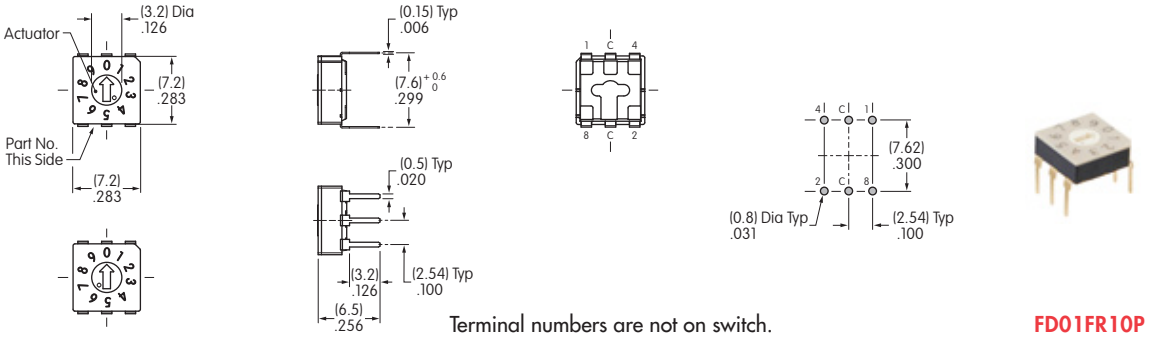
Gull Wing

TYPICAL SWITCH DIMENSIONS

Screwdriver Actuated • Decimal • Straight

FD01FR10P
Real Coded

FD01FC10P
Complement
Coded



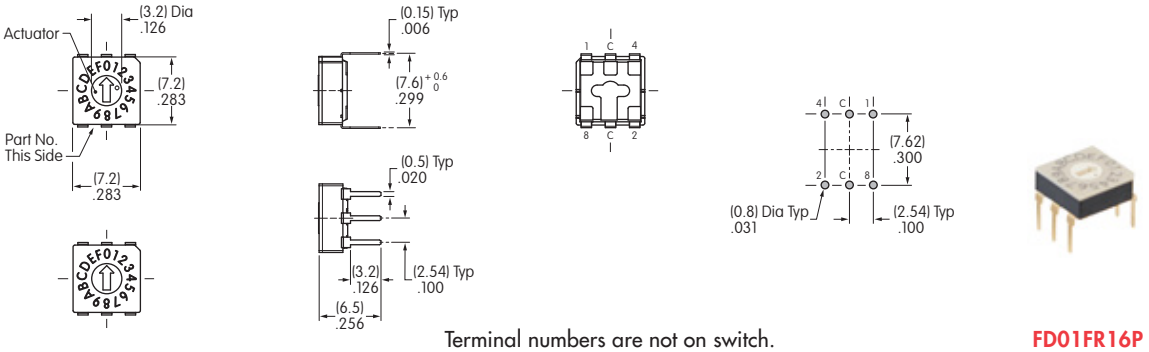
Terminal numbers are not on switch.

FD01FR10P

Screwdriver Actuated • Hexadecimal • Straight

FD01FR16P
Real Coded

FD01FC16P
Complement
Coded



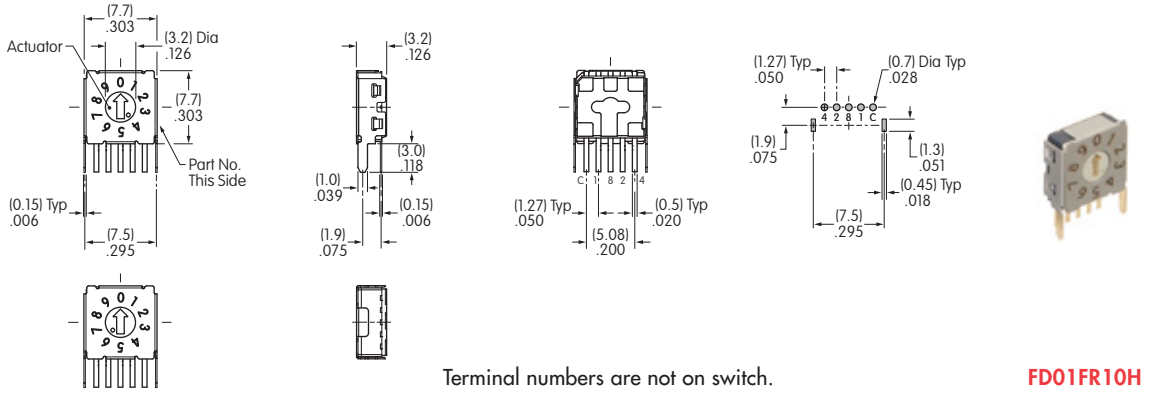
Terminal numbers are not on switch.

FD01FR16P

Screwdriver Actuated • Decimal • Right Angle

FD01FR10H
Real Coded

FD01FC10H
Complement
Coded



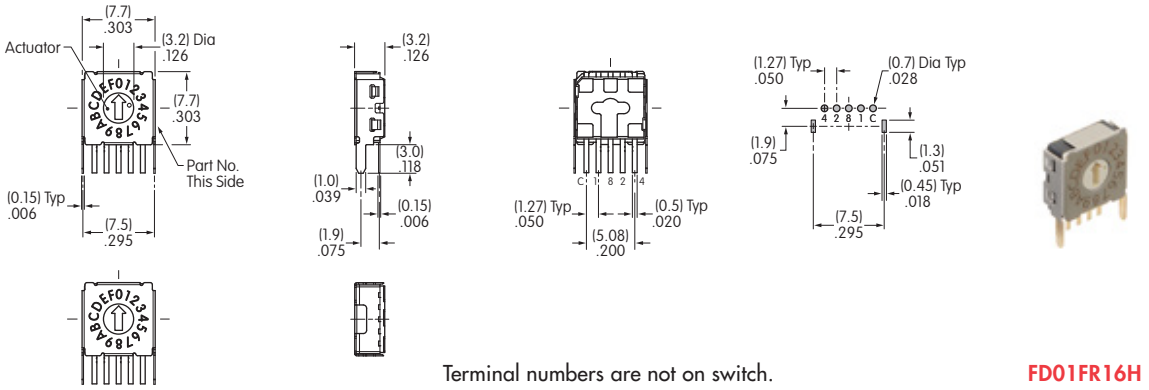
Terminal numbers are not on switch.

FD01FR10H

Screwdriver Actuated • Hexadecimal • Right Angle

FD01FR16H
Real Coded

FD01FC16H
Complement
Coded



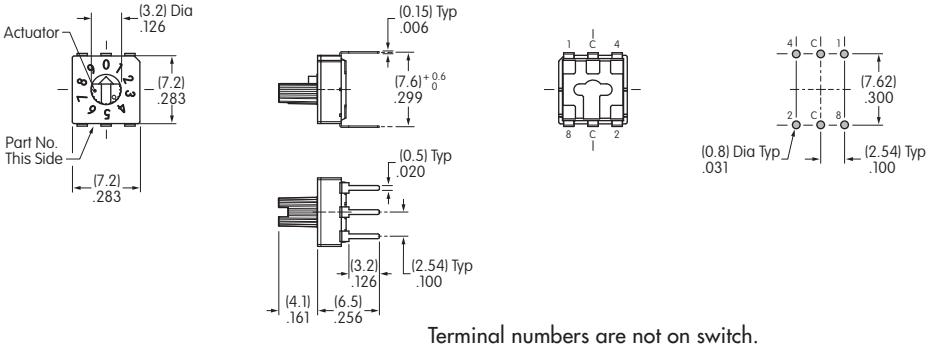
Terminal numbers are not on switch.

FD01FR16H

TYPICAL SWITCH DIMENSIONS

Shaft Actuated • Decimal • Straight

Real Coded

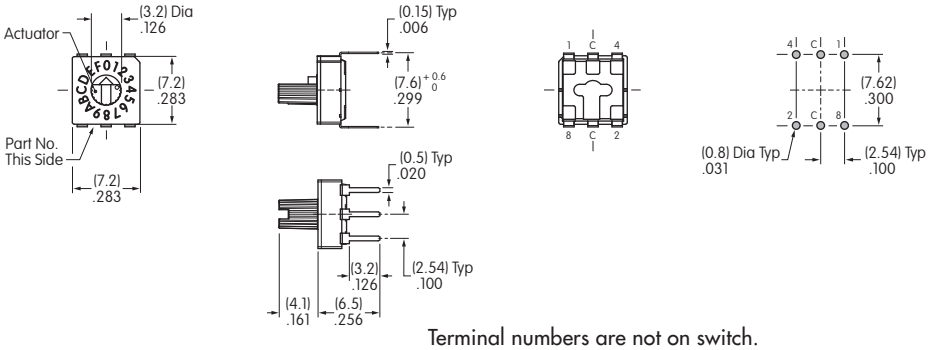


FD01KR10P

Terminal numbers are not on switch.

Shaft Actuated • Hexadecimal • Straight

Real Coded

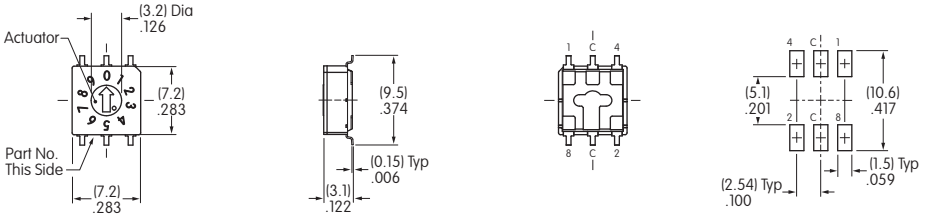


FD01KR16P

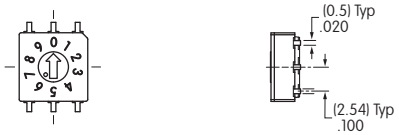
Terminal numbers are not on switch.

Screwdriver Actuated • Decimal • Gull Wing • Upright

FD02FR10P
Real Coded



FD02FC10P
Complement
Coded

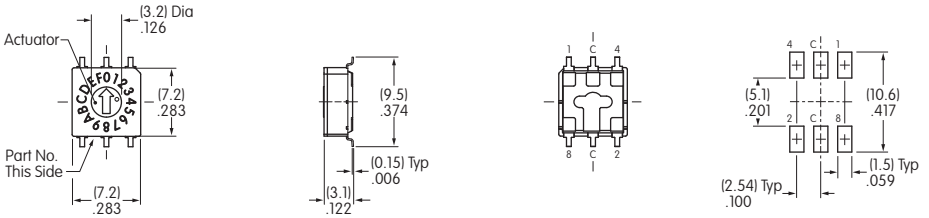


FD02FR10P

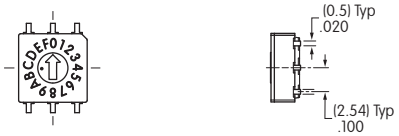
Terminal numbers are not on switch.

Screwdriver Actuated • Hexadecimal • Gull Wing • Upright

FD02FR16P
Real Coded



FD02FC16P
Complement
Coded



FD02FR16P

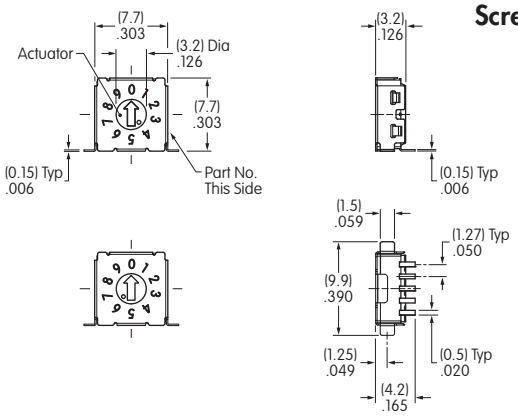
Terminal numbers are not on switch.

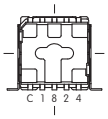
TYPICAL SWITCH DIMENSIONS

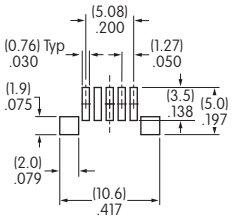
Screwdriver Actuated • Decimal • Gull Wing • Right Angle

FD02FR10H
Real Coded

FD02FC10H
Complement
Coded







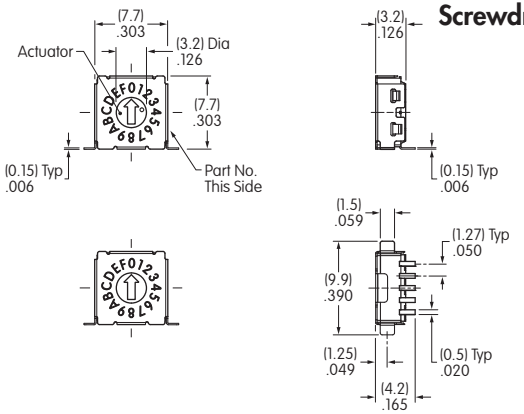
Terminal numbers are not on switch.

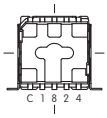
FD02FR10H

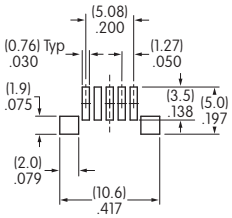
Screwdriver Actuated • Hexadecimal • Gull Wing • Right Angle

FD02FR16H
Real Coded

FD02FC16H
Complement
Coded





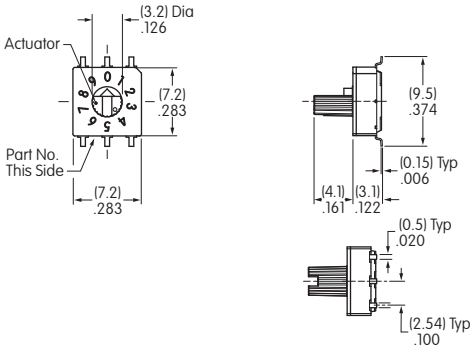


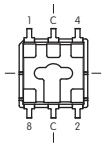
Terminal numbers are not on switch.

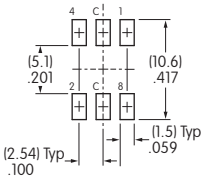
FD02FR16H

Shaft Actuated • Decimal • Gull Wing • Upright

Real Coded





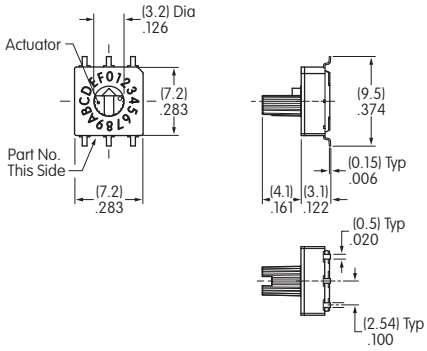


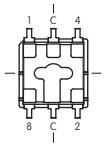
Terminal numbers are not on switch.

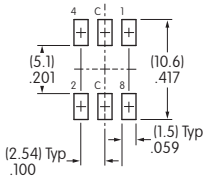
FD02KR10P

Shaft Actuated • Hexadecimal • Gull Wing • Upright

Real Coded







Terminal numbers are not on switch.

FD02KR16P

PACKAGING

S **Stick-Tube**

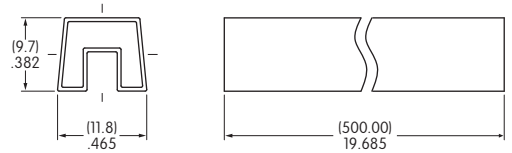
FD01
Each stick-tube contains 60 switches for straight or right angle.

FD02
Each stick-tube contains 60 switches for upright or 45 switches for right angle.

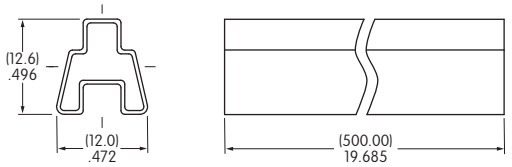
R **Tape-Reel**

FD02
Each tape-reel contains 1,000 switches for screwdriver actuated with upright.
Each tape-reel contains 500 switches for screwdriver actuated with right angle.
Each tape-reel contains 500 switches for shaft actuated with upright.

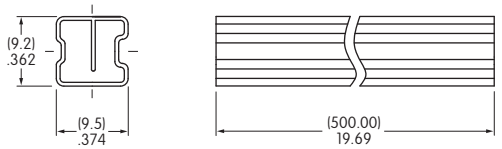
FD01FR10P-S, FD01FC10P-S, FD01FR16P-S, FD01FC16P-S



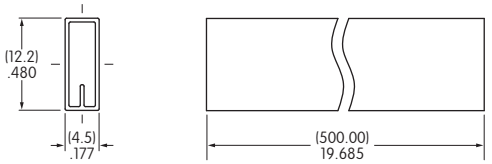
FD01KR10P-S, FD01KR16P-S



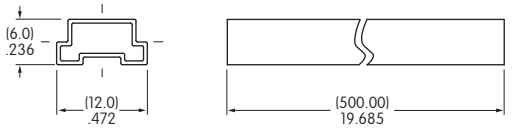
FD02FR10H-S, FD02FC10H-S, FD02FR16H-S, FD02FC16H-S



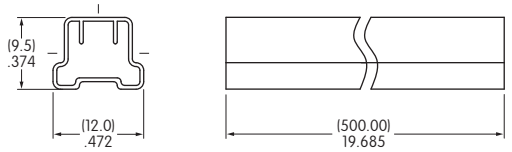
FD01FR10H-S, FD01FC10H-S, FD01FR16H-S, FD01FC16H-S



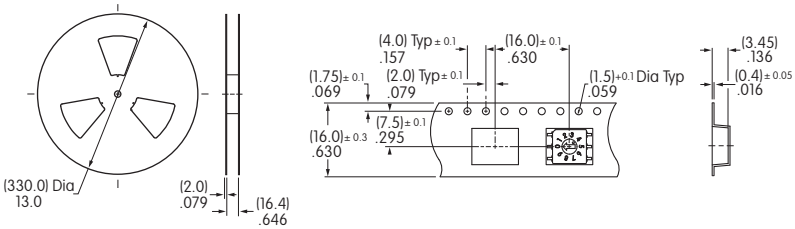
FD02FR10P-S, FD02FC10P-S, FD02FR16P-S, FD02FC16P-S



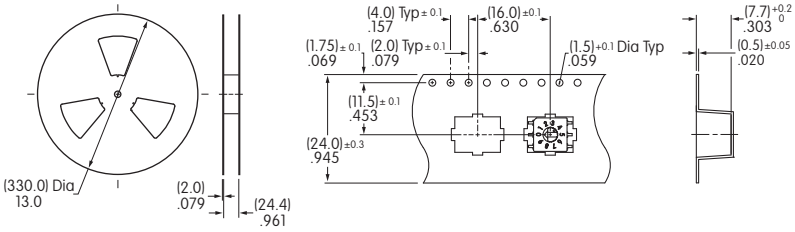
FD02KR10P-S, FD02KR16P-S



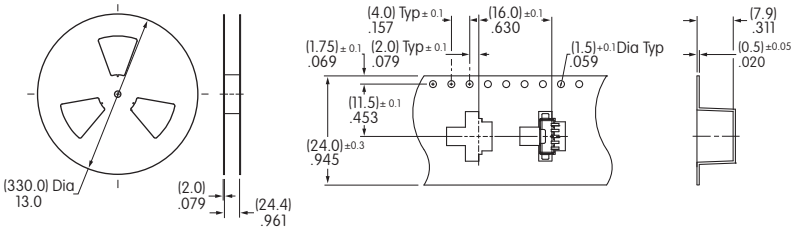
FD02FR10P-R, FD02FC10P-R, FD02FR16P-R, FD02FC16P-R



FD02KR10P-R, FD02KR16P-R



FD02FR10H-R, FD02FC10H-R, FD02FR16H-R, FD02FC16H-R



Effective Date January 2024

NKK SWITCHES
www.nkkswitches.com • 1.877.2BUYNKK (228.9655)
7850 East Gelding Drive • Scottsdale, AZ 85260 • Telephone 480.991.0942 • Fax 480.998.1435