

# General Specifications

## Electrical Capacity (Resistive Load)

|                             |                |
|-----------------------------|----------------|
| <b>Switching Rating:</b>    | 100mA @ 5V DC  |
| <b>Nonswitching Rating:</b> | 100mA @ 50V DC |

## Other Ratings

|                                  |   |
|----------------------------------|---|
| <b>Contact Resistance:</b>       | 80 milliohms maximum for circuit; 30 milliohms maximum for contact point  |
| <b>Insulation Resistance:</b>    | 1,000 megohms minimum @ 250V DC   |
| <b>Dielectric Strength:</b>      | 250V AC minimum for 1 minute minimum  |
| <b>Mechanical Life:</b>          | 20,000 detent operations minimum  |
| <b>Electrical Life:</b>          | 20,000 detent operations minimum  |
|                                  | Notes: A detent operation is one actuator position operation or stepping.<br>20,000 detent operations = 1,250 cycles for hexadecimal devices or 2,000 cycles for decimal devices. A cycle is one 360° rotation. |
| <b>Nominal Operating Torque:</b> | 0.006Nm   |
| <b>Contact Timing:</b>           | Nonshorting (break-before-make)   |

## Materials & Finishes

|                             |  |
|-----------------------------|--|
| <b>Actuator:</b>            | Glass fiber reinforced polyamide           |
| <b>Housing:</b>             | Glass fiber reinforced polyamide (UL94V-0) |
| <b>O-ring:</b>              | Nitrile butadiene rubber                   |
| <b>Base:</b>                | Glass fiber reinforced polyamide (UL94V-0) |
| <b>Movable Contact:</b>     | Beryllium copper with gold plating         |
| <b>Stationary Contacts:</b> | Brass with gold plating                    |
| <b>Terminals:</b>           | Brass with gold plating                    |

## Environmental Data

|                                     |  |
|-------------------------------------|--|
| <b>Operating Temperature Range:</b> | -25°C through +75°C (-13°F through +167°F)   |
| <b>Humidity:</b>                    | 90 ~ 95% humidity for 96 hours @ 40°C (104°F)  |
| <b>Vibration:</b>                   | 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 |
| <b>Shock:</b>                       | 50G (490m/s <sup>2</sup> ) acceleration (tested in 6 right angled directions, with 5 shocks in each direction)                               |

## Processing

|                   |  |
|-------------------|--|
| <b>Soldering:</b> | Wave Soldering Recommended: See Profile B in Supplement section.<br>Note: During Wave Soldering process, set the switch to the following position:<br>NDFR10, NDFR16, NDKR10, NDKR16: 0 position;<br>NDFC10, NDKC10: 7 position; NDFC16, NDKC16: F position.<br>Manual Soldering: See Profile B in Supplement section. |
| <b>Cleaning:</b>  | Automated Cleaning. See Cleaning Specifications in Supplement section.   |

## Standards & Certifications

|                                |   |
|--------------------------------|---|
| <b>Flammability Standards:</b> | UL94V-0 rated housing & base<br>The ND Series rotaries have not been tested for UL recognition or CSA certification.<br>These switches are designed for use in a low-voltage, low-current, logic-level circuit.<br>When used as intended in a logic-level circuit, the results do not produce hazardous energy. |
|--------------------------------|---|

# Distinctive Characteristics

Sealed construction prevents contact contamination and allows automated soldering and cleaning. Sealed design accomplished with seals between the actuator and housing and between housing and base.

Highly visible legends and choice of screwdriver or shaft actuation to provide trouble-free code setting.

Detent mechanism designed for crisp, positive action for accurate switch setting.

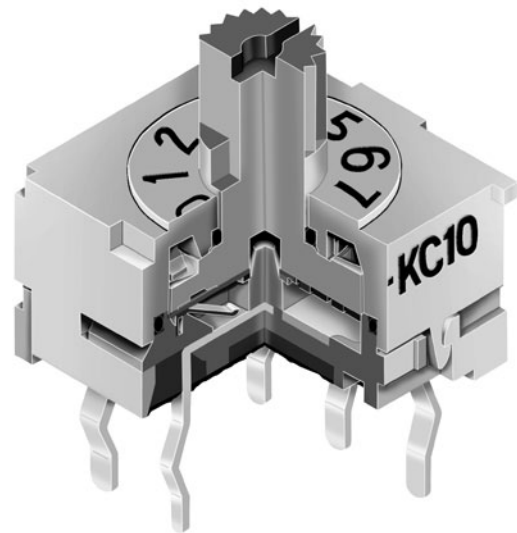
Bifurcated, spring loaded contacts give unmatched logic-level reliability.

Heat tolerant resin used for body meets UL flammability rating of 94V-0 and maintains switch reliability through automated soldering process.

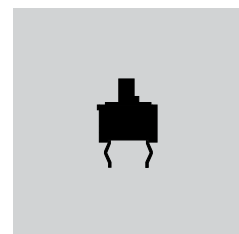
Crimped terminals ensure secure PC mounting and prevent dislodging during soldering.

.100" (2.54mm) terminal grid spacing between pin centers, plus 3-by-3 terminal arrangement for footprint pattern equivalent to industry standard.

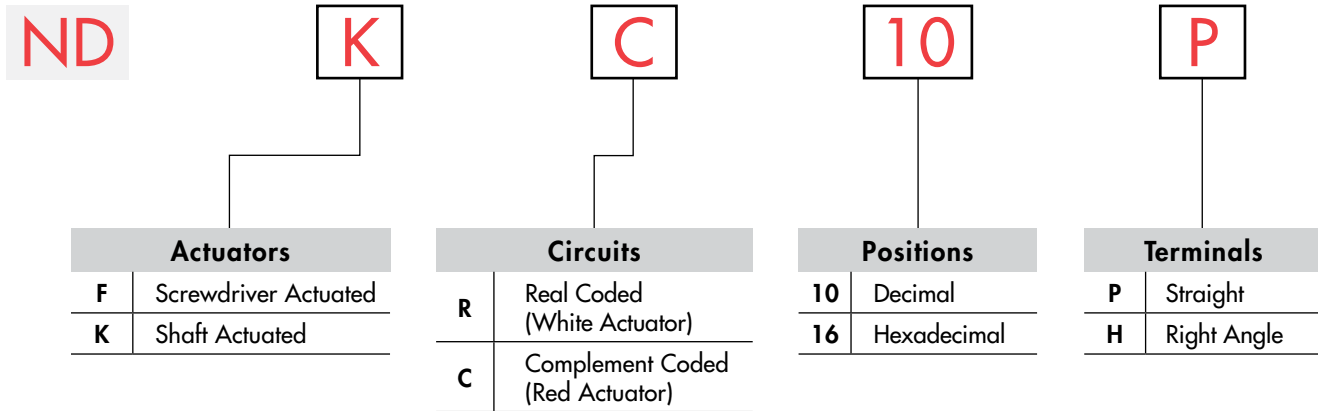
Epoxy sealed terminals lock out flux, solvents, and other contaminants.



Actual Size

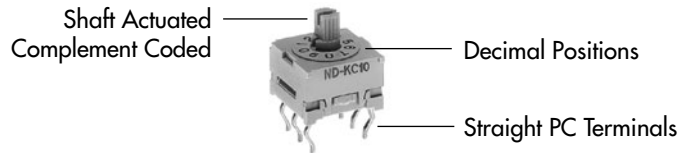


## TYPICAL SWITCH ORDERING EXAMPLE



### DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

**NDKC10P**

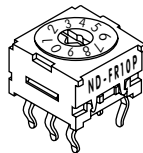


## ACTUATORS

**F**

**Screwdriver Actuated**

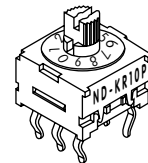
Actuator colors:  
White for real coded  
Red for complement coded



**K**

**Shaft Actuated**

Actuator colors:  
White for real coded  
Red for complement coded



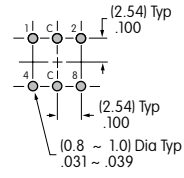
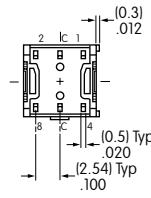
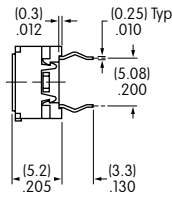
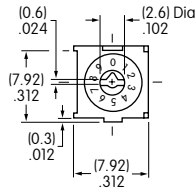
Actuators are fully rotational in either direction.

## TRUTH TABLES (CIRCUITS & POSITIONS)

| Terminal No. (Output)                                     | Actuator Position<br>● = ON | 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 |   |   |   |  |
| <b>R</b> Real Coded<br>Model Numbers:<br>NDFR, NDKR       | 1                           |            | ● |   | ● |   | ● |   | ● |   | ●              |   | ● |   | ● |   | ● |   | ● |   | ● |   | ● |   | ● |   | ● |   | ● |   |  |
|   | 2                           |            |   | ● |   | ● |   | ● |   | ● |                | ● |   | ● |   | ● |   | ● |   | ● |   | ● |   | ● |   | ● |   | ● |   | ● |  |
|   | 4                           |            |   |   | ● |   | ● |   | ● |   | ●              |   | ● |   | ● |   | ● |   | ● |   | ● |   | ● |   | ● |   | ● |   | ● |   |  |
|   | 8                           |            |   |   |   | ● |   | ● |   | ● |                | ● |   | ● |   | ● |   | ● |   | ● |   | ● |   | ● |   | ● |   | ● |   | ● |  |
| <b>C</b> Complement Coded<br>Model Numbers:<br>NDFC, NDKC | 1                           | ●          |   | ● |   | ● |   | ● |   | ● |                | ● |   | ● |   | ● |   | ● |   | ● |   | ● |   | ● |   | ● |   | ● |   | ● |  |
|   | 2                           | ●          | ● |   |   | ● | ● |   |   | ● | ●              |   |   | ● | ● |   |   | ● | ● |   |   | ● | ● |   |   | ● | ● |   |   | ● |  |
|   | 4                           | ●          | ● | ● |   | ● | ● | ● |   | ● | ●              | ● |   | ● | ● | ● |   | ● | ● | ● |   | ● | ● | ● |   | ● | ● | ● |   | ● |  |
|   | 8                           | ●          | ● | ● | ● |   | ● | ● | ● | ● |                | ● | ● | ● | ● |   | ● | ● | ● | ● |   | ● | ● | ● | ● |   | ● | ● | ● | ● |  |

TYPICAL SWITCH DIMENSIONS

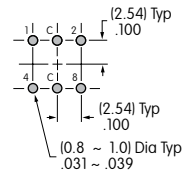
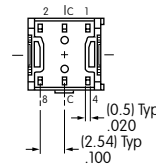
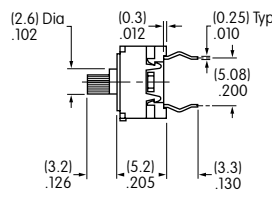
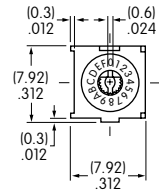
Screwdriver Actuated • Straight PC



Terminal numbers are not on switch

**NDFR10P**

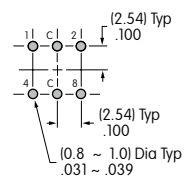
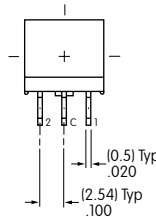
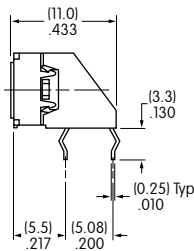
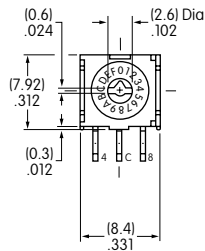
Shaft Actuated • Straight PC



Terminal numbers are not on switch

**NDKC16P**

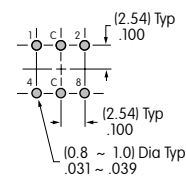
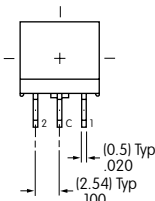
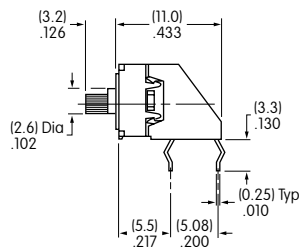
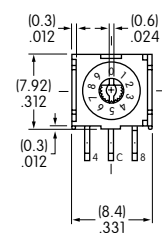
Screwdriver Actuated • Right Angle PC



Terminal numbers are on terminal cover

**NDFC16H**

Shaft Actuated • Right Angle PC



Terminal numbers are on terminal cover

**NDKR10H**

## Данный компонент на территории Российской Федерации

### Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

moschip.ru\_4

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