

Miniature Snap Switch

Single Pole D4 Series



Features

- Choice of standard or light operating force
- Long life coil spring mechanism
- RoHS compliant
- Cadmium free
- Various aux actuators
- Various terminal types
- Agency approved extended life versions available

Standard Parts¹ (note "G2" suffix does not affect fit, form or function)

| | | | | | |
|-----------|-----------|-----------|-----------|-----------|-----------|
| D413-R1AA | D429-R1TD | D433-R1AA | D443-R1LD | D449-R1LL | D453-R1RA |
| D413-R1LA | D429-R1AA | D433-R1LD | D443-R1MD | D449-R1MD | D453-R1RD |
| D413-R1LD | D429-R1LD | D433-R1RA | D443-R1RA | D449-R1ML | D459-R1AA |
| D413-R1RA | D429-R1LL | D433-R1RD | D443-R1RD | D449-R1RA | D459-R1LD |
| D419-R1AA | D429-R1MD | D439-R1LL | D449-R1AA | D449-R1RD | D459-R1LL |
| D423-R1RA | D429-R1ML | D439-V1ML | D449-R1LD | D453-B8AA | D459-R1ML |
| D423-R1RD | | D443-R1AA | | D453-R1AA | |

¹The part number configuration matrix below provides details to the part numbers above.
For configurable part numbers that are not listed above, not listed in your region, or for custom part numbers, contact the factory or your distributor.
For information on crossing discontinued U.S. only part numbers, see D4 cross-reference chart at www.switches-sensors.zf.com.

Part Number Breakdown

D413-R1AA

| Series | Contact Rating ² | | Configuration ³ | | | | | | | |
|--------|-----------------------------|-------|----------------------------|-----------|---------------------------------|--------|-----------|--------|-----------|-----------------------|
| D4 | 1 | 0.1 A | 85 °C | | | 125 °C | | 150 °C | | |
| | 2 | 3 A | 1 | SPST – NO | Standard Op. Force "Y" | G | SPST – NO | S | SPST – NO | Light Op. Force |
| | 3 | 5 A | 2 | SPST – NC | | H | SPST – NC | T | SPST – NC | |
| | 4 | 10 A | 3 | SPDT | | M | SPDT | U | SPDT | |
| | 5 | 15 A | 7 | SPST – NO | Light Op. Force "X" | N | SPST – NO | | | |
| | 8 | 21 A | 8 | SPST – NC | | P | SPST – NC | | | |
| | | | 9 | SPDT | | R | SPDT | | | |

²UL AC current rating; see table on reverse for complete details

³D48 only available with light operating force

| Terminal Type | Description |
|---------------|--|
| A1 | Welding |
| B8 | Short solder |
| P4 | 1.2 x 0.5 (0.047 x 0.020) PCB, underside* |
| P5 | 1.2 x 0.5 (0.047 x 0.020) PCB, rear* |
| PA | 1.2 x 0.5 (0.047 x 0.020) PCB, housing side* |
| PB | 1.2 x 0.5 (0.047 x 0.020) PCB, cover side* |
| Q1 | 4.8 x 0.8 (0.187 x 0.032) QC, straight* |
| Q3 | 4.8 x 0.8 (0.187 x 0.032) QC, dog leg* |

*not available for D48

**not available for D45 or D48

| Terminal Type | mm (inches) |
|---------------|---|
| R1 | 4.8 x 0.5 (0.187 x 0.020) QC, straight* |
| R3 | 4.8 x 0.5 (0.187 x 0.020) QC, dog leg** |
| S1 | Solder with temp stop |
| V1 | 6.3 x 0.8 (0.250 x 0.032) QC, straight |
| V3 | 6.3 x 0.8 (0.250 x 0.032) QC, dog leg |
| W9 | Screw* |
| X5 | 1.5 x 0.8 (0.059 x 0.032) QC, 2.5 mm grid |
| Y5 | 6.3 x 0.8 (0.250 x 0.032) QC, 5 mm grid |

Actuator Type mm (inches)

| Actuator Type | Actuation length |
|---------------|---------------------------------------|
| AA | Button N/A |
| JA | SS lever, standard ratio 21.2 (0.835) |
| JD | SS lever, standard ratio 35.6 (1.4) |
| JL | SS lever, standard ratio 69.9 (2.75) |
| KA | SS lever, high ratio 25.7 (1.01) |
| KD | SS lever, high ratio 40.1 (1.58) |
| KL | SS lever, high ratio 74.4 (2.93) |
| LA | Lever, standard ratio 21.2 (0.835) |
| LD | Lever, standard ratio 35.6 (1.4) |
| LL | Lever, standard ratio 69.9 (2.75) |

| Actuator Type | Actuation length |
|---------------|---|
| MA | Lever, high ratio 25.7 (1.01) |
| MD | Lever, high ratio 40.1 (1.58) |
| ML | Lever, high ratio 74.4 (2.93) |
| RA | Roller, standard ratio 20.6 (0.811) |
| RD | Roller, standard ratio 34.1 (1.34) |
| SA | Roller, simulated, rear mount 20.6 (0.811) |
| TA | Roller, high ratio 25.1 (0.988) |
| TD | Roller, high ratio 38.6 (1.52) |
| UA | Roller, simulated, front mount 25.1 (0.988) |

For actuator details, see D4 actuator reference sheet at <http://switches-sensors.zf.com/us/>

www.switches-sensors.zf.com ZF Electronics Systems Pleasant Prairie, LLC ("ZF") acquired the rights to the CHERRY branded switches and sensors in 2008. Although ZF divested its interest in the CHERRY name in 2015, the switches and sensors remain unchanged and are now sold under the ZF brand.

Page 1 of 2, Last update 2018-03-16, Specifications subject to change without notice.



Electrical Specifications – Contact Ratings

| Contact | EN61058 ⁴ | UL1054 |
|---------|---|---|
| 1 | 0.1 (0.5) A, 250 VAC; 0.5 A, 30 VDC; 1 (1) A, 250 VAC | 0.1 A, 125/250 VAC; 0.5 A, 30 VDC; 1 A, 125 VAC |
| 2 | 3 (1) A, 250 VAC | 3 A, 125/250 VAC; 1/10 HP, 250 VAC |
| 3 | 6 (2) A, 250 VAC | 5 A, 125/250 VAC; ¼ HP, 250 VAC |
| 4 | 10 (3) A, 250 VAC | 10 A, 125/250 VAC; 6 A, 30 VDC; ½ HP, 125/250 VAC |
| 5 | 16 (4) A, 250 VAC | 15 A, 125/250 VAC; ½ HP, 125-250 VAC |
| 8 | 21 (8) A, 250 VAC | 21 A, 250 VAC; 1 HP, 125 VAC; 2 HP, 250 VAC |

UL file number E314201

⁴D45 with R1 terminals are not 61508 certified

Environmental and Mechanical Specifications

| | | |
|---|--|---------------------|
| Operating Temperature | -40 °C to 85, 125 or 150 °C (-40 °F to 185, 257 or 302 °F) | |
| Flammability Rating | UL 94V-0 | |
| Operating life – electrical life at rated load, 85 °C | | |
| | Contact | UL1054 ⁵ |
| | 1 | 6,000 |
| | 2 | 6,000 |
| | 3 | 6,000 |
| | 4 | 6,000 |
| | 5 | 6,000 |
| | 7 | 6,000 |
| | EN61058 | |
| | 1 | 50,000 |
| | 2 | 50,000 |
| | 3 | 50,000 |
| | 4 | 50,000 |
| | 5 | 50,000 |
| | 7 | 10,000 |

⁵Extended life available

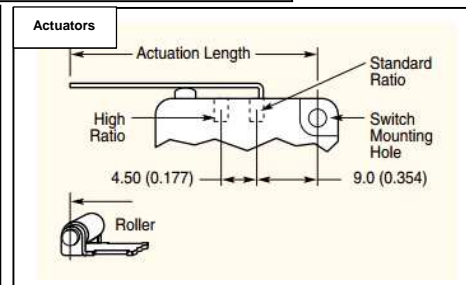
Material Specifications

| | |
|--------------------|---|
| Case | Polyamide (PA) 85 °C, Thermoplastic Polyester (PET) 125 or 150 °C |
| Cover | Polyamide (PA) 85 °C, Thermoplastic Polyester (PET) 125 or 150 °C |
| Actuating Button | Thermoplastic Acetyl (POM) 85 °C, Thermoplastic Polyester (PET) 125 or 150 °C |
| Contacts | Gold Cross Point (D41), Silver (D42), Silver Alloy (D43-D48) |
| Terminals | Brass |
| Auxiliary Actuator | Stainless Steel or Cold-Rolled Steel (Nickel Plated) |
| Moving Blade | Silver Plated Brass |

Environmental Specifications

| | |
|---------------------|--|
| Ambient Temperature | -40 °C to 85 °C/120 °C (-40 °F to 185 °F/248 °F) |
| Operating Force | 45 – 400 cN (model dependent, without actuator) |
| Total Travel | 1.6 mm |
| Ingress Protection | IP40 |

Dimensions mm (inches) and terminal configurations





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