

General data

RF 15 (15 \times 15 mm) and RF 19 (19 \times 19 mm) with distinct key click, for use under an overlay or with RK 90 keycaps. Can be fully illuminated.

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4

Specifications LED

3 mm LED

| (valid for 25 °C) | Red LED | Green LED | Yellow LED |
|--|------------------|---------------------|------------------|
| Max. forward current I_F : | 30 mA | 30 mA | 20 mA |
| Current reduction from: $T_0 = 50$ °C: | approx 0.5 mA/°C | approx 0.5 mA/°C | approx 0.2 mA/°C |
| Wavelength typ: | 635 nm | 565 nm | 586 nm |
| Forward voltage U_F/I_F typ: | 2 V/10 mA | 2 V/10 mA | 2 V/10 mA |
| Reverse voltage U_R/I_F typ: | 5 V/100 μA min. | 5 V/100 μA min. | 5 V/100 μA min. |
| Ambient temperature, operating: | - 20 °C + 80 °C | - 20 °C + 80 °C | - 20 °C + 80 °C |
| | Blue LED | Red low-current LED | |
| Max. forward current I_F : | 20 mA | 30 mA | |
| Current reduction from: $T_0 = 50$ °C: | approx 0.6 mA/°C | approx 0.5 mA/°C | |
| Wavelength typ: | 470 nm | 645 nm | |
| Forward voltage U_F/I_F typ: | 2.7 V/10 mA | 1.6 V/1 mA | |
| Reverse voltage U_B/I_F typ: | 5V/100 μA min. | 5 V/100 μA min. | |
| Ambient temperature, operating: | - 20 °C + 80 °C | - 20 °C + 80 °C | |

2 mm LED

| (valid for 25 °C) | Red LED | Green LED | Green LED superbright |
|--|--|---|--|
| Max. forward current I_F : Current reduction from: $T_0 = 50$ °C: Light current f_V/I_F typ: Wavelength typ: Forward voltage U_F/I_F typ: Reverse voltage U_R/I_F typ: Ambient temperature, operating: | 30 mA 0.5 mA/°C - 637 nm 1.8 V/20 mA 5 V/100 μA min. - 55 °C + 100 °C | 30 mA 0.5 mA/°C - 569 nm 2.1 V/10 mA 5 V/100 μA min. - 40 °C + 100 °C | 30 mA - - 510-545 nm 3.5 V/20 mA - -30 °C + 100 °C |
| | Yellow LED | White LED | Blue LED |
| Max. forward current I_F : Current reduction from: $T_0 = 50$ °C: Light current f_V/I_F typ: Wavelength typ: Forward voltage U_F/I_F typ: Reverse voltage U_R/I_F typ: Ambient temperature, operating: | 50 mA 0.8 mA/°C 250 mIm/20 mA 590 nm 1.9 V/20 mA 5 V/100 μA min. -40 °C + 100 °C | 25 mA - - 3.6 V/20 mA - - 20 °C + 80 °C | 30 mA - - 464-485 nm 3.6 V/20 mA - 20 °C + 80 °C |
| | Multi-colour LED | | |
| Max. forward current I_F : Current reduction from: $T_0 = 50$ °C: Light current f_V/I_F typ: Wavelength typ: Forward voltage U_F/I_F typ: Reverse voltage U_R/I_F typ: Ambient temperature, operating: | 30 mA approx 0.6 mA/°C - 635/565 nm 2 V/10 mA - - 20 °C + 80 °C | | |

Calculating the Rated power Example for 5 Volt: series resistor: of series:

 $R_{V} = \frac{U_{B} - U_{F}}{I_{F}}$ $P_{V} = I_{F}^{2} \times R_{V}$ $R_{V} = \frac{5V - 2.0 \text{ V}}{0.02 \text{ A}} = 150 \Omega \text{ (= standard value)}$



RF 15 short-travel keyswitch



General data

Low-profile keyboards with RF 15 components should be designed with a 19.05 mm grid. With this grid, frame webs remain free between the individual keys. The overlay can be glued onto these frame webs; we recommend area embossing over the keys for the overlays.

Technical data

| General information | | Rated power max. | |
|----------------------|-----------------------|--------------------------|---------------------|
| Colour of lens | see order block | (ohmic load) | Au: 2 W, Ag: 12.5 W |
| Recommended key grid | 19.05 mm | Contact resistance when | |
| | | new max. | 100 m Ω |
| Dimensions | | Contact resistance acc. | |
| Length | 15 mm | to life max. | 3Ω |
| Width | 15 mm | Insulation resistance | $10^9 \Omega$ |
| Overall height | 9.7 mm | ESD strength (underneath | |
| _ | | overlay) | 15 kV |
| Mechanical design | | Bouncing time max. | 5 ms |
| Mounting | soldering into PCB | | |
| Terminals | contacts tin-plated, | Other specifications | |
| | fix contact Ag plated | Ambient temp. operating | |
| Contact system | snap-action contact | min. | -25 °C |
| Contact arrangement | 1 NÖ | Ambient temp. operating | |
| Contact materials | Au/Ag | max. | +70 °C |
| | T | _ | _ |

RF

| Mechanical characteristics |
|----------------------------|
| Operating force max. |
| Operating travel |

Illumination

LED colour

LED type

Operating travel 0.5 mm Switching travel 0.5 mm

Robustness min. with through-plated PCB

100 N

2 ... 3 N

spot-/fully illuminated

see order block

see order block

Electrical characteristics

Rated voltage min.
Rated voltage max.
Rated current min.
Au: 0.02 V, Ag: 3 V
Au: 42 V, Ag: 50 V
Au: 0.01 mA, Ag: 0.1 mA
Au: 100 mA, Ag: 250 mA

Resistance at variable environment

Resistance to constant

Storage temperature min.

Storage temperature max.

Storage temperature max.

Operating life min. Soldering time max. Soldering temperature

max.

(product)

(in tube)

environment

Flammability of materials

IEC 600 68-2-3 and 2-30 according to

IEC 600 68-2-14 and 2-33

1000000 2.5 sec.

-40 °C

+80 °C

+50 °C

according to

250 °C UL 94 HB

C&K

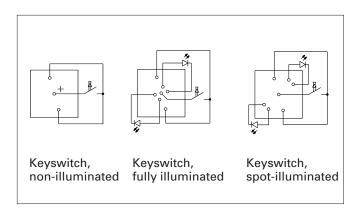
Force/Travel Diagram – Keyswitch RF 15

Operation characteristic limits RF F(N) F1 F2 O,0,2 O,4 S (mm) O,6 O,8 1

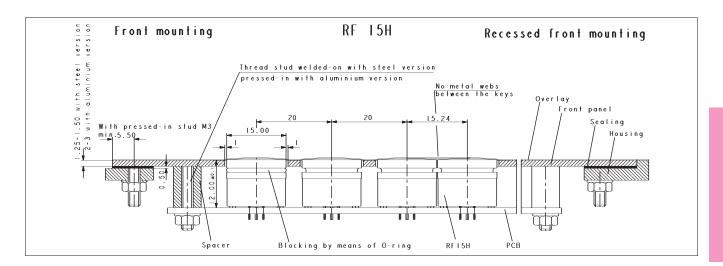
F 1 = Max. operating force

F 2 = Force at contact F 2 is max. 55% of F 1

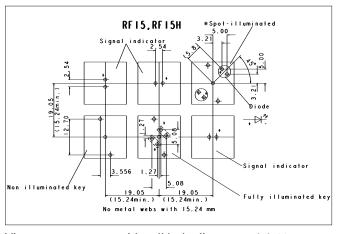
Circuit Diagram - Keyswitch RF 15



Dimensional Drawing RF 15

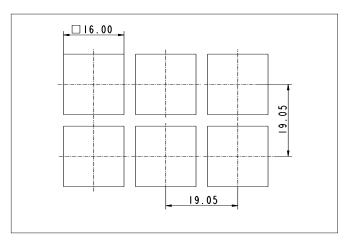


Hole Pattern RF 15



View on component side, all hole diameters 1,1 +/- 0,1 mm

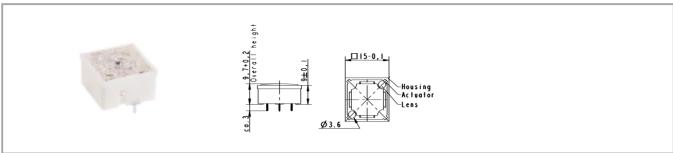
Hole Pattern - Front Panel



RF



RF 15 short-travel keyswitch, non-illuminated



| Contact materials | Illumination | Colour of lens | LED colour | LED type | Order no. |
|-------------------|-----------------|----------------|------------|----------|-------------------|
| Au | not illuminated | transparent | | | 3.14.100.001/0000 |
| Ag | not illuminated | transparent | | | 3.14.100.006/0000 |

Technical data see page 4 - 26

Accessories:

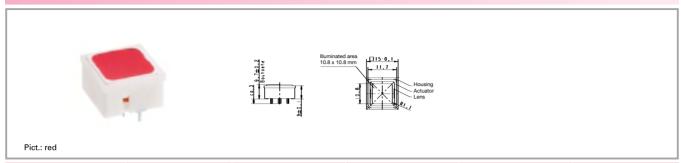
Keycap for RF 15, snap-on, for overall height 12.5 mm: 5.46.654.059/0227 Other keycaps see chapter RK90

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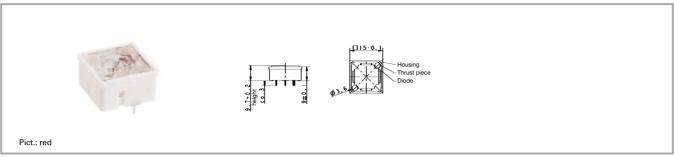
RF 15 short-travel keyswitch, fully illuminated with 2 LEDs



| Contact materials | Illumination | Colour of lens | LED colour | LED type | Order no. |
|-------------------|-----------------------------|----------------|------------|----------|-------------------|
| Au | fully illuminated 2 LEDs | red | red | 2 mm | 3.14.200.011/0000 |
| Au | fully illuminated 2 LEDs | green | green | 2 mm | 3.14.200.012/0000 |
| Au | fully illuminated 2 LEDs | yellow | yellow | 2 mm | 3.14.200.013/0000 |
| Au | fully illuminated 2 LEDs | orange | yellow | 2 mm | 3.14.200.014/0000 |
| Au | fully illuminated 2 LEDs | blue | blue | 2 mm | 3.14.200.015/0000 |
| Ag | fully illuminated 2 LEDs | red | red | 2 mm | 3.14.200.021/0000 |
| Ag | fully illuminated 2 LEDs | green | green | 2 mm | 3.14.200.022/0000 |
| Ag | fully illuminated 2 LEDs | yellow | yellow | 2 mm | 3.14.200.023/0000 |
| Ag | fully illuminated 2 LEDs | orange | yellow | 2 mm | 3.14.200.024/0000 |
| Ag | fully illuminated 2 LEDs | blue | blue | 2 mm | 3.14.200.025/0000 |

Technical data see page 4 - 26

RF 15 short-travel keyswitch, 1 LED spot-illumination



| Contact materials | Illumination | Colour of lens | LED colour | LED type | Order no. |
|-------------------|----------------------------|----------------|------------|----------|-------------------|
| Au | spot illumination 1 LED | opaque white | blue | 3 mm | 3.14.100.030/0000 |
| Au | spot illumination 1 LED | transparent | red | 3 mm | 3.14.100.031/0000 |
| Au | spot illumination 1 LED | transparent | green | 3 mm | 3.14.100.032/0000 |
| Au | spot illumination 1 LED | transparent | yellow | 3 mm | 3.14.100.033/0000 |
| Ag | spot illumination 1 LED | opaque white | blue | 3 mm | 3.14.100.040/0000 |
| Ag | spot illumination 1 LED | transparent | red | 3 mm | 3.14.100.041/0000 |
| Ag | spot illumination 1 LED | transparent | green | 3 mm | 3.14.100.042/0000 |
| Ag | spot illumination 1 LED | transparent | yellow | 3 mm | 3.14.100.043/0000 |

Technical data see page 4 - 26

Double-spot LED illumination available on request.



RF 15 N short-travel keyswitch





100 $m\Omega$

+50 °C

1000000

according to

IEC 600 68-2-3 and 2-30

General data

The RF 15N keyswitch provides a minimum overall height of 6.2 mm. The overall height can be varied by extension plungers which are inserted into the cross-like notches on the actuator tops.

LEDs can only be arranged separately next to the keyswitches up to an overall height of 10 mm (i.e. without plunger or with small plunger).

Keyswitches with overall heights of 12 mm or more can be provided with a maximum of 2 LEDs which are inserted into the recesses of the keyswitch housing. LEDs of keyswitches with overall heights of 12.5 mm or more should be placed onto LED spacers in order to obtain satisfactory illumination.

Contact resistance when

Other specifications

Operating life min.

(in tube)

Technical data

| General | inform | ation |
|---------|----------|-------|
| General | 11110111 | auvi |

Colour of lens see order block new max. Recommended key grid 19.05 mm Contact resistance acc. to life max.

 3Ω $10^9 \Omega$ **Dimensions** Insulation resistance ESD strength 15 mm Length 15 kV Width 15 mm (underneath overlay) Overall height 6.2 mm Bouncing time max. 5 ms

Mechanical design

Mounting soldering into PCB Ambient temp. operating Terminals contacts tin-plated, -25 °C min. fix contact Ag plated Ambient temp. operating

Contact system snap-action contact +70 °C max. Contact arrangement -40 °C 1 NO Storage temperature min. Contact materials Au/Ag Storage temperature max.

Illumination external 3 mm LED +80 °C (product) possible if height < 12 mm Storage temperature max.

Mechanical characteristics

Resistance to constant Operating force max. 2 ... 3 N environment Operating travel 0.5 mm Switching travel 0.5 mm Resistance at variable

Au: 2 W, Ag: 12.5 W

according to Robustness min. with through-plated PCB environment IEC 600 68-2-14 and 2-33

100 N

Electrical characteristics Soldering time max. 2.5 sec. Au: 0.02 V, Ag: 3 V Rated voltage min. Soldering temperature Rated voltage max. Au: 42 V, Ag: 50 V 250 °C max. Rated current min. Au: 0.01 mA, Ag: 0.1 mA Flammability of materials UL 94 HB

Rated current max. Au: 100 mA, Ag: 250 mA Rated power max.

RF

(ohmic load)

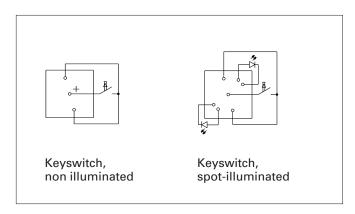
C&K

Force/Travel Diagram – Keyswitch RF 15 N

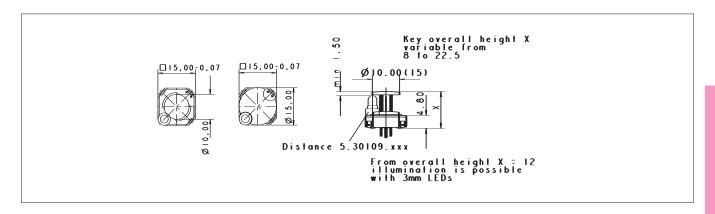
Operation characteristic limits RF F (N) F1 F2 O,2 O,4 S (mm) F2

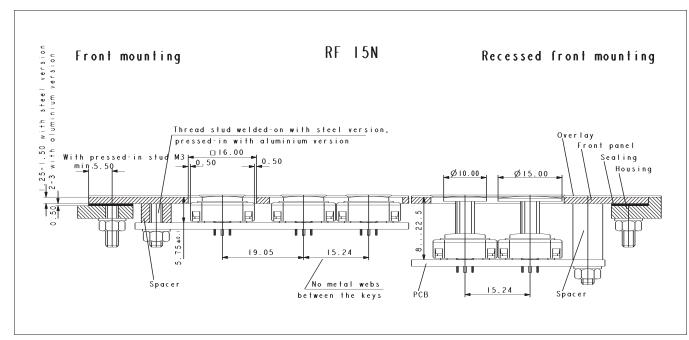
F 1 = Max. operating force F 2 = Force at contact F 2 is max. 55% of F 1

Circuit Diagram - Keyswitch RF 15 N



Dimensional Drawings RF 15 N



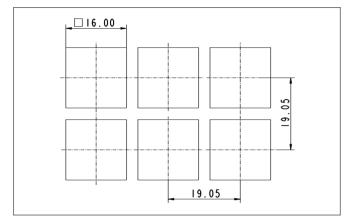


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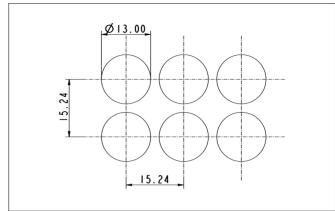
RF

Hole Patterns – Front Panel RF 15 N

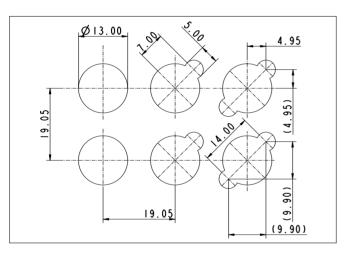
RF 15 N without plunger



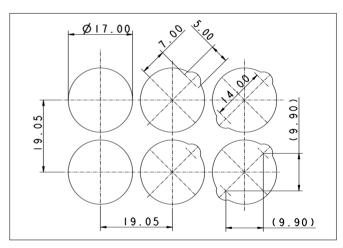
RF 15 N with plunger ø 10 mm, non-illuminated



RF 15 N with plunger ø 10 mm, illuminated

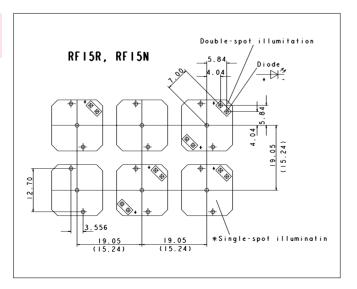


RF 15 N with plunger ø 15 mm, illuminated



Hole Pattern RF 15 N

RF



View on component side All hole diameters 1,1 +/- 0,1 mm PCB layout Keyswitch 1/400" grid

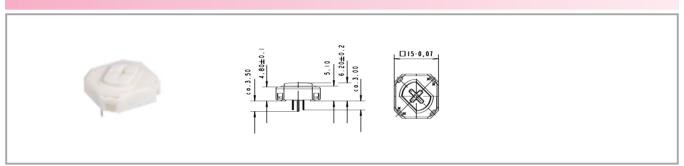
RF short-travel keyswitches



Accessories RF 15 N short-travel keyswitch

| Description | Photo | Order no. | Page |
|---|-------|-------------------|------|
| LED yellow, 3mm | 1111 | 1.90.690.103/0000 | |
| LED spacer for RF 15 N, \emptyset 5 mm, spacing length 2.2 mm, light grey, for use with overall height of 12.5 mm | | 5.30.109.010/0756 | |
| Extension plunger for RF 15 N, Ø 10 mm, overall height 22.5 mm | T | 5.46.011.028/0710 | |
| Extension plunger for RF 15 N, Ø 15 mm, overall height 22.5 mm | T | 5.46.017.028/0710 | |

RF 15 N short-travel keyswitch, non-illuminated



| Contact materials | Illumination | Recommended key grid | Overall height | Order no. |
|-------------------|--------------------------------------|----------------------|----------------|-------------------|
| Au | external 3 mm LED possible if height | 19.05 mm | 6.2 mm | 3.14.100.601/0000 |
| Ag | external 3 mm LED possible if height | 19.05 mm | 6.2 mm | 3.14.100.606/0000 |

Technical data see page 4 - 32



RF 15 R short-travel keyswitch



General data

The round actuator of the RF 15 R keyswitch requires round front panel cut-outs. These make it possible to use a narrow keyboard grid of only 15.24 mm with sufficiently large frame webs between the individual keys. We recommend area embossing over the actuators for the overlay.

Contact resistance when

Technical data

General information

| Recommended key grid | 15.24 mm | new max. | 100 m Ω |
|----------------------------|-----------------------------|---|--------------------------|
| | | Contact resistance acc. | • 0 |
| Dimensions | | to life max. | 3 Ω |
| Length | 15 mm | Insulation resistance | 10 ⁹ Ω |
| Width | 15 mm | ESD strength | |
| Overall height | 9,7/12,5 mm | (underneath overlay) | 15 kV |
| | | Bouncing time max. | 5 ms |
| Mechanical design | | | |
| Mounting | soldering into PCB | Other specifications | |
| Terminals | contacts tin-plated, | Ambient temp. operating | |
| | fix contact Ag plated | min. | -25 °C |
| Contact system | snap-action contact | Ambient temp, operating | |
| Contact arrangement | 1 NÖ | max. | +70 °C |
| Contact materials | Au/Ag | Storage temperature min. | -40 °C |
| Illumination | spot illumination | Storage temperature max. | |
| LED colour | see order block | (product) | +80 °C |
| LED type | see order block | Storage temperature max. | |
| -71 | | (in tube) | +50 °C |
| Mechanical characteristics | | Resistance to constant | |
| Operating force max. | 2 3 N | environment | according to |
| Operating travel | 0.5 mm | 5 | IEC 600 68-2-3 and 2-30 |
| Switching travel | 0.5 mm | Resistance at variable | 120 000 00 2 0 4114 2 00 |
| Robustness min. | with through-plated PCB | environment | according to |
| nobastnoss mm. | 100 N | on vironinone | IEC 600 68-2-14 and 2-33 |
| | 10014 | Operating life min. | 1000000 |
| Electrical characteristics | | Soldering time max. | 2.5 sec. |
| Rated voltage min. | Au: 0.02 V, Ag: 3 V | Soldering time max. Soldering temperature | 2.3 360. |
| Rated voltage min. | Au: 42 V, Ag: 50 V | max. | 250 °C |
| Rated current min. | Au: 0.01 mA, Ag: 0.1 mA | Flammability of materials | UL 94 HB |
| nateu current iiiii. | Au. 0.01 IIIA, Ag. 0.1 IIIA | i iaiiiiiabiiity oi iiiateilais | OL 34 FID |

Au: 100 mA, Ag: 250 mA

Au: 2 W, Ag: 12.5 W

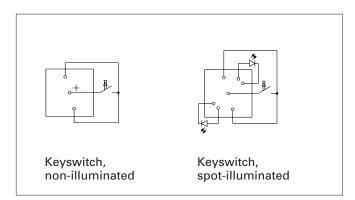
Rated current max. Rated power max. (ohmic load)

C&K

Force/Travel Diagram - Keyswitch RF 15 R

Operation characteristic limits RF F(N) F1 F2 Operation characteristic limits RF

Circuit Diagram – Keyswitch RF 15 R

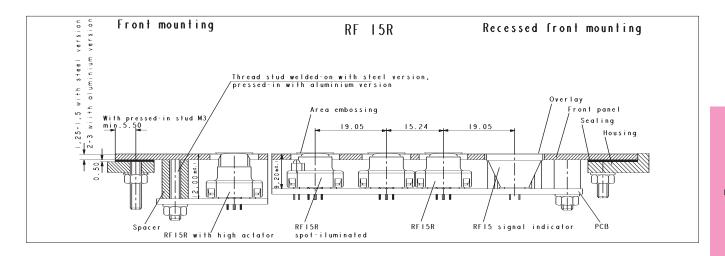


F 1 = Max. operating force

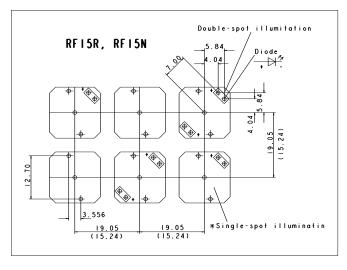
F 2 = Force at contact

F 2 is max. 55% of F 1

Dimensional Drawing RF 15 R



Hole Pattern RF 15 R

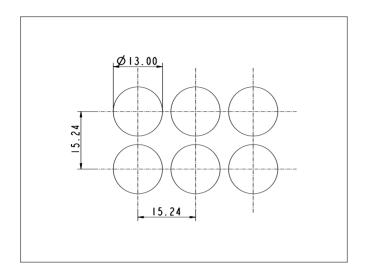


View on component side All hole diameters 1,1 +/- 0,1 mm PCB layout Keyswitch 1/400" grid 4

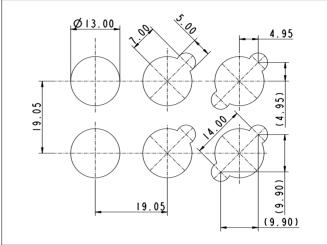


Hole Pattern – Front Panel RF 15 R

RF 15 R, non-illuminated



RF 15 R, illuminated

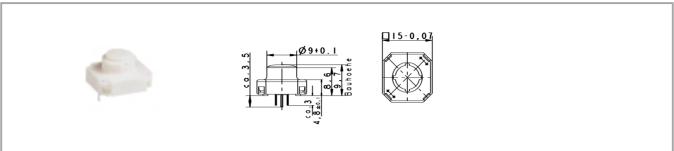


RF

4 - 38 **PCB** Keyswitches



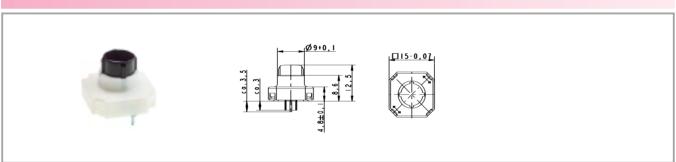
RF 15 R low short-travel keyswitch, non-illuminated



| Contact materials | Overall height | Illumination | LED type | LED colour | Order no. |
|-------------------|----------------|-----------------|----------|------------|-------------------|
| Au | 9.7 mm | not illuminated | | | 3.14.100.501/0000 |
| Ag | 9.7 mm | not illuminated | | | 3.14.100.506/0000 |

Technical data see page 4 - 36

RF 15 R high short-travel keyswitch, non-illuminated

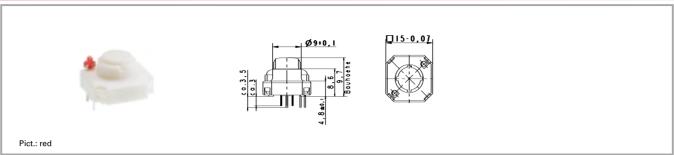


| Contact materials | Overall height | Illumination | LED type | LED colour | Order no. |
|-------------------|----------------|-----------------|----------|------------|-------------------|
| Au | 12.5 mm | not illuminated | | | 3.14.100.801/0000 |
| Ag | 12.5 mm | not illuminated | | | 3.14.100.806/0000 |

Technical data see page 4 - 36



RF 15 R low short-travel keyswitch, 1 LED spot-illumination



| Contact materials | Overall height | Illumination | LED type | LED colour | Order no. |
|-------------------|----------------|----------------------------|----------|------------|-------------------|
| Au | 9.7 mm | spot illumination 1 LED | 2 mm | red | 3.14.100.531/0000 |
| Au | 9.7 mm | spot illumination 1 LED | 2 mm | green | 3.14.100.532/0000 |
| Au | 9.7 mm | spot illumination 1 LED | 2 mm | yellow | 3.14.100.533/0000 |
| Ag | 9.7 mm | spot illumination 1 LED | 2 mm | red | 3.14.100.541/0000 |
| Ag | 9.7 mm | spot illumination 1 LED | 2 mm | green | 3.14.100.542/0000 |
| Ag | 9.7 mm | spot illumination 1 LED | 2 mm | yellow | 3.14.100.543/0000 |

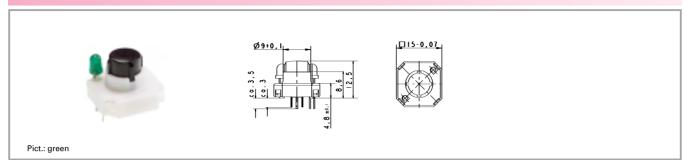
Technical data see page 4 - 36

Versions with 2 LEDs available on request.

4



RF 15 R high short-travel keyswitch, 1 LED spot-illumination



| Contact materials | Overall height | Illumination | LED type | LED colour | Order no. |
|-------------------|----------------|----------------------------|----------|------------|-------------------|
| Au | 12.5 mm | spot illumination 1 LED | 3 mm | blue | 3.14.100.830/0000 |
| Au | 12.5 mm | spot illumination 1 LED | 3 mm | red | 3.14.100.831/0000 |
| Au | 12.5 mm | spot illumination 1 LED | 3 mm | green | 3.14.100.832/0000 |
| Au | 12.5 mm | spot illumination 1 LED | 3 mm | yellow | 3.14.100.833/0000 |
| Ag | 12.5 mm | spot illumination 1 LED | 3 mm | blue | 3.14.100.840/0000 |
| Ag | 12.5 mm | spot illumination 1 LED | 3 mm | red | 3.14.100.841/0000 |
| Ag | 12.5 mm | spot illumination 1 LED | 3 mm | green | 3.14.100.842/0000 |
| Ag | 12.5 mm | spot illumination 1 LED | 3 mm | yellow | 3.14.100.843/0000 |

Technical data see page 4 - 36

Versions with 2 LEDs available on request.



RF 15 H short-travel keyswitch



General data

Application notes:

The RF 15 H key has an overall height of 12.5 mm and can be fully illuminated. When designing membrane keyboards, we recommend using a key grid of at least 19.05 mm and a 0.13 mm overlay with area embossing over the keys. You can use the O-ring (accessory) to block the key and use it as an indicator field or blank spaceholder.

Technical data

| General information Colour of lens | see order block | Rated power max. (ohmic load) | Au: 2 W, Ag: 12.5 W |
|---|---------------------|-------------------------------|-----------------------|
| Recommended key grid | 20 mm | Contact resistance when | Au. 2 VV, Ag. 12.5 VV |
| necommended key grid | 20111111 | new max. | 100 m Ω |
| Dimensions | | Contact resistance acc. | 100 11122 |
| Length | 15 mm | to life max. | 3 Ω |
| Width | 15 mm | Insulation resistance | 10 ⁹ Ω |
| Overall height | 12.5 mm | ESD strength | |
| ū | | (underneath overlay) | 15 kV |
| Mechanical design | | Bouncing time max. | 5 ms |
| Mounting | soldering into PCB | - | |
| Terminals | see order block | Other specifications | |
| Contact system | snap-action contact | Ambient temp. operating | |
| Contact arrangement | 1 NO | min. | -25 °C |
| Contact materials | Au/Ag | Ambient temp. operating | |
| Illumination | not illuminated / | max. | +70 °C |
| | fully illuminated | Storage temperature min. | -40 °C |
| LED colour | see order block | Storage temperature max. | |

RF

| Mechanical characteristics | |
|----------------------------|----------------------------------|
| Operating force max. | 2 3 N |
| Operating travel | 0.5 mm |
| Switching travel | 0.5 mm |
| Robustness min. | with through-plated PCB 100 N |

see order block

Flectrical characteristics

| Electrical characteristics | |
|----------------------------|-------------------------|
| Rated voltage min. | Au: 0.02 V, Ag: 3 V |
| Rated voltage max. | Au: 42 V, Ag: 50 V |
| Rated current min. | Au: 0.01 mA, Ag: 0.1 m/ |
| Rated current max. | Au: 100 mA, Ag: 250 m/ |
| | |

| Analisant tanan analisan | 20 0 |
|---------------------------|--------------------------|
| Ambient temp. operating | |
| max. | +70 °C |
| Storage temperature min. | -40 °C |
| Storage temperature max. | |
| (product) | +80 °C |
| Storage temperature max. | 100 0 |
| (in tube) | +50 °C |
| • | +50 C |
| Resistance to constant | |
| environment | according to |
| | IEC 600 68-2-3 and 2-30 |
| Resistance at variable | |
| environment | according to |
| | IEC 600 68-2-14 and 2-33 |
| Operating life min. | 1000000 |
| | 2.5 sec. |
| Soldering time max. | 2.5 Sec. |
| Soldering temperature | |
| max. | 250 °C |
| Flammability of materials | UL 94 HB |
| - | |

LED type

C&K

Force/Travel Diagram – Keyswitch RF 15 H

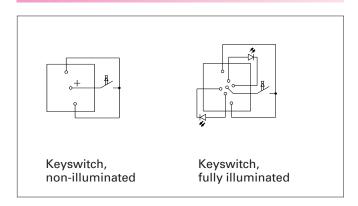
Operation characteristic limits RF F1 F2 Operation characteristic limits RF F1 F2 Operation characteristic limits RF

F 1 = Max. operating force

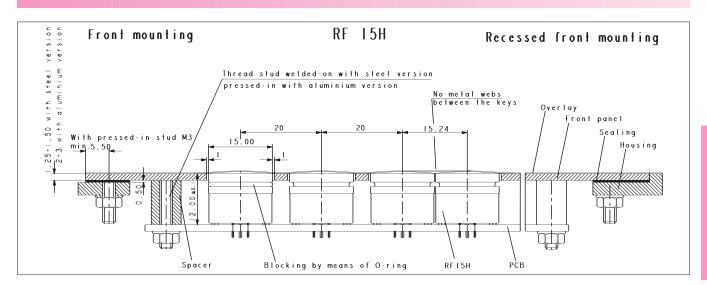
F 2 = Force at contact

F 2 is max. 55% of F 1

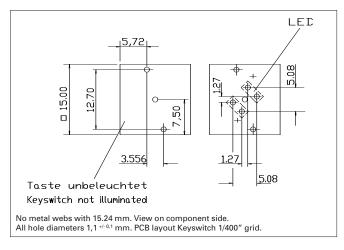
Circuit Diagram - Keyswitch RF 15 H



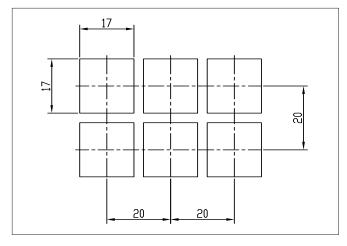
Dimensional Drawing



Hole Pattern



Hole Pattern - Front Panel



4

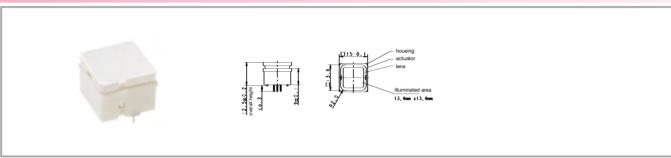
RF



Accessories RF 15 H short-travel keyswitch

| Description | Photo | Order no. | Page |
|--|-------|-------------------|------|
| O-ring, black, for blocking the operating stroke | 0 | 5.30.120.009/0100 | |

RF 15 H short-travel keyswitch, non-illuminated



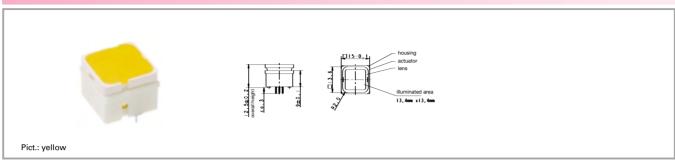
| Contact materials | Illumination | Colour of lens | LED colour | LED type | Order no. |
|-------------------|-----------------|----------------|------------|----------|-------------------|
| Au | not illuminated | white | | | 3.14.100.702/0000 |
| Ag | not illuminated | white | | | 3.14.100.707/0000 |

Technical data see page 4 - 42

4



RF 15 H short-travel keyswitch, fully illuminated



| Contact materials | Illumination | Colour of lens | LED colour | LED type | Order no. |
|-------------------|-----------------------------|----------------|--------------------|----------|-------------------|
| Au | fully illuminated 2 LEDs | red | red | 2 mm | 3.14.200.731/0000 |
| Au | fully illuminated 2 LEDs | green | green | 2 mm | 3.14.200.732/0000 |
| Au | fully illuminated 1 LED | green | green super bright | 3 mm | 3.14.200.736/0000 |
| Au | fully illuminated 2 LEDs | yellow | yellow | 2 mm | 3.14.200.733/0000 |
| Au | fully illuminated 1 LED | white | white | 3 mm | 3.14.200.735/0000 |
| Au | fully illuminated 2 LEDs | orange | yellow | 2 mm | 3.14.200.738/0000 |
| Au | fully illuminated 1 LED | blue | blue | 3 mm | 3.14.200.739/0000 |
| Au | fully illuminated 2 LEDs | white | multi colour | 3 mm | 3.14.100.734/0000 |
| Ag | fully illuminated 2 LEDs | red | red | 2 mm | 3.14.200.741/0000 |
| Ag | fully illuminated 2 LEDs | green | green | 2 mm | 3.14.200.742/0000 |
| Ag | fully illuminated 1 LED | green | green super bright | 3 mm | 3.14.200.746/0000 |
| Ag | fully illuminated 2 LEDs | yellow | yellow | 2 mm | 3.14.200.743/0000 |
| Ag | fully illuminated 1 LED | white | white | 3 mm | 3.14.200.745/0000 |
| Ag | fully illuminated 2 LEDs | orange | yellow | 2 mm | 3.14.200.748/0000 |
| Ag | fully illuminated 1 LED | blue | blue | 3 mm | 3.14.200.749/0000 |
| Ag | fully illuminated 2 LEDs | white | multi colour | 3 mm | 3.14.100.744/0000 |

Technical data see page 4 - 42

When using the keyswitches with multicolour LEDs the illumination colour can be varied from red to green by change of polarity. Due to the frequency of the polarity-changes the colours red, green, yellow as well as all secondary colours from these are possible.

4



RF 15 signal indicator



Technical data

General information

Colour of lens Recommended key grid

Dimensions

Length Width Overall height

Mechanical design

Mounting Illumination LED colour LED type

Other specifications

Ambient temp. operating min.
Ambient temp. operating

max.

see order block 19.05 mm

15 mm 15 mm 9.7 mm

soldering into PCB fully illuminated 1 LED see order block 2 mm

-25 °C

+70 °C

Storage temperature min. Storage temperature max.

(product)

Storage temperature max. (in tube)

Resistance to constant environment

Resistance at variable environment

Soldering time max.
Soldering temperature

max.

Flammability of materials

-40 °C

+80 °C

+50 °C

according to

IEC 600 68-2-3 and 2-30

according to

IEC 600 68-2-14 and 2-33

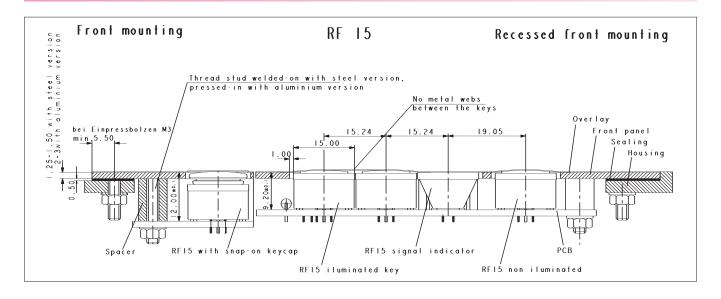
2.5 sec.

250 °C UL 94 HB





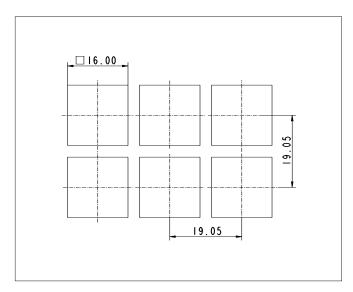
Dimensional Drawing Signal Indicator RF 15



Hole Pattern

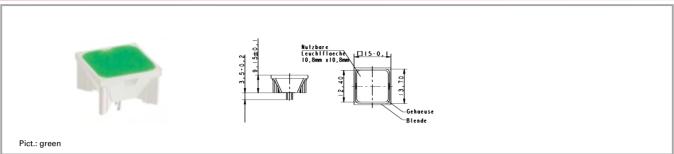
RF15, RF15H *Spot-illuminated 5.00 Signal indicator 3.21 Signal indicator 3.21 Signal indicator 3.21 Signal indicator 5.08 All hole diameters 1,1 +6.1 mm. View on component side. All hole diameters 1,1 +6.1 mm.

Hole Pattern – Front Panel



RF

RF 15 signal indicator, fully illuminated, 1 LED



| Overall height | Illumination | Colour of lens | LED colour | LED type | Order no. |
|----------------|----------------------------|----------------|------------|----------|-------------------|
| 9.7 mm | fully illuminated 1 LED | red | red | 2 mm | 3.14.200.051/0000 |
| 9.7 mm | fully illuminated 1 LED | green | green | 2 mm | 3.14.200.052/0000 |
| 9.7 mm | fully illuminated 1 LED | yellow | yellow | 2 mm | 3.14.200.053/0000 |
| 9.7 mm | fully illuminated 1 LED | orange | yellow | 2 mm | 3.14.200.054/0000 |
| 9.7 mm | fully illuminated 1 LED | blue | blue | 2 mm | 3.14.200.055/0000 |

Technical data see page 4 - 46



RF 19 short-travel keyswitch



General data

Application notes:

RF 19 keys offer a large actuation area. When designing low-profile keyboards with a grid of >= 23 mm, frame webs remain free between the individual keys.

The overlay can be glued onto these frame webs; we recommend area embossing over the keys for the overlay.

Technical data

| General information | | Rated power max. | |
|----------------------|-----------------------|-------------------------|---------------------|
| Colour of lens | see order block | (ohmic load) | Au: 2 W, Ag: 12.5 W |
| Recommended key grid | 23 mm | Contact resistance when | _ |
| , - | | new max. | 100 m Ω |
| Dimensions | | Contact resistance acc. | |
| Length | 19.05 mm | to life max. | 3Ω |
| Width | 19.05 mm | Insulation resistance | $10^9 \Omega$ |
| Overall height | 9.7 mm | ESD strength | |
| - | | (underneath overlay) | 15 kV |
| Mechanical design | | Bouncing time max. | 5 ms |
| Mounting | soldering into PCB | _ | |
| Terminals | contacts tin-plated, | Other specifications | |
| | fix contact Ag plated | Ambient temp, operating | |
| Contact system | snap-action contact | min. | -25 °C |
| Contact arrangement | 1 NO | Ambient temp, operating | |

RF

| Mechanical characteristics | |
|----------------------------|----------------------------------|
| Operating force max. | 2 3 N |
| Operating travel | 0.5 mm |
| Switching travel | 0.5 mm |
| Robustness min. | with through-plated PCB 100 N |

Au/Ag

spot-/fully illuminated

see order block

see order block

Electrical characteristics

Contact materials

Illumination

LED colour LED type

Rated voltage min. Au: 0.02 V, Ag: 3 V Au: 42 V, Ag: 50 V Rated voltage max. Au: 0.01 mA, Ag: 0.1 mA Rated current min. Rated current max. Au: 100 mA, Ag: 250 mA

| Bouncing time max. | 5 ms |
|---|--|
| Other specifications Ambient temp. operating | |
| min. | -25 °C |
| Ambient temp. operating max. | +70 °C |
| Storage temperature min. Storage temperature max. | -40 °C |
| (product) | +80 °C |
| Storage temperature max. (in tube) | +50 °C |
| Resistance to constant environment | according to IEC 600 68-2-3 and 2-30 |
| Resistance at variable | 1EC 000 06-2-3 and 2-30 |
| environment | according to IEC 600 68-2-14 and 2-33 |
| Operating life min. | 1000000 |
| Soldering time max. Soldering temperature | 2.5 sec. |
| max. | 250 °C UL 94 HB |
| Flammability of materials | UL 94 ND |

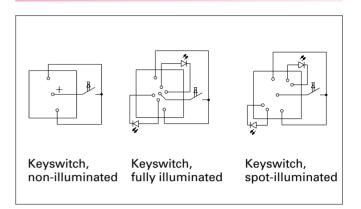
C&K

Force/Travel Diagram - Keyswitch RF 19

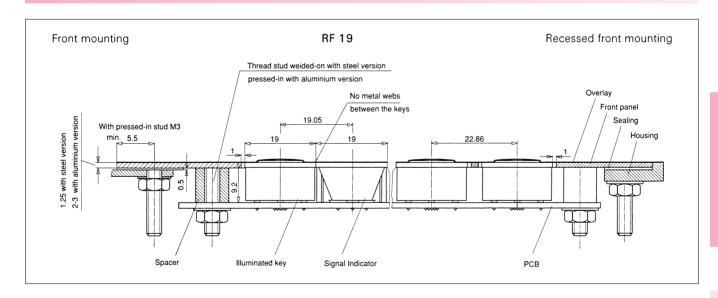
Operation characteristic limits RF F(N) F1 F2 1 0 0 0,2 0,4 8 (mm) 0,6 0,8 1

F 1 = Max. operating force F 2 = Force at contact F 2 is max. 55% of F 1

Circuit Diagram - Keyswitch RF 19



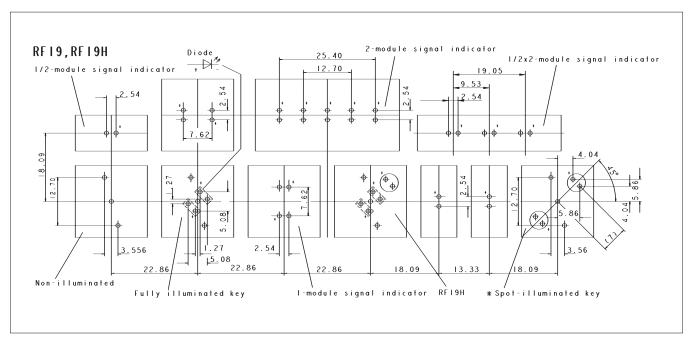
Dimensional Drawing



RF



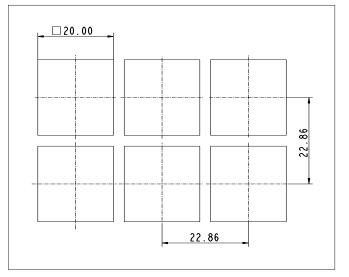
Hole Patterns RF 19



* The LED may be positioned either on the left-hand or right-hand side. Standard version: LED on left-hand side View on component side, all hole diameters 1,1 +/- 0,1 mm

Hole Patterns – Front Panel RF 19

4



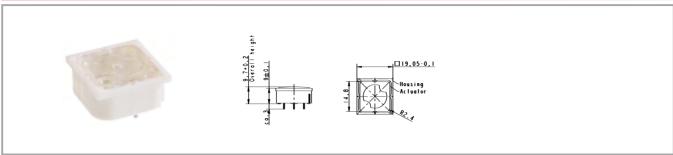
RF

4 - 52 PCB Keyswitches





RF 19 short-travel keyswitch, non-illuminated

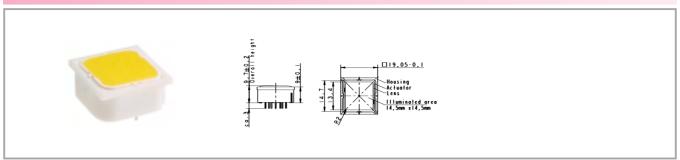


| Contact materials | Illumination | Colour of lens | LED colour | LED type | Order no. |
|-------------------|-----------------|----------------|------------|----------|-------------------|
| Au | not illuminated | transparent | | | 3.14.001.001/0000 |
| Ag | not illuminated | transparent | | | 3.14.001.006/0000 |

Technical data see page 4 - 50



RF 19 short-travel keyswitch, fully illuminated with 2 LEDs



| Contact materials | Illumination | Colour of lens | LED colour | LED type | Order no. |
|-------------------|-----------------------------|----------------|------------|----------|-------------------|
| Au | fully illuminated 2 LEDs | red | red | 2 mm | 3.14.002.011/0000 |
| Au | fully illuminated 2 LEDs | green | green | 2 mm | 3.14.002.012/0000 |
| Au | fully illuminated 2 LEDs | yellow | yellow | 2 mm | 3.14.002.013/0000 |
| Au | fully illuminated 2 LEDs | orange | yellow | 2 mm | 3.14.002.014/0000 |
| Au | fully illuminated 2 LEDs | blue | blue | 2 mm | 3.14.002.015/0000 |
| Ag | fully illuminated 2 LEDs | red | red | 2 mm | 3.14.002.021/0000 |
| Ag | fully illuminated 2 LEDs | green | green | 2 mm | 3.14.002.022/0000 |
| Ag | fully illuminated 2 LEDs | yellow | yellow | 2 mm | 3.14.002.023/0000 |
| Ag | fully illuminated 2 LEDs | orange | yellow | 2 mm | 3.14.002.024/0000 |
| Ag | fully illuminated 2 LEDs | blue | blue | 2 mm | 3.14.002.025/0000 |

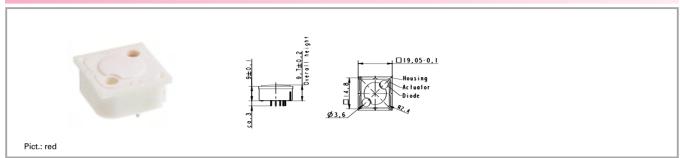
Technical data see page 4 - 50

4





RF 19 short-travel keyswitch, 1 LED spot-illumination



| Contact materials | Illumination | Colour of lens | LED colour | LED type | Order no. |
|-------------------|----------------------------|----------------|------------|----------|-------------------|
| Au | spot illumination 1 LED | opaque white | blue | 3 mm | 3.14.001.030/0000 |
| Au | spot illumination 1 LED | transparent | red | 3 mm | 3.14.001.031/0000 |
| Au | spot illumination 1 LED | transparent | green | 3 mm | 3.14.001.032/0000 |
| Au | spot illumination 1 LED | transparent | yellow | 3 mm | 3.14.001.033/0000 |
| Ag | spot illumination 1 LED | opaque white | blue | 3 mm | 3.14.001.040/0000 |
| Ag | spot illumination 1 LED | transparent | red | 3 mm | 3.14.001.041/0000 |
| Ag | spot illumination 1 LED | transparent | green | 3 mm | 3.14.001.042/0000 |
| Ag | spot illumination 1 LED | transparent | yellow | 3 mm | 3.14.001.043/0000 |

Technical data see page 4 - 50

Versions with 2 LEDs available on request.



RF 19 short-travel keyswitch, 1 NC + 1 NO



Technical data

| General information Recommended key grid | 23 mm |
|--|-------|
| Dimensions | 40.05 |

Length19.05 mmWidth19.05 mmOverall height9.7 mm

Mechanical design

Mounting soldering into PCB contacts tin-plated, fix contact Ag plated

Contact system bridge contact
Contact arrangement 1 NC + 1 NO
Contact materials Au/Ag
Illumination none

Mechanical characteristics

Operating force max. 2 ... 3 N
Operating travel 0.5 mm
Switching travel 0.5 mm
Robustness min. with through-plated PCB

Electrical characteristics
Rated voltage min.
Rated voltage max.
Rated current min.
Au: 0.02 V, Ag: 3 V V
Au: 42 V, Ag: 50 V V
Au: 0.01 mA,
Ag: 0.1 mA mA
Au: 100 mA,
Ag: 250 mA mA
Rated power max.

(ohmic load) Au: 2 W, Ag: 12.5 W

Bouncing time max.

Other specifications

Ambient temp. operating min. -25 °C

Ambient temp. operating max. +70 °C

Storage temperature min. Storage temperature max. (product) +80 °C

Storage temperature max. (in tube) +50 °C

Resistance to constant environment according

Resistance at variable environment

Operating life min.
Soldering time max.
Soldering temperature
max.
Flammability of materials

according to

IEC 600 68-2-3 and 2-30

according to IEC 600 68-2-14 and 2-33 100000

100000 5 sec.

5 ms

265 °C UL 94 HB

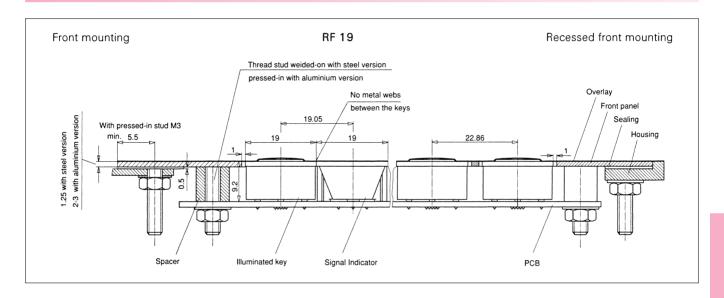
4

C&K

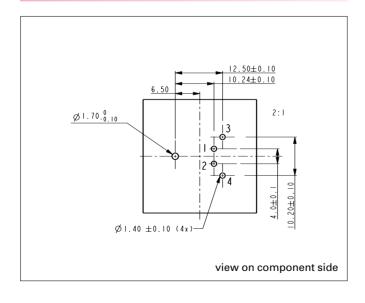
Circuit Diagram

$$SIF - \begin{cases} 1 \\ - - - \end{cases}$$

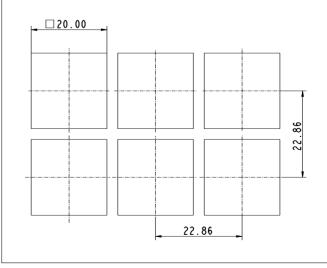
Dimensional Drawing



Hole Pattern



Hole Pattern - Front Panel

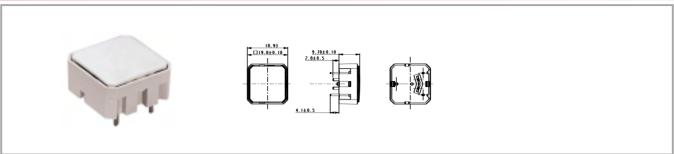


4

RF



RF 19 short-travel keyswitch, non-illuminated



| Contact materials | Contact arrangement | Illumination | Colour of lens | Order no. |
|-------------------|---------------------|-----------------|----------------|-------------------|
| Au | 1 NC + 1 NO | not illuminated | opaque white | 1.16.000.991/0000 |
| Ag | 1 NC + 1 NO | not illuminated | opaque white | 1.16.000.990/0000 |

Technical data see page 4 - 56

4



RF 19 H short-travel keyswitch



General data

Application notes:

The RF 19H key has an overall height of 12.5 mm and can be fully illuminated. When designing membrane keyboards, we recommend using a key grid of at least 23 mm and a 0.13 mm overlay with area embossing over the keys. You can use the O-ring (accessory) to block the key and use it as an indicator field or blank spaceholder.

Technical data

General information

| Colour of lens Recommende |
|------------------------------|
| |

see order block ended key grid 24 mm **Dimensions** Length 19.05 mm Width 19.05 mm Overall height 12.5 mm

Mechanical design

Mounting soldering into PCB Terminals contacts tin-plated, fix contact Ag plated Contact system snap-action contact

Contact arrangement 1 NO Contact materials Au/Ag spot-fully illuminated Illumination

LED colour see order block LED type see order block

Mechanical characteristics

Operating force max. 2 ... 3 N Operating travel 0.5 mm Switching travel 0.5 mm Robustness min. with through-plated PCB

100 N

Electrical characteristics

Au: 0.02 V, Ag: 3 V Rated voltage min. Rated voltage max. Au: 42 V, Ag: 50 V Au: 0.01 mA, Ag: 0.1 mA Rated current min. Au: 100 mA, Ag: 250 mA Rated current max.

Rated power max. (ohmic load) Au: 2 W, Ag: 12.5 W Contact resistance when 100 $m\Omega$ new max

Contact resistance acc. 3.0 to life max. Insulation resistance $10^9 \Omega$

ESD strength (underneath overlay) 15 kV Bouncing time max. 5 ms

Other specifications

Ambient temp. operating -25 °C min. Ambient temp. operating +70 °C -40 °C Storage temperature min. Storage temperature max. +80 °C (product) Storage temperature max. (in tube) +50 °C Resistance to constant

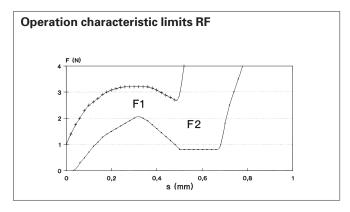
environment according to IEC 600 68-2-3 and 2-30 Resistance at variable

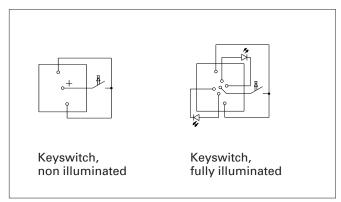
environment according to IEC 600 68-2-14 and 2-33 Operating life min. 1000000 Soldering time max. 2.5 sec.

Soldering temperature 250 °C Flammability of materials UL 94 HB

Force/Travel Diagram – Keyswitch RF 19 H

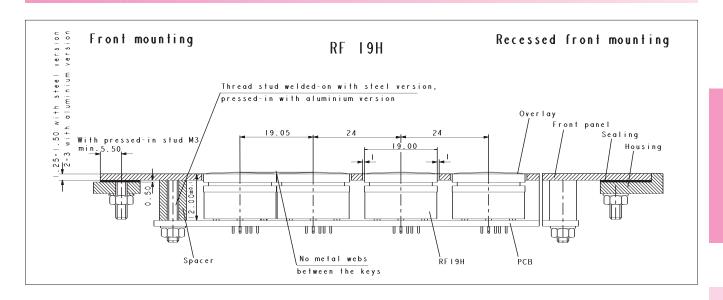
Circuit Diagram - Keyswitch RF 19 H





- F 1 = Max. operating force F 2 = Force at contact
- F 2 is max. 55% of F 1

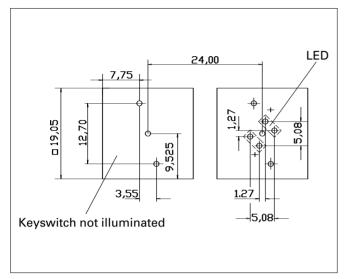
Dimensional Drawing



RF

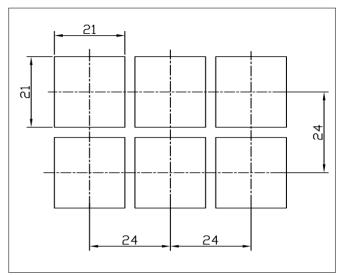


Hole Pattern RF 19 H



* The LED may be positioned either on the left-hand or right-hand side. Standard version: LED on left-hand side View on component side, all hole diameters 1,1 +/- 0,1 mm

Hole Pattern – Front Panel RF 19 H



4

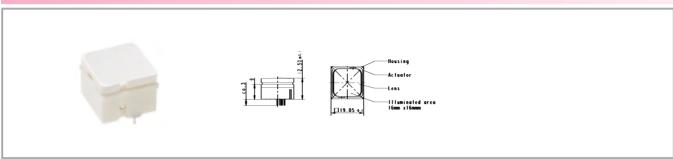
RF short-travel keyswitches



Accessories RF 19 H short-travel keyswitches

| Description | Photo | Order no. | Page |
|---|-------|-------------------|------|
| O-ring, black, 17.0 x 1.5, for blocking RF 19H keys | 0 | 5.30.125.003/0100 | |

RF 19 H keyswitch, non-illuminated

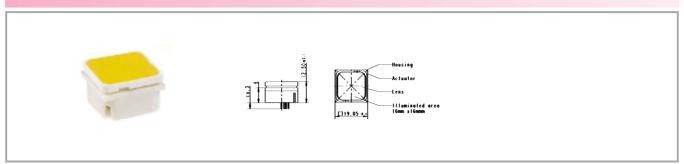


| Contact materials | Illumination | Colour of lens | LED colour | LED type | Order no. |
|-------------------|-----------------|----------------|------------|----------|-------------------|
| Au | not illuminated | white | | | 3.14.001.501/0000 |
| Ag | not illuminated | white | | | 3.14.001.506/0000 |

Technical data see page 4 - 60



RF 19 H short-travel keyswitch, fully illuminated



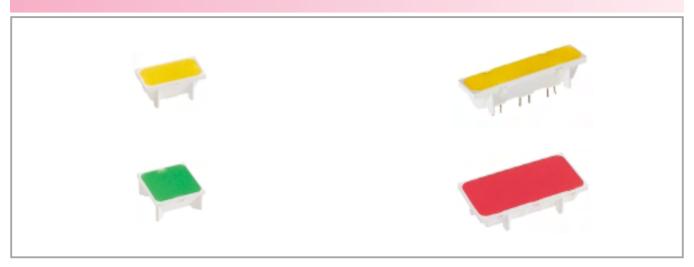
| Illumination | Colour of lens | LED colour | LED type | Order no. |
|-----------------------------|---|--|--|---|
| fully illuminated 2 LEDs | red | red | 2 mm | 3.14.002.613/0000 |
| fully illuminated 2 LEDs | green | green | 2 mm | 3.14.002.632/0000 |
| fully illuminated 1 LED | green | green super bright | 3 mm | 3.14.002.633/0000 |
| fully illuminated 2 LEDs | yellow | yellow | 2 mm | 3.14.002.653/0000 |
| fully illuminated 1 LED | white | white | 3 mm | 3.14.002.684/0000 |
| fully illuminated 2 LEDs | orange | yellow | 2 mm | 3.14.002.673/0000 |
| fully illuminated 2 LEDs | white | multi colour | 3 mm | 3.14.001.672/0000 |
| fully illuminated 1 LED | blue | blue | 3 mm | 3.14.002.683/0000 |
| fully illuminated 2 LEDs | red | red | 2 mm | 3.14.002.623/0000 |
| fully illuminated 2 LEDs | green | green | 2 mm | 3.14.002.642/0000 |
| fully illuminated 1 LED | green | green super bright | 3 mm | 3.14.002.643/0000 |
| fully illuminated 1 LED | blue | blue super bright | 3 mm | 3.14.002.688/0000 |
| fully illuminated 2 LEDs | yellow | yellow | 2 mm | 3.14.002.663/0000 |
| fully illuminated 1 LED | white | white | 3 mm | 3.14.002.689/0000 |
| fully illuminated 2 LEDs | orange | yellow | 2 mm | 3.14.002.678/0000 |
| fully illuminated 2 LEDs | white | multi colour | 3 mm | 3.14.001.682/0000 |
| | fully illuminated 2 LEDs fully illuminated 2 LEDs fully illuminated 1 LED fully illuminated 2 LEDs fully illuminated 1 LED fully illuminated 2 LEDs fully illuminated 2 LEDs fully illuminated 2 LEDs fully illuminated 1 LED fully illuminated 2 LEDs fully illuminated 1 LED fully illuminated 2 LEDs fully illuminated 2 LEDs fully illuminated 1 LED fully illuminated 1 LED fully illuminated 1 LED fully illuminated 1 LED fully illuminated 2 LEDs fully illuminated 1 LED fully illuminated 1 LED fully illuminated 1 LED fully illuminated 2 LEDs fully illuminated 2 LEDs fully illuminated | fully illuminated 2 LEDs fully illuminated 2 LEDs fully illuminated 3 green fully illuminated 4 yellow 2 LEDs fully illuminated 5 white fully illuminated 6 orange 6 yellow 6 yellow 7 yellow 7 yellow 8 yellow 9 yellow 9 yellow 9 yellow 9 yellow 9 yellow 9 yellow 1 LED 1 yellow 1 yel | fully illuminated 2 LEDs fully illuminated 2 LEDs fully illuminated 2 LEDs fully illuminated 3 green 3 green 4 green 5 green 5 green 5 green 6 green 7 green 8 green 8 green 9 green 9 green 8 green 9 | fully illuminated 2 LEDs fully illuminated 2 LEDs fully illuminated 2 green green green yellow 2 mm fully illuminated 2 LEDs fully illuminated yellow yellow 2 mm fully illuminated orange yellow 2 mm fully illuminated 2 LEDs fully illuminated orange yellow 2 mm fully illuminated 2 LEDs fully illuminated blue blue 3 mm fully illuminated red red 2 mm fully illuminated 2 LEDs fully illuminated green green 2 mm fully illuminated 2 LEDs fully illuminated pred green green 2 mm fully illuminated 2 LEDs fully illuminated green green yellow 2 mm fully illuminated blue blue super bright 3 mm fully illuminated blue blue super bright 3 mm fully illuminated yellow yellow 2 mm fully illuminated yellow yellow 2 mm fully illuminated orange yellow 3 mm |

Technical data see page 4 - 60

When using the keyswitches with multicolour LEDs the illumination colour can be varied from red to green by change of polarity. Due to the frequency of the polarity-changes the colours red, green, yellow as well as all secondary colours from these are possible.



RF 19 signal indicator



Technical data

General information

Colour of lens Recommended key grid

Dimensions

Length Width Overall height

Mechanical design

Mounting Illumination LED colour LED type

see order block 23/x mm

see order block see order block 9.15 mm

soldering into PCB see order block see order block see order block

Other specifications

Ambient temp. operating +70 °C Storage temperature min. Storage temperature max. +80 °C (product) Storage temperature max. (in tube)

Resistance to constant environment

Resistance at variable environment

Soldering time max. Soldering temperature

Flammability of materials



-25 °C

-40 °C

+50 °C

according to IEC 600 68-2-3 and 2-30

according to

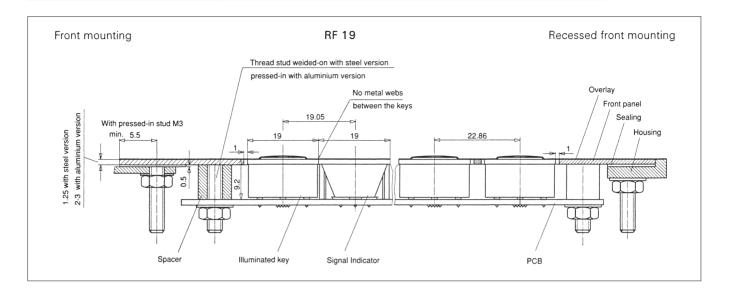
IEC 600 68-2-14 and 2-33

2.5 sec.

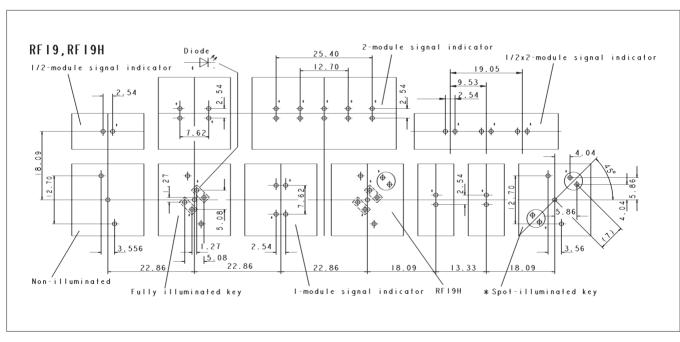
250 °C UL 94 HB

C&K

Dimensional Drawing Signal Indicator RF 19



Hole Patterns RF 19



* The LED may be positioned either on the left-hand or right-hand side. Standard verstion: LED on left-hand side View on component side, all hole diameters 1,1 +/- 0,1 mm

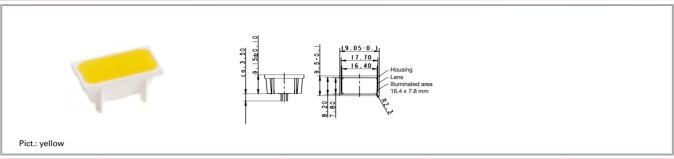
Front panel cut-out = outer keyswitch size + 1 mm

RF

PCB Keyswitches 4 - 67



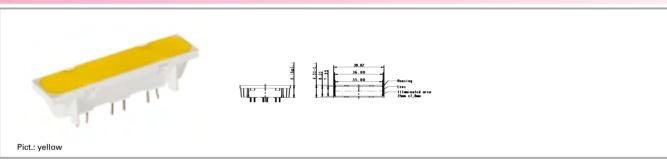
RF 19 signal indicator, ¹/₂ x 1-module



| Illumination | Colour of lens | LED colour | LED type | Order no. |
|----------------------------|----------------|------------|----------|-------------------|
| fully illuminated 1 LED | red | red | 2 mm | 3.14.002.061/0000 |
| fully illuminated 1 LED | green | green | 2 mm | 3.14.002.062/0000 |
| fully illuminated 1 LED | yellow | yellow | 2 mm | 3.14.002.063/0000 |
| fully illuminated 1 LED | orange | yellow | 2 mm | 3.14.002.064/0000 |

Technical data see page 4 - 66

RF 19 signal indicator, ¹/₂ x 2-module

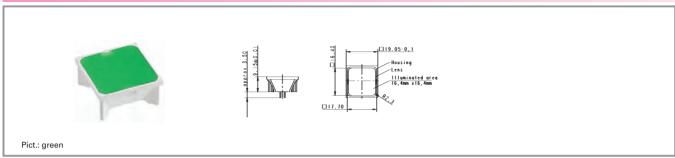


| Illumination | Colour of lens | LED colour | LED type | Order no. |
|-----------------------------|----------------|------------|----------|-------------------|
| fully illuminated 3 LEDs | red | red | 2 mm | 3.14.002.908/0000 |
| fully illuminated 3 LEDs | green | green | 2 mm | 3.14.002.909/0000 |
| fully illuminated 3 LEDs | yellow | yellow | 2 mm | 3.14.002.910/0000 |
| fully illuminated 3 LEDs | orange | yellow | 2 mm | 3.14.002.911/0000 |

Technical data see page 4 - 66



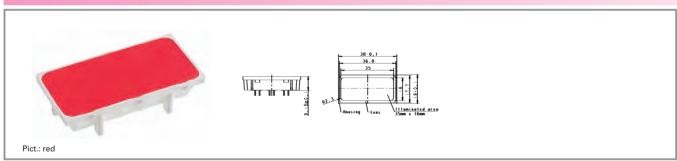
RF 19 signal indicator, 1 x 1-module



| Illumination | Colour of lens | LED colour | LED type | Order no. |
|-----------------------------|----------------|------------|----------|-------------------|
| fully illuminated 2 LEDs | red | red | 2 mm | 3.14.002.051/0000 |
| fully illuminated 2 LEDs | green | green | 2 mm | 3.14.002.052/0000 |
| fully illuminated 2 LEDs | yellow | yellow | 2 mm | 3.14.002.053/0000 |
| fully illuminated 2 LEDs | orange | yellow | 2 mm | 3.14.002.054/0000 |
| fully illuminated 2 LEDs | blue | blue | 2 mm | 3.14.001.659/0000 |

Technical data see page 4 - 66

RF 19 signal indicator, 1 x 2-module



| Illumination | Colour of lens | LED colour | LED type | Order no. |
|-----------------------------|----------------|------------|----------|-------------------|
| fully illuminated 5 LEDs | red | red | 2 mm | 3.14.002.071/0000 |
| fully illuminated 5 LEDs | green | green | 2 mm | 3.14.002.072/0000 |
| fully illuminated 5 LEDs | yellow | yellow | 2 mm | 3.14.002.073/0000 |
| fully illuminated 5 LEDs | orange | yellow | 2 mm | 3.14.002.074/0000 |

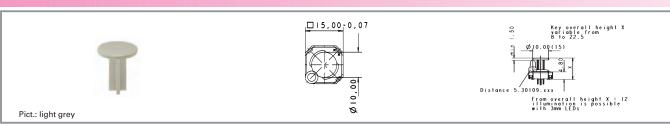
Technical data see page 4 - 66



RF special accessories



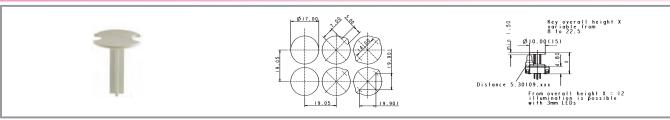
Extension plunger for RF 15 N, round head



| Length | Width | Overall height | Diameter | Colour | Order no. complete |
|--------|-------|----------------|----------|--------|--------------------|
| | | 9 mm | 10 mm | | 5.46.011.036/0710 |
| | | 9.7 mm | 10 mm | | 5.46.011.030/0710 |
| | | 12.5 mm | 10 mm | | 5.46.011.037/0710 |
| | | 13 mm | 10 mm | | 5.46.011.038/0710 |
| | | 22.5 mm | 10 mm | | 5.46.011.028/0710 |

Length of plunger = Overall height - 4.25 mm.

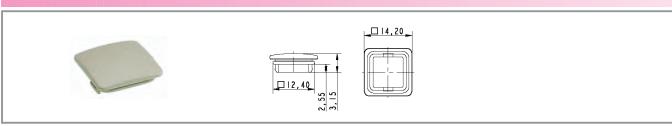
Extension plunger for RF 15 N, round head, with recess for LED



| Length | Width | Overall height | Diameter | Colour | Order no. complete |
|--------|-------|----------------|----------|--------|--------------------|
| | | 9 mm | 15 mm | | 5.46.017.036/0710 |
| | | 9.7 mm | 15 mm | | 5.46.017.030/0710 |
| | | 12.5 mm | 15 mm | | 5.46.017.037/0710 |
| | | 13 mm | 15 mm | | 5.46.017.038/0710 |
| | | 22.5 mm | 15 mm | | 5.46.017.028/0710 |

Length of plunger = Overall height - 4.25 mm.

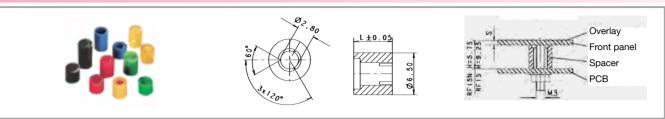
Keycap for RF 15, snap-on, for overall height 12.5 mm



| Length | Width | Overall height | Diameter | Colour | Order no. complete |
|---------|---------|----------------|----------|--------|--------------------|
| | | | | | |
| 14.2 mm | 14.2 mm | 12.5 mm | | beige | 5.46.654.059/0227 |



Spacers, round, for RF 15, RF 19



| Length | Width | Overall height | Diameter | Colour | Order no. complete |
|----------|-------|----------------|----------|------------------------------|--------------------|
| 4 mm | | | | green | 5.30.759.025/0000 |
| 4.25 mm | | | | blue | 5.30.759.026/0000 |
| 4.50 mm | | | | red | 5.30.759.027/0000 |
| 4.75 mm | | | | blue transparent | 5.30.759.028/0000 |
| 5 mm | | | | black | 5.30.759.029/0000 |
| 5.25 mm | | | | yellow orange transparent | 5.30.759.030/0000 |
| 5.50 mm | | | | yellow | 5.30.759.031/0000 |
| 5.75 mm | | | | green | 5.30.759.032/0000 |
| 6 mm | | | | blue | 5.30.759.033/0000 |
| 6.25 mm | | | | red | 5.30.759.034/0000 |
| 6.50 mm | | | | blue transparent | 5.30.759.035/0000 |
| 6.75 mm | | | | black | 5.30.759.036/0000 |
| 7 mm | | | | yellow orange transparent | 5.30.759.037/0000 |
| 7.25 mm | | | | yellow | 5.30.759.038/0000 |
| 7.50 mm | | | | green | 5.30.759.039/0000 |
| 7.75 mm | | | | blue | 5.30.759.040/0000 |
| 8 mm | | | | red | 5.30.759.041/0000 |
| 8.25 mm | | | | blue transparent | 5.30.759.042/0000 |
| 10.00 mm | | | | black | 5.30.759.043/0104 |

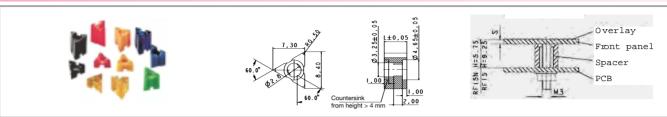
Required spacer length = Overall height of key - front panel thickness - 0.5 mm (area embossing).

4

RF



Spacers, triangular, for RF 15, RF 19



| Length | Width | Overall height | Diameter | Colour | Order no. complete |
|---------|-------|----------------|----------|------------------------------|--------------------|
| 2.50 mm | | | | blue | 5.30.759.094/0000 |
| 2.75 mm | | | | red | 5.30.759.095/0000 |
| 3 mm | | | | blue transparent | 5.30.759.096/0000 |
| 3.25 mm | | | | black | 5.30.759.097/0000 |
| 3.50 mm | | | | yellow orange transparent | 5.30.759.098/0000 |
| 3.75 mm | | | | yellow | 5.30.759.099/0000 |
| 4 mm | | | | green | 5.30.759.100/0000 |
| 4.25 mm | | | | blue | 5.30.759.101/0000 |
| 4.50 mm | | | | red | 5.30.759.102/0000 |
| 4.75 mm | | | | blue transparent | 5.30.759.103/0000 |
| 5 mm | | | | black | 5.30.759.104/0000 |
| 5.25 mm | | | | yellow orange transparent | 5.30.759.105/0000 |
| 5.50 mm | | | | yellow | 5.30.759.106/0000 |
| 5.75 mm | | | | green | 5.30.759.107/0000 |
| 6 mm | | | | blue | 5.30.759.108/0000 |
| 6.25 mm | | | | red | 5.30.759.109/0000 |
| 6.50 mm | | | | blue transparent | 5.30.759.110/0000 |
| 6.75 mm | | | | black | 5.30.759.111/0000 |
| 7 mm | | | | yellow orange transparent | 5.30.759.112/0000 |
| 7.25 mm | | | | yellow | 5.30.759.113/0000 |
| 7.50 mm | | | | green | 5.30.759.114/0000 |
| 7.75 mm | | | | blue | 5.30.759.115/0000 |
| 8 mm | | | | red | 5.30.759.116/0000 |

| Length | Width | Overall height | Diameter | Colour | Order no. complete |
|----------|-------|----------------|----------|------------------------------|--------------------|
| 8.25 mm | | | | blue transparent | 5.30.759.117/0000 |
| 10.00 mm | | | | black | 5.30.759.124/0000 |
| 10.25 mm | | | | yellow orange transparent | 5.30.759.125/0000 |

 $Required\ spacer\ length = Overall\ height\ of\ key\ -\ front\ panel\ thickness\ -\ 0.5\ mm\ (area\ embossing).$

| LED spacer for RF 15 N | | | | | | |
|------------------------|--|--|--|--|--|--|
| | | | | | | |
| • | | | | | | |
| Pict.: light grey | | | | | | |

| Length | Width | Overall height | Diameter | Colour | Order no. complete |
|--------|-------|----------------|----------|------------|--------------------|
| 2.2 mm | | 12.5 mm | 5 mm | light grey | 5.30.109.010/0756 |
| 12 mm | | 22.5 mm | 5 mm | black | 5.30.109.019/0105 |

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