



General data

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

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| | |
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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 | White LED | Green LED superbright |
| Max. forward current I _F : | 20 mA | 25 mA | 30 mA |
| Current reduction from: T ₀ = 50 °C: | approx 0.6 mA/°C | - | - |
| Wavelength typ: | 470 nm | - | 510-545 nm |
| Forward voltage U _F /I _F typ: | 2.7 V/10 mA | 3.6 V/20 mA | 3.5 V/20 mA |
| Reverse voltage U _R /I _F typ: | 5V/100 µA min. | - | - |
| Ambient temperature, operating: | - 20 °C ... + 80 °C | - 20 °C ... + 80 °C | -30 °C ... + 100 °C |

2 mm LED

| (valid for 25 °C) | Red LED | Green LED | Yellow LED |
|---|----------------------|----------------------|---------------------|
| Max. forward current I _F : | 30 mA | 30 mA | 50 mA |
| Current reduction from: T ₀ = 50 °C: | 0.5 mA/°C | 0.5 mA/°C | 0.8 mA/°C |
| Light current f _v /I _F typ: | - | - | 250 mIm/20 mA |
| Wavelength typ: | 637 nm | 569 nm | 590 nm |
| Forward voltage U _F /I _F typ: | 1.8 V/20 mA | 2.1 V/10 mA | 1.9 V/20 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: | - 55 °C ... + 100 °C | - 40 °C ... + 100 °C | -40 °C ... + 100 °C |
| | Blue LED | Multi-colour LED | |
| Max. forward current I _F : | 30 mA | 30 mA | |
| Current reduction from: T ₀ = 50 °C: | - | approx 0.6 mA/°C | |
| Light current f _v /I _F typ: | - | - | |
| Wavelength typ: | 464-485 nm | 635/565 nm | |
| Forward voltage U _F /I _F typ: | 3.6 V/20 mA | 2 V/10 mA | |
| Reverse voltage U _R /I _F typ: | - | - | |
| Ambient temperature, operating: | - 20 °C ... + 80 °C | - 20 °C ... + 80 °C | |

4

RF

| | | |
|----------------------------------|--------------------------|--|
| Calculating the series resistor: | Rated power of series: | Example for 5 Volt: |
| $R_V = \frac{U_B - U_F}{I_F}$ | $P_V = I_F^2 \times R_V$ | $R_V = \frac{5V - 2.0 V}{0.02 A} = 150 \Omega (= \text{standard value})$ |

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

Colour of lens see order block
 Recommended key grid 19.05 mm

Dimensions

Length 15 mm
 Width 15 mm
 Overall height 9.7 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
 Illumination spot-/fully illuminated
 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

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

Rated power max. (ohmic load) Au: 2 W, Ag: 12.5 W
 Contact resistance when new max. 100 mΩ
 Contact resistance acc. to life max. 3 Ω
 Insulation resistance 10⁹ Ω
 ESD strength (underneath overlay) 15 kV
 Bouncing time max. 5 ms

Other specifications

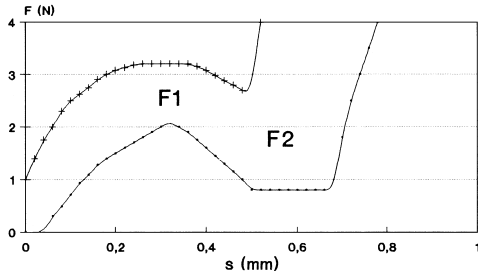
Ambient temp. operating min. -25 °C
 Ambient temp. operating max. +70 °C
 Storage temperature min. -40 °C
 Storage temperature max. (product) +80 °C
 Storage temperature max. (in tube) +50 °C
 Resistance to constant environment according to IEC 600 68-2-3 and 2-30
 Resistance at variable environment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

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RF

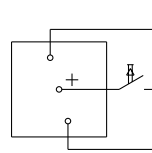
Force/Travel Diagram – Keyswitch RF 15

Operation characteristic limits RF

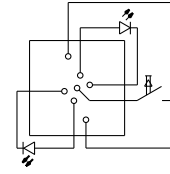


F 1 = Max. operating force
F 2 = Force at contact
F 2 is max. 55% of F 1

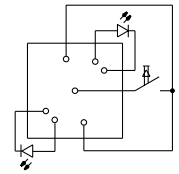
Circuit Diagram – Keyswitch RF 15



Keyswitch, non-illuminated

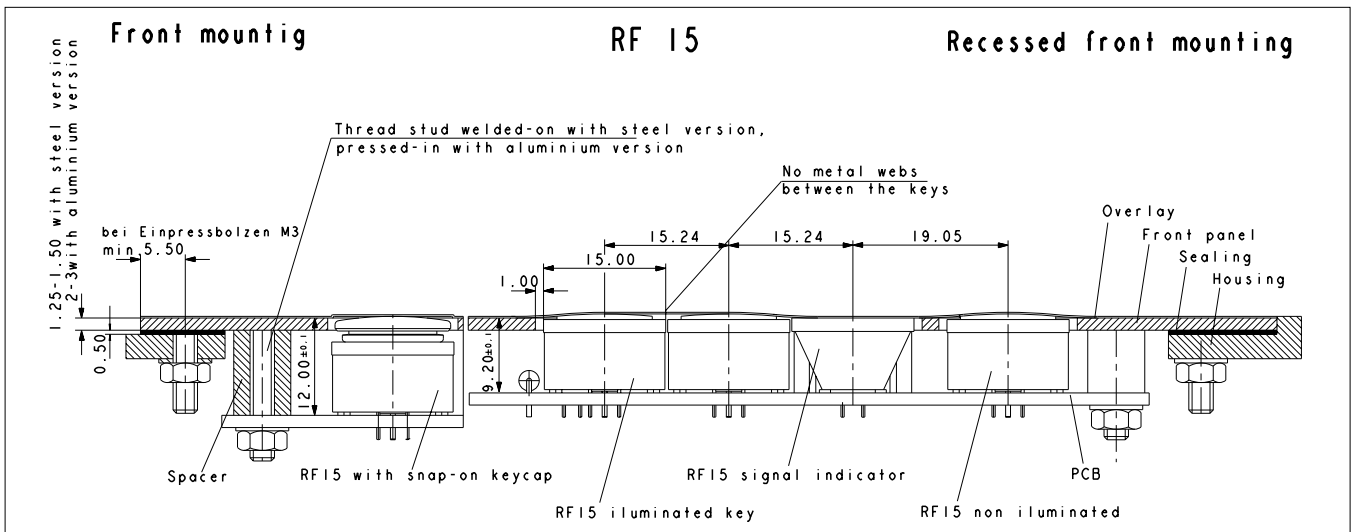


Keyswitch, fully illuminated

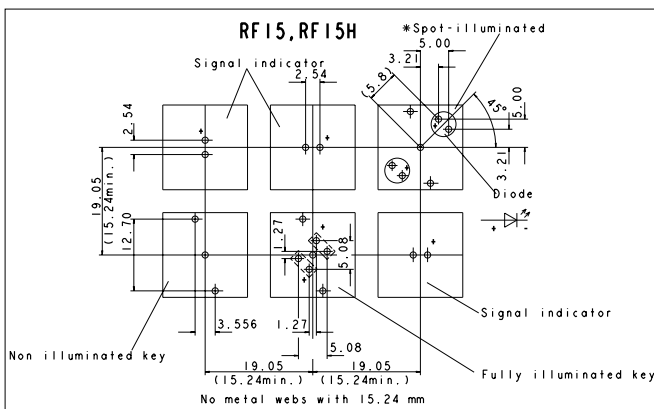


Keyswitch, spot-illuminated

Dimensional Drawing RF 15



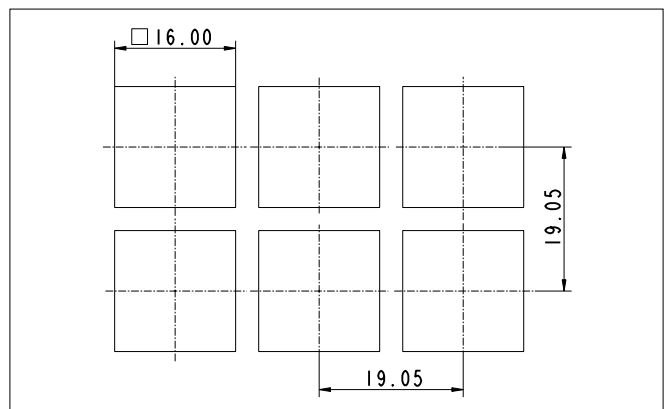
Hole Pattern RF 15



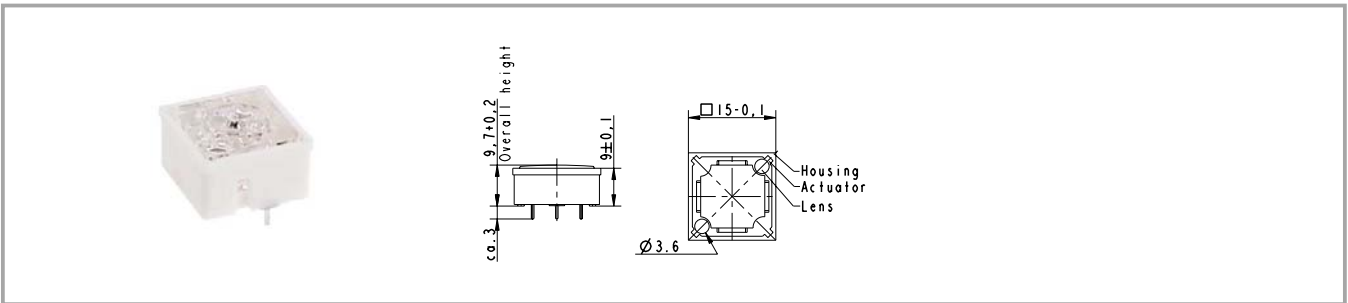
View on component side, all hole diameters 1,1 ± 0,1 mm

PCB Keyswitches

Hole Pattern – Front Panel



RF 15 short-travel keyswitch, non-illuminated



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

Technical data see page 4 - 26

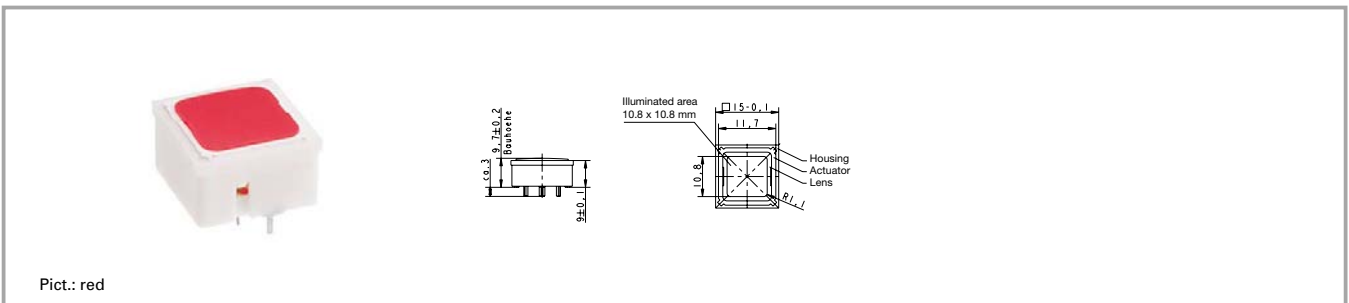
Accessories:

Keycap for RF 15, snap-on, for overall height 12.5 mm: 5.46.654.059/0227

For keycaps, refer to chapter accessories and system RK 90.

If exchangeable legends are required, or if an overall height of 12.5 mm is required, a keycap can be mounted on the non-illuminated keys. The keycap legend is visible through a window in the overlay. You can change the legend by replacing the keycap.

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



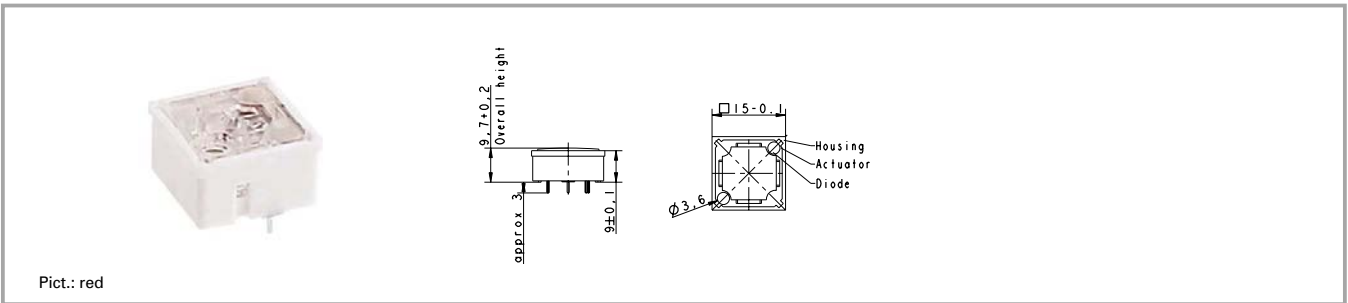
| Contact materials | Illumination | Colour of lens | LED colour | LED type | Order no. |
|-------------------|-----------------------------|----------------|------------|----------|--------------------------|
| Ag | fully illuminated 2 LEDs | red | red | 2 mm | 3.14.200.021/0000 |
| Ag | fully illuminated 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 |
| 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 |

Technical data see page 4 - 26

For keycaps, refer to RK 90 system design.

Technical data of LED see separate page at the beginning of this chapter.

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

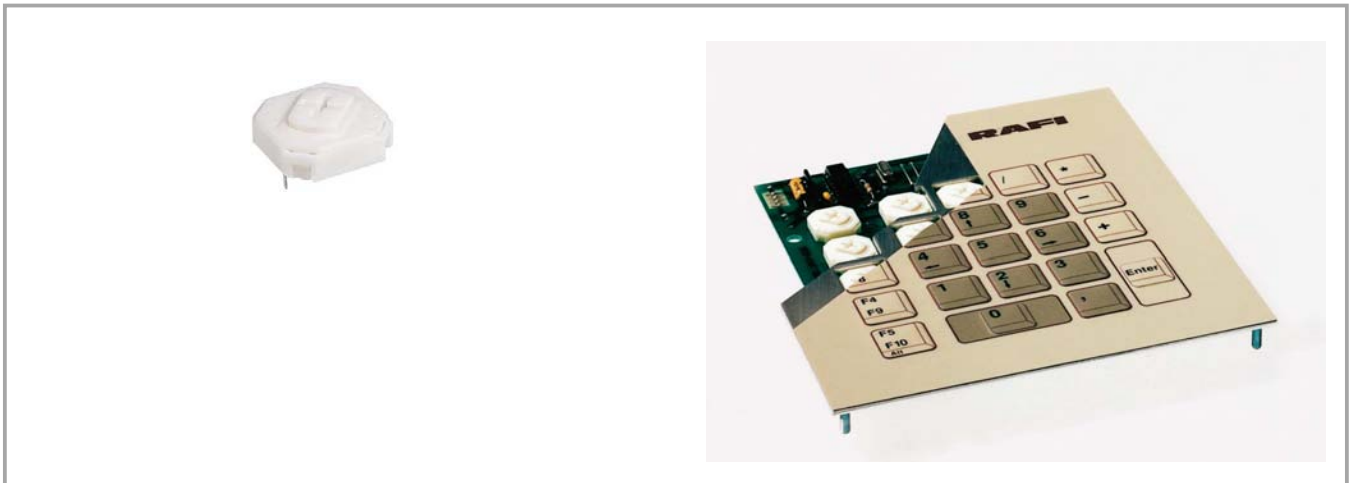


| Contact materials | Illumination | Colour of lens | LED colour | LED type | Order no. |
|-------------------|----------------------------|----------------|------------|----------|--------------------------|
| Ag | spot illumination 1 LED | opaque white | blue | 3 mm | 3.14.100.040/0000 |
| Ag | spot 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 |
| 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 |

Technical data see page 4 - 26

Double-spot LED illumination available on request
 Technical data of LED see separate page at the beginning of this chapter.

RF 15 N short-travel keyswitch



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.

Technical data

General information

Colour of lens see order block
 Recommended key grid 19.05 mm

Dimensions

Length 15 mm
 Width 15 mm
 Overall height 6.2 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
 Illumination external 3 mm LED possible if height < 12 mm

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

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 mA
 Rated current max. Au: 100 mA, Ag: 250 mA
 Rated power max. (ohmic load) Au: 2 W, Ag: 12.5 W

Contact resistance when new max. 100 mΩ
 Contact resistance acc. to life max. 3 Ω
 Insulation resistance 10⁹ Ω
 ESD strength (underneath overlay) 15 kV
 Bouncing time max. 5 ms

Other specifications

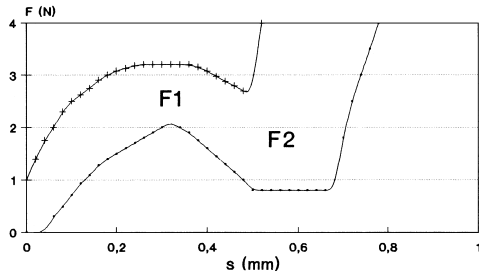
Ambient temp. operating min. -25 °C
 Ambient temp. operating max. +70 °C
 Storage temperature min. -40 °C
 Storage temperature max. (product) +80 °C
 Storage temperature max. (in tube) +50 °C
 Resistance to constant environment according to IEC 600 68-2-3 and 2-30
 Resistance at variable environment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

4

RF

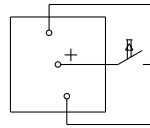
Force/Travel Diagram – Keyswitch RF 15 N

Operation characteristic limits RF

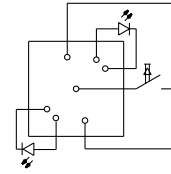


F 1 = Max. operating force
F 2 = Force at contact
F 2 is max. 55% of F 1

Circuit Diagram – Keyswitch RF 15 N

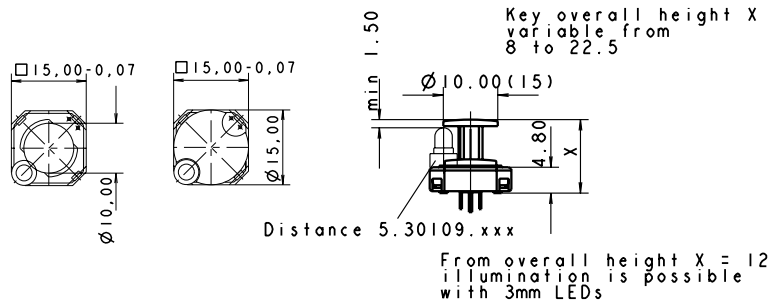


Keyswitch,
non illuminated



Keyswitch,
spot-illuminated

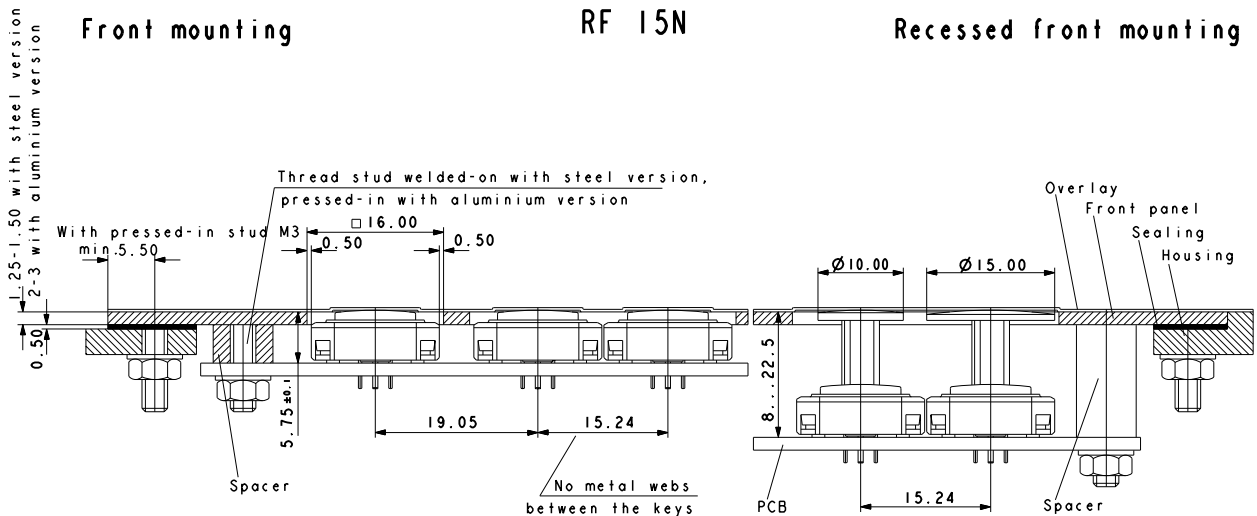
Dimensional Drawings RF 15 N



Front mounting

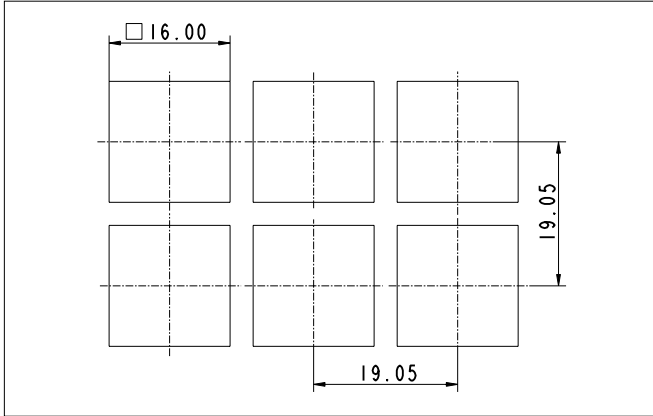
RF 15N

Recessed front mounting

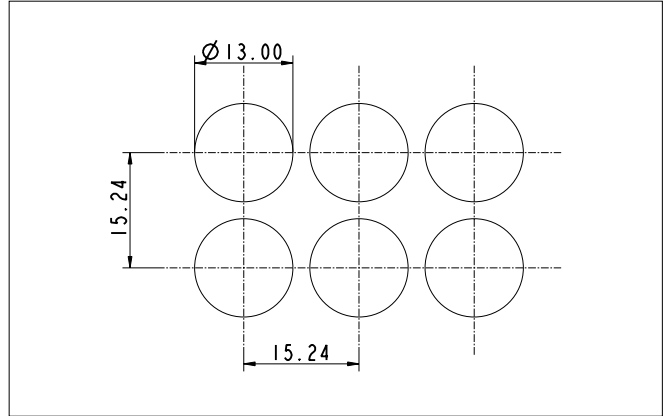


Hole Patterns – Front Panel RF 15 N

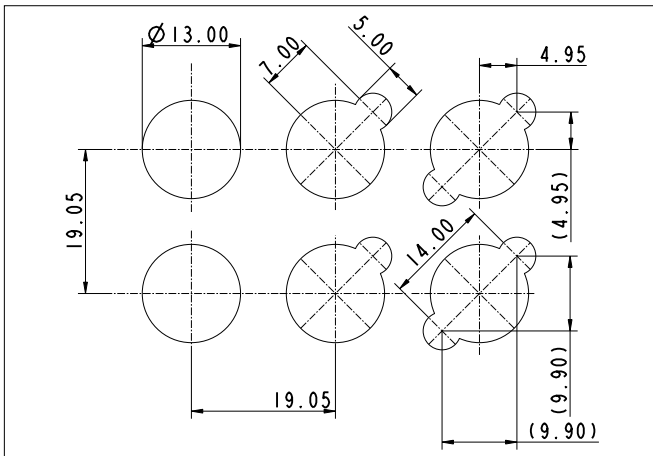
RF 15 N without plunger



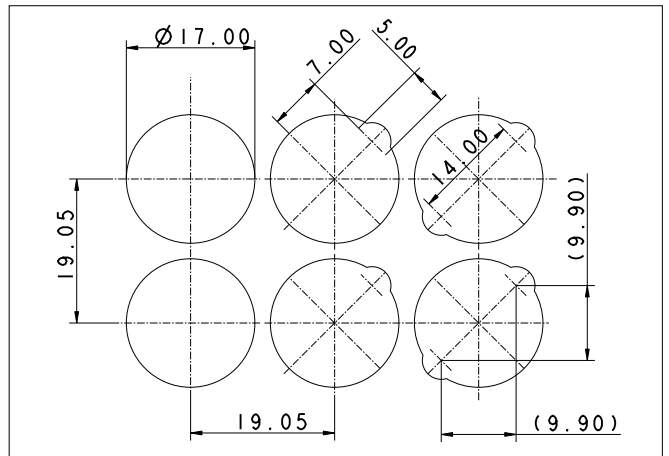
RF 15 N with plunger \varnothing 10 mm, non-illuminated



RF 15 N with plunger \varnothing 10 mm, illuminated

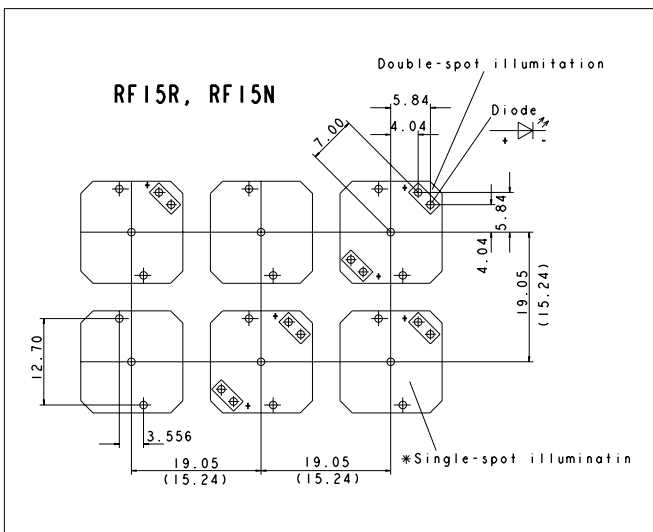


RF 15 N with plunger \varnothing 15 mm, illuminated



4

Hole Pattern RF 15 N



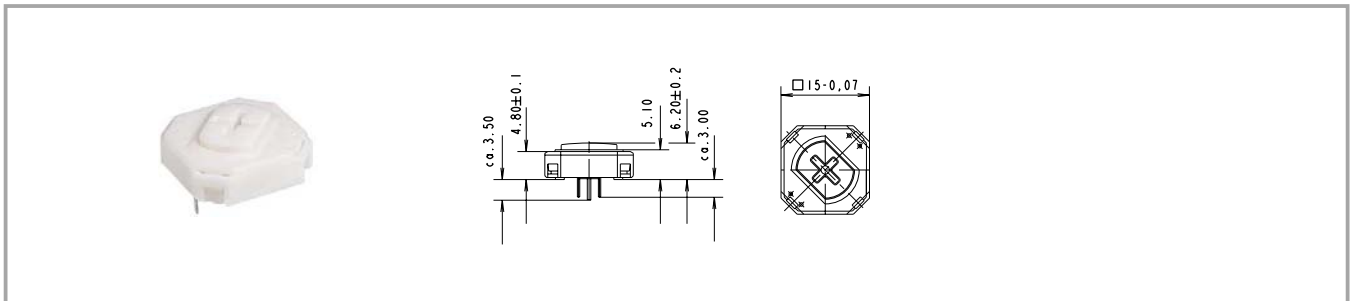
View on component side
All hole diameters 1,1 \pm 0,1 mm
PCB layout Keyswitch 1/400" grid

RF

Accessories RF 15 N short-travel keyswitch

| Description | Photo | Order no. | Page |
|---|--|--------------------------|--------|
| LED yellow, 3mm |  | 1.90.690.103/0000 | 5 - 20 |
| LED spacer for RF 15 N, Ø 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 |  | 5.46.011.028/0710 | |
| Extension plunger for RF 15 N, Ø 15 mm, overall height 22.5 mm |  | 5.46.017.028/0710 | |

RF 15 N short-travel keyswitch, non-illuminated



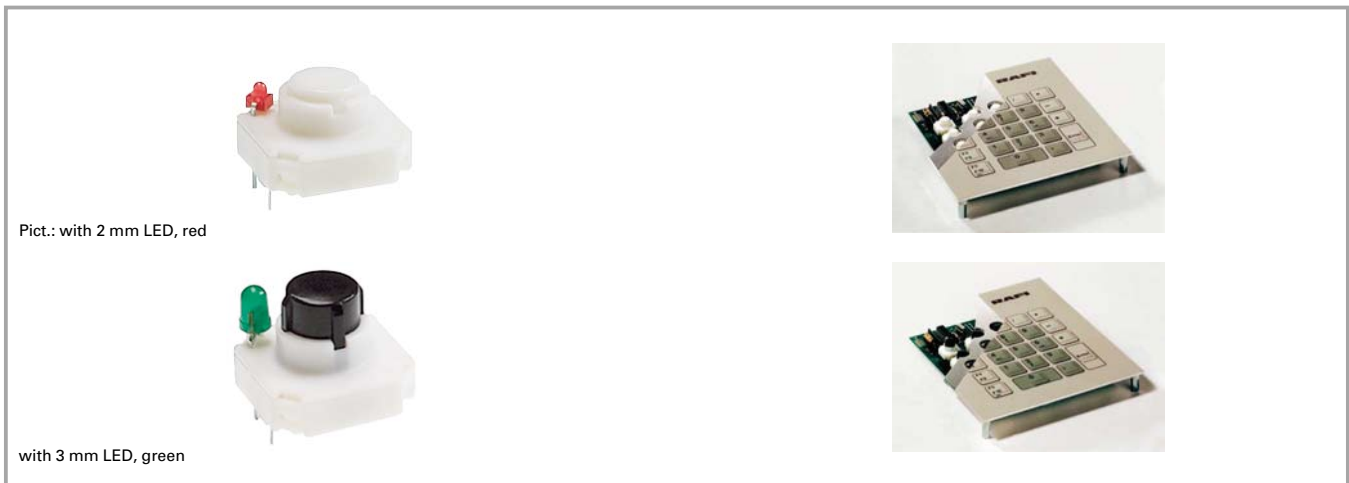
| Contact materials | Illumination | Recommended key grid | Overall height | Order no. |
|-------------------|--|----------------------|----------------|--------------------------|
| Au | external 3 mm LED possible if height < 12 mm | 19.05 mm | 6.2 mm | 3.14.100.601/0000 |
| Ag | external 3 mm LED possible if height < 12 mm | 19.05 mm | 6.2 mm | 3.14.100.606/0000 |

Technical data see page 4 - 32

For keycaps, refer to RK 90 system design.

Double-spot LED illumination available on request.

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.

Technical data

General information

Recommended key grid 15.24 mm

Dimensions

Length 15 mm
Width 15 mm
Overall height 9,7/12,5 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
Illumination spot 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

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 mA
Rated current max. Au: 100 mA, Ag: 250 mA
Rated power max. (ohmic load) Au: 2 W, Ag: 12.5 W

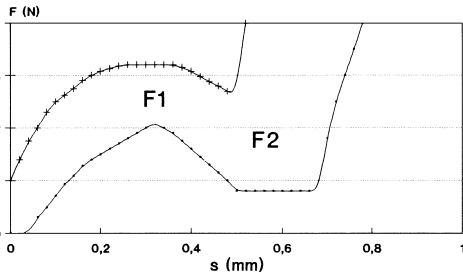
Contact resistance when new max. 100 mΩ
Contact resistance acc. to life max. 3 Ω
Insulation resistance 10⁹ Ω
ESD strength (underneath overlay) 15 kV
Bouncing time max. 5 ms

Other specifications

Ambient temp. operating min. -25 °C
Ambient temp. operating max. +70 °C
Storage temperature min. -40 °C
Storage temperature max. (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 environment according to IEC 600 68-2-14 and 2-33
Operating life min. 1,000,000
Soldering time max. 2,5 sec.
Soldering temperature max. 250 °C
Flammability of materials UL 94 HB

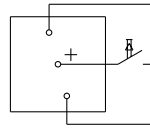
Force/Travel Diagram – Keyswitch RF 15 R

Operation characteristic limits RF

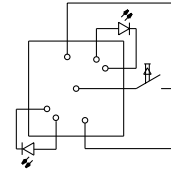


F 1 = Max. operating force
F 2 = Force at contact
F 2 is max. 55% of F 1

Circuit Diagram – Keyswitch RF 15 R

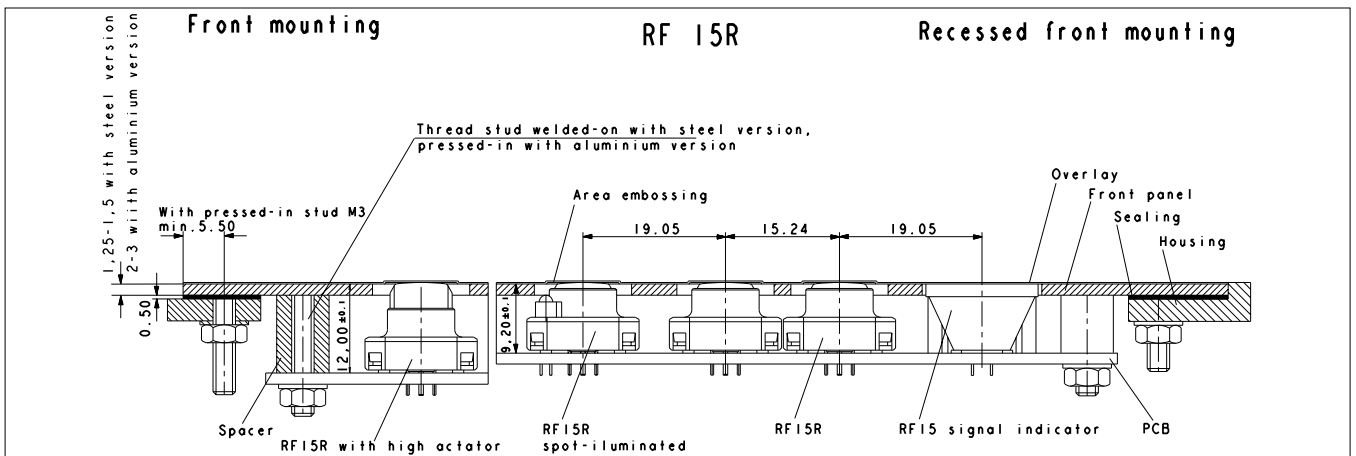


Keyswitch,
non-illuminated

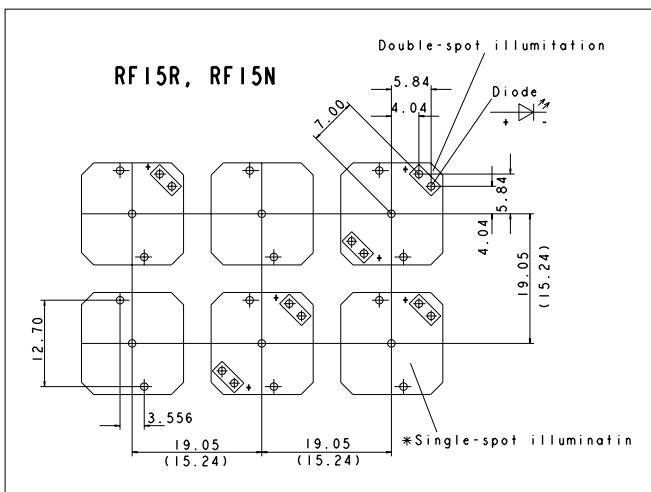


Keyswitch,
spot-illuminated

Dimensional Drawing RF 15 R



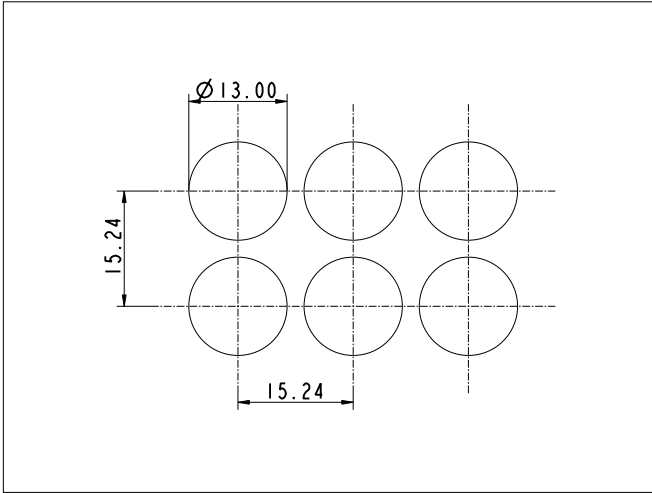
Hole Pattern RF 15 R



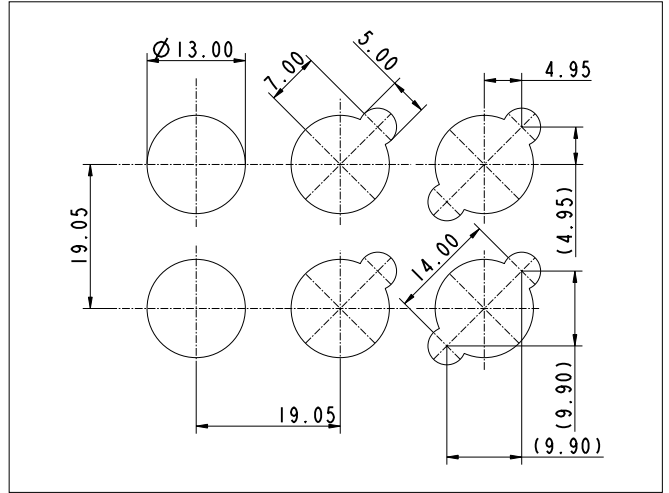
View on component side
All hole diameters 1,1 \pm 0,1 mm
PCB layout Keyswitch 1/400" grid

Hole Pattern – Front Panel RF 15 R

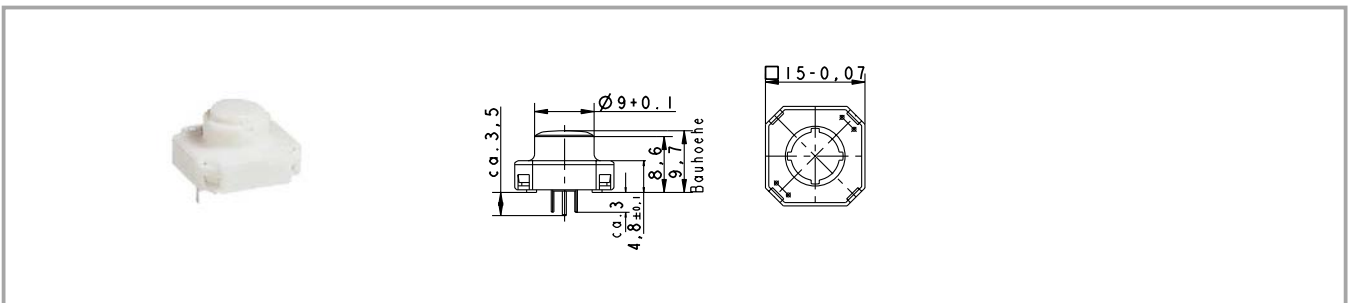
RF 15 R, non-illuminated



RF 15 R, illuminated



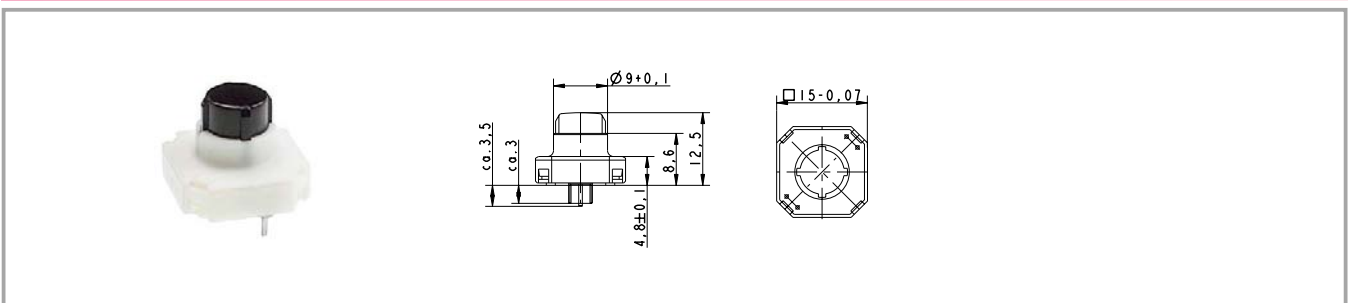
RF 15 R low short-travel keyswitch, non-illuminated



| 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



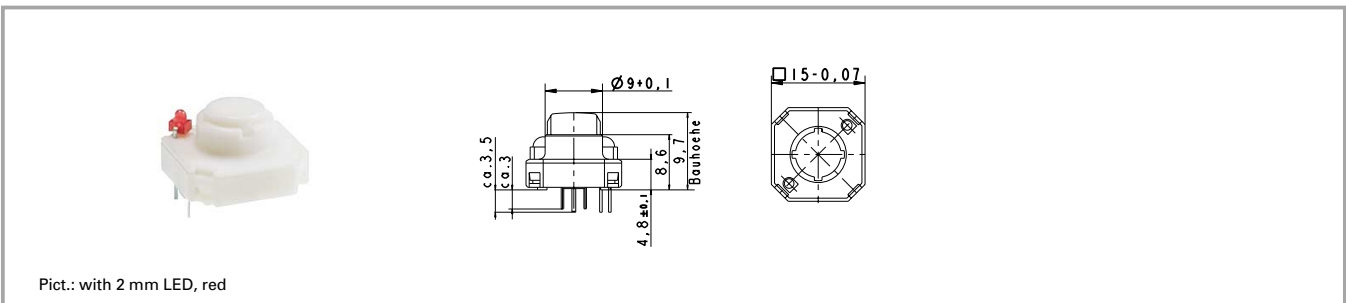
| Contact materials | Overall height | Illumination | LED type | LED colour | Order no. |
|-------------------|----------------|-----------------|----------|------------|--------------------------|
| Au | 12.5 mm | not illuminated | | | 3.14.100.801/0000 |
| Ag | 12.5 mm | not illuminated | | | 3.14.100.806/0000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

Technical data see page 4 - 36

4

RF

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



Pict.: with 2 mm LED, red

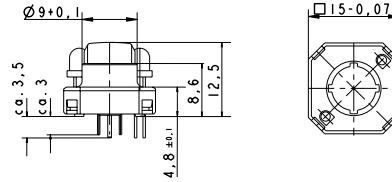
| Contact materials | Overall height | Illumination | LED type | LED colour | Order no. |
|-------------------|----------------|----------------------------|----------|------------|--------------------------|
| Au | 9.7 mm | spot illumination 1 LED | 2 mm | red | 3.14.100.531/0000 |
| Au | 9.7 mm | spot 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.

Technical data of LED see separate page at the beginning of this chapter.

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



Pict.: with 3 mm LED, green

| 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.

Technical data of LED see separate page at the beginning of the chapter.

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
 Recommended key grid 20 mm

Dimensions

Length 15 mm
 Width 15 mm
 Overall height 12.5 mm

Mechanical design

Mounting soldering into PCB
 Terminals see order block
 Contact system snap-action contact
 Contact arrangement 1 NO
 Contact materials Au/Ag
 Illumination not illuminated / fully illuminated
 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

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

Rated power max. (ohmic load) Au: 2 W, Ag: 12.5 W
 Contact resistance when new max. 100 mΩ
 Contact resistance acc. to life max. 3 Ω
 Insulation resistance 10⁹ Ω
 ESD strength (underneath overlay) 15 kV
 Bouncing time max. 5 ms

Other specifications

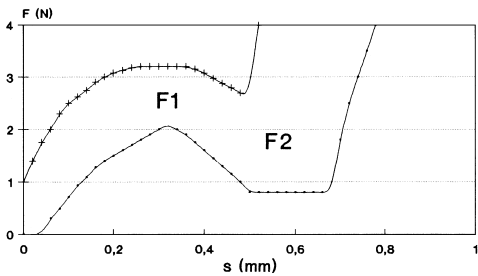
Ambient temp. operating min. -25 °C
 Ambient temp. operating max. +70 °C
 Storage temperature min. -40 °C
 Storage temperature max. (product) +80 °C
 Storage temperature max. (in tube) +50 °C
 Resistance to constant environment according to IEC 600 68-2-3 and 2-30
 Resistance at variable environment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

4

RF

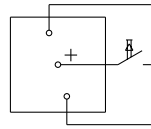
Force/Travel Diagram – Keyswitch RF 15 H

Operation characteristic limits RF

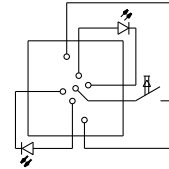


F 1 = Max. operating force
F 2 = Force at contact
F 2 is max. 55% of F 1

Circuit Diagram – Keyswitch RF 15 H

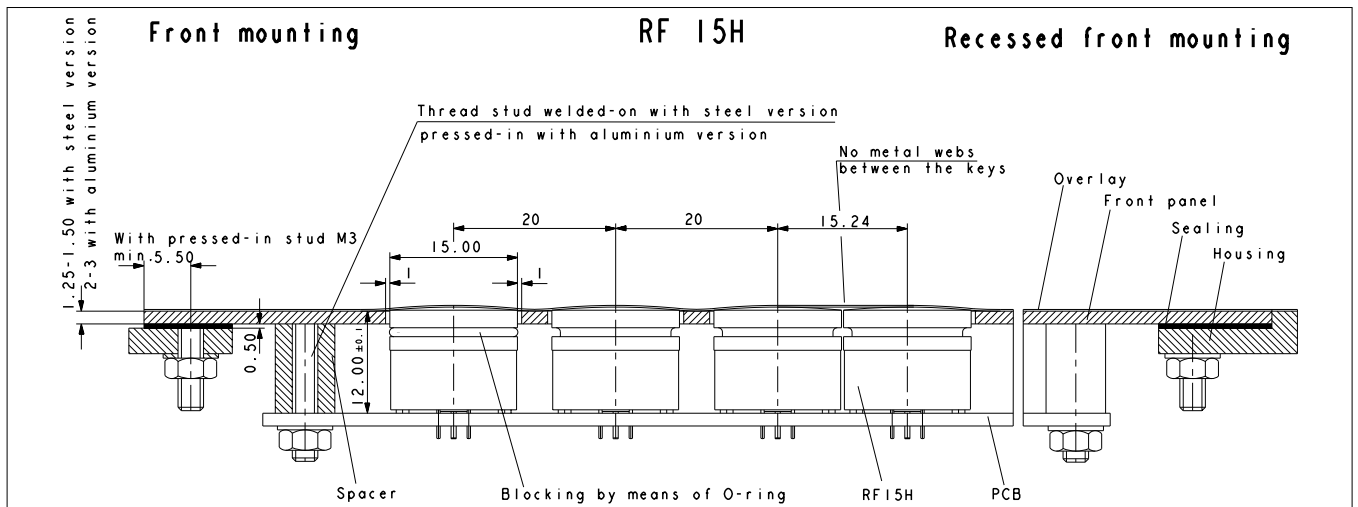


Keyswitch,
non-illuminated

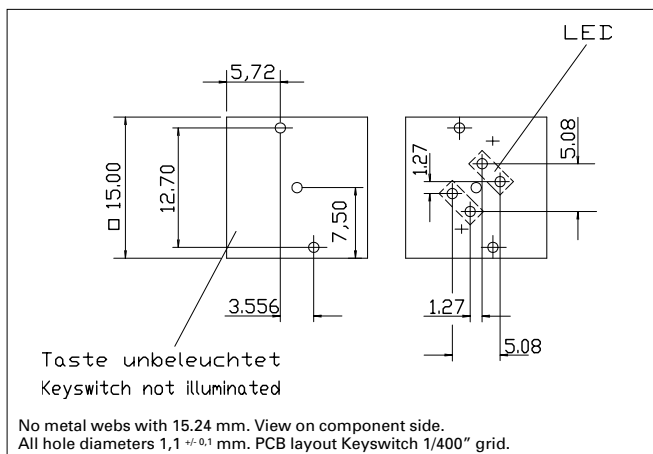


Keyswitch,
fully illuminated

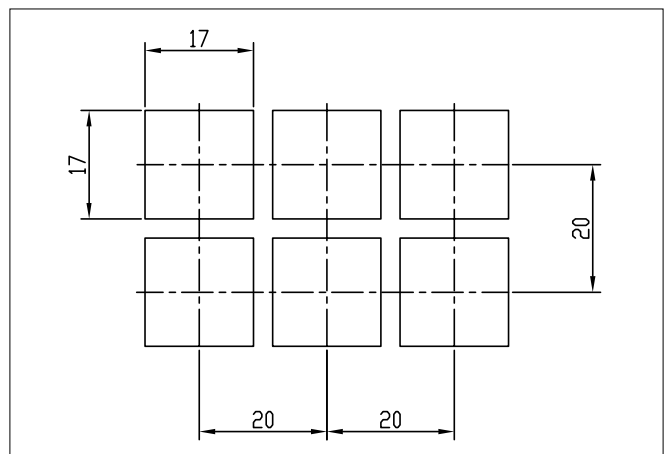
Dimensional Drawing



Hole Pattern



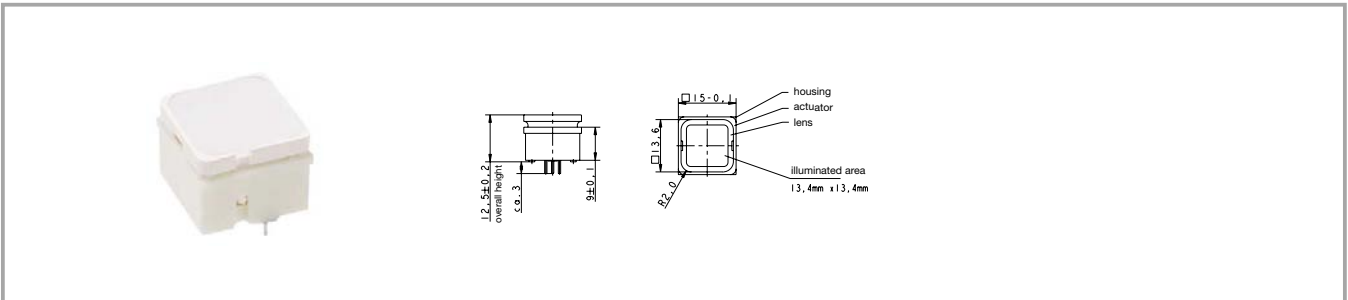
Hole Pattern – Front Panel



Accessories RF 15 H short-travel keyswitch

| Description | Photo | Order no. | Page |
|--|--|--------------------------|--------|
| O-ring, black, for blocking the operating stroke |  | 5.30.120.009/0100 | 5 - 27 |

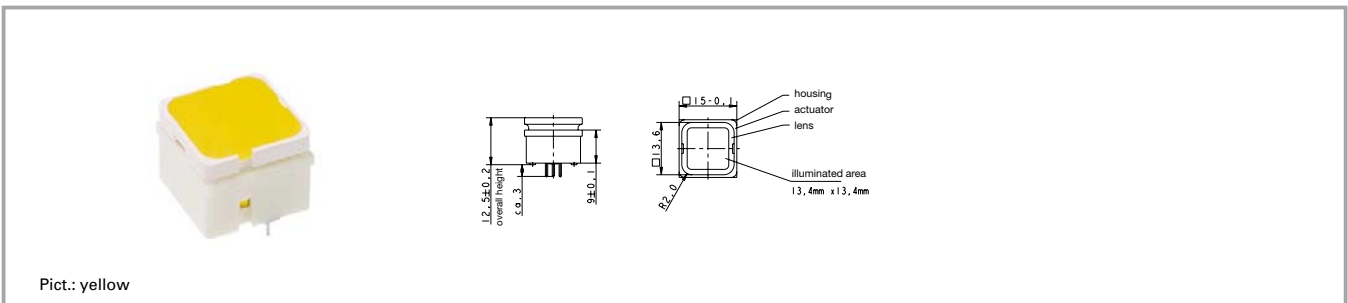
RF 15 H short-travel keyswitch, non-illuminated



| 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

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. Technical data of LED see separate page of the beginning of this chapter.

RF 15 signal indicator



Pict.: green

Technical data

General information

Colour of lens see order block
Recommended key grid 19.05 mm

Dimensions

Length 15 mm
Width 15 mm
Overall height 9.7 mm

Mechanical design

Mounting soldering into PCB
Illumination fully illuminated 1 LED
LED colour see order block
LED type 2 mm

Other specifications

Ambient temp. operating min. -25 °C

Ambient temp. operating max.

+70 °C

Storage temperature min.

-40 °C

Storage temperature max. (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 environment

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

Soldering time max.

2,5 sec.

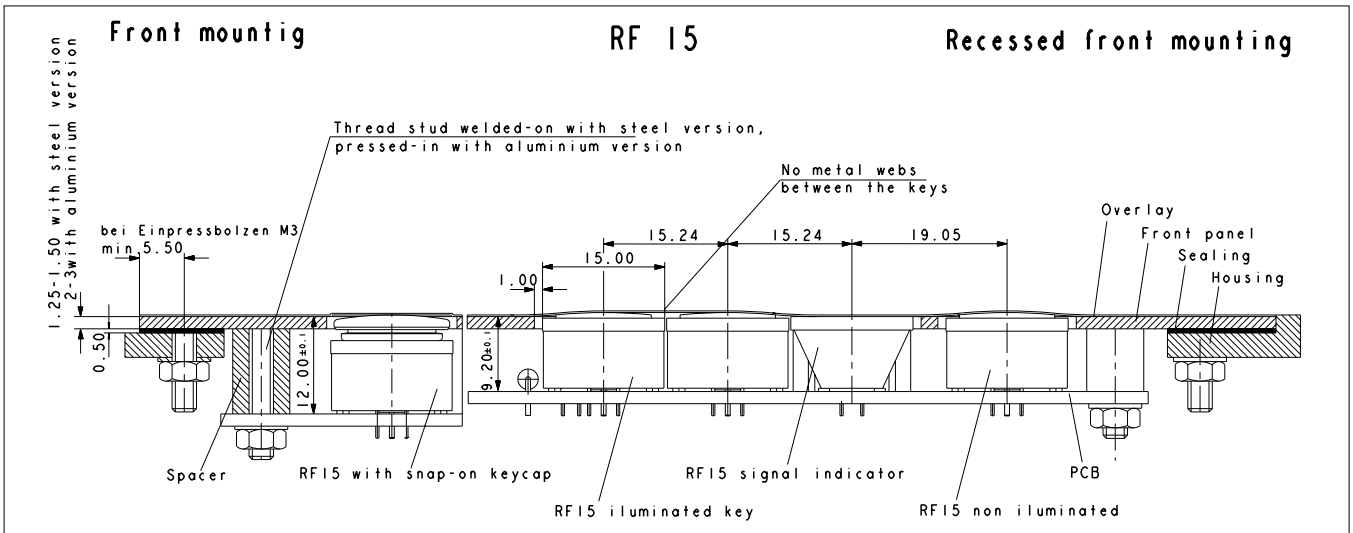
Soldering temperature max.

250 °C

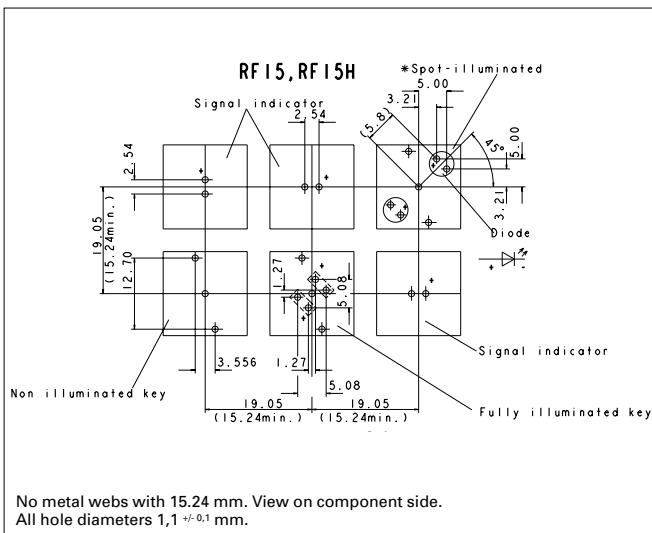
Flammability of materials

UL 94 HB

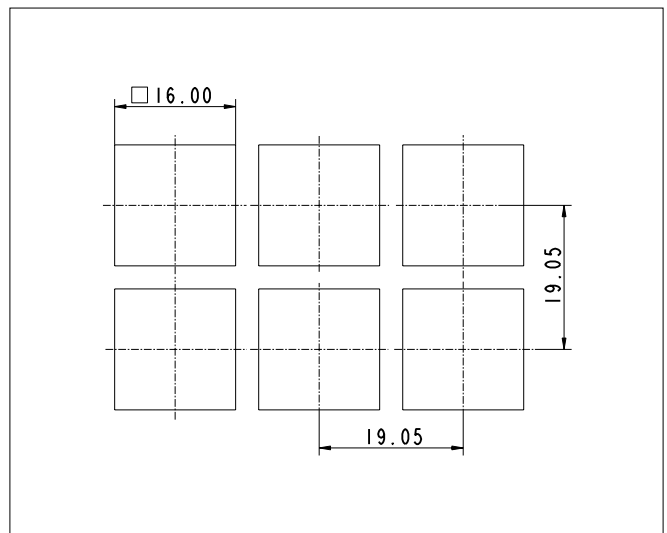
Dimensional Drawing Signal Indicator RF 15



Hole Pattern



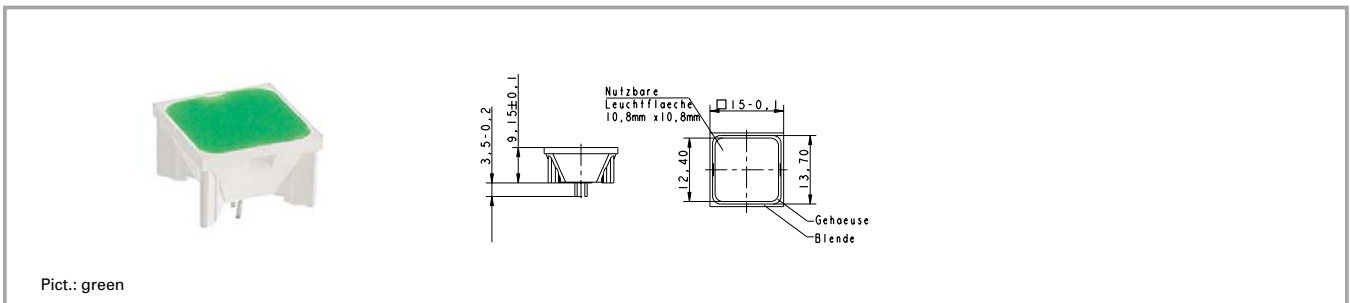
Hole Pattern – Front Panel



4

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

For more information, see LEDs.

Technical data of LED see separate page of the beginning of this chapter.

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

Colour of lens see order block
Recommended key grid 23 mm

Dimensions

Length 19.05 mm
Width 19.05 mm
Overall height 9.7 mm

Mechanical design

Mounting soldering into PCB
Terminals contacts tin-plated, fix contact Ag plated snap-action contact
Contact system 1 NO
Contact arrangement Au/Ag
Contact materials spot-/fully illuminated
Illumination see order block
LED colour see order block
LED type

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

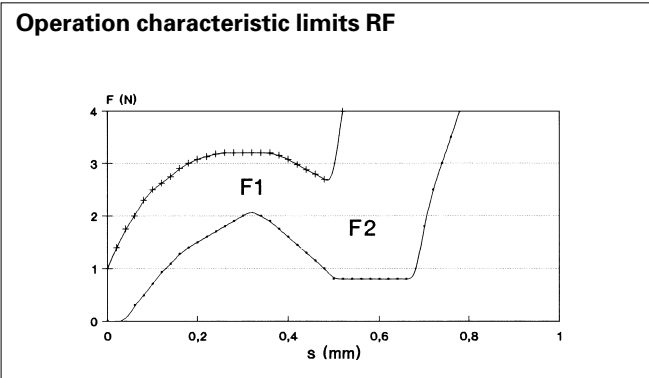
Rated voltage min. Au: 0.02 V, Ag: 3 V
Rated voltage max. Au: 42 V, Ag: 50 V
Rated current min. Au: 0,01 mA, Ag: 0,1 mA
Rated current max. Au: 100 mA, Ag: 250 mA

Rated power max. (ohmic load) Au: 2 W, Ag: 12.5 W
Contact resistance when new max. 100 m Ω
Contact resistance acc. to life max. 3 Ω
Insulation resistance 10⁹ Ω
ESD strength (underneath overlay) 15 kV
Bouncing time max. 5 ms

Other specifications

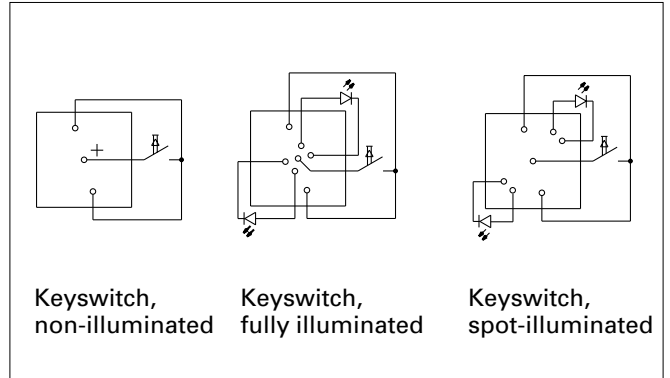
Ambient temp. operating min. -25 °C
Ambient temp. operating max. +70 °C
Storage temperature min. -40 °C
Storage temperature max. (product) +80 °C
Storage temperature max. (in tube) +50 °C
Resistance to constant environment according to IEC 600 68-2-3 and 2-30
Resistance at variable environment according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

Force/Travel Diagram – Keyswitch RF 19

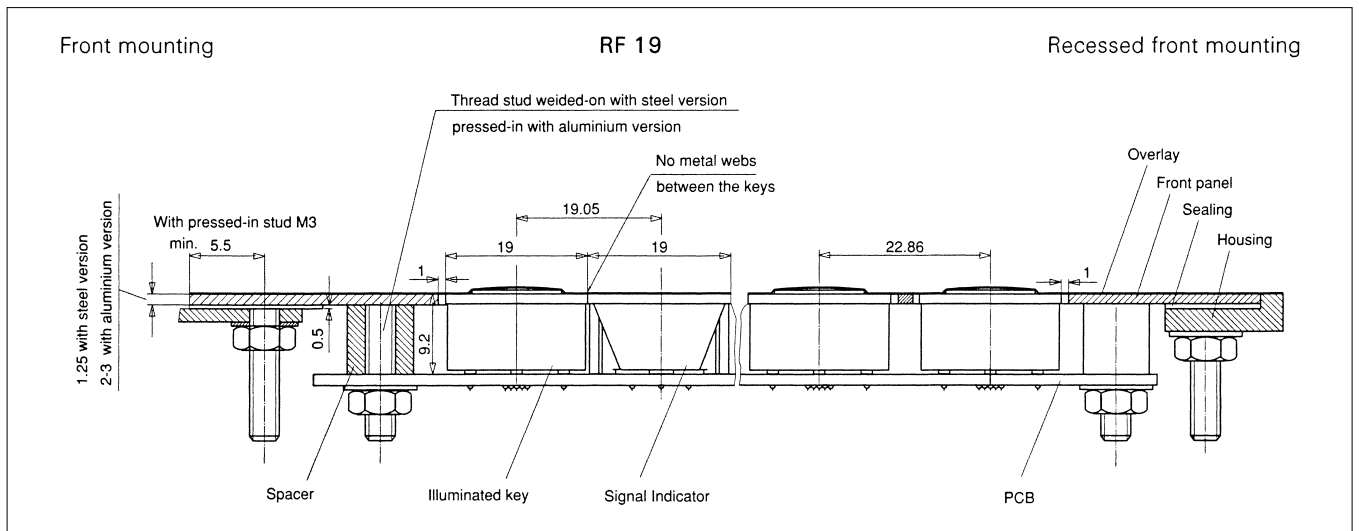


F 1 = Max. operating force
F 2 = Force at contact
F 2 is max. 55% of F 1

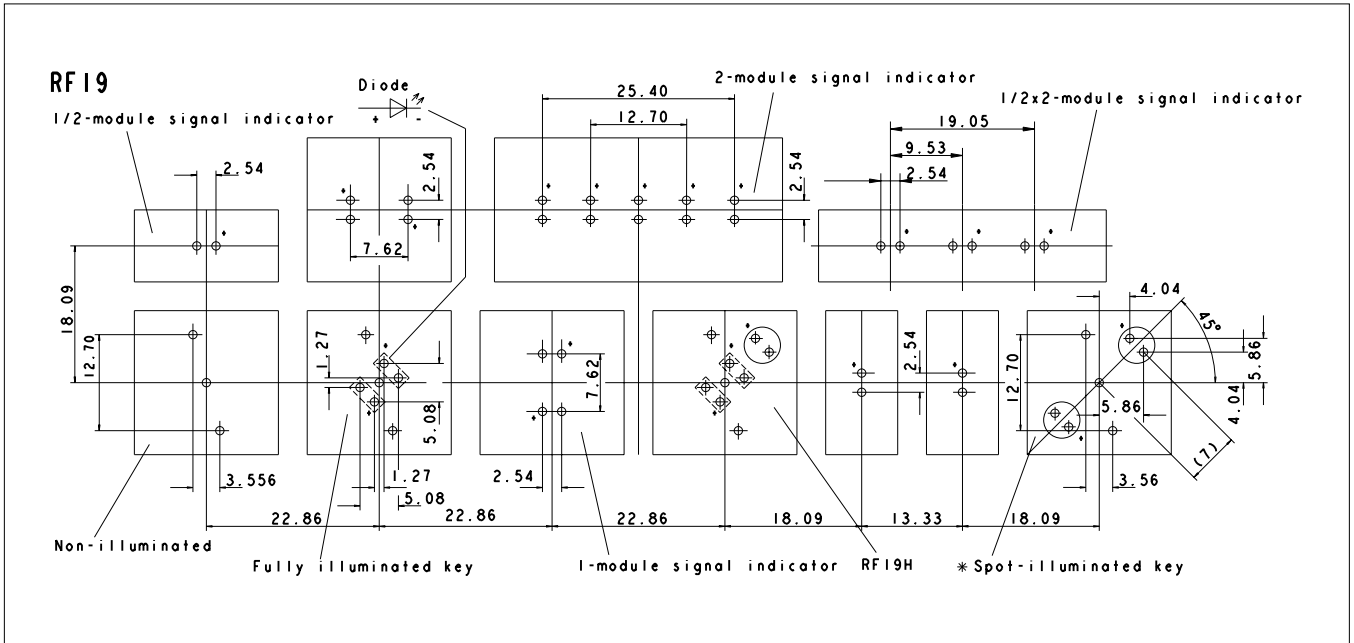
Circuit Diagram – Keyswitch RF 19



Dimensional Drawing



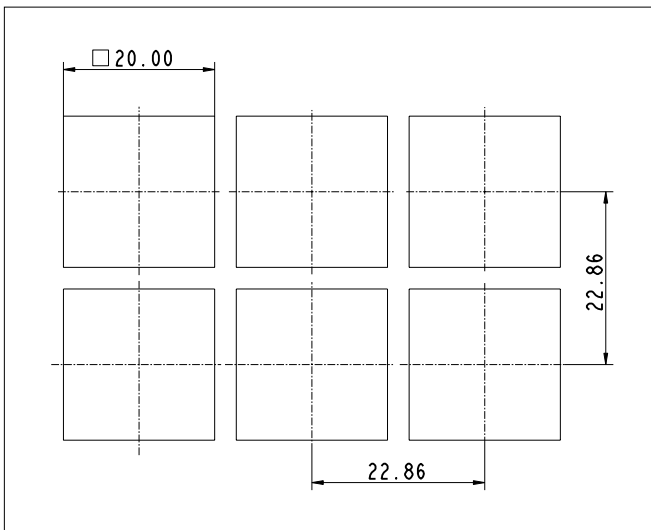
Hole Patterns RF 19



* 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

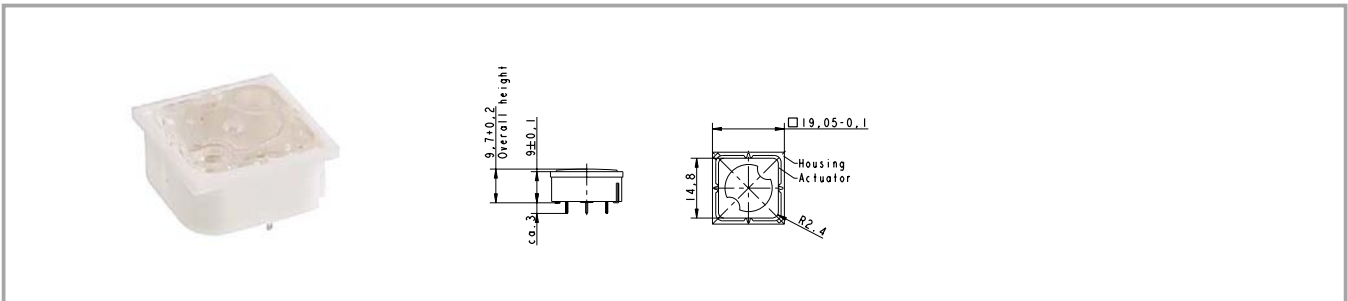
Hole Patterns – Front Panel RF 19

4



RF

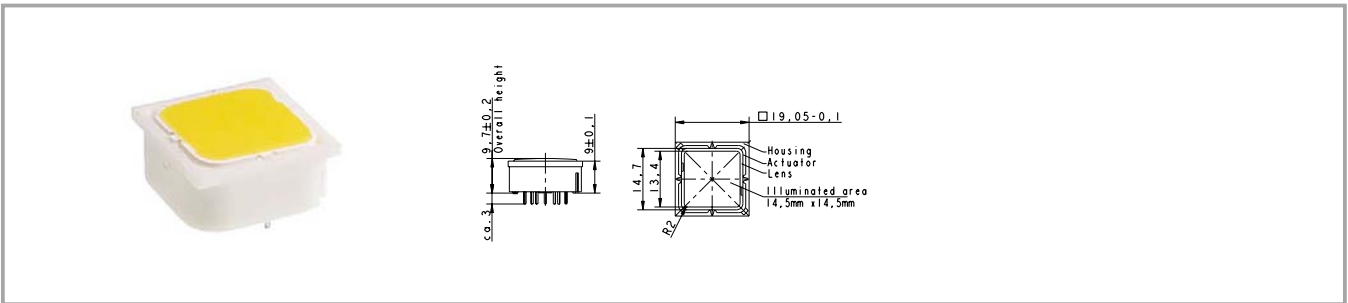
RF 19 short-travel keyswitch, non-illuminated



| 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

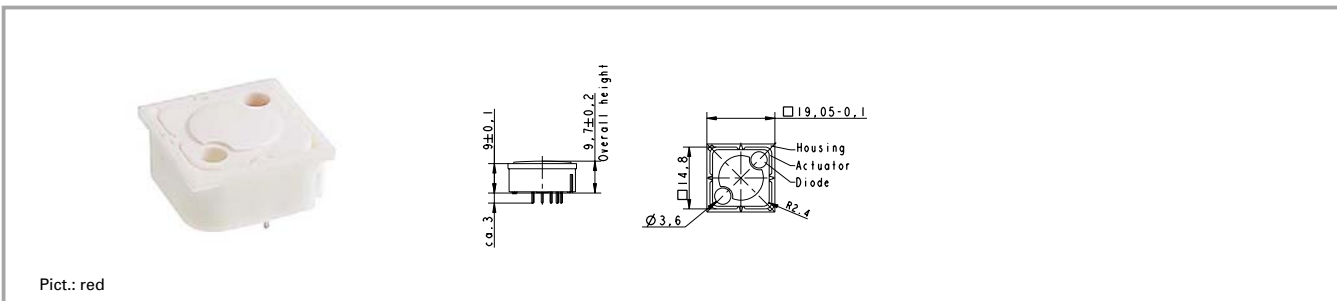


| Contact materials | Illumination | Colour of lens | LED colour | LED type | Order no. |
|-------------------|-----------------------------|----------------|------------|----------|--------------------------|
| Au | fully illuminated 2 LEDs | red | red | 2 mm | 3.14.002.011/0000 |
| Au | fully illuminated 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

Technical data of LED see separate page of the beginning of this chapter.

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.

Technical data of LED see separate page of the beginning of this chapter.

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



Technical data

General information

Recommended key grid 23 mm

Dimensions

Length 19.05 mm
Width 19.05 mm
Overall height 9.7 mm

Mechanical design

Mounting soldering into PCB
Terminals contacts tin-plated, fix contact Ag plated bridge contact
Contact system 1 NC + 1 NO
Contact arrangement Au/Ag
Contact materials none
Illumination

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

Rated voltage min. Au: 0,02 V, Ag: 3 V V
Rated voltage max. Au: 42 V, Ag: 50 V V
Rated current min. Au: 0,01 mA, Ag: 0,1 mA mA
Rated current max. Au: 100 mA, Ag: 250 mA mA
Rated power max. (ohmic load) Au: 2 W, Ag: 12.5 W

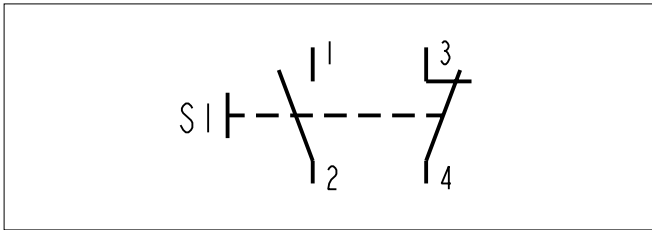
For keycaps, refer to RK 90.

Contact resistance when new max. 100 mΩ
Contact resistance acc. to life max. 3 Ω
Insulation resistance 2 x 10⁶ Ω
ESD strength (underneath overlay) 15 kV
Bouncing time max. 5 ms

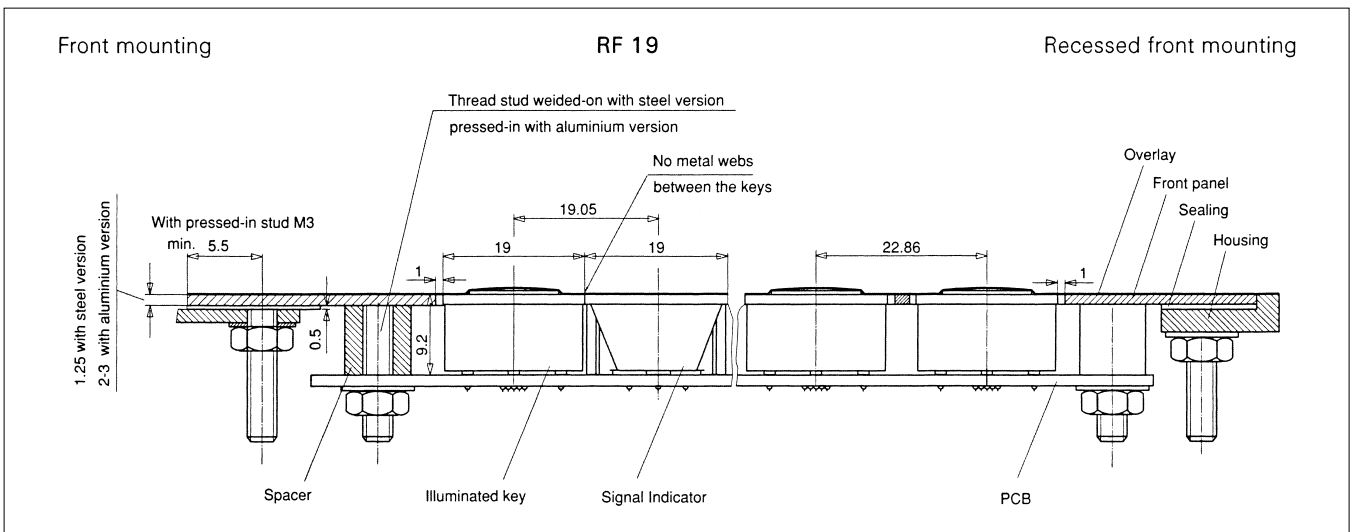
Other specifications

Ambient temp. operating min. -25 °C
Ambient temp. operating max. +70 °C
Storage temperature min. -40 °C
Storage temperature max. (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 environment according to IEC 600 68-2-14 and 2-33
Operating life min. 100000
Soldering time max. 5 sec.
Soldering temperature max. 265 °C
Flammability of materials UL 94 HB

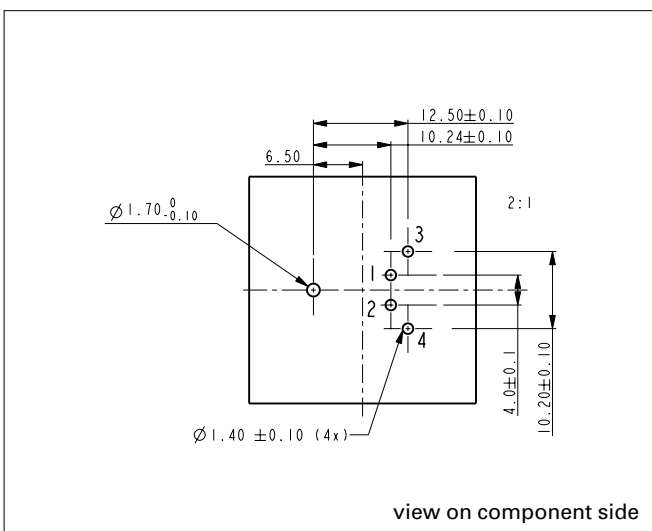
Circuit Diagram



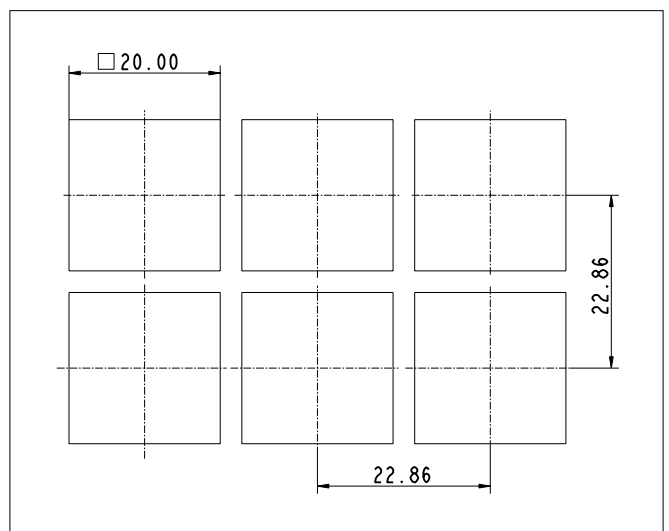
Dimensional Drawing



Hole Pattern



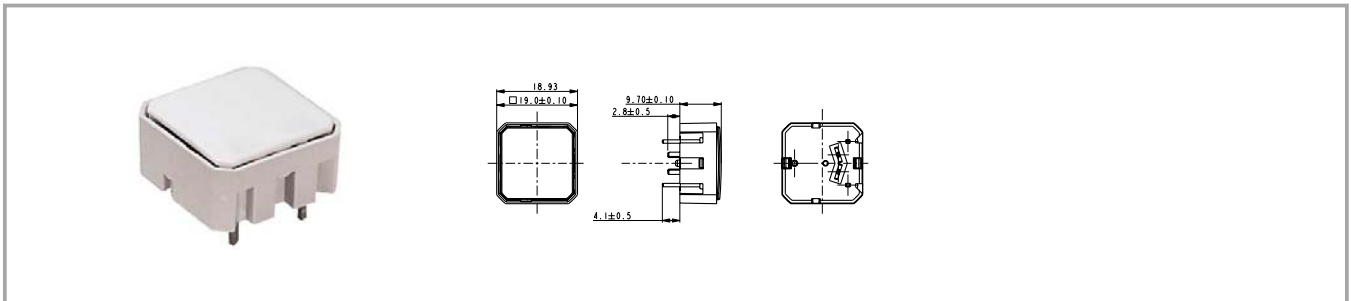
Hole Pattern – Front Panel



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

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 see order block
Recommended 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 snap-action contact

Contact system 1 NO
Contact arrangement Au/Ag
Contact materials spot-/fully illuminated
Illumination see order block
LED colour see order block
LED type

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

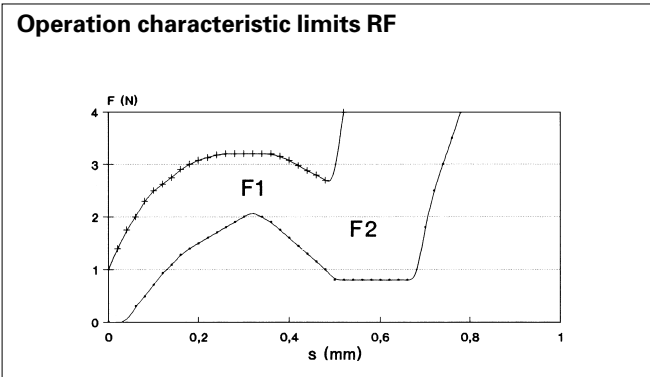
Rated voltage min. Au: 0.02 V, Ag: 3 V
Rated voltage max. Au: 42 V, Ag: 50 V
Rated current min. Au: 0,01 mA, Ag: 0,1 mA
Rated current max. Au: 100 mA, Ag: 250 mA

Rated power max. (ohmic load) Au: 2 W, Ag: 12.5 W
Contact resistance when new max. 100 mΩ
Contact resistance acc. to life max. 3 Ω
Insulation resistance 10⁹ Ω
ESD strength (underneath overlay) 15 kV
Bouncing time max. 5 ms

Other specifications

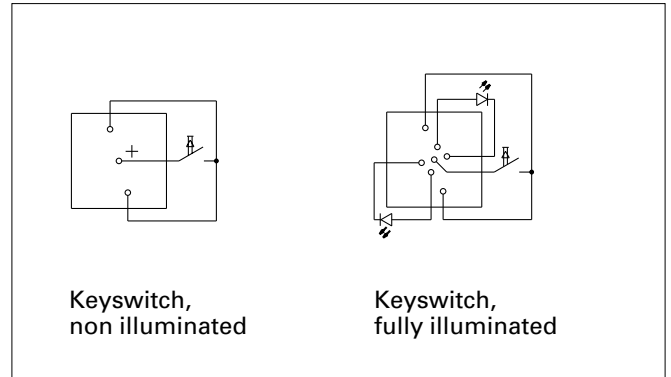
Ambient temp. operating min. -25 °C
Ambient temp. operating max. +70 °C
Storage temperature min. -40 °C
Storage temperature max. (product) +80 °C
Storage temperature max. (in tube) +50 °C
Resistance to constant environment according to IEC 600 68-2-3 and 2-30
Resistance at variable environment according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

Force/Travel Diagram – Keyswitch RF 19 H

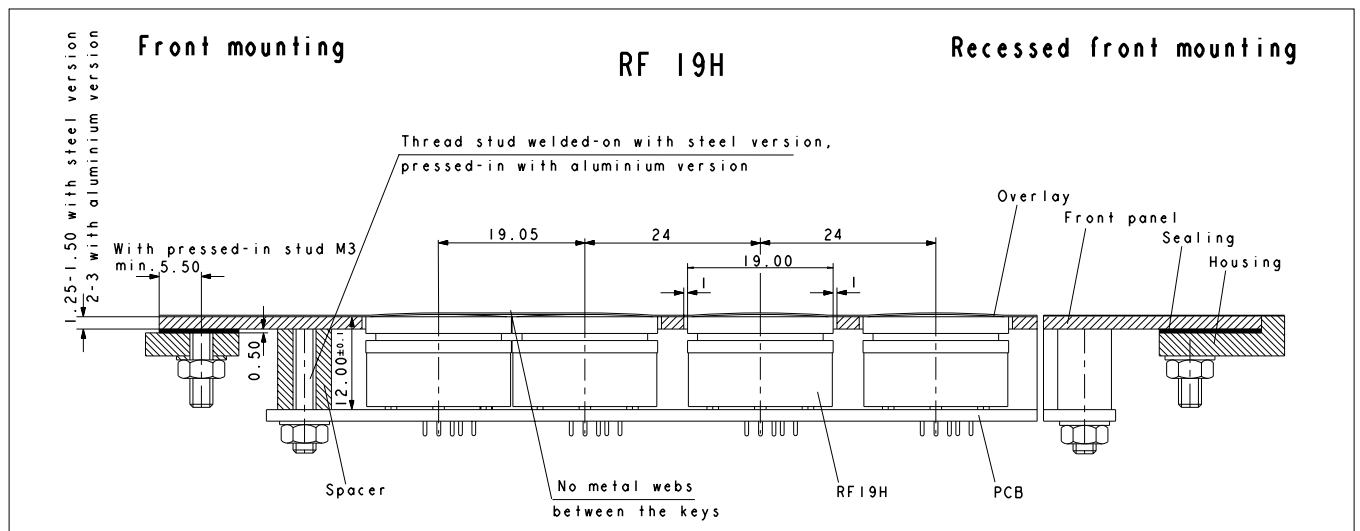


F 1 = Max. operating force
F 2 = Force at contact
F 2 is max. 55% of F 1

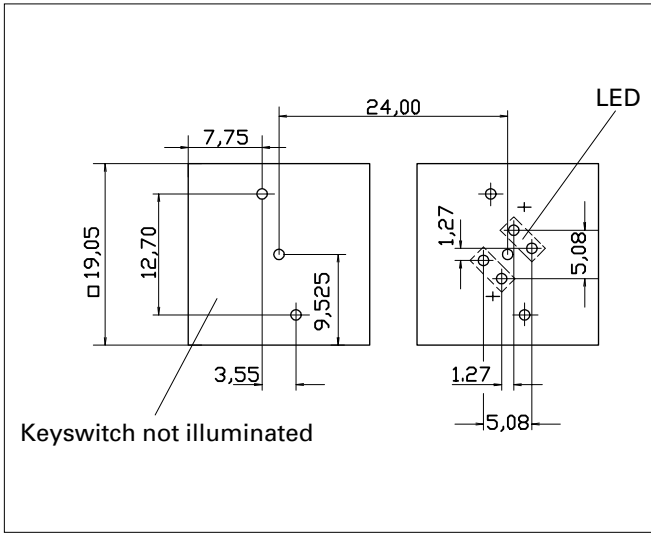
Circuit Diagram – Keyswitch RF 19 H



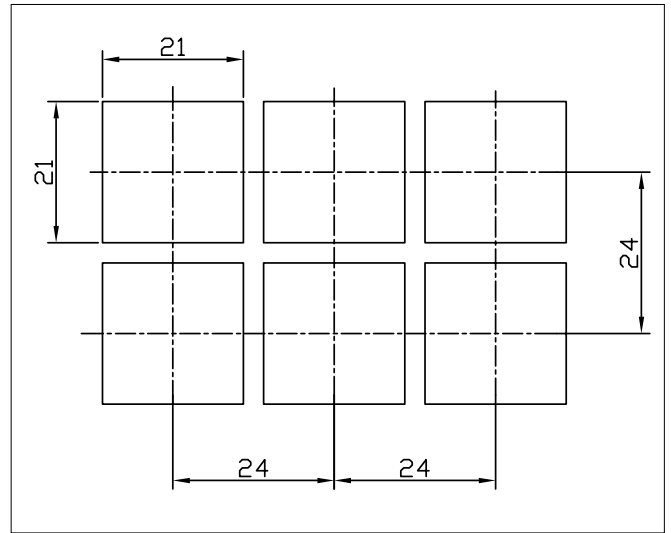
Dimensional Drawing



Hole Pattern RF 19 H



Hole Pattern – Front Panel RF 19 H



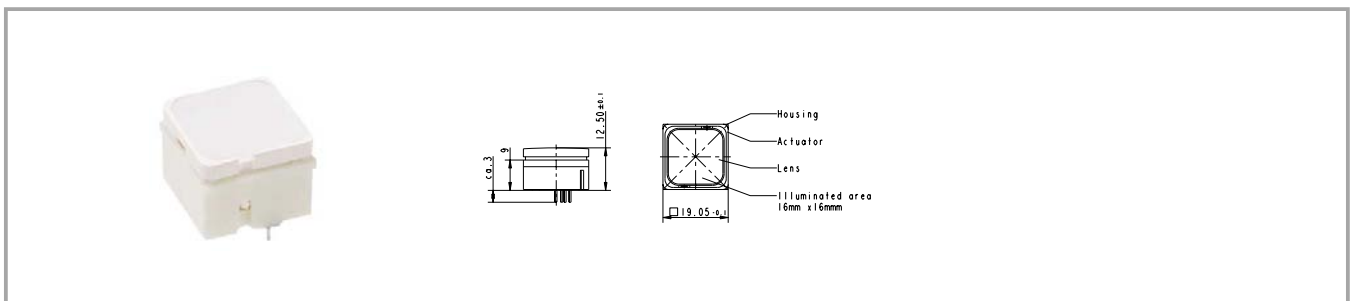
* The LED may be positioned either on the left-hand or right-hand side.
 Standard version: LED on left-hand side
 View on component side, all hole diameters 1,1 +/- 0,1 mm

4

Accessories RF 19 H short-travel keyswitch

| Description | Photo | Order no. | Page |
|---|-------|-------------------|--------|
| O-ring, black, 17.0 x 1.5, for blocking RF 19H keys | | 5.30.125.003/0100 | 5 - 27 |

RF 19 H keyswitch, non-illuminated

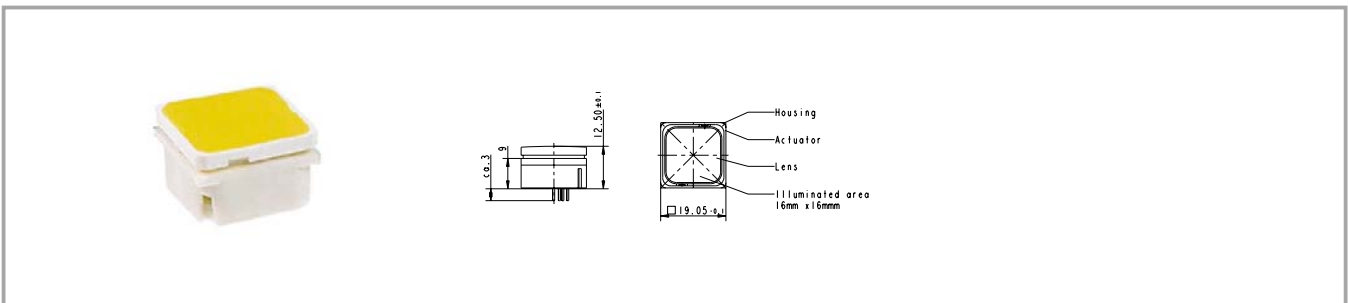


RF

| 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

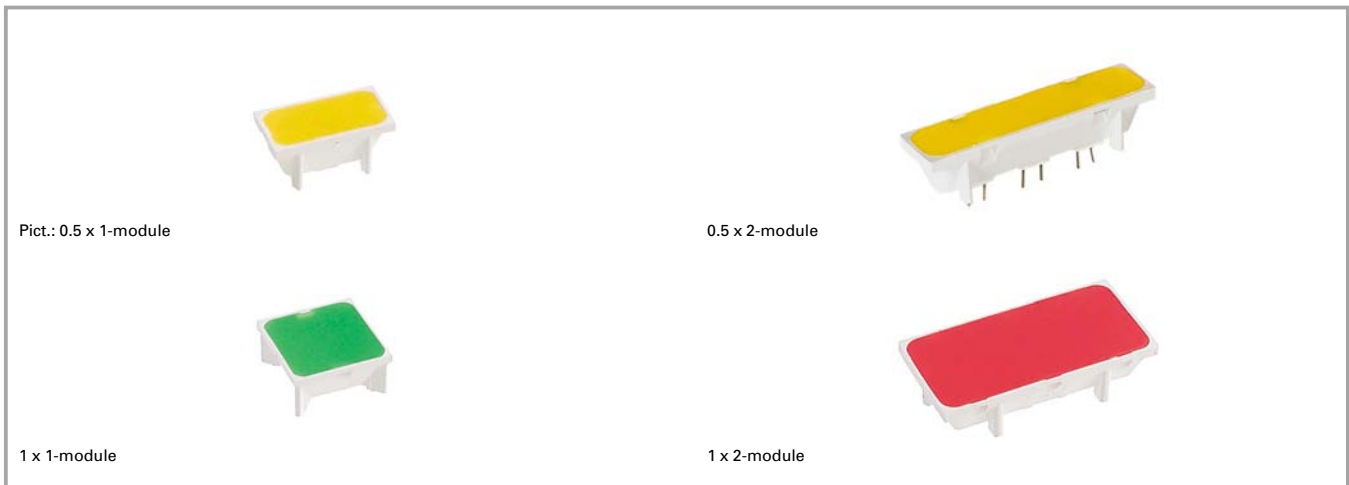


| Contact materials | Illumination | Colour of lens | LED colour | LED type | Order no. |
|-------------------|-----------------------------|----------------|--------------------|----------|-------------------|
| Au | fully illuminated 2 LEDs | red | red | 2 mm | 3.14.002.613/0000 |
| Au | fully illuminated 2 LEDs | green | green | 2 mm | 3.14.002.632/0000 |
| Au | fully illuminated 1 LED | green | green super bright | 3 mm | 3.14.002.633/0000 |
| Au | fully illuminated 2 LEDs | yellow | yellow | 2 mm | 3.14.002.653/0000 |
| Au | fully illuminated 1 LED | white | white | 3 mm | 3.14.002.684/0000 |
| Au | fully illuminated 2 LEDs | orange | yellow | 2 mm | 3.14.002.673/0000 |
| Au | fully illuminated 2 LEDs | white | multi colour | 3 mm | 3.14.001.672/0000 |
| Au | fully illuminated 1 LED | blue | blue | 3 mm | 3.14.002.683/0000 |
| Ag | fully illuminated 2 LEDs | red | red | 2 mm | 3.14.002.623/0000 |
| Ag | fully illuminated 2 LEDs | green | green | 2 mm | 3.14.002.642/0000 |
| Ag | fully illuminated 1 LED | green | green super bright | 3 mm | 3.14.002.643/0000 |
| Ag | fully illuminated 1 LED | blue | blue super bright | 3 mm | 3.14.002.688/0000 |
| Ag | fully illuminated 2 LEDs | yellow | yellow | 2 mm | 3.14.002.663/0000 |
| Ag | fully illuminated 1 LED | white | white | 3 mm | 3.14.002.689/0000 |
| Ag | fully illuminated 2 LEDs | orange | yellow | 2 mm | 3.14.002.678/0000 |
| Ag | fully illuminated 2 LEDs | white | multi colour | 3 mm | 3.14.001.682/0000 |

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. Technical data of LED see separate page of the beginning of this chapter.

RF 19 signal indicator



Technical data

General information

Colour of lens see order block
Recommended key grid 23/x mm

Dimensions

Length see order block
Width see order block
Overall height 9.15 mm

Mechanical design

Mounting soldering into PCB
Illumination see order block
LED colour see order block
LED type see order block

Other specifications

Ambient temp. operating min. -25 °C

Ambient temp. operating max.

+70 °C

Storage temperature min.

-40 °C

Storage temperature max. (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 environment

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

Soldering time max.

2,5 sec.

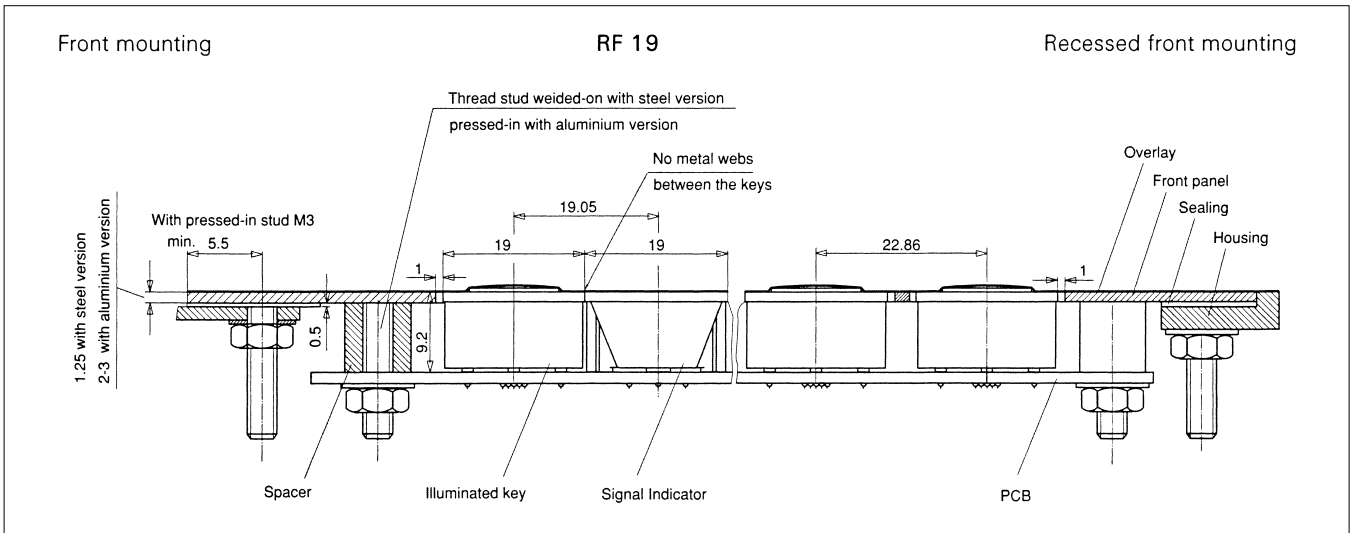
Soldering temperature max.

250 °C

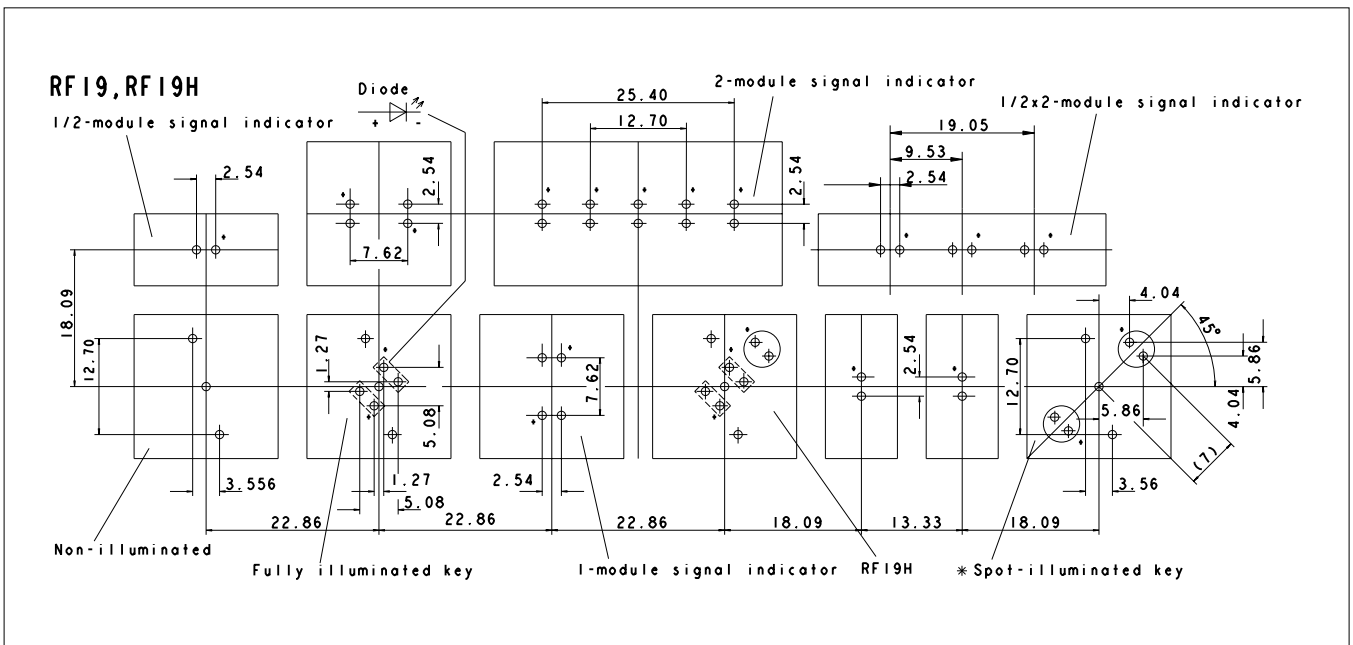
Flammability of materials

UL 94 HB

Dimensional Drawing Signal Indicator RF 19



Hole Patterns RF 19



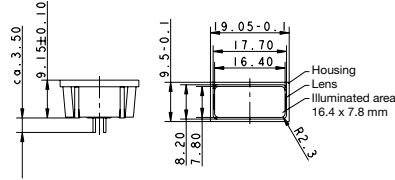
* The LED may be positioned either on the left-hand or right-hand side.
Standard version: LED on left-hand side
View on component side, all hole diameters 1,1 +/- 0,1 mm

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

4

RF

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



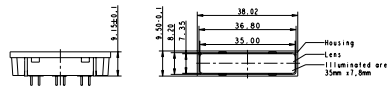
Pict.: 0,5 x 1-module, yellow

| 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 - 64

For more information, see LEDs.

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



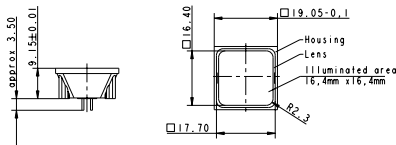
Pict.: 0,5 x 2-module, yellow

| 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 - 64

For more information, see LEDs.

RF 19 signal indicator, 1 x 1-module



Pict.: 1 x 1-module, green

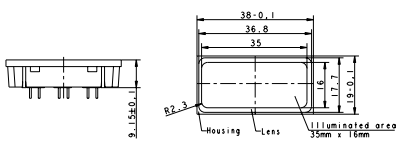
| illumination | Colour of lens | LED colour | LED type | Order no. |
|-----------------------------|----------------|------------|----------|--------------------------|
| fully illuminated 2 LEDs | red | red | 2 mm | 3.14.002.051/0000 |
| fully illuminated 2 LEDs | green | green | 2 mm | 3.14.002.052/0000 |
| 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 - 64

For more information, see LEDs.

Suitable for RK 90 system design, illuminated for 2-module keycap.

RF 19 signal indicator, 1 x 2-module



Pict.: 1 x 2-module, red

| 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 - 64

For more information, see LEDs.

RF special accessories



Pict.: light grey

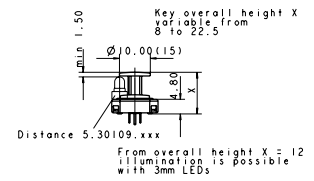
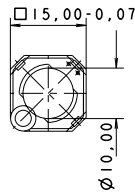


round and triangular versions

Extension plunger for RF 15 N, round head



Pict.: light grey



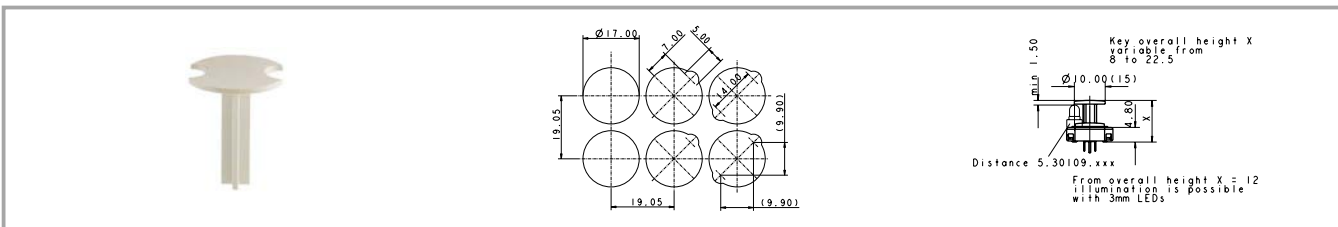
| Length | Width | Overall height | Diameter | Colour | Order no. |
|--------|-------|----------------|----------|--------|--------------------------|
| | | 9 mm | 10 mm | | 5.46.011.036/0710 |
| | | 9.7 mm | 10 mm | | 5.46.011.030/0710 |
| | | 12.5 mm | 10 mm | | 5.46.011.037/0710 |
| | | 13 mm | 10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

Length of plunger = Overall height - 4.25 mm.

4

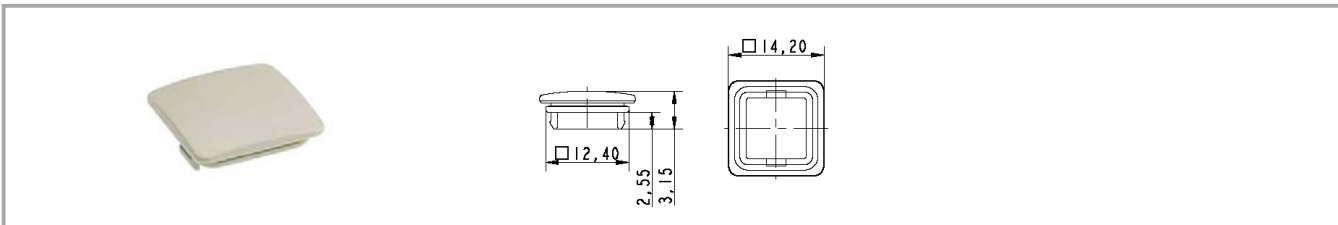
RF

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



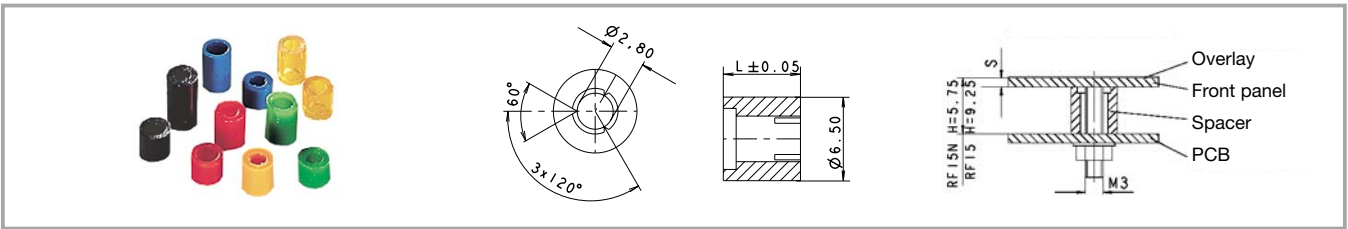
| Length | Width | Overall height | Diameter | Colour | Order no. |
|--------|-------|----------------|----------|--------|--------------------------|
| | | 9 mm | 15 mm | | 5.46.017.036/0710 |
| | | 9.7 mm | 15 mm | | 5.46.017.030/0710 |
| | | 12.5 mm | 15 mm | | 5.46.017.037/0710 |
| | | 13 mm | 15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

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



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

Spacers, round

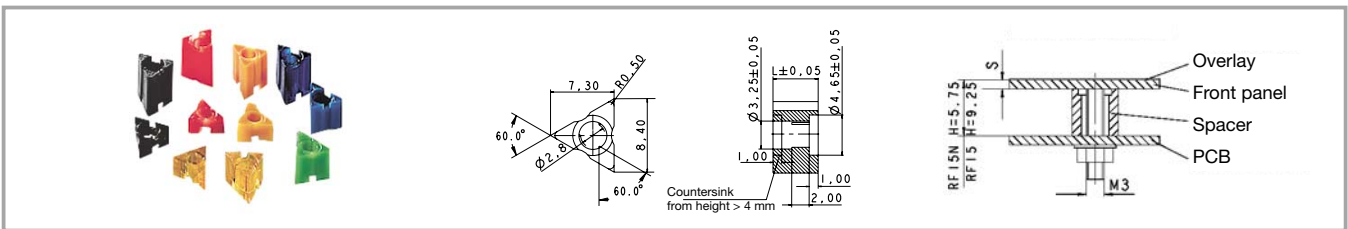


| Length | Width | Overall height | Diameter | Colour | Order no. |
|----------|-------|----------------|----------|---------------------------|--------------------------|
| 3.50 mm | | | | blue transparent | 5.30.759.023/0000 |
| 4 mm | | | | green | 5.30.759.025/0000 |
| 4.25 mm | | | | blue | 5.30.759.026/0000 |
| 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 |
| 6.2 mm | | | | blue | 5.30.759.251/0000 |
| 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 |
| 9.00 mm | | | | green | 5.30.759.046/0000 |
| 10.00 mm | | | | black | 5.30.759.043/0104 |

4

RF

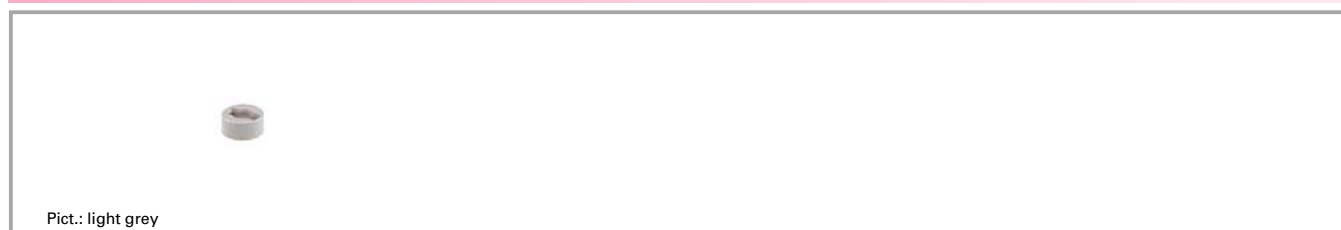
Spacers, triangular



| Length | Width | Overall height | Diameter | Colour | Order no. |
|---------|-------|----------------|----------|---------------------------|--------------------------|
| 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 |
| 6.2 mm | | | | blue | 5.30.759.253/0000 |
| 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 |

| Length | Width | Overall height | Diameter | Colour | Order no. |
|----------|-------|----------------|----------|---------------------------|--------------------------|
| 8 mm | | | | red | 5.30.759.116/0000 |
| 8.25 mm | | | | blue transparent | 5.30.759.117/0000 |
| 9 mm | | | | blue | 5.30.759.254/0000 |
| 10.00 mm | | | | black | 5.30.759.124/0000 |
| 10.25 mm | | | | yellow orange transparent | 5.30.759.125/0000 |

LED spacer for RF 15 N



| Length Characteristic 1 | Width Characteristic 2 | Overall height | Diameter | Colour | Order no. |
|-------------------------|------------------------|----------------|----------|------------|-------------------|
| 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 |

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- Конкурентоспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



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