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Product Information

General notes

The printable switching elements with tactile feedback, unlighted or lighted, by means of LED, are characterised by a robust design and various application possibilities.

Mounting

Cosmos modular tact switch is suitable for use with through-hole caps or for installation under membrane-type overlays. Also anti pull-off key caps are available.

The small size and square shape allow the modular switches to be used side by side on 2.54 mm matrix.

Contacts

The Cosmos series offer the customer with the choice of silver or tropicalized gold contacts as 1 normally open.

Contact and terminals are fully sealed against dust, liquid penetrations, soldering and solvent cleaning processes.

Keys

The customer has the selection of lense and key-caps in various colours and shapes.

Marking

Standard markings are available. Custom markings or symbols in different colours are available on request.

Illumination

The illuminated Cosmos is available in red, green and yellow embedded LED. Other LED colours on request.

We reserve the right to modify technical data



All dimensions in mm


Modular tact switch

Modular element usable for Keys \square 12.3 mm | \varnothing 10 mm



Essential Accessories:

-  Key cap square page 6
-  Key square page 5

| | Switching action | Contacts | Contact material | Illumination | Typ-Nr. | Component layout | Mounting dimensions | Technical drawing | Circuit drawing |  |
|--|------------------|----------|------------------|--------------|--------------------|------------------|---------------------|-------------------|-----------------|---|
| Modular tact switch standard | M | 1 NO | Silver | LED green | 81.20101.03 | 1 | 1 | 5 | 2 | 0.002 |
| | | | | LED red | 81.20101.02 | 1 | 1 | 5 | 2 | 0.002 |
| | | | | LED yellow | 81.20101.04 | 1 | 1 | 5 | 2 | 0.002 |
| | | | | without | 81.10101.00 | 1 | 1 | 5 | 1 | 0.002 |
| tropicalized | M | 1 NO | Gold | LED green | 81.22151.03 | 1 | 1 | 5 | 2 | 0.002 |
| | | | | LED red | 81.22151.02 | 1 | 1 | 5 | 2 | 0.002 |
| | | | | LED yellow | 81.22151.04 | 1 | 1 | 5 | 2 | 0.002 |
| | | | | without | 81.12151.00 | 1 | 1 | 5 | 1 | 0.002 |

Switching action: M = Momentary action


Contacts: NO = Normally open

Component layout from page 9, Mounting dimensions from page 9, Technical drawing from page 9, Circuit drawing from page 10

Front

Protective lens

for mounting under foil


| | Protective lens | Typ-Nr. | Technical drawing |  |
|---|---------------------|--------------------|-------------------|---|
| Protective lens Lens diameter 11 mm | Plastic transparent | 80.00000.97 | 4 | 0.001 |
| Lens diameter 7.8 mm | Plastic transparent | 80.00000.11 | 3 | 0.001 |

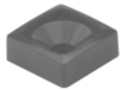


Technical drawing from page 9

Key square

for mounting with front panel cut-out


| | Key | Ø 12.3 x 12.3 mm Typ-Nr. | Technical drawing |  |
|-------------------|--------------------|-----------------------------|-------------------|---|
| Key square | Plastic dark-grey | 80.11011.07 | 6 | 0.001 |
| | Plastic light-grey | 80.11011.09 | 6 | 0.001 |
| | Plastic red | 80.11011.02 | 6 | 0.001 |



Technical drawing from page 9

Key round

for mounting with front panel cut-out

| | Key | Ø 10 mm Typ-Nr. | Technical drawing |  |
|------------------|--------------------|--------------------|-------------------|---|
| Key round | Plastic dark-grey | 80.33033.07 | 7 | 0.001 |
| | Plastic light-grey | 80.33033.09 | 7 | 0.001 |
| | Plastic red | 80.33033.02 | 7 | 0.001 |



Technical drawing from page 9

Key cap square


for mounting with front panel cut-out



| | Key cap | Lens | Marking | Typ-Nr. | Technical drawing | kg |
|-------------------------------------|--------------------|-------------|--------------|--------------------|-------------------|-------|
| Key cap square illuminative | Plastic black | transparent | - | 83.11072.01 | 1 | 0.001 |
| | | | # | 83.11075.01 | 1 | 0.001 |
| | | | ÷ | 83.11055.01 | 1 | 0.001 |
| | | | → | 83.11077.01 | 1 | 0.001 |
| | | | * | 83.11074.01 | 1 | 0.001 |
| | | | . | 83.11076.01 | 1 | 0.001 |
| | | | + | 83.11071.01 | 1 | 0.001 |
| | | | = | 83.11069.01 | 1 | 0.001 |
| | | | 0 | 83.11036.01 | 1 | 0.001 |
| | | | 1 | 83.11027.01 | 1 | 0.001 |
| | | | 2 | 83.11028.01 | 1 | 0.001 |
| | | | 3 | 83.11029.01 | 1 | 0.001 |
| | | | 4 | 83.11030.01 | 1 | 0.001 |
| | | | 5 | 83.11031.01 | 1 | 0.001 |
| | | | 6 | 83.11032.01 | 1 | 0.001 |
| | | | 7 | 83.11033.01 | 1 | 0.001 |
| | | | 8 | 83.11034.01 | 1 | 0.001 |
| | | | 9 | 83.11035.01 | 1 | 0.001 |
| | | | A | 83.11001.01 | 1 | 0.001 |
| | | | B | 83.11002.01 | 1 | 0.001 |
| C | 83.11003.01 | 1 | 0.001 | | | |
| D | 83.11004.01 | 1 | 0.001 | | | |
| E | 83.11005.01 | 1 | 0.001 | | | |
| F | 83.11006.01 | 1 | 0.001 | | | |
| x | 83.11070.01 | 1 | 0.001 | | | |
| illuminative, with diffusor disc | Plastic colourless | transparent | without text | 83.00000.11 | 1 | 0.001 |
| illuminative, without diffusor disc | Plastic colourless | transparent | without text | 83.00000.00 | 1 | 0.001 |

Continuation see next page


Continued from previous page

| | Key cap | Lens | Marking | Typ-Nr. | Technical drawing |  |
|------------------|--------------------|--------------------|--------------|--------------------|-------------------|---|
| non-illuminative | Plastic dark grey | opaque | without text | 82.00000.07 | 1 | 0.001 |
| | Plastic light grey | opaque | - | 82.01072.09 | 1 | 0.001 |
| | | | # | 82.01075.09 | 1 | 0.001 |
| | | | ÷ | 82.01055.09 | 1 | 0.001 |
| | | | → | 82.01077.09 | 1 | 0.001 |
| | | | * | 82.01074.09 | 1 | 0.001 |
| | | | . | 82.01076.09 | 1 | 0.001 |
| | | | + | 82.01071.09 | 1 | 0.001 |
| | | | = | 82.01069.09 | 1 | 0.001 |
| | | | 0 | 82.01036.09 | 1 | 0.001 |
| | | | 1 | 82.01027.09 | 1 | 0.001 |
| | | | 2 | 82.01028.09 | 1 | 0.001 |
| | | | 3 | 82.01029.09 | 1 | 0.001 |
| | | | 4 | 82.01030.09 | 1 | 0.001 |
| | | | 5 | 82.01031.09 | 1 | 0.001 |
| | | | 6 | 82.01032.09 | 1 | 0.001 |
| | | | 7 | 82.01033.09 | 1 | 0.001 |
| | | | 8 | 82.01034.09 | 1 | 0.001 |
| | | | 9 | 82.01035.09 | 1 | 0.001 |
| | | | A | 82.01001.09 | 1 | 0.001 |
| | | | B | 82.01002.09 | 1 | 0.001 |
| | C | 82.01003.09 | 1 | 0.001 | | |
| | D | 82.01004.09 | 1 | 0.001 | | |
| E | 82.01005.09 | 1 | 0.001 | | | |
| F | 82.01006.09 | 1 | 0.001 | | | |
| | | | without text | 82.00000.09 | 1 | 0.001 |
| | | | x | 82.01070.09 | 1 | 0.001 |
| | Plastic red | opaque | without text | 82.00000.02 | 1 | 0.001 |

Technical drawing from page 9

Key cap round

for mounting with front panel cut-out

| | Key cap | Typ-Nr. | Technical drawing |  |
|--|---------------------------|--------------------|-------------------|---|
| Key cap round non-illuminative | Plastic dark grey opaque | 82.33000.07 | 2 | 0.001 |
| | Plastic light grey opaque | 82.33000.09 | 2 | 0.001 |
| | Plastic red opaque | 82.33000.02 | 2 | 0.001 |

Technical drawing from page 9



Modular tact switch

Electric strength

300 V_{rms}, 50 Hz

Switching system

Switching element

Funktion 1 Normally open

Material

Housing

Polyamide (PA) with Fibreglass, as per UL 94 V0, self-extinguishing

Pushbutton cap

Polycarbonate (PC)

Material of contact

Nickel with 0.5 µm Gold plating for Gold contact

Nickel with 2 µm Silver plating for Silver contact

Mechanical characteristics

Terminals

Plating mean values :

Gold contact 0.5 µm Au

Silver contact 2 µm Ag

LED 8 µm SnAgCu

Actuating force

3.6 N (mean value)

Actuating travel

Travel mean values :

Nominal operating travel 0.35 mm

Maximal travel incl. overtravel 0.5 mm

Over travel 0.15 mm

Rebound time

≤100 µs

Resistance to heat of soldering

Manual soldering 350 °C, 3 sec.

Flow soldering 260 °C, 5 sec.

270 °C, 5 sec., as per EN IEC 60068-20

Electrical characteristics

Operating voltage/-current

Nominal 24 VDC, 125 mA

Maximum Voltage 50 V DC

Minimum Voltage 10 mV (Gold contact), 100 mV (Silver contact)

Minimum Current 500 µA (Gold contact), 1 mA (Silver contact)

Illumination

LED current consumption :

20 mA at 2.1 V (yellow and green)

10 mA at 2.1 V (red)

Isolation resistance

≥1000 MΩ at 100 VDC

Contact resistance

≤20 mΩ

Electrical life

≥1 million cycles of operations at contact power rating

Switch rating

3 W

Environmental conditions

Storage temperature

-40 °C ... +85 °C (non-illuminated)

-30 °C ... +85 °C (illuminated)

Operating temperature

-25°C ... +85°C

Climate resistance

Damp heat steady :

21 days (Gold contact), 10 days (Silver contact),

as per EN IEC 60068-2-56

Saline mist :

96 hours (Gold contact), 24 hours (Silver contact),

as per EN IEC 60068-2-11

Shock resistance

1000 m/s², as per EN IEC 60512-4

Vibration resistance

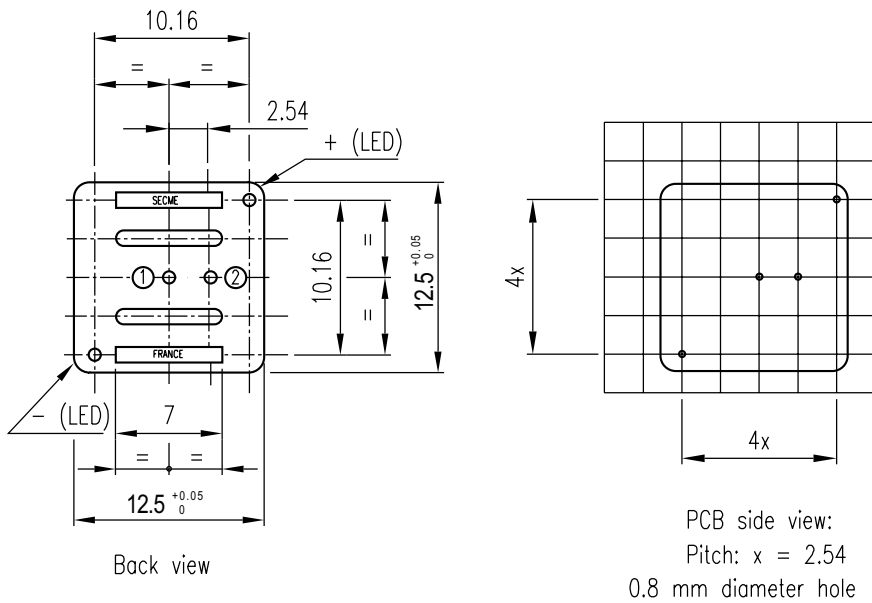
400 m/s², 1000 Hz, 1 min., as per EN IEC 60512-4

Approvals

RoHS compliant

Component layout

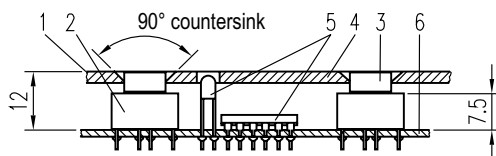
1 Modular tact switch page 4



Mounting dimensions

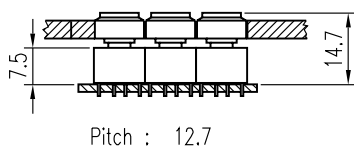
1 Modular tact switch page 4

COSMOS under film layout



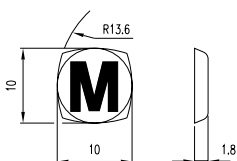
- ① Front panel film: silk-screen printing
- ② COSMOS module
- ③ Protective lens $\varnothing 11$ (if protection lens $\varnothing 7.8$ is used, height on PCB is 11.1)
- ④ Device front panel
- ⑤ Components (LEDs, resistors, integrated circuits...)
- ⑥ Printed circuit

COSMOS building block mounting

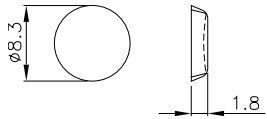


Technical drawing

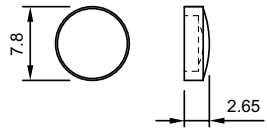
1 Key cap square page 6



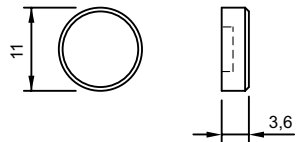
2 Key cap round page 7



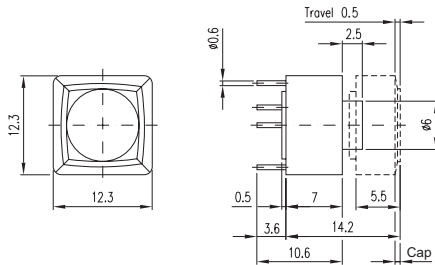
3 Protective lens page 5



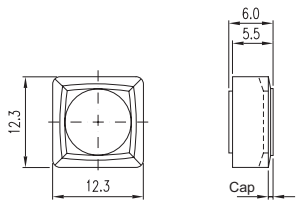
4 Protective lens page 5



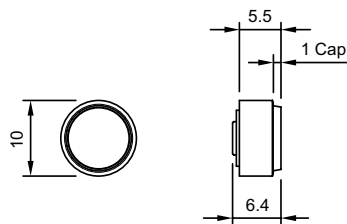
5 Modular tact switch page 4



6 Key square page 5

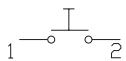


7 Key round page 5

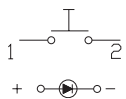


Circuit drawing

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2 Modular tact switch page 4



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| 80.00000.97 | 5 | 83.11036.01 | 6 | | |
| 80.11011.02 | 5 | 83.11055.01 | 6 | | |
| 80.11011.07 | 5 | 83.11069.01 | 6 | | |
| 80.11011.09 | 5 | 83.11070.01 | 6 | | |
| 80.33033.02 | 5 | 83.11071.01 | 6 | | |
| 80.33033.07 | 5 | 83.11072.01 | 6 | | |
| 80.33033.09 | 5 | 83.11074.01 | 6 | | |
| 81.10101.00 | 4 | 83.11075.01 | 6 | | |
| 81.12151.00 | 4 | 83.11076.01 | 6 | | |
| 81.20101.02 | 4 | 83.11077.01 | 6 | | |
| 81.20101.03 | 4 | | | | |
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| 81.22151.02 | 4 | | | | |
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