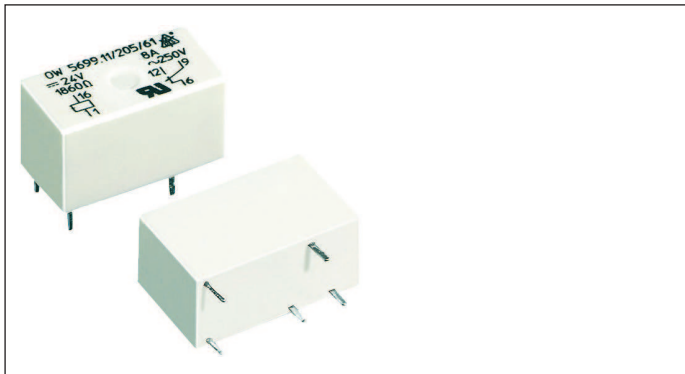


## DILAIS

Power Miniature Relays, monostable  
OW 5691, OW 5699



- According to DIN EN 61810-1, DIN EN 60664-1
- Clearance and creepage distances:  
Contact - coil  $\geq 8$  mm
- Low rated power consumption
- High dielectric strength  $\geq 4$  kV
- High mechanical service life
- High switching power
- High thermal continuous current
- Large voltage range
- Very small volume **DIL model**, can be plugged into standard IC-Sockets
- Different connection arrangements and contact materials
- Wash proof RT III

### Applications

- Control technique
- White goods

### Approvals and Markings



### Technical Data

| Relay type                                 | OW 5691 / OW 5699   |  | OW 5699                                     |
|--|---|--|---|
| <b>1.0 Relay coil</b>                      |   |  |   |
| 1.1 Nominal voltage                        | DC V  | 4, 5, 6, 12, 20, 24, 48                                      |   |
| 1.2 Nominal consumption                    | mW  | see table Technical Data                                     |   |
| 1.11 Voltage range                         | $U_N$   | 0.75 ... 2.2   | 0.75 ... 1.6                                |
| 1.13 Holding power                         | mW  | see table Technical Data                                     |   |
| <b>2.0 Contacts</b>                        |   |  |   |
| 2.1 Contact arrangement                    | 1 NO, 1 changeover contact                                    |  |   |
| 2.2 Contact material                       | AgNi + 0.3 $\mu$ m Au <sup>1)</sup> ; optionally 3 $\mu$ m Au |  |   |
| 2.3 Rated insulation voltage               | AC V  | 250  |   |
| Switching voltage min./max.                | V   | AC/DC 10 (AC/DC 2 / AC/DC 60) <sup>3)</sup> / DC 120, AC 250 |   |
| 2.4 Limiting continuous current $I_{th}$   | A   | 5  | 8   |
| Switching current min./max.                | A   | 0.01 <sup>2)</sup> / 5                                       | 0.01 <sup>2)</sup> / 8                      |
| 2.5 Switching power min./max.              | VA  | 0.1 / 1 250  | 0.1 / 2 000                                 |
| Switching power min./max.                  | W   | 0.1 / 120  | 0.1 / 120                                   |
| 2.6 Switching capacity to IEC/EN 60947-5-1 | AC 15 AC V/A NC: 230 / 1, NO: 230 / 3                         |  |   |
| 2.7 Electrical life                        | at 1 s On, 1 s Off (see contacts service life)                |  |   |
| at AC 230 V 5 A $\cos \varphi=1$           | switching cycles  | see characteristics of contact service life                  |   |
| 2.9 Response time                          | ms  | ( $I_{th}=5$ A) max. 8 (typically 5)                         | ( $I_{th}=8$ A) max 5. (typically 2.2)      |
| Release time                               | ms  | max. 4 (typisch 2)   |   |
| Bouncing time (NC)                         | max. 10 (typically 6)   |  | max. 8 (typically 3.5)                      |
| Bouncing time (NO)                         | (I <sub>th</sub> =5 A) max. 4 (typically 1.5)                 |  | (I <sub>th</sub> =8 A) max. 2 (typically 1) |
| 2.10 Contact force                         | cN  | approx. 8  | approx. 10                                  |
| <b>3.0 Other</b>                           |   |  |   |
| 3.1 Mechanical life                        | switching cycles  | $\geq 10^8$  |   |
| 3.2 Temperature range                      | $^{\circ}$ C  | - 40 ... + 80  |   |
| 3.3 Degree of protection                   | Wash proof RT III   |  |   |
| 3.5 Vibration resistance                   | 10 ... 55 Hz; 1.2 mm amplitude; 10 g max. IEC/EN 60068-2-6    |  |   |
| 3.6 Climate resistance                     | 20 / 080 / 04 (climate category); A / B / D IEC/EN 60068-1    |  |   |

<sup>1)</sup> on request: AgSnO<sub>2</sub> + 0.3  $\mu$ m Au

<sup>2)</sup>Typical values

## Technical Data

|                          |  |            |  |
|--------------------------|--|------------|--|
| 3.8                      | Insulation according to IEC 60664-1    |            |  |
|                          | Rated insulation voltage               | AC V       | 250                                      |
|                          | Pollution degree                       |            | 3  |
|                          | Overtoltage category                   |            | III                                      |
|                          | Test voltage                           |            |  |
|                          | Contact-coil (1 min)                   | AC kV eff. | ≥ 4                                      |
|                          | Clearance and creepage distances       |            |  |
|                          | Contact-coil                           | mm         | ≥ 5.5 (safe separation acc. to EN 50178) |
| 3.9                      | Weight                                 | g          | approx. 5                                |
| <b>4.0 Packing</b>       |  |            |  |
| 4.1                      | on cardboard in slipcase               | piece      | 100                                      |
| 4.2                      | in case package                        | piece      | 1000                                     |
| <b>5.0 Solder method</b> |  |            |  |
| 5.1                      | Solder method /-temperature /-duration | °C / s     | Wafe soldering / 260 / 5                 |

## Design Versions

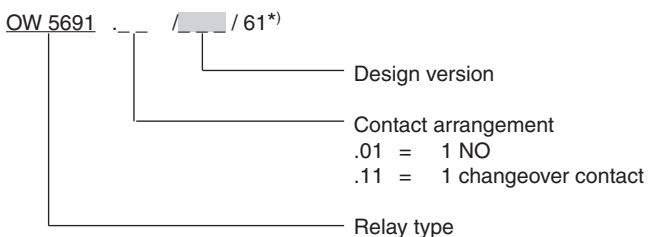
### 1 changeover contact

|                       | Nominal volatage U <sub>N</sub> | V DC               | 4.5   | 6     | 12   | 20    | 24    | 48    |
|-----------------------|---------------------------------|--------------------|-------|-------|------|-------|-------|-------|
|                       |                                 |                    |       |       |      |       |       |       |
| I <sub>th</sub> = 5 A | Design version                  | AgNi 0.15          | 911   | 912   | 913  | 916   | 914   | 915   |
|                       | Type OW 5691.11                 | Au-Contact         | 081   | 082   | 083  | 086   | 084   | 085   |
|                       | Design version                  | AgNi 0.15          | 171   | 172   | 173  | 176   | 174   | 175   |
|                       | Type OW 5699.11                 | Au-Contact         | 191   | 192   | 193  | 196   | 194   | 195   |
|                       | Resistance at 20°C              | Ω                  | 78    | 155   | 600  | 1 600 | 2 400 | 9 216 |
|                       | Nominal consumption             | mW                 | 260   | 233   | 240  | 250   | 240   | 250   |
|                       | Holding power                   | mW                 | 65    | 58    | 60   | 62.5  | 60    | 62.5  |
|                       | Response voltage                | V DC               | 3.3   | 4.5   | 9    | 14.5  | 17.5  | 36    |
| I <sub>th</sub> = 8 A | Design version                  | AgSnO <sub>2</sub> | 201   | 202   | 203  | 204   | 205   | 206   |
|                       | Type OW 5699.11                 |                    |       |       |      |       |       |       |
|                       | Resistance at 20°C              | Ω                  | 65    | 115   | 465  | 1 250 | 1 860 | 6 310 |
|                       | Nominal consumption             | mW                 | 311   | 313   | 310  | 320   | 310   | 365   |
|                       | Holding power                   | mW                 | 77.75 | 78.25 | 77.5 | 80    | 77.5  | 91.25 |
| Response voltage      | V DC                            | 3.3                | 4.5   | 9     | 15   | 18    | 36    |       |

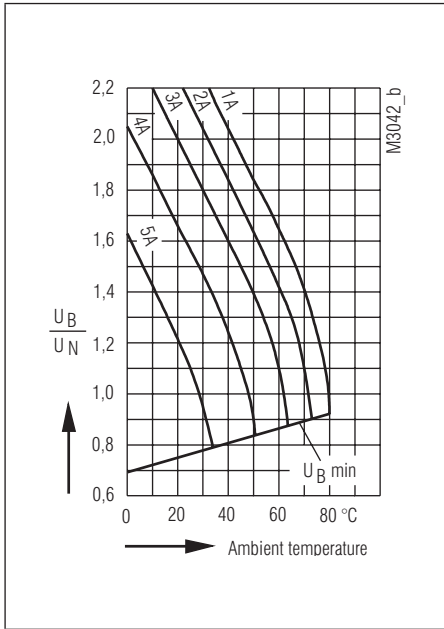
### 1 NO contact

|                       | Nominal volatage U <sub>N</sub> | V DC               | 4.5   | 6     | 12    | 20    | 24    | 48    |
|-----------------------|---------------------------------|--------------------|-------|-------|-------|-------|-------|-------|
|                       |                                 |                    |       |       |       |       |       |       |
| I <sub>th</sub> = 5 A | Design version                  | AgNi 0.15          | 921   | 922   | 923   | 926   | 924   |       |
|                       | Type OW 5691.01                 | Au-Contact         | 091   | 092   | 093   | 096   | 094   |       |
|                       | Design version                  | AgNi 0.15          | 181   | 182   | 183   | 186   | 184   |       |
|                       | Type OW 5699.01                 | Au-Contact         | 231   | 232   | 233   | 236   | 234   |       |
|                       | Resistance at 20°C              | Ω                  | 155   | 315   | 1 070 | 2 960 | 4 350 |       |
|                       | Nominal consumption             | mW                 | 131   | 114   | 135   | 135   | 132   |       |
|                       | Holding power                   | mW                 | 32.75 | 28.5  | 33.75 | 33.75 | 33    |       |
|                       | Response voltage                | V DC               | 3     | 4.3   | 8     | 13    | 16    |       |
| I <sub>th</sub> = 8 A | Design version                  | AgSnO <sub>2</sub> | 221   | 222   | 223   | 224   | 225   | 226   |
|                       | Type OW 5699.01                 |                    |       |       |       |       |       |       |
|                       | Resistance at 20°C              | Ω                  | 78    | 155   | 600   | 1 600 | 2 400 | 9 200 |
|                       | Nominal consumption             | mW                 | 260   | 233   | 240   | 250   | 240   | 250   |
|                       | Holding power                   | mW                 | 65    | 58.25 | 60    | 62.5  | 60    | 62.5  |
| Response voltage      | V DC                            | 3.3                | 4.5   | 9     | 14    | 17    | 32    |       |

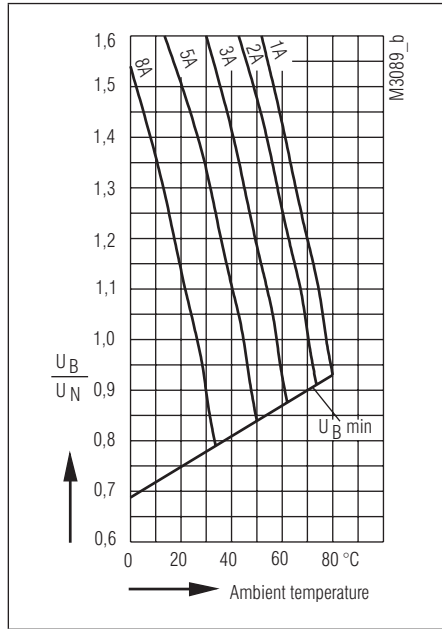
## Ordering Example



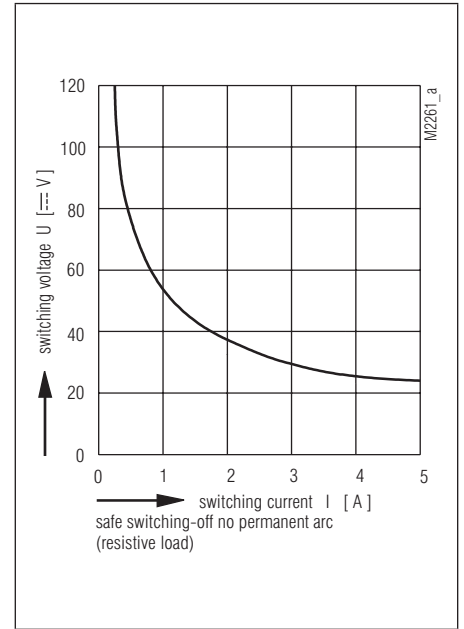
\*) /61 cURus approval



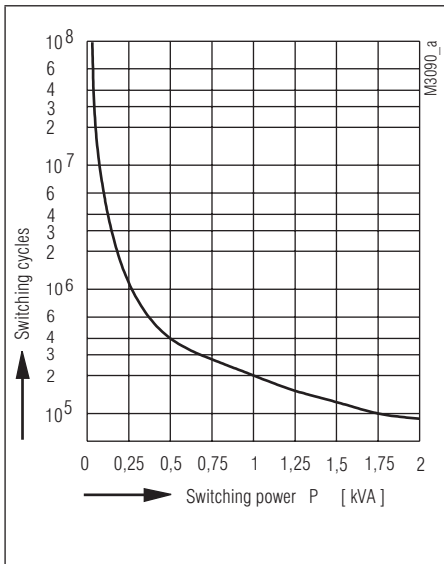
Operating voltage limit curve for OW 5691 and OW 5699 with  $I_m \leq 5$  A



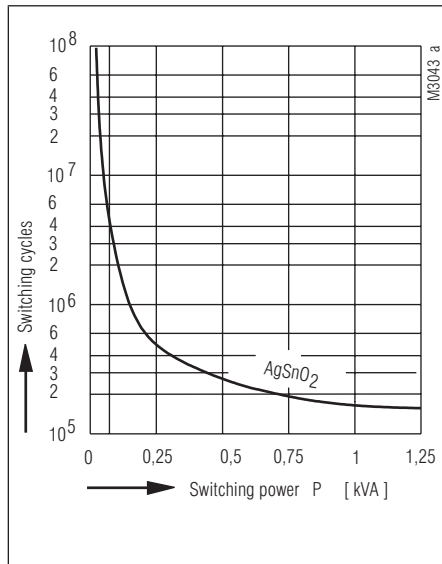
Operating voltage limit curve for OW 5699 with  $I_m \leq 8$  A



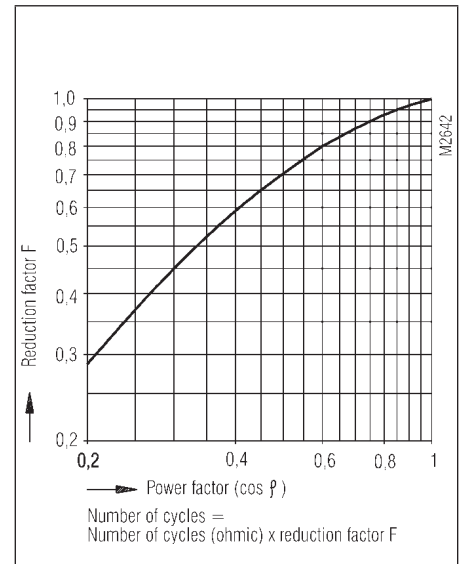
Limit curve for arc-free operation at  $t_v = 20^\circ\text{C}$ ) for OW 5691 and OW 5699 (resistive load)



Contact service life for OW 5699 with  $I_m \leq 8$  A (NO contact)



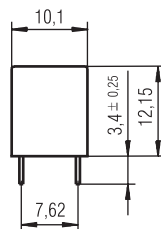
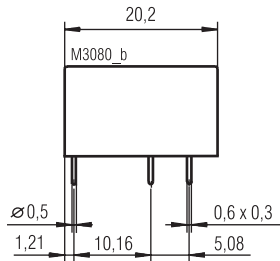
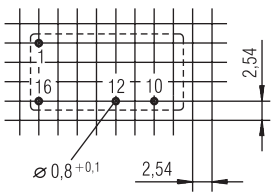
Contact service life for OW 5691 and OW 5699 with  $I_m \leq 5$  A (NO contact)



Reduction factor for inductive loads

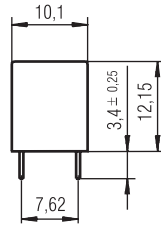
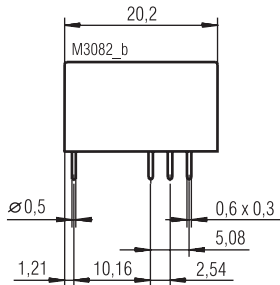
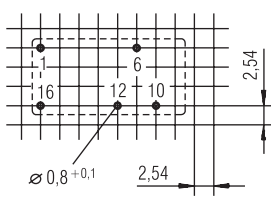
## Dimensions, Pin Configuration, Connection Diagrams

Pin arrangement (bottom view)



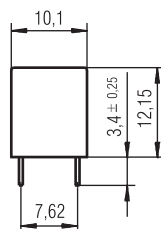
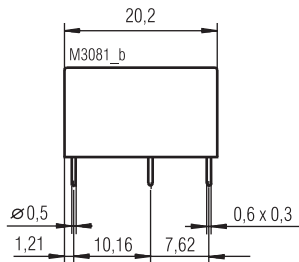
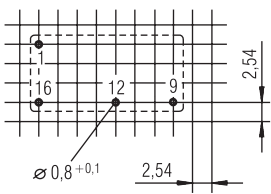
OW 5691.01

Pin arrangement (bottom view)



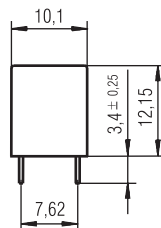
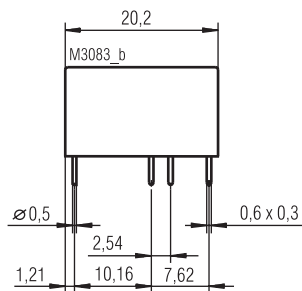
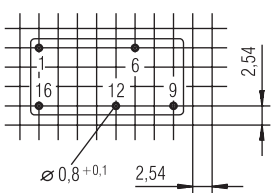
OW 5691.11

Pin arrangement (bottom view)



OW 5699.01

Pin arrangement (bottom view)



OW 5699.11

Connections for basic grid dimensions 2.5 mm as well as 2.54 mm according to IEC/EN 60 097 and IEC 60 326 average.  
Pin distance tolerance measured at the pin ends  $\pm 0.3$  mm. Dimensions are valid for untinned state.