# **R50A** high power relays





- Relays for photovoltaic systems, solar inverters, power supplies and UPS
- Max. switching current: 50 A
- Contact gap: ≥ 2 mm
- DC coils, insulation class F: 155 °C
- For PCB
- Recognitions, certifications, directives: RoHS, calls

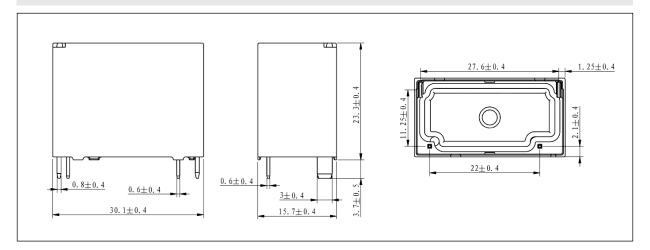
# Contact data

Contact material         AgSnO₂           Rated / max. switching voltage         AC         250 V / 277 V           Rated load         AC1         50 A / 250 V AC           Max. make current         50 A           Rated current         50 A           Max. breaking capacity         AC1         13 850 VA           Contact resistance         ≤ 100 mΩ           Max. operating frequency         • at rated load AC1         360 cycles/hour           • no load         7 200 cycles/hour           Coil data         Coil data           Rated voltage         DC 5, 6, 9, 12, 18, 24 V           Must release voltage         DC: ≥ 0,05 Un           Operating range of supply voltage         0,751,1 Un see Table 1           Rated power consumption         DC           Insulation according to EN 60664-1         1nsulation pollution degree           Insulation pollution degree         2           Insulation resistance         1 000 MΩ           Dielectric strength         • between coil and contacts         4 500 V AC           • contact clearance         2 500 V AC           General data         Operating / release time (typical values)         20 ms / 10 ms           Electrical life         • contact (cykle)         7 200 cycles/hour	Number and type of contacts	1 NO			
Rated load       AC1       50 A / 250 V AC         Max. make current       50 A         Rated current       50 A         Max. breaking capacity       AC1       13 850 VA         Contact resistance       ≤ 100 mΩ         Max. operating frequency       • at rated load AC1       360 cycles/hour         • no load       7 200 cycles/hour         Coil data       Rated voltage       DC ≥ 0,05 Un         Rated voltage       DC ≥ 0,05 Un       DO ≥ 20,05 Un         Operating range of supply voltage       0,751,1 Un see Table 1         Rated power consumption       DC 1,6 W         Insulation according to EN 60664-1       Insulation pollution degree       2         Insulation resistance       1 000 MΩ         Dielectric strength       • between coil and contacts       4 500 V AC         • contact clearance       2 500 V AC         General data       Operating / release time (typical values)       20 ms / 10 ms         Electrical life       resistive AC1       360 cycles/hour       5 x 10 <sup>4</sup> 20 A make/break, 50 A carry, 250 V AC, 85 °C         Mechanical life (cykle)       7 200 cycles/hour       10 <sup>5</sup> Dimensions (L x W x H)       30,1 x 15,7 x 23,3 mm	Contact material	AgSnO <sub>2</sub>			
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Contact resistance $≤ 100 \text{ m}\Omega$ Max. operating frequency • at rated load AC1 • no load  Coil data  Rated voltage  DC 5, 6, 9, 12, 18, 24 V  Must release voltage  DC: ≥ 0,05 Un  Operating range of supply voltage  Rated power consumption  DC 1,6 W  Insulation according to EN 60664-1  Insulation pollution degree  Insulation resistance  Dielectric strength • between coil and contacts • contact clearance  Ceneral data  Operating / release time (typical values)  Electrical life • resistive AC1  Mechanical life (cykle)  7 200 cycles/hour  360 cycles/hour  7 200 cycles/hour  7 200 cycles/hour  7 200 cycles/hour  7 200 cycles/hour  360 cycles/hour  100 MΩ  100 MΩ	Rated current	50 A			
Max. operating frequency       • at rated load AC1       360 cycles/hour         • no load       7 200 cycles/hour         Coil data         Rated voltage       DC       5, 6, 9, 12, 18, 24 V         Must release voltage       DC: ≥ 0,05 Un         Operating range of supply voltage       0,751, 1 Un       see Table 1         Rated power consumption       DC       1,6 W         Insulation according to EN 60664-1       Insulation pollution degree       2         Insulation resistance       1 000 MΩ         Dielectric strength       • between coil and contacts       4 500 V AC         • contact clearance       2 500 V AC         General data         Operating / release time (typical values)       20 ms / 10 ms         Electrical life       • resistive AC1       360 cycles/hour       5 x 10 <sup>4</sup> 20 A make/break, 50 A carry, 250 V AC, 85 °C         Mechanical life (cykle)       7 200 cycles/hour       10 <sup>5</sup> Dimensions (L x W x H)       30,1 x 15,7 x 23,3 mm	Max. breaking capacity AC1	13 850 VA			
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Rated voltage         DC         5, 6, 9, 12, 18, 24 V           Must release voltage         DC: ≥ 0,05 Un           Operating range of supply voltage         0,751,1 Un           Rated power consumption         DC           Insulation according to EN 60664-1           Insulation pollution degree         2           Insulation resistance         1 000 MΩ           Dielectric strength         4 500 V AC           • between coil and contacts         4 500 V AC           • contact clearance         2 500 V AC           General data         Operating / release time (typical values)         20 ms / 10 ms           Electrical life         • resistive AC1         360 cycles/hour         5 x 10 <sup>4</sup> 20 A make/break, 50 A carry, 250 V AC, 85 °C           Mechanical life (cykle)         7 200 cycles/hour         10 <sup>5</sup> Dimensions (L x W x H)         30,1 x 15,7 x 23,3 mm	no load	7 200 cycles/hour			
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Rated power consumption DC 1,6 W  Insulation according to EN 60664-1  Insulation pollution degree 2  Insulation resistance 1 000 MΩ  Dielectric strength  • between coil and contacts 4 500 V AC  • contact clearance 2 500 V AC  General data  Operating / release time (typical values) 20 ms / 10 ms  Electrical life  • resistive AC1 360 cycles/hour 5 x 10 <sup>4</sup> 20 A make/break, 50 A carry, 250 V AC, 85 °C  Mechanical life (cykle) 7 200 cycles/hour 10 <sup>5</sup> Dimensions (L x W x H) 30,1 x 15,7 x 23,3 mm		DC: ≥ 0,05 U <sub>n</sub>			
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Insulation pollution degree  Insulation resistance  Insulation pollution degree  Insulation degree  In	Rated power consumption DC	1,6 W			
Insulation resistance1 000 MΩDielectric strength4 500 V AC• between coil and contacts4 500 V AC• contact clearance2 500 V ACGeneral dataOperating / release time (typical values)20 ms / 10 msElectrical liferesistive AC1360 cycles/hour $5 \times 10^4$ 20 A make/break, 50 A carry, 250 V AC, 85 °CMechanical life (cykle)7 200 cycles/hour $10^5$ Dimensions (L x W x H) $30.1 \times 15.7 \times 23.3 \text{ mm}$	Insulation according to EN 60664-1				
Dielectric strength  • between coil and contacts  • contact clearance  2 500 V AC  General data  Operating / release time (typical values)  Electrical life  • resistive AC1  Mechanical life (cykle)  7 200 cycles/hour  Dimensions (L x W x H)  4 500 V AC  2 5 ms / 10 ms  5 x 10 <sup>4</sup> 20 A make/break, 50 A carry, 250 V AC, 85 °C  Mechanical life (cykle)  7 200 cycles/hour  3 30,1 x 15,7 x 23,3 mm	Insulation pollution degree	2			
<ul> <li>between coil and contacts</li> <li>contact clearance</li> <li>2 500 V AC</li> </ul> General data Operating / release time (typical values) Electrical life <ul> <li>resistive AC1</li> <li>Mechanical life (cykle)</li> <li>7 200 cycles/hour</li> </ul> 5 x 10 <sup>4</sup> 20 A make/break, 50 A carry, 250 V AC, 85 °C Mechanical life (cykle) <ul> <li>7 200 cycles/hour</li> <li>10<sup>5</sup></li> </ul> Dimensions (L x W x H) <ul> <li>30,1 x 15,7 x 23,3 mm</li> </ul>	Insulation resistance	1 000 ΜΩ			
<ul> <li>contact clearance</li> <li>General data</li> <li>Operating / release time (typical values)</li> <li>Electrical life</li> <li>resistive AC1</li> <li>Mechanical life (cykle)</li> <li>T 200 cycles/hour</li> <li>105</li> <li>Dimensions (L x W x H)</li> <li>20 N C</li> <li>20 N C</li> <li>20 A make/break, 50 A carry, 250 V AC, 85 °C</li> <li>30,1 x 15,7 x 23,3 mm</li> </ul>	Dielectric strength				
General data  Operating / release time (typical values)  Electrical life  • resistive AC1  Mechanical life (cykle)  7 200 cycles/hour  Dimensions (L x W x H)  20 ms / 10 ms  5 x 10 <sup>4</sup> 20 A make/break, 50 A carry, 250 V AC, 85 °C  10 <sup>5</sup> 30,1 x 15,7 x 23,3 mm	between coil and contacts	4 500 V AC			
Operating / release time (typical values)  Electrical life  • resistive AC1  Mechanical life (cykle)  7 200 cycles/hour  Dimensions (L x W x H)  20 ms / 10 ms  5 x 10 <sup>4</sup> 20 A make/break, 50 A carry, 250 V AC, 85 °C  10 <sup>5</sup> 30,1 x 15,7 x 23,3 mm	contact clearance	2 500 V AC			
Electrical life  • resistive AC1  Mechanical life (cykle)  Dimensions (L x W x H)  360 cycles/hour  5 x 10 <sup>4</sup> 20 A make/break, 50 A carry, 250 V AC, 85 °C  10 <sup>5</sup> 30,1 x 15,7 x 23,3 mm	General data				
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	Mechanical life (cykle) 7 200 cycles/hour	105			
Weight 20.1 g	Dimensions (L x W x H)	30,1 x 15,7 x 23,3 mm			
, · · · ·	Weight	20,1 g			
Ambient temperature • operating -40+85 °C	Ambient temperature • operating	-40+85 °C			
(non-condensation and/or icing)	ν,				
Cover protection flux proof	•	flux proof			
Shock resistance 10 g					
Vibration resistance 1,5 mm DA 1055 Hz	Vibration resistance	1,5 mm DA 1055 Hz			

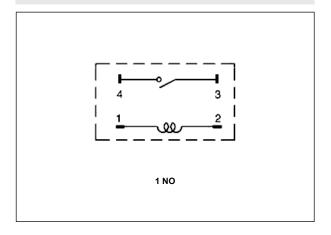
The data in bold type relate to the standard versions of the relays.



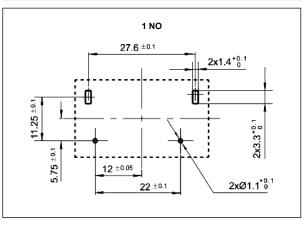
#### **Dimensions**



# Connection diagrams (pin side view)



# Pinout (solder side view)



## Mounting

Relays  ${f R50A}$  are designed for direct PCB mounting  ${f 0}$ .

• An appropriate cross-section of the PCB must be provided in accordance with design standards, to ensure proper heat dissipation from the contact pins under load.

### Coil data - DC voltage version

Table 1

Coil code Rated voltage V DC ❷	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC		
			min. (at 20 °C)	max. (at 20 °C)	
1005	5	16	± 10%	3,75	5,5
1006	6	23	± 10%	4,50	6,6
1009	9	51	± 10%	6,75	9,9
1012	12	90	± 10%	9,00	13,2
1018	18	203	± 10%	13,50	19,8
1024	24	360	± 10%	18,00	26,4

**②** The relay applies full coil voltage to maintain 200 ms. Coil holding voltage can be reduced to 50...75% of the rated coil voltage to achieve energy saving after applying 200 ms rated coil voltage. The relay coil is not allowed to apply more than the upper limit of the rated voltage for a long time to prevent the relay from overheating and burning out.

# **Ordering codes** Туре Contact Number and type Cover Connection Coil code material of contacts protection mode 5 R Contact material 30 - AgSnO2 see Table 1 page 3 Number and type of contacts 21 - 1 NO, contact gap ≥ 2 mm Cover protection 2 - in flux proof cover Connection mode

### Examples of ordering codes:

5 - for PCB

**R50A-3021-25-1005** relay **R50A**, for PCB, one normally open contact, with contact gap ≥ 2 mm, contact material AgSnO<sub>2</sub>, coil voltage 5 V DC, in flux proof cover

**R50A-3021-25-1024** relay **R50A**, for PCB, one normally open contact, with contact gap ≥ 2 mm, contact

material AgSnO<sub>2</sub>, coil voltage 24 V DC, in flux proof cover

#### PRECAUTIONS:

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<sup>1.</sup> Ensure that the parameters of the product described in its specification provide a safety margin for the appropriate operation of the device or system and never use the product in circumstances which exceed the parameters of the product. 2. Never touch any live parts of the device. 3. Ensure that the product has been connected correctly. An incorrect connection may cause malfunction, excessive heating or risk of fire. 4. In case of any risk of any serious material loss or death or injuries of humans or animals, the devices or systems shall be designed so to equip them with double safety system to guarantee their reliable operation.