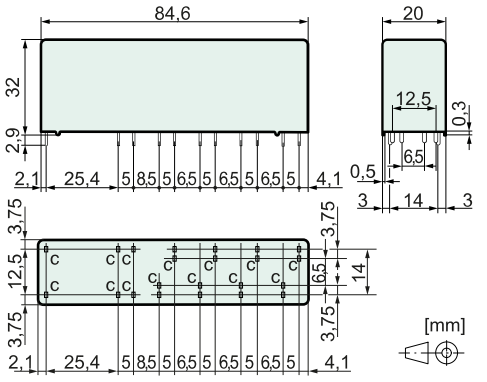
# Relays
## SIP6 Series

## Features

- Relay with forcibly guided contacts according to IEC 61810-3
- Application type A
- Protective separation (see insulation data)
- Suitable for print mounting
- High switching capacity
- Contact assignment
  SIP512: 5 NO + 1 NC, SIP422: 4 NO + 2 NC

## Dimensions



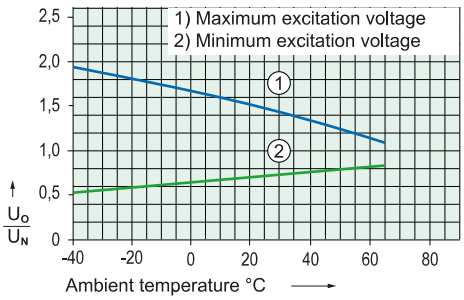

| | |
|---|---|
| Pin dimension c | 1,0 x 0,4 mm |
| Recommended drilling on PCB | Ø 1,3 mm |

## Coil data at 20 °C

| | |
|---|---|
| Nominal power (typ.) | 1,3 W |
| Holding power (typ.) | 0,39 W |
| Coil limit temperature | 125 °C |

| Nominal voltage (VDC) | Min. Pick-up voltage (VDC) | Min. Drop-out voltage (VDC) | Nominal current (mA) | Resistance (Ohm) |
|---|---|---|---|---|
| 5,0 | 3,5 | 0,5 | 260 | 19 (1 ± 10 %) |
| 12,0 | 8,4 | 1,2 | 109 | 110 (1 ± 10 %) |
| 18,0 | 12,6 | 1,8 | 72 | 248 (1 ± 10 %) |
| 24,0 | 16,8 | 2,4 | 55 | 440 (1 ± 10 %) |
| 48,0 | 33,6 | 4,8 | 27 | 1760 (1 ± 10 %) |
| 60,0 | 42,0 | 6,0 | 22 | 2750 (1 ± 10 %) |
| 110,0 | 77,0 | 11,0 | 12 | 9250 (1 ± 13 %) |
| 220,0 | 154,0 | 22,0 | 6 | 37000 (1 ± 15 %) |

Excitation voltage range



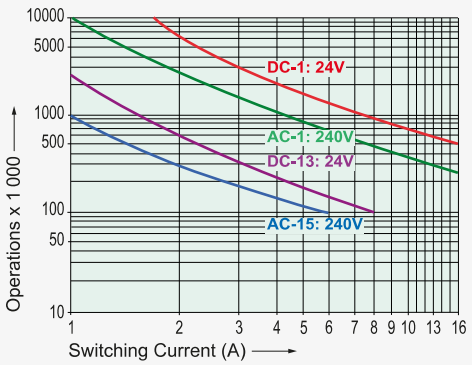

Test conditions:
- Graph 1: Contact current
  contacts 11-12, 21-22, 23-24: 4 A MAX,
  contacts 33-34, 43-44, 53-54, 63-64: 12 A MAX
- Graph 2: without previous operation
- Free-standing relay on PCB
- Duty cycle 100%

## Contact data

| | |
|---|---|
| Contact resistance as new (max.) | 100 mΩ |
| *Contact data apply to contacts* | *11-12, 21-22, 23-24* |
| Contact material | $AgSnO_2$ + 0,2, ..., 0,4 µm Au |
| Contact type | crown contact |
| Rated switching power 250 V / 6 A / AC-1 (max.) | 1500 VA |
| Electr. life time (0,1 Hz, rel. duty cycle 10%) | 100000 |
| Inrush current | 15 A for 20 ms |
| Switching voltage range | 5, ..., 250 V DC / AC |
| Switching current range* | 5 mA, ..., 6 A |
| Switching power range* | 60 mW, ..., 1500 W (VA) |
| Short circuit resistance of contacts** with pre-fuse | 1000 A SCPD 6 A gG / gL (fuse) |
| Electrical life, Switching capacity, Continuous current | see SIR8 series |
| *Contact data apply to contacts* | *33-34, 43-44, 53-54, 63-64* |
| Contact material | $AgSnO_2$ |
| Contact type | single contact |
| Rated switching power 250 V(400 V / 16 A / AC-1 (max.) | 4000 VA |
| Electr. life time (0,1 Hz, rel. duty cycle 10%) | 250000 |
| Inrush current | 60 A for 20 ms |
| Switching voltage range | 5, ..., 250 V DC (480 V AC) |
| Switching current range* | 10 mA, ..., 16 A |
| Switching power range* | 120 mW, ..., 4000 W (VA) |
| Short circuit resistance of contacts** with pre-fuse | 1000 A SCPD 16 A gG / gL (fuse) |

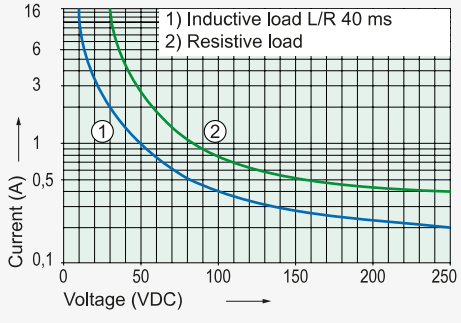
* Reference values ** Prospective short-circuit current

Electrical life (NO contacts)

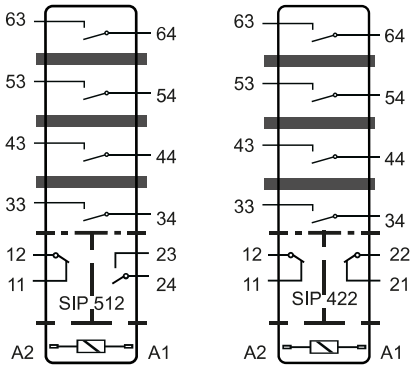



| | |
|---|---|
| Switching capacity (IEC 61810-1) | |
| AC-1: | 240 V / 16 A MAX |
| AC-15: | 240 V / 6 A MAX |
| DC-1: | 24 V / 16 A MAX |
| DC-13: | 24 V / 8 A / 0,1 Hz MAX |
| Switching capacity (UL 508) | A600, R150 |
| Continuous current per contact at load of: | |
| 1 or 2 contacts | 16 A MAX |
| 3 contacts | 12 A MAX |
| 4 contacts | 10 A MAX |

## Contact load limit curve (DC)




## Circuit diagram (top view)




## Insulation data

| | |
|---|---|
| Rated insulation voltage (IEC 60664-1) | 250 VAC |
| Basic insulation | |
| - Air and creepage distance (min.) | 4 mm |
| - Test voltage | 2500 $V_{rms}$ / 1 min |
| Double or reinforced insulation | |
| - Air and creepage distance (min.) | 8 mm |
| - Test voltage | 4000 $V_{rms}$ / 1 min |
| Double or reinforced insulation | |
| - Air and creepage distance (min.) | 8 mm |
| - Test voltage | 5000 $V_{rms}$ / 1 min |
| Open contact: Test voltage* | 1500 $V_{rms}$ / 1 min |
| Creepage resistance | CTI 250 |
| Pollution degree | 2 |
| Overvoltage category | III |
| Insulation resistance (min.) | 100 MΩ |
| - Test voltage | 500 VDC |

* Initial value

## Mechanical data

| | |
|---|---|
| Mechanical lifetime (min.) | 10 x $10^6$ operations |
| Switching frequency (max.) | 15 Hz |
| Response time (NO closed) (typ.) | 18 ms |
| Drop-out time (NC closed) (typ.)* | 5 ms |
| Bounce time (typ.) | NO: 8 ms / NC: 12 ms |
| Shock resistance (16 ms) (min.) | NO: 10g / NC: 8g |
| Vibr. resistance (10-200 Hz) (min.) | NO: 10g / NC: 3,5g |
| Weight | approx. 60 g |
| Mounting position | any |
| Mounting distance (min.) | 5 mm |

* without coil wiring

## Technical data

| | |
|---|---|
| Ambient temperature | -40 °C, ..., +70 °C |
| Thermal resistance | 40 K / W |
| Protection class | RT II |
| Solder bath temperature | 270 °C / 5 s |
| Test method (heating) | A (group assembly) |
| Approvals | cULus, TÜV |
| Flammability class | UL 94 V-0 |
| UL File | E188953 Sec. 4 |

## Options, Accessories

| | |
|---|---|
| Other coil designs | possible |
| Coils accord. to EN 50155 (railway applications) | possible |

## Product key

SIP 4 2 2 24VDC XX

| | | |
|---|---|---|
| SIP | Type designation | |
| 4 | Number of contacts NO | |
| 2 | Number of contacts NC | |
| 2 | Connection technology | 2 = Solder terminals |
| 24VDC | Nominal coil voltage | |
| XX | Options | |

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