# Power PCB Relay RT1

- **1 pole 12A/16A, 1 form C (CO) or 1 form A (NO) contact**
- **DC or AC coil**
- **5kV/10mm coil-contact, reinforced insulation**
- **Ambient temperature 85°C (DC coil)**
- **WG version: product in accordance to IEC 60335-1**
- **Reflow version: for THR (Through-Hole Reflow) soldering process**

F0144-C

Typical applications
Boiler control, timers, garage door control, POS automation, interface modules

## Approvals

VDE REG.-Nr. 6106, cULus E214025, cCSAus 14385; CQC
Technical data of approved types on request

## Contact Data

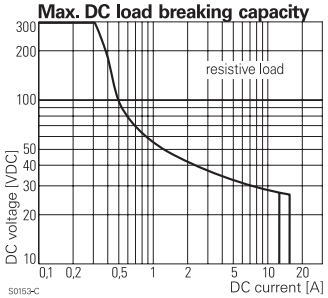
| | 12A | 16A |
|---|---|---|
| Contact arrangement | 1 form C (CO) or 1 form A (NO) | |
| Rated voltage | 250VAC | |
| Max. switching voltage | 400VAC | |
| Rated current | 12A | 16A |
| Limiting continuous current | 12A | 16A, UL: 20A |
| Limiting making current max. 4s, duty factor 10% | 25A | 30A |
| Breaking capacity max. | 3000VA | 4000VA |
| Contact material | AgNi 90/10, AgNi 90/10 gold plated | |
| Frequency of operation, with/without load | | |
| DC coil | 360/72000h$^{-1}$ | |
| AC coil | 360/36000h$^{-1}$ | |
| Operate/release time max., DC coil | 8/6ms | |
| Bounce time max., DC coil, form A/form B | 4/6ms | |
| Electrical endurance | see electrical endurance graph[1)] | |

### Contact ratings

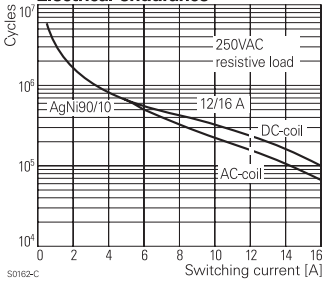
| Type | Contact | Load | Cycles |
|---|---|---|---|
| **IEC 61810** | | | |
| RT314 DC-coil | A (NO) | 16A, 250VAC, cosφ=1, 85°C | 30x10$^3$ |
| RT314 DC-coil | C (CO) | 16A, 250VAC, cosφ=1, 85°C | 10x10$^3$ |
| RT314 DC-coil | A (NO) | 10A, 400VAC, cosφ=1, 85°C | 150x10$^3$ |
| RT114 DC-coil | A (NO) | 12A, 250VAC, cosφ=1, 85°C | 50x10$^3$ |
| RT114 AC-coil | A (NO) | 12A, 250VAC, cosφ=1, 70°C | 100x10$^3$ |
| **UL 508** | | | |
| RT314 | A/B (NO/NC) | 20A, 250VAC, general purpose, 85°C | 6x10$^3$ |
| RT334 | A (NO) | 16A, 250VAC, gen. purpose, 85°C | 50x10$^3$ |
| RT314 | A (NO) | 1hp, 240VAC, 40°C | 1x10$^3$ |
| RT314 | A (NO) | FLA/LRA, 4.5/13.1A, 480VAC, 70°C | 100x10$^3$ |
| **EN60947-5-1** | | | |
| RT314 DC-coil | A/B (NO/NC) | 2A, 24VDC, DC13 | 6.050 |
| **EN60730-1** | | | |
| RT314 DC-coil | A (NO) | 12(2)A, 250VAC, 85°C | 100x10$^3$ |

1) For reflow solderable versions: actual contact performance may be influenced by the reflow soldering process.

**Max. DC load breaking capacity**




**Electrical endurance**




## Contact Data (continued)

| | |
|---|---|
| Mechanical endurance | |
| DC coil | >30x10$^6$ operations |
| AC coil | >10x10$^6$ operations |
| AC coil, reflow version | >5x10$^6$ operations |

## Coil Data

| | |
|---|---|
| Coil voltage range, DC coil/ AC coil | 5 to 110VDC / 24 to 230VAC |
| Operative range, IEC 61810 | 2 |
| Coil insulation system according UL | class F |

### Coil versions, DC coil

| Coil code | Rated voltage VDC | Operate voltage VDC | Release voltage VDC | Coil resistance Ω±10%[2)] | Rated coil power mW |
|---|---|---|---|---|---|
| 005 | 5 | 3.5 | 0.5 | 62 | 403 |
| 006 | 6 | 4.2 | 0.6 | 90 | 400 |
| 009 | 9 | 6.3 | 0.9 | 200 | 400 |
| 012 | 12 | 8.4 | 1.2 | 360 | 400 |
| 024 | 24 | 16.8 | 2.4 | 1440 | 400 |
| 048 | 48 | 33.6 | 4.8 | 5520 | 417 |
| 060 | 60 | 42.0 | 6.0 | 8570[2)] | 420 |
| 110 | 110 | 77.0 | 11.0 | 28800[2)] | 420 |

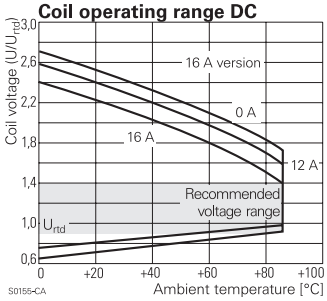
2) Coil resistance ±12%.
All figures are given for coil without pre-energization, at ambient temperature +23°C.
Other coil voltages on request.

### Coil versions, AC coil 50/60 Hz

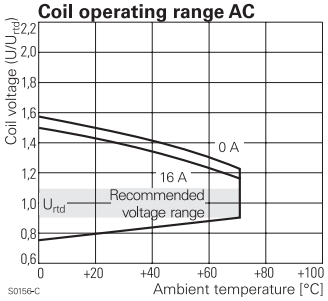
| Coil code | Rated voltage VAC | Operate voltage VAC | Release voltage VAC | Coil resistance Ω±15%[3)] | Rated coil power VA |
|---|---|---|---|---|---|
| 524 | 24 | 18.0 | 3.6 | 350[3)] | 0.76 |
| 615 | 115 | 86.3 | 17.3 | 8100 | 0.76 |
| 620 | 120 | 90.0 | 18.0 | 8800 | 0.75 |
| 700 | 200 | 150.0 | 30.0 | 24350 | 0.76 |
| 730 | 230 | 172.5 | 34.5 | 32500 | 0.74 |

3) Coil resistance ±10%.
All figures are given for coil without pre-energization, at ambient temperature +23°C, 50 Hz.
Other coil voltages on request.

**Coil operating range DC**




**Coil operating range AC**



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## Power PCB Relay RT1 (Continued)

| Insulation Data | |
|---|---|
| Initial dielectric strength | |
| between open contacts | $1000V_{rms}$ |
| between contact and coil | $5000V_{rms}$ |
| Clearance/creepage | |
| between contact and coil | ≥10/10mm |
| Material group of insulation parts | IIIa |
| Tracking index of relay base | PTI 250V |
| reflow version | PTI 175V |

| Other Data | |
|---|---|
| Material compliance: EU RoHS/ELV, China RoHS, REACH, Halogen content refer to the Product Compliance Support Center at www.te.com/customersupport/rohssupportcenter | |
| Resistance to heat and fire | |
| WG version or Reflow version | according EN60335, par30 |
| Ambient temperature | |
| DC coil | -40 to 85°C |
| AC coil | -40 to 70°C |
| Category of environmental protection, IEC 61810 | |
| standard version | RTII - flux proof, RTIII - wash tight |
| reflow version | RTII - flux proof |
| Vibration resistance (functional) | |
| form A/form B contact, 30 to 500Hz | 20g/5g |
| Shock resistance (destructive) | 100g |

| Other Data (continued) | |
|---|---|
| Terminal type | |
| standard version | PCB-THT, plug-in |
| reflow version | PCB-THR |
| Mounting distance | AC coil: ≥2.5mm |
| Weight | 14g |
| Resistance to soldering heat | THT, IEC 60068-2-20 |
| RTII | 270°C/10s |
| RTIII | 260°C/5s |
| Resistance to soldering heat | THR |
| reflow soldering (for reflow version) | forced gas convection [4] or vapour phase [5] |
| temperature profile | according EN61730 |
| Packaging/unit | tube/20 pcs., box/500 pcs. |

4) infrared heating not allowed
5) recommended fluid LS/230

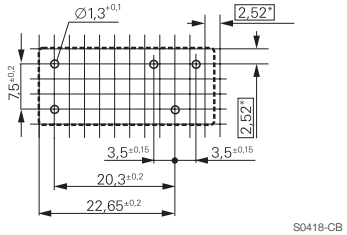
| Accessories | |
|---|---|
| For details see datasheet | Accessories Industrial Power Relay RT |

NOTE: indicated contact ratings and electrical endurance data for direct wiring of relays (according IEC 61810-1); for relays mounted on sockets deratings may apply.

**PCB layout / terminal assignment**
Bottom view on solder pins

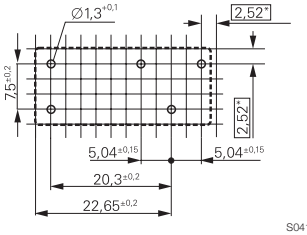
*) With the recommended PCB hole sizes a grid pattern from 2.5mm to 2.54mm can be used.

12A, pinning 3.5mm



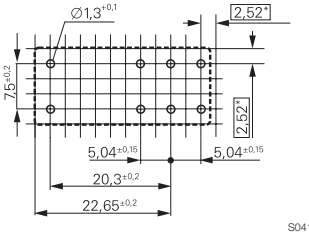
S0418-CB

12A, pinning 5mm



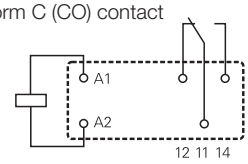
S0418-CN

16A, pinning 5mm



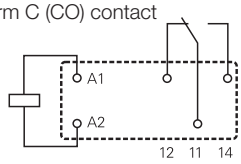
S0418-CA

1 form C (CO) contact



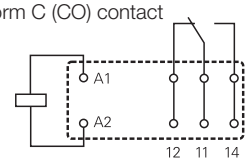
S0163-BG

1 form C (CO) contact



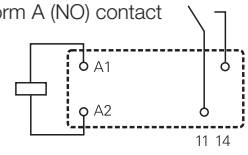
S0163-BC

1 form C (CO) contact



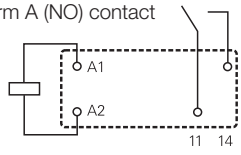
S0163-BE

1 form A (NO) contact



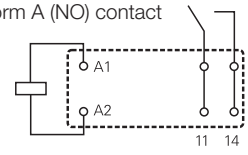
S0163-BH

1 form A (NO) contact



S0163-BD

1 form A (NO) contact



S0163-BF



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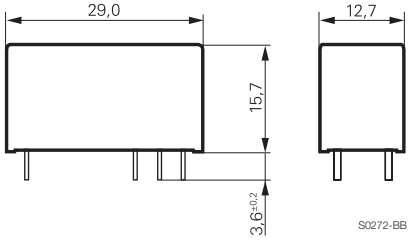
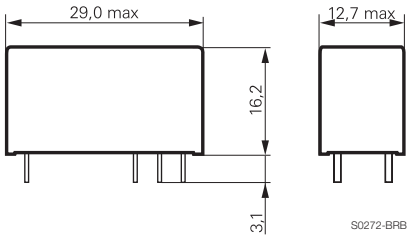
## Power PCB Relay RT1 (Continued)

**Dimensions**

THT version

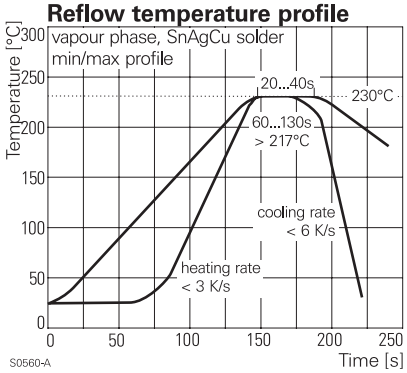



THR version (reflow solderable)

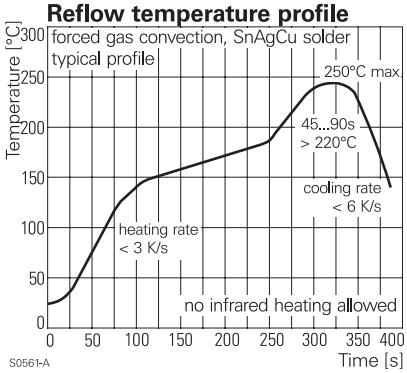



**Process conditions for Reflow soldering**
according to EN61760-1

**Reflow temperature profile**




**Reflow temperature profile**




**Product code structure** — Typical product code: **RT 3 1 4 024**

**Type**
- **RT** Power PCB Relay RT1

**Version**
- **1** 12A, pinning 3.5mm, flux proof
- **2** 12A, pinning 5mm, flux proof *)
- **3** 16A, pinning 5mm, flux proof
- **B** 12A, pinning 3.5mm, wash tight
- **D** 16A, pinning 5mm, wash tight

**Contact arrangement**
- **1** 1 form C (CO) contact
- **3** 1 form A (NO) contact

**Contact material**
- **4** AgNi 90/10
- **5** AgNi 90/10 gold plated (for type RT31.)

**Coil**
Coil code: please refer to coil versions table

**Version**
- **Blank** Standard version
- **WG** Product in accordance with IEC 60335-1 (domestic appliances)
- **R** Reflow solderable

*) Wash tight version on request



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## Power PCB Relay RT1 (Continued)

| Product code | Version | Contacts | Contact material | Coil | Version | Part number |
|---|---|---|---|---|---|---|
| RT114009 | 12A, pinning 3.5mm, | 1 form C (CO) | AgNi 90/10 | 9VDC | Standard | 1393239-9 |
| RT114012 | flux proof | contact | | 12VDC | | 1419108-1 |
| RT114012WG | | | | | IEC60335-1 compliant | 7-1415538-6 |
| RT114024 | | | | 24VDC | Standard | 1-1393239-3 |
| RT114024WG | | | | | IEC60335-1 compliant | 1415539-4 |
| RT114730 | | | | 230VAC | Standard | 1-1393239-9 |
| RT115024 | | | AgNi 90/10 gold pl. | 24VDC | | 2-1393239-1 |
| RT134012 | | 1 form A (NO) | AgNi 90/10 | 12VDC | | 2-1393239-6 |
| RT134024 | | contact | | 24VDC | | 3-1393239-0 |
| RT214012 | 12A, pinning 5mm, | 1 form C (CO) | | 12VDC | | 5-1393239-4 |
| RT214024 | flux proof | contact | | 24VDC | | 5-1393239-5 |
| RT214524 | | | | 24VAC | | 5-1393239-9 |
| RT214730 | | | | 230VAC | | 1419108-6 |
| RT314005 | 16A, pinning 5mm, | | | 5VDC | | 9-1393239-1 |
| RT314006 | flux proof | | | 6VDC | | 9-1393239-3 |
| RT314012 | | | | 12VDC | | 9-1393239-5 |
| RT314012WG | | | | | IEC60335-1 compliant | 8-1415535-6 |
| RT314024 | | | | 24VDC | Standard | 9-1393239-8 |
| RT314024WG | | | | | IEC60335-1 compliant | 1415538-7 |
| RT314048 | | | | 48VDC | Standard | 1393240-1 |
| RT314730 | | | | 230VAC | | 1393240-7 |
| RT315024 | | | AgNi 90/10 gold pl. | 24VDC | | 1-1393240-4 |
| RT334009WG | | 1 form A (NO) | AgNi 90/10 | 9VDC | IEC60335-1 compliant | 3-1415538-1 |
| RT334012 | | contact | | 12VDC | Standard | 4-1393240-5 |
| RT334012WG | | | | | IEC60335-1 compliant | 1-1415527-1 |
| RT334024 | | | | 24VDC | Standard | 4-1393240-8 |
| RT334048 | | | | 48VDC | | 5-1393240-0 |
| RTB14005 | 12A, pinning 3.5mm, | 1 form C (CO) | | 5VDC | | 1-1393238-2 |
| RTB14012 | wash tight | contact | | 12VDC | | 1-1393238-5 |
| RTB14024 | | | | 24VDC | | 1-1393238-9 |
| RTB14524 | | | | 24VAC | | 2-1393238-4 |
| RTD14005 | 16A, pinning 5mm, | | | 5VDC | | 5-1393238-9 |
| RTD14012 | wash tight | | | 12VDC | | 6-1393238-2 |
| RTD14024 | | | | 24VDC | | 6-1393238-8 |
| RTD14048 | | | | 48VAC | | 6-1393238-9 |
| RTD34012 | | 1 form A (NO) | | 12VDC | | 3-1419108-5 |
| RTD34024 | | contact | | 24VDC | | 3-1419108-8 |

This list represents the most common types and does not show all variants covered by this datasheet.
Other types on request



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