

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 Cert. No. 40007571, cULus E214025, cCSAus 1142018;
CQC 18002197247

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

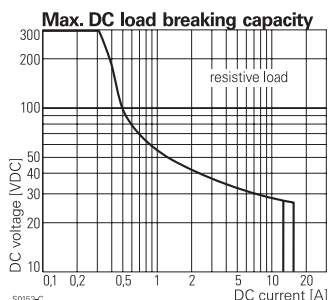
| Type | Contact | Load | Cycles |
|------------------|---------|---------------------------|---------------------|
| IEC 61810 | | | |
| RT314 DC-coil | A (NO) | 16A, 250VAC, cosφ=1, 85°C | 30x10 ³ |
| RT314 DC-coil | C (CO) | 16A, 250VAC, cosφ=1, 85°C | 10x10 ³ |
| RT314 DC-coil | A (NO) | 10A, 400VAC, 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 |

EN60947-4-1

| | | | |
|-------|--------|---------------|-------|
| RT314 | A (NO) | 250V/2A, AC-3 | 6.050 |
|-------|--------|---------------|-------|



EN60947-5-1

| | | | |
|---------------|-------------|-----------------|-------|
| RT314 DC-coil | A/B (NO/NC) | 2A, 24VDC, DC13 | 6.050 |
| RT314 | A (NO) | 250/3A, AC-15 | 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.

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 |
| 018 | 18 | 12.6 | 1.8 | 770 | 420 |
| 020 | 20 | 14.0 | 2.0 | 952 | 420 |
| 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.

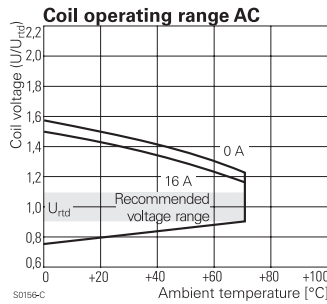
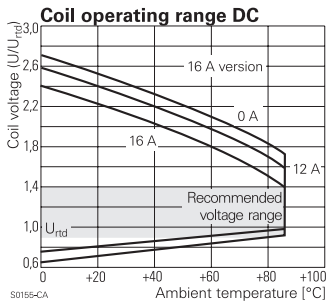
Coil versions, AC coil 50/60 Hz

| 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 |
| 548 | 48 | 36.0 | 7.2 | 1420 | 0.74 |
| 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.

Power PCB Relay RT1 (Continued)



Other coil voltages on request.

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 RT1](#)
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

12A, pinning 3.5mm



S0418-CB

12A, pinning 5mm



S0418-CN

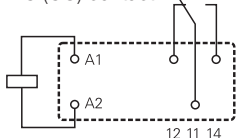
16A, pinning 5mm



S0418-CA

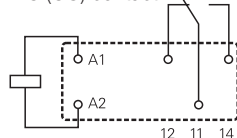
*) With the recommended PCB hole sizes a grid pattern from 2.5mm to 2.54mm can be used.

1 form C (CO) contact



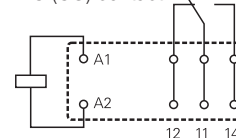
S0163-BG

1 form C (CO) contact



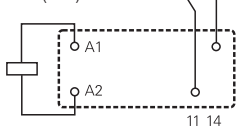
S0163-BC

1 form C (CO) contact



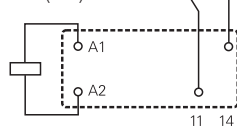
S0163-BE

1 form A (NO) contact



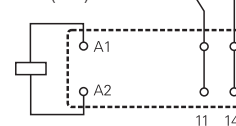
S0163-BH

1 form A (NO) contact



S0163-BD

1 form A (NO) contact



S0163-BF

Power PCB Relay RT1 (Continued)

Dimensions



Process conditions for Reflow soldering
according to EN61760-1



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
- C** 12A, pinning 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

Power PCB Relay RT1 (Continued)

| Product code | Version | Contacts | Contact material | Coil | Version | Part number |
|--------------|----------------------|---------------|---------------------|--------|----------------------|-------------|
| RT114009 | 12A, | 1 form C (CO) | AgNi 90/10 | 9VDC | Standard | 1393239-9 |
| RT114012 | pinning 3.5mm, | 1 form C (CO) | | 12VDC | | 1419108-1 |
| RT114012WVG | flux proof | 1 form C (CO) | | 12VDC | IEC60335-1 compliant | 7-1415538-6 |
| RT114024 | | 1 form C (CO) | | 24VDC | Standard | 1-1393239-3 |
| RT114024WVG | | 1 form C (CO) | | 24VDC | IEC60335-1 compliant | 1415539-4 |
| RT114730 | | 1 form C (CO) | | 230VAC | Standard | 1-1393239-9 |
| RT115024 | | 1 form C (CO) | AgNi 90/10 gold pl. | 24VDC | | 2-1393239-1 |
| RT134012 | | 1 form A (NO) | AgNi 90/10 | 12VDC | | 2-1393239-6 |
| RT134024 | | 1 form A (NO) | | 24VDC | | 3-1393239-0 |
| RT214012 | 12A, | 1 form C (CO) | | 12VDC | | 5-1393239-4 |
| RT214024 | pinning 5mm, | 1 form C (CO) | | 24VDC | | 5-1393239-5 |
| RT214524 | flux proof | 1 form C (CO) | | 24VAC | | 5-1393239-9 |
| RT214730 | | 1 form C (CO) | | 230VAC | | 1419108-6 |
| RT314005 | 16A, | 1 form C (CO) | | 5VDC | | 9-1393239-1 |
| RT314006 | pinning 5mm, | 1 form C (CO) | | 6VDC | | 9-1393239-3 |
| RT314009 | flux proof | 1 form C (CO) | | 9VDC | | 9-1393239-4 |
| RT314012 | | 1 form C (CO) | | 12VDC | | 9-1393239-5 |
| RT314012R | | 1 form C (CO) | | 12VDC | Reflow solderable | 4-1415543-6 |
| RT314012WVG | | 1 form C (CO) | | 12VDC | IEC60335-1 compliant | 8-1415535-6 |
| RT314018 | | 1 form C (CO) | | 18VDC | Standard | 9-1393239-7 |
| RT314024 | | 1 form C (CO) | | 24VDC | | 9-1393239-8 |
| RT314024WVG | | 1 form C (CO) | | 24VDC | IEC60335-1 compliant | 1415538-7 |
| RT314048 | | 1 form C (CO) | | 48VDC | Standard | 1393240-1 |
| RT314060 | | 1 form C (CO) | | 60VDC | | 1-1649328-7 |
| RT314110 | | 1 form C (CO) | | 110VDC | | 1393240-3 |
| RT314524 | | 1 form C (CO) | | 24VAC | | 1393240-4 |
| RT314548 | | 1 form C (CO) | | 48VAC | | 1393240-5 |
| RT314615 | | 1 form C (CO) | | 115VAC | | 1393240-6 |
| RT314730 | | 1 form C (CO) | | 230VAC | | 1393240-7 |
| RT314730WVG | | 1 form C (CO) | | 230VAC | IEC60335-1 compliant | 4-1415538-0 |
| RT315024 | | 1 form C (CO) | AgNi 90/10 gold pl. | 24VDC | Standard | 1-1393240-4 |
| RT334009WVG | | 1 form A (NO) | AgNi 90/10 | 9VDC | IEC60335-1 compliant | 3-1415538-1 |
| RT334012 | | 1 form A (NO) | | 12VDC | Standard | 4-1393240-5 |
| RT334012WVG | | 1 form A (NO) | | 12VDC | IEC60335-1 compliant | 1-1415527-1 |
| RT334024 | | 1 form A (NO) | | 24VDC | Standard | 4-1393240-8 |
| RT334048 | | 1 form A (NO) | | 48VDC | | 5-1393240-0 |
| RTB14005 | 12A, | 1 form C (CO) | | 5VDC | | 1-1393238-2 |
| RTB14012 | pinning 3.5mm, | 1 form C (CO) | | 12VDC | | 1-1393238-5 |
| RTB14024 | wash tight | 1 form C (CO) | | 24VDC | | 1-1393238-9 |
| RTB14524 | | 1 form C (CO) | | 24VAC | | 2-1393238-4 |
| RTB34012 | | 1 form A (NO) | | 12VDC | | 3-1393238-0 |
| RTC14024 | 12A, 5mm, wash tight | 1 form C (CO) | | 24VDC | | 5-1393238-0 |
| RTD14005 | 16A, | 1 form C (CO) | | 5VDC | | 5-1393238-9 |
| RTD14012 | pinning 5mm, | 1 form C (CO) | | 12VDC | | 6-1393238-2 |
| RTD14024 | wash tight | 1 form C (CO) | | 24VDC | | 6-1393238-8 |
| RTD14048 | | 1 form C (CO) | | 48VDC | | 6-1393238-9 |

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