

**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<br>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 <sup>-1</sup>                     |              |
| AC coil   | 360/36000h <sup>-1</sup>                     |              |
| 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 <sup>1)</sup> |              |

**Contact ratings**

| Type             | Contact | Load                      | Cycles              |
|------------------|---------|---------------------------|---------------------|
| <b>IEC 61810</b> |         |                           |                     |
| RT314 DC-coil    | A (NO)  | 16A, 250VAC, cosφ=1, 85°C | 30x10 <sup>3</sup>  |
| RT314 DC-coil    | C (CO)  | 16A, 250VAC, cosφ=1, 85°C | 10x10 <sup>3</sup>  |
| RT314 DC-coil    | A (NO)  | 10A, 400VAC, cosφ=1, 85°C | 150x10 <sup>3</sup> |
| RT114 DC-coil    | A (NO)  | 12A, 250VAC, cosφ=1, 85°C | 50x10 <sup>3</sup>  |
| RT114 AC-coil    | A (NO)  | 12A, 250VAC, cosφ=1, 70°C | 100x10 <sup>3</sup> |

**UL 508**

|       |             |                                    |                     |
|-------|-------------|------------------------------------|---------------------|
| RT314 | A/B (NO/NC) | 20A, 250VAC, general purpose, 85°C | 6x10 <sup>3</sup>   |
| RT334 | A (NO)      | 16A, 250VAC, gen. purpose, 85°C    | 50x10 <sup>3</sup>  |
| RT314 | A (NO)      | 1hp, 240VAC, 40°C                  | 1x10 <sup>3</sup>   |
| RT314 | A (NO)      | FLA/LRA, 4.5/13.1A, 480VAC, 70°C   | 100x10 <sup>3</sup> |

**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 <sup>3</sup> |
|---------------|--------|----------------------|---------------------|

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

**Contact Data (continued)**

|                         |                                |
|-------------------------|--------------------------------|
| Mechanical endurance    |                                |
| DC coil                 | >30x10 <sup>6</sup> operations |
| AC coil                 | >10x10 <sup>6</sup> operations |
| AC coil, reflow version | >5x10 <sup>6</sup> 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% <sup>2)</sup> | 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 <sup>2)</sup>                  | 420                 |
| 110       | 110               | 77.0                | 11.0                | 28800 <sup>2)</sup>                 | 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% <sup>3)</sup> | Rated coil power VA |
|-----------|-------------------|---------------------|---------------------|-------------------------------------|---------------------|
| 524       | 24                | 18.0                | 3.6                 | 350 <sup>3)</sup>                   | 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 <sub>rms</sub> |
| between contact and coil           | 5000V <sub>rms</sub> |
| 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](http://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 <sup>4)</sup> or vapour phase <sup>5)</sup> |
| 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



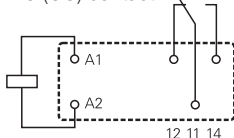
S0418-CN

16A, pinning 5mm



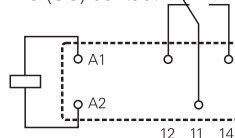
S0418-CA

1 form C (CO) contact



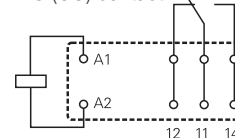
S0163-BG

1 form C (CO) contact



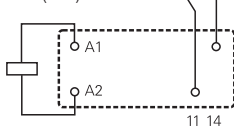
S0163-BC

1 form C (CO) contact



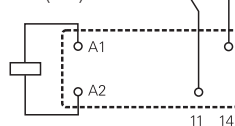
S0163-BE

1 form A (NO) contact



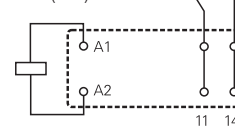
S0163-BH

1 form A (NO) contact



S0163-BD

1 form A (NO) contact



S0163-BF

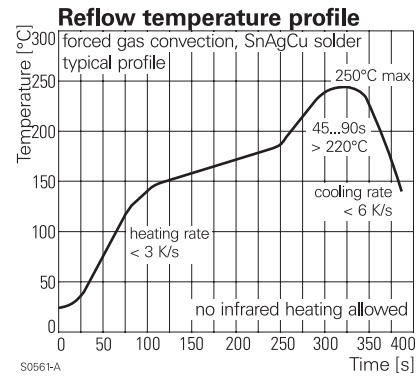
\*) With the recommended PCB hole sizes a grid pattern from 2.5mm to 2.54mm can be used.

**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.  
Other types on request

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