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

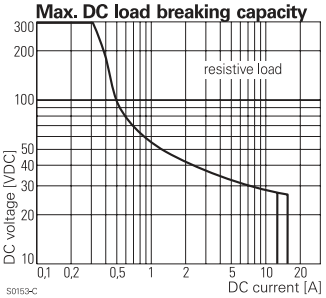
VDE Cert. No. 40007571, cULus E214025, cCSAus 1142018
CQC 20002275223 (China production), CQC 08001027262 (China production), CQC 18002197247 (monostable)
Technical data of approved types on request

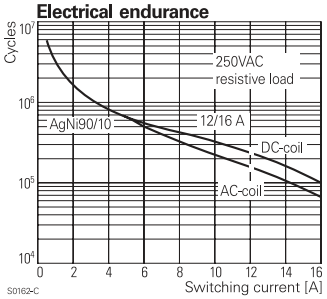
Contact Data

	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 61810-1 (former 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





Contact Data (continued)

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.

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.
Other coil voltages on request.

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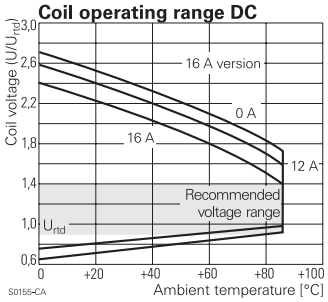
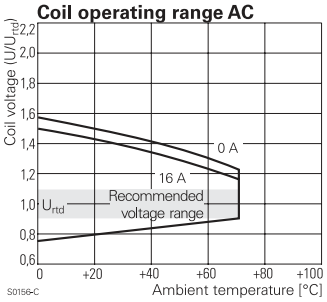
Coil operating range DC



Coil operating range AC



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

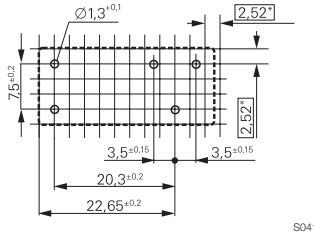
For details see datasheet	Accessories Industrial Power Relay RT

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.

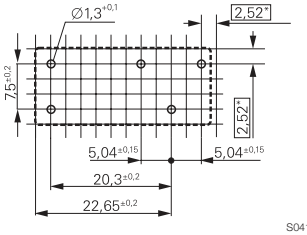
PCB layout / terminal assignment
Bottom view on solder pins

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

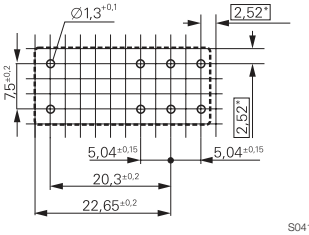
12A, pinning 3.5mm



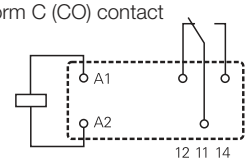
12A, pinning 5mm



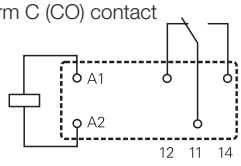
16A, pinning 5mm



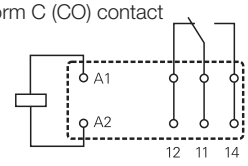
1 form C (CO) contact



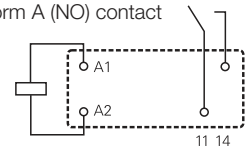
1 form C (CO) contact



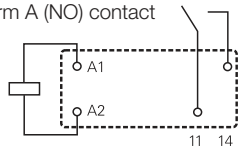
1 form C (CO) contact



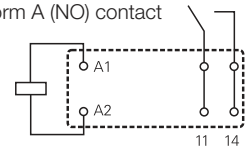
1 form A (NO) contact



1 form A (NO) contact



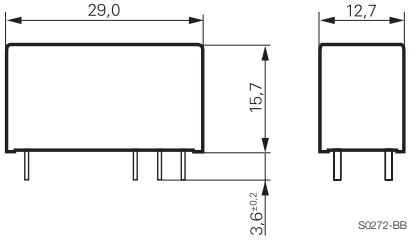
1 form A (NO) contact



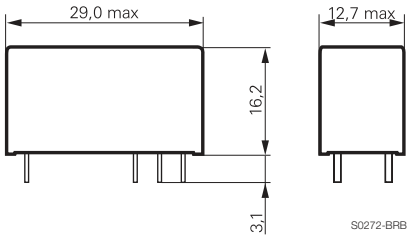
Power PCB Relay RT1 (Continued)

Dimensions

THT version

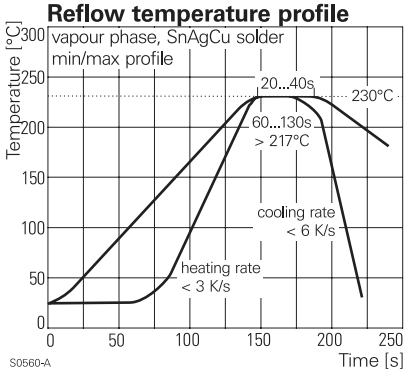


THR version (reflow solderable)

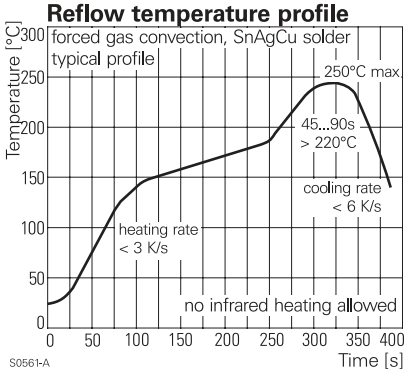


Process conditions for Reflow soldering
according to EN61760-1

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 (not for Reflow version)
- **C** 12A, pinning 5mm, wash tight (not for Reflow version)
- **D** 16A, pinning 5mm, wash tight (not for Reflow version)

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	
						Austria	China
RT114009	12A, pinning 3.5mm, flux proof	1 form C (CO) contact	AgNi 90/10	9VDC	Standard	1393239-9	1-1649326-2
RT114012				12VDC		1419108-1	1-1649326-3
RT114012WG				12VDC	IEC60335-1 compliant	7-1415538-6	
RT114024				24VDC	Standard	1-1393239-3	1-1649326-5
RT114024WG				24VDC	IEC60335-1 compliant	1415539-4	
RT114730				230VAC	Standard	1-1393239-9	
RT115024			AgNi 90/10 gold pl.	24VDC		2-1393239-1	3-1833000-9
RT134012		1 form A (NO) contact	AgNi 90/10	12VDC		2-1393239-6	3-1649326-1
RT134024				24VDC		3-1393239-0	3-1649326-3
RT214012	12A, pinning 5mm, flux proof	1 form C (CO) contact		12VDC		5-1393239-4	1-1649327-3
RT214024				24VDC		5-1393239-5	1-1649327-5
RT214524				24VAC		5-1393239-9	
RT214730				230VAC		1419108-6	
RT314005	16A, pinning 5mm, flux proof			5VDC		9-1393239-1	1-1649328-0
RT314006				6VDC		9-1393239-3	1-1649328-1
RT314009				9VDC		9-1393239-4	
RT314012				12VDC		9-1393239-5	1-1649328-3
RT314012R				12VDC	Reflow solderable	4-1415543-6	
RT314012WG				12VDC	IEC60335-1 compliant	8-1415535-6	5-1833002-0
RT314018				18VDC	Standard	9-1393239-7	1-1649328-4
RT314024				24VDC		9-1393239-8	1-1649328-5
RT314024WG				24VDC	IEC60335-1 compliant	1415538-7	5-1833002-1
RT314048				48VDC	Standard	1393240-1	1-1649328-6
RT314060				60VDC		1-1649328-7	1-1649328-7
RT314110				110VDC		1393240-3	
RT314524				24VAC		1393240-4	
RT314548				48VAC		1393240-5	
RT314615				115VAC		1393240-6	
RT314730				230VAC		1393240-7	
RT314730WG				230VAC	IEC60335-1 compliant	4-1415538-0	
RT315024			AgNi 90/10 gold pl.	24VDC	Standard	1-1393240-4	3-1833002-7
RT334009WG		1 form A (NO) contact	AgNi 90/10	9VDC	IEC60335-1 compliant	3-1415538-1	
RT334012				12VDC	Standard	4-1393240-5	3-1649328-1
RT334012WG				12VDC	IEC60335-1 compliant	1-1415527-1	5-1833002-2
RT334024				24VDC	Standard	4-1393240-8	3-1649328-3
RT334048				48VDC		5-1393240-0	3-1649328-4
RTB14005	12A, pinning 3.5mm, wash tight	1 form C (CO) contact		5VDC		1-1393238-2	1649326-1
RTB14012				12VDC		1-1393238-5	1649326-4
RTB14024				24VDC		1-1393238-9	1649326-6
RTB14524				24VAC		2-1393238-4	
RTB34012		1 form A (NO)		12VDC		3-1393238-0	2-1649326-2
RTC14024	12A, 5mm, wash	1 form C (CO) contact		24VDC		5-1393238-0	1649327-6
RTD14005	16A, pinning 5mm, wash tight			5VDC		5-1393238-9	1649328-1
RTD14012				12VDC		6-1393238-2	1649328-4
RTD14024				24VDC		6-1393238-8	1649328-6
RTD14048				48VDC		6-1393238-9	1649328-7
RT114048	12A, pinning 3.5mm, flux proof			48VDC			1-1649326-6
RT214005	12A, pinning 5mm, flux proof			5VDC			1-1649327-0
RT234012				12VDC			1-1649327-3
RT234024	12A, pinning 3.5mm, wash tight			24VDC	IEC 60335-1 compliant		1-1649327-5
RTB14048				48VDC	standard		1649326-7
RTB34005	16A, pinning 5mm, wash tight			5VDC			1-1649326-9
RTD14060				60VDC			1649328-8
RTD34012		1 form A (NO) contact		12VDC			2-1649328-2
RTD34024WG				24VDC			3-1649328-7
RTD34015				15VDC			4-1833002-0
RTD34024				24VDC			2-1649328-4

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