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

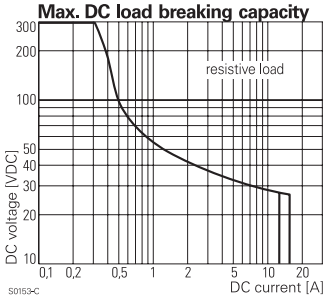
	12A	16A
Contact arrangement	1 form C (CO) or 1 form A (NO)	
Rated voltage	250VAC	
Max. switching voltage	400VAC	
Rated current	12A	16A
Limiting continuous current	12A	16A, UL: 20A
Limiting making current max. 4s, duty factor 10%	25A	30A
Breaking capacity max.	3000VA	4000VA
Contact material	AgNi 90/10, 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

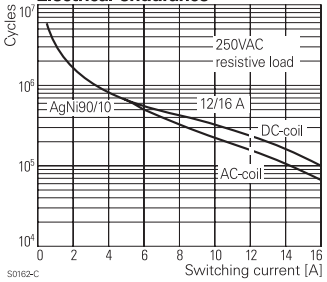
Type	Contact	Load	Cycles
IEC 61810			
RT314 DC-coil	A (NO)	16A, 250VAC, cosφ=1, 85°C	30x10^3
RT314 DC-coil	C (CO)	16A, 250VAC, cosφ=1, 85°C	10x10^3
RT314 DC-coil	A (NO)	10A, 400VAC, cosφ=1, 85°C	150x10^3
RT114 DC-coil	A (NO)	12A, 250VAC, cosφ=1, 85°C	50x10^3
RT114 AC-coil	A (NO)	12A, 250VAC, cosφ=1, 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

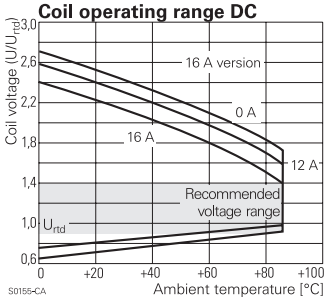
2) Coil resistance ±12%.
All figures are given for coil without pre-energization, at ambient temperature +23°C.
Other coil voltages on request.

Coil versions, AC coil 50/60 Hz

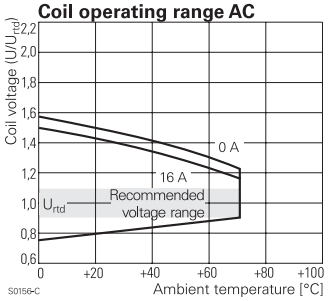
Coil code	Rated voltage VAC	Operate voltage VAC	Release voltage VAC	Coil resistance Ω±15%[3)]	Rated coil power VA
524	24	18.0	3.6	350[3)]	0.76
615	115	86.3	17.3	8100	0.76
620	120	90.0	18.0	8800	0.75
700	200	150.0	30.0	24350	0.76
730	230	172.5	34.5	32500	0.74

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

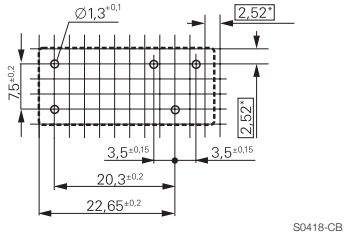
Accessories	
For details see datasheet	Accessories Industrial Power Relay RT

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

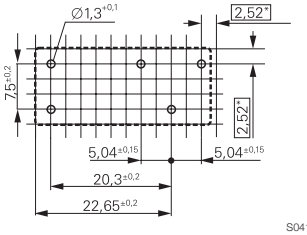
*) With the recommended PCB hole sizes a grid pattern from 2.5mm to 2.54mm can be used.

12A, pinning 3.5mm



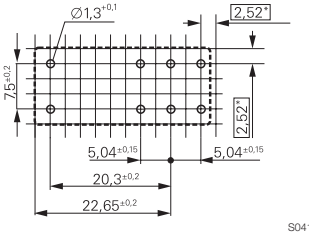
S0418-CB

12A, pinning 5mm



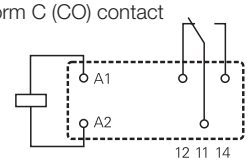
S0418-CN

16A, pinning 5mm



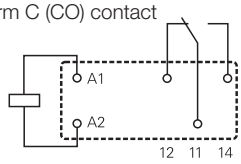
S0418-CA

1 form C (CO) contact



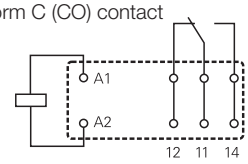
S0163-BG

1 form C (CO) contact



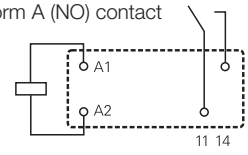
S0163-BC

1 form C (CO) contact



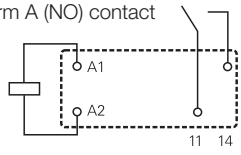
S0163-BE

1 form A (NO) contact



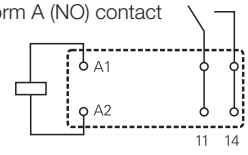
S0163-BH

1 form A (NO) contact



S0163-BD

1 form A (NO) contact



S0163-BF

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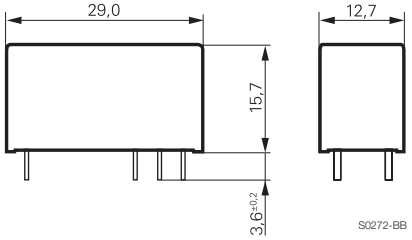
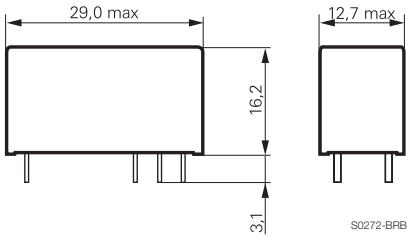
Power PCB Relay RT1 (Continued)

Dimensions

THT version

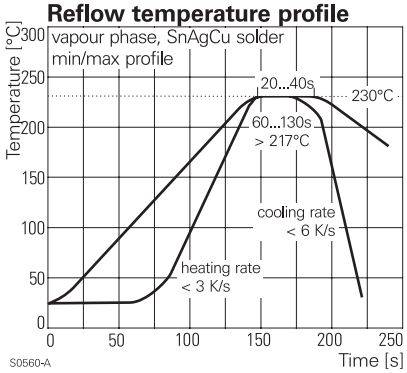


THR version (reflow solderable)

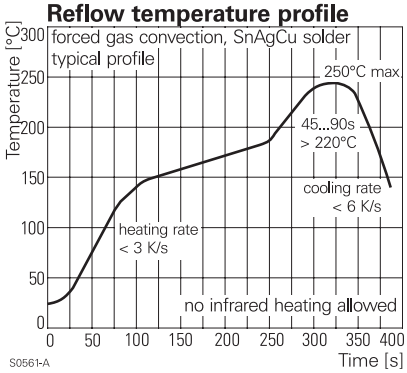


Process conditions for Reflow soldering
according to EN61760-1

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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