

WangRong Group

Automotive Relay



■ About WangRong

WangRong Group (WRG), established in 2000 as Shajing Branch of OEG in Shenzhen, has developed its business scope from original precise relays to all kind of industrial components. Its products are certified to UL/cULus, VDE, TUV, CQC and in accordance with RoHS directive.

WRG has established two manufacturing centers in Shenzhen and Huangshan, which are all in accordance with ISO 9001, ISO 14001 and TS 16949. WRG has equipped with advanced Test lab for UL 60947 tests.

WRG strong production capacity guarantees high quality and fast delivery. With more than 20 years of experience in introducing, studying

and practicing international advanced materials, processing and management knowledge, WRG has developed its deep knowledge and expertise in R&D, tooling, injection, stamping, assembling, testing and auto production. WRG strives to provide reliable solutions for its industrial customers. WRG is continuously developing its marketing and sales network. Besides in Mainland, WRG has also established subsidiaries and offices in HongKong, Japan, Italy, USA and Korea. WRG dedicates to provide pre-sales service and after sales service timely and closely.



■ Focus on Quality and Innovation

Quality and innovation is essential to our company. By introducing advanced international technology and management, WRG has built state of art manufacture center and become one of the most trusted partners for its customers.

Huangshan Manufacturing Center

Staff: about 500

Area: 80,000 m²

Production Capacity: 700 M pieces/year

Shenzhen Manufacturing Center

Staff: about 350

Area: 18,000 m²

Production Capacity: 110 M pieces/year



Huangshan Manufacturing Center



Shenzhen Manufacturing Center



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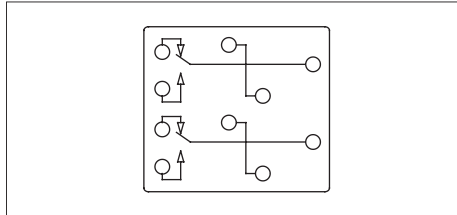
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RAT2-Z Automotive relay Available in 2020

- Super miniature PCB, twin type
- Compact and high-capacity 25 A load switching
- 2 single, independent relays in 1 case



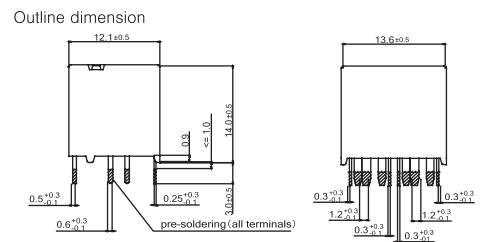
RAT2-Z



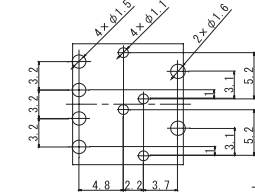
Technical parameters

Coil data		12 V
Rated voltage		2: 109 mA, 3: 75 mA, 4: 54.5 mA
Rated current		2: 1309 mW, 3: 900 mW, 4: 655 mW
Operating power		2: 5.5 V DC, 3: 6.5 V DC, 4: 7.7 V DC
Response voltage		2: 0.6 V DC, 3: 0.8 V DC, 4: 0.8 V DC
Drop out voltage		2: 110 Ω ±10%, 3: 160 Ω ±10%, 4: 220 Ω ±10%
Coil resistance		10 ~ 16 V DC
Usable voltage range		Max. 10 ms
Operating time		Max. 10 ms
Release time		
Contact data		1C × 2 (2 independent circuits)
Contact configuration		Ag alloy
Contact material		N.O.: 20 A 14 V DC, N.C.: 10 A 14 V DC
Nominal switching capacity		25 A for 2 min (12 V DC, 20 °C)
Max. carrying current ^{※1}		1 A 14 V DC (20 °C)
Min. load ^{※2}		14 V DC
Rated contact voltage		N.O.: Typ. 4 mΩ, N.C.: Typ. 5 mΩ (DC 6 V 1 A)
Contact resistance		Min. 1,000,000 ops. (at 120 cpm)
Mechanical life		Resistive load: Min. 100,000 ops. (at nominal switching capacity, operating frequency: 1s ON, 9s OFF)
Electrical life ^{※3}		Motor load: Min. 100,000 ops. (25 A 14 V DC at motor lock condition, operating frequency: 0.5s ON, 9.5s OFF)
General data		
Rated withstand voltage	Between contacts	500 Vrms for 1 min (Detection current: 10 mA)
	Coil / Contact	500 Vrms for 1 min (Detection current: 10 mA)
Insulation resistance		Min. 100 MΩ (500 V DC, Measurement at same location as "Rated withstand voltage" section)
Vibration		Functional test: 10 ~ 100 Hz, Min. 44.1 m/s ² {4.5G} (Detection time: 10 μs) Destructive test: 10 ~ 500 Hz, Min. 44.1 m/s ² {4.5G} (Detection time: X, Y direction 2 hours, Z direction 4 hours)
Shock		Functional test: Min. 100 m/s ² {10G} (Half-wave pulse of sine wave: 11 ms, detection time: 10 μs) Destructive test: Min. 1,000 m/s ² {100G} (Half-wave pulse of sine wave: 6 ms)
Ambient temperature (Operation) ^{※4}		Standard type: -40~85 °C, High heat-resistant / Pin in Paste type: -40~110 °C
Operating humidity		Standard type: 5~85%, High heat-resistant / Pin in Paste type: 2~85%
Dimension L×W×H (mm)		13.6×12.1×14.0
Weight (g)		6.5

Drawings



PCB board layout (bottom view)



Tolerance		
<1mm		±0.1mm
1~3mm		±0.2mm
>3mm		±0.3mm

- ※1 Depends on connection conditions. Also, this does not guarantee repeated switching. We recommend that you confirm operation under actual conditions.
- ※2 This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load.
- ※3 Do not use for lamp loads, electric discharge lamp loads, any other lamp loads and capacitor loads. Please contact us for details.
- ※4 The upper operation ambient temperature limit is the maximum temperature that can satisfy the coil temperature rise value.

Type designation

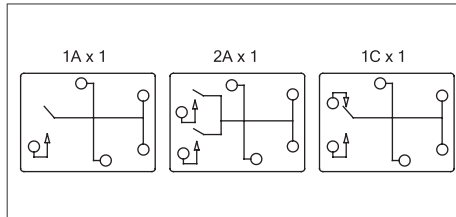
Model designation	Contact arrangement	Contact specification	Heat resistance	Coil resistance
RAT2	-Z	*	H	2
RAT2	C: 1C×2 (8pin) Z: 1C×2 (10pin)	Blank: Standard type	Blank: Standard type H: High heat-resistant type R: Pin in Paste type	2: 110Ω 3: 160Ω 4: 220Ω

RAM1 Automotive relay Coming soon

- Large capacity switching despite small size
- High Load Relay for Smart J/B



RAM1

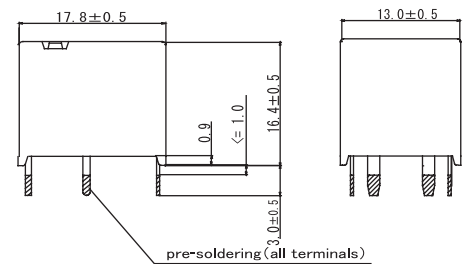


Technical parameters

Coil data	
Rated voltage	12 V
Rated current	2: 109 mA, 3: 75 mA, 4: 53.3 mA
Operating power	2: 1309 mW, 3: 900 mW, 4: 640 mW
Response voltage	2: 6.5 V DC, 3: 7.0 V DC, 4: 7.5 V DC
Drop out voltage	2: 0.5 V DC, 3: 0.5 V DC, 4: 0.5 V DC
Coil resistance	2: 110 Ω ±10%, 3: 160 Ω ±10%, 4: 225 Ω ±10%
Usable voltage range	10 ~ 16 V DC
Operating time	Max. 10 ms
Release time	Max. 10 ms
Contact data	
Contact configuration	1A×1, 2A×1, 1C×1
Contact material	Ag alloy
Nominal switching capacity	N.O.: 30 A 14 V DC, N.C.: 15 A 14 V DC
Max. carrying current ^{※1}	35 A for 1 hour (12 V DC, 20 °C)
Min. load ^{※2}	1 A 14 V DC (20 °C)
Rated contact voltage	14 V DC
Contact resistance	N.O.: Typ. 3 mΩ, N.C.: Typ. 4 mΩ (DC 6 V 1 A)
Mechanical life	Min. 1,000,000 ops. (at 120 cpm)
Electrical life ^{※3}	Resistive load: Min. 100,000 ops. (at nominal switching capacity, operating frequency: 1s ON, 9s OFF) Motor load: Min. 100,000 ops. (30 A 14 V DC at motor lock condition, operating frequency: 0.5s ON, 9.5s OFF) Lamp load: Min. 200,000 ops. (84 A (inrush), 12 A (steady), 14 V DC, operating frequency: 1s ON, 14s OFF)
General data	
Rated withstand voltage	Between contacts: 500 Vrms for 1 min (Detection current: 10 mA) Coil / Contact: 500 Vrms for 1 min (Detection current: 10 mA)
Insulation resistance	Min. 100 MΩ (500 V DC, Measurement at same location as "Rated withstand voltage" section)
Vibration	Functional test: 10 ~ 100 Hz, Min. 44.1 m/s ² {4.5G} (Detection time: 10 μs) Destructive test: 10 ~ 500 Hz, Min. 44.1 m/s ² {4.5G} (Detection time: X, Y direction 2 hours, Z direction 4 hours)
Shock	Functional test: Min. 100 m/s ² {10G} (Half-wave pulse of sine wave: 11 ms, detection time: 10 μs) Destructive test: Min. 1,000 m/s ² {100G} (Half-wave pulse of sine wave: 6 ms)
Ambient temperature (Operation) ^{※4}	Standard type: -40~85 °C , High heat-resistant / Pin in Paste type: -40~110 °C
Operating humidity	Standard type: 5~85%, High heat-resistant / Pin in Paste type: 2~85%
Dimension LxWxH (mm)	17.8x13.0x16.4
Weight (g)	10

Drawings

Outline dimension



- ※1 Depends on connection conditions. Also, this does not guarantee repeated switching. We recommend that you confirm operation under actual conditions.
- ※2 This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load.
- ※3 When using the lamp control type, please inquire our sales representative.
- ※4 The upper operation ambient temperature limit is the maximum temperature that can satisfy the coil temperature rise value.

Type designation

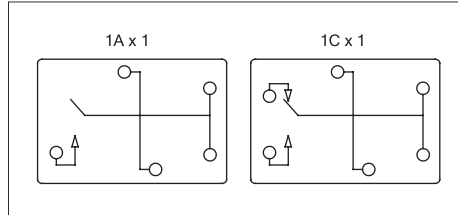
Model designation	Contact arrangement	Contact specification	Heat resistance	Coil resistance
RAM1	-A	*	H	2
RAM1	A: 1A×1 B: 2A×1 C: 1C×1	Blank: Standard type	Blank: Standard type H: High heat-resistant type R: Pin in Paste type	2: 110Ω 3: 160Ω 4: 225Ω

RAS1 Automotive relay Coming soon

- Miniature PCB, 1 Form A/C
- Wide line-up
- Pin in Paste compliant model added



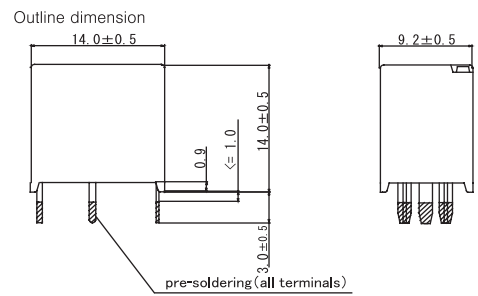
RAS1



Technical parameters

Coil data		12 V
Rated voltage		2: 120 mA, 3: 75 mA, 4: 53.3 mA
Rated current		2: 1440 mW, 3: 900 mW, 4: 640 mW
Operating power		2: 5.5 V DC, 3: 6.5 V DC, 4: 7.7 V DC
Response voltage		2: 0.5 V DC, 3: 0.8 V DC, 4: 0.8 V DC
Drop out voltage		2: 100 Ω ±10%, 3: 160 Ω ±10%, 4: 225 Ω ±10%
Coil resistance		10 ~ 16 V DC
Usable voltage range		Max. 10 ms
Operating time		Max. 10 ms
Release time		
Contact data		1A x 1, 1C x 1
Contact configuration		Ag alloy
Contact material		N.O.: 20 A 14 V DC, N.C.: 10 A 14 V DC
Nominal switching capacity		25 A for 10 min (12 V DC, 20 °C)
Max. carrying current ^{※1}		1 A 14 V DC (20 °C)
Min. load ^{※2}		14 V DC
Rated contact voltage		N.O.: Typ. 3 mΩ, N.C.: Typ. 4 mΩ (DC 6 V 1 A)
Contact resistance		Min. 1,000,000 ops. (at 120 cpm)
Mechanical life		Resistive load: Min. 100,000 ops. (at nominal switching capacity, operating frequency: 1s ON, 9s OFF)
Electrical life ^{※3}		Motor load: Min. 100,000 ops. (25 A 14 V DC at motor lock condition, operating frequency: 0.5s ON, 9.5s OFF)
		Lamp load: Min. 100,000 ops. (56 A (inrush), 8 A (steady), 14 V DC, operating frequency: 1s ON, 14s OFF)
General data		
Rated withstand voltage	Between contacts	500 Vrms for 1 min (Detection current: 10 mA)
	Coil / Contact	500 Vrms for 1 min (Detection current: 10 mA)
Insulation resistance		Min. 100 MΩ (500 V DC, Measurement at same location as "Rated withstand voltage" section)
Vibration		Functional test: 10 ~ 100 Hz, Min. 44.1 m/s ² {4.5G} (Detection time: 10 μs)
		Destructive test: 10 ~ 500 Hz, Min. 44.1 m/s ² {4.5G} (Detection time: X, Y direction 2 hours, Z direction 4 hours)
Shock		Functional test: Min. 100 m/s ² {10G} (Half-wave pulse of sine wave: 11 ms, detection time: 10 μs)
		Destructive test: Min. 1,000 m/s ² {100G} (Half-wave pulse of sine wave: 6 ms)
Ambient temperature (Operation) ^{※4}		Standard type: -40~85 °C , High heat-resistant / Pin in Paste type: -40~110 °C
Operating humidity		Standard type: 5~85%, High heat-resistant / Pin in Paste type: 2~85%
Dimension LxWxH (mm)		14.0x9.2x14.0
Weight (g)		5

Drawings



- ※1 Depends on connection conditions. Also, this does not guarantee repeated switching. We recommend that you confirm operation under actual conditions.
- ※2 This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load.
- ※3 When using the lamp control type, please inquire our sales representative.
- ※4 The upper operation ambient temperature limit is the maximum temperature that can satisfy the coil temperature rise value.

Type designation

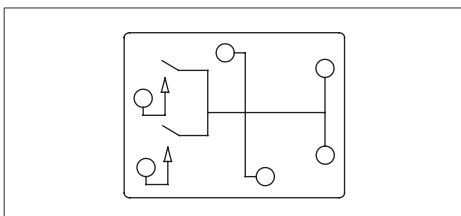
Model designation	Contact arrangement	Contact specification	Heat resistance	Coil resistance
RAS1	-A	*	H	2
RAS1	A: 1A×1 C: 1C×1	Blank: Standard type L: Lamp control type	Blank: Standard type H: High heat-resistant type R: Pin in Paste type	2: 100Ω 3: 160Ω 4: 225Ω

RAW1 Automotive relay Coming soon

- Max. carrying current 60A
- 1 from U type



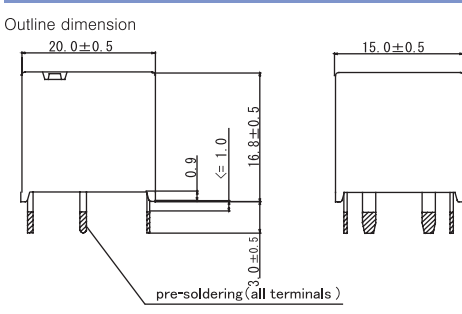
RAW1



Technical parameters

Coil data	
Rated voltage	12 V
Rated current	3: 75 mA, 4: 53.3 mA, 5: 37.5 mA
Operating power	3: 900 mW, 4: 640 mW, 5: 450 mW
Response voltage	3: 7.7 V DC, 4: 9.0 V DC, 5: 10.5 V DC
Drop out voltage	3: 0.8 V DC, 4: 0.8 V DC, 5: 0.8 V DC
Coil resistance	3: 160 Ω ±10%, 4: 225 Ω ±10%, 5: 320 Ω ±10%
Usable voltage range	10 ~ 16 V DC
Operating time	Max. 10 ms
Release time	Max. 10 ms
Contact data	
Contact configuration	2A×1 (1 from U)
Contact material	Ag alloy
Nominal switching capacity	60 A 14 V DC
Max. carrying current ^{※1}	60 A for 1 hour (12 V DC, 20 °C)
Min. load ^{※2}	1 A 14 V DC (20 °C)
Rated contact voltage	14 V DC
Contact resistance	Typ. 3 mΩ (DC 6 V 1 A)
Mechanical life	Min. 1,000,000 ops. (at 120 cpm)
Electrical life ^{※3}	Resistive load: Min. 100,000 ops. (at nominal switching capacity, operating frequency: 1s ON, 9s OFF) Motor load: Min. 100,000 ops. (45 A 14 V DC at motor lock condition, operating frequency: 0.5s ON, 9.5s OFF)
General data	
Rated withstand voltage	Between contacts 500 Vrms for 1 min (Detection current: 10 mA) Coil / Contact 500 Vrms for 1 min (Detection current: 10 mA)
Insulation resistance	Min. 100 MΩ (500 V DC, Measurement at same location as "Rated withstand voltage" section)
Vibration	Functional test: 10 ~ 100 Hz, Min. 44.1 m/s ² {4.5G} (Detection time: 10 μs) Destructive test: 10 ~ 500 Hz, Min. 44.1 m/s ² {4.5G} (Detection time: X, Y direction 2 hours, Z direction 4 hours)
Shock	Functional test: Min. 100 m/s ² {10G} (Half-wave pulse of sine wave: 11 ms, detection time: 10 μs) Destructive test: Min. 1,000 m/s ² {100G} (Half-wave pulse of sine wave: 6 ms)
Ambient temperature (Operation) ^{※4}	High heat-resistant / Pin in Paste type: -40~110 °C
Operating humidity	High heat-resistant / Pin in Paste type: 2~85%
Dimension L×W×H (mm)	20.0×15.0×16.8
Weight (g)	13

Drawings



- ※1 Depends on connection conditions. Also, this does not guarantee repeated switching. We recommend that you confirm operation under actual conditions.
- ※2 This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load.
- ※3 When using the lamp control type, please inquire our sales representative.
- ※4 The upper operation ambient temperature limit is the maximum temperature that can satisfy the coil temperature rise value.

Type designation

Model designation	Contact arrangement	Contact specification	Heat resistance	Coil resistance
RAW1	-B	*	H	3
RAW1	B: 2A×1	Blank: Standard type	H: High heat-resistant type R: Pin in Paste type	3: 160Ω 4: 225Ω 5: 320Ω

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