WRG
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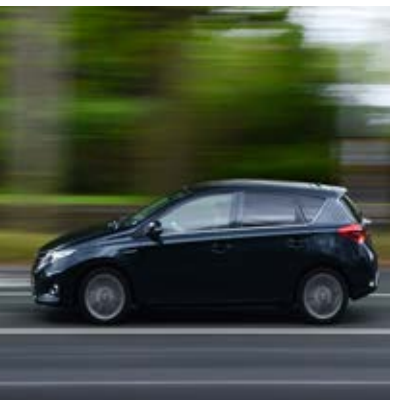
POWER GmbH

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.

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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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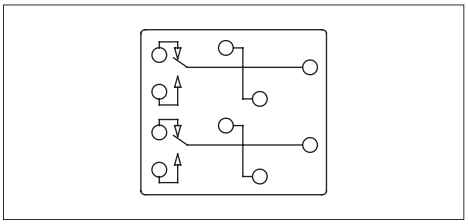
RAT2-Z Automotive relay Available in 2020

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

RAT2-Z

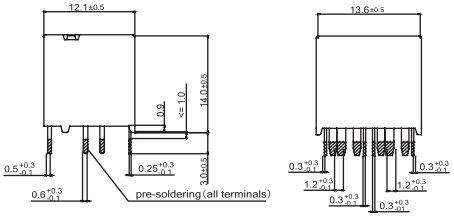


Technical parameters

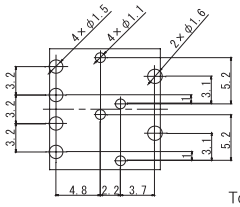
Coil data		
Rated voltage		12 V
Rated current		2: 109 mA, 3: 75 mA, 4: 54.5 mA
Operating power		2: 1309 mW, 3: 900 mW, 4: 655 mW
Response voltage		2: 5.5 V DC, 3: 6.5 V DC, 4: 7.7 V DC
Drop out voltage		2: 0.6 V DC, 3: 0.8 V DC, 4: 0.8 V DC
Coil resistance		2: 110 Ω ±10%, 3: 160 Ω ±10%, 4: 220 Ω ±10%
Usable voltage range		10 ~ 16 V DC
Operating time		Max. 10 ms
Release time		Max. 10 ms
Contact data		
Contact configuration		1C × 2 (2 independent circuits)
Contact material		Ag alloy
Nominal switching capacity		N.O.: 20 A 14 V DC, N.C.: 10 A 14 V DC
Max. carrying current ※1		25 A for 2 min (12 V DC, 20 ℃)
Min. load ※2		1 A 14 V DC (20 ℃)
Rated contact voltage		14 V DC
Contact resistance		N.O.: Typ. 4 mΩ, N.C.: Typ. 5 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. (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 ℃ , High heat-resistant / Pin in Paste type: -40~110 ℃
Operating humidity		Standard type: 5~85%, High heat-resistant / Pin in Paste type: 2~85%
Dimension L×W×H (mm)		13.6x12.1x14.0
Weight (g)		6.5

Drawings

Outline dimension



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

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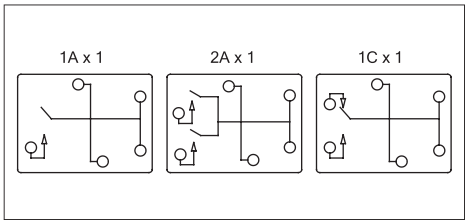
RAM1 Automotive relay Coming soon

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

RAM1

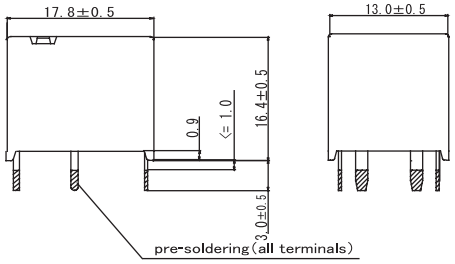


Technical parameters

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 ℃)
Min. load ※2		1 A 14 V DC (20 ℃)
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 ℃ , High heat-resistant / Pin in Paste type: -40~110 ℃
Operating humidity		Standard type: 5~85%, High heat-resistant / Pin in Paste type: 2~85%
Dimension L×W×H (mm)		17.8x13.0x16.4
Weight (g)		10

Drawings

Outline dimension



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※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 representativ.
※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

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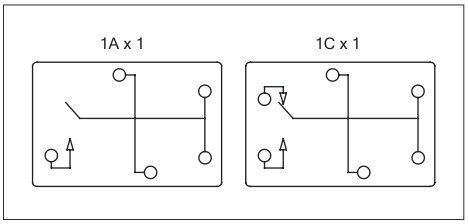
RAS1 Automotive relay Coming soon

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

RAS1

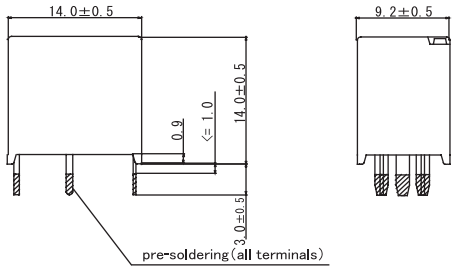


Technical parameters

Coil data		
Rated voltage		12 V
Rated current		2: 120 mA, 3: 75 mA, 4: 53.3 mA
Operating power		2: 1440 mW, 3: 900 mW, 4: 640 mW
Response voltage		2: 5.5 V DC, 3: 6.5 V DC, 4: 7.7 V DC
Drop out voltage		2: 0.5 V DC, 3: 0.8 V DC, 4: 0.8 V DC
Coil resistance		2: 100 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 x 1, 1C × 1
Contact material		Ag alloy
Nominal switching capacity		N.O.: 20 A 14 V DC, N.C.: 10 A 14 V DC
Max. carrying current ※1		25 A for 10 min (12 V DC, 20 ℃)
Min. load ※2		1 A 14 V DC (20 ℃)
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. (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 ℃ , High heat-resistant / Pin in Paste type: -40~110 ℃
Operating humidity		Standard type: 5~85%, High heat-resistant / Pin in Paste type: 2~85%
Dimension L×W×H (mm)		14.0x9.2x14.0
Weight (g)		5

Drawings

Outline dimension



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※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 representativ.
※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

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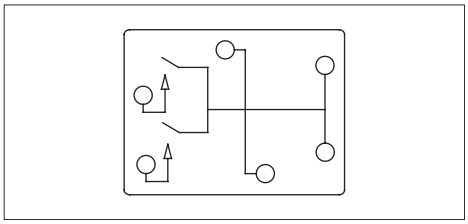
RAW1 Automotive relay Coming soon

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

RAW1

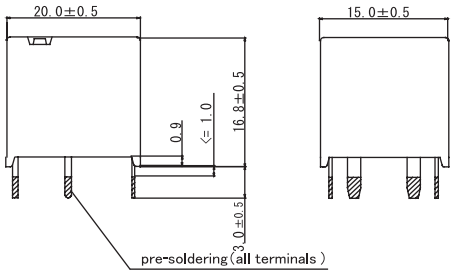


Technical parameters

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 ℃)
Min. load ※2		1 A 14 V DC (20 ℃)
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 ℃
Operating humidity		High heat-resistant / Pin in Paste type: 2~85%
Dimension L×W×H (mm)		20.0x15.0x16.8
Weight (g)		13

Drawings

Outline dimension



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※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 representativ.
※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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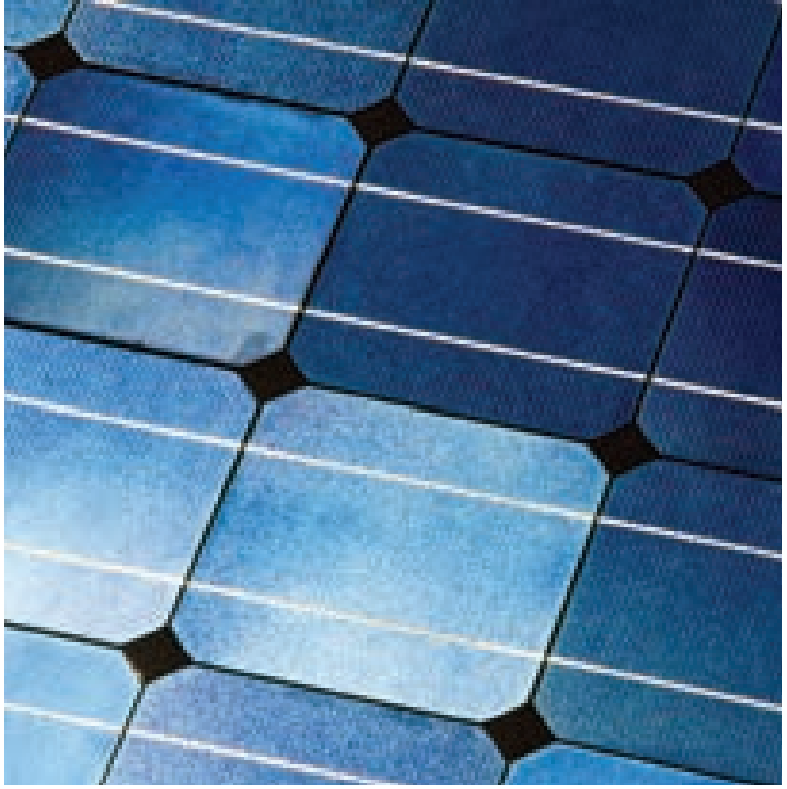

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