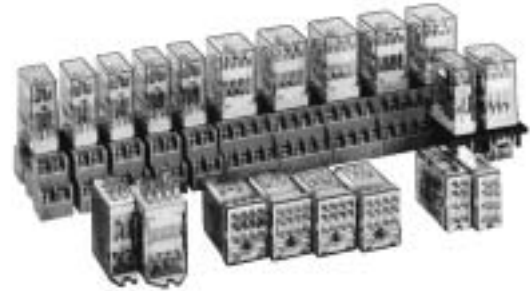


## RY/RM Series — General Purpose Miniature Relays

Key features of the RY series include:

- Compact miniature size saves space
- 2PDT and 4PDT models, available with bifurcated crossbar contacts, ensure reliable low-current switching for dry circuit applications
- Choice of plug-in/solder or PCB type terminals
- Options include check button for test operation and indicator lights
- DIN rail, surface, panel, and PCB type sockets available for a wide range of mounting applications



UL Recognized  
File No. E55996



CSA Certified  
File No. LR35144



File No. B020813332452



|   |   |
|---|---|
| <b>Contact Material</b>                                   | <b>RY2, RY4:</b> Silver (Ag), gold-plated<br><b>RY22, RY42:</b> Ag-Pd alloy<br><b>RM:</b> Silver (Ag)   |
| <b>Contact Resistance</b>                                 | <b>RY2, RY4:</b> 50mΩ maximum<br><b>RY22, RY42:</b> 100mΩ maximum<br><b>RM:</b> 30mΩ maximum  |
| <b>Minimum Applicable Load</b>                            | <b>RY2, RY4:</b> 5V DC, 10mA/24V DC, 5mA<br><b>RM2:</b> 24VDC/10mA, 5VDC/20mA (reference value)<br>Bifurcated contacts: <b>RY22, RY42:</b> 1V DC, 100μA (reference value)   |
| <b>Operating Time</b>                                     | 20ms maximum  |
| <b>Release Time</b>                                       | 20ms maximum  |
| <b>Maximum Continuous Applied Voltage (AC/DC) at 20°C</b> | 110% of the rated voltage   |
| <b>Minimum Operating Voltage (AC/DC) at 20°C</b>          | 80% of the rated voltage  |
| <b>Drop-Out Voltage (AC)</b>                              | 30% or more of the rated voltage  |
| <b>Drop-Out Voltage (DC)</b>                              | 10% or more of the rated voltage  |
| <b>Power Consumption</b>                                  | <b>RY2, RY22:</b> DC: approximately 0.8W<br>AC: approximately 1.1VA (50Hz), 1VA (60Hz)<br><b>RY4, RY42, RM2:</b> DC: approximately 0.9W<br>AC: approximately 1.4VA (50Hz), 1.2VA (60Hz)   |
| <b>Insulation Resistance</b>                              | 100MΩ minimum (measured with 500V DC megger)  |
| <b>Dielectric Strength</b>                                | <b>RY2, RY22:</b> Between live and dead parts: 1,500V AC, 1 minute; Between contact and coil: 1,500V AC, 1 minute; Between contacts of different poles: 1,500V AC, 1 minute; Between contacts of the same pole: 1,000V AC, 1 minute<br><b>RY4, RY42, RM2:</b> Between live and dead parts: 2,000V AC, 1 minute; Between contact and coil: 2,000V AC, 1 minute; Between contacts of different poles: 2,000V AC, 1 minute; Between contacts of the same pole: 1,000V AC, 1 minute |
| <b>Frequency Response</b>                                 | 1,800 operations/hour   |
| <b>Temperature Rise</b>                                   | Coil: 85°C maximum<br>Contact: 65°C maximum   |
| <b>Vibration Resistance</b>                               | 0 to 6G (55Hz maximum)  |
| <b>Shock Resistance</b>                                   | <b>RY2, RY22:</b> 100N (approximately 10G)<br><b>RY4, RY42, RM2:</b> 200N (approximately 20G)   |
| <b>Life Expectancy</b>                                    | <b>Electrical</b><br><b>RY2, RY4:</b> over 200,000 operations (120V, 3A)<br><b>RY22, RY42:</b> over 200,000 operations (120V AC, 1A)<br><b>RM2:</b> over 500,00 operations (240V AC, 5A)  |
|   | <b>Mechanical</b><br>over 50,000,000 operations   |
| <b>Operating Temperature</b>                              | -30 to +70°C  |
| <b>Weight</b>   | DPDT: 23g; 4PDT: 34g (approximately)  |

## Ordering Information

Order standard voltages for fastest delivery. Allow extra delivery time for non-standard voltages.

Basic Part No.

RY4S-U

Coil Voltage:

AC110-120V

## Part Numbers

### Part Numbers: RY/RM Series with Options

| Termination                     | Contact Configuration         | Basic Part No. | Indicator Light | Check Button | Indicator Light and Check Button | Top Bracket |
|---------------------------------|-------------------------------|----------------|-----------------|--------------|----------------------------------|-------------|
| S<br>Solder/plug-in             | DPDT small footprint          | RY2S-U         | RY2S-UL         | RY2S-UC      | RY2S-ULC                         | RY2S-UT     |
|                                 | DPDT<br>(bifurcated contacts) | RY22S-U        | RY22S-UL        | —            | —                                | RY22S-UT    |
|                                 | DPDT wide footprint           | RM2S-U         | RM2S-UL         | RM2S-UC      | RM2S-ULC                         | RM2S-UT     |
|                                 | 4PDT                          | RY4S-U         | RY4S-UL         | RY4S-UC      | RY4S-ULC                         | RY4S-UT     |
|                                 | 4PDT<br>(bifurcated contacts) | RY42S-U        | RY42S-UL        | RY42S-UC     | RY42S-ULC                        | RY42S-UT    |
| V<br>PCB 0.031"<br>(0.8mm) wide | DPDT small footprint          | RY2V-U         | RY2V-UL         | RY2V-UC      | RY2V-ULC                         | —           |
|                                 | DPDT<br>(bifurcated contacts) | RY22V-U        | RY22V-UL        | —            | —                                | —           |
|                                 | DPDT wide footprint           | RM2V-U         | RM2V-UL         | RM2V-UC      | RM2V-ULC                         | —           |
|                                 | 4PDT                          | RY4V-U         | RY4V-UL         | RY4V-UC      | RY4V-ULC                         | —           |
|                                 | 4PDT<br>(bifurcated contacts) | RY42V-U        | RY42V-UL        | RY42V-UC     | RY42V-ULC                        | —           |

E

Relays

## Ratings

### Coil Ratings

| Rated Voltage (V) | Rated Current ±15% at 20°C |                |           |                | Coil Resistance ±10% at 20°C |                | Coil Inrush (60Hz) |                | Coil Inductance |                |               |                |       |
|-------------------|----------------------------|----------------|-----------|----------------|------------------------------|----------------|--------------------|----------------|-----------------|----------------|---------------|----------------|-------|
|                   | 60Hz                       |                | 50Hz      |                | RY2, RY22                    | RM2, RY4, RY42 | RY2, RY22          | RM2, RY4, RY42 | Energizing      |                | De-Energizing |                |       |
|                   | RY2, RY22                  | RM2, RY4, RY42 | RY2, RY22 | RM2, RY4, RY42 |                              |                |                    |                | RY2, RY22       | RM2, RY4, RY42 | RY2, RY22     | RM2, RY4, RY42 |       |
| AC                | 6V                         | 150mA          | 200mA     | 170mA          | 240mA                        | 18.8Ω          | 9.4Ω               | 250mA          | 340mA           | 0.09H          | 0.08H         | 0.06H          | 0.04H |
|                   | 12V                        | 75mA           | 100mA     | 86mA           | 121mA                        | 76.8Ω          | 39.3Ω              | 120mA          | 170mA           | 0.37H          | 0.30H         | 0.22H          | 0.16H |
|                   | 24V                        | 37mA           | 50mA      | 42mA           | 60.5mA                       | 300Ω           | 153Ω               | 56mA           | 85mA            | 1.5H           | 1.2H          | .9H            | 0.63H |
|                   | 120V*                      | 7.5mA          | 11mA      | 8.6mA          | 13.1mA                       | 7,680Ω         | 4,170Ω             | 12mA           | 16mA            | 37H            | 33H           | 22H            | 15H   |
|                   | 240V †                     | 3.2mA          | 5.5mA     | 3.7mA          | 6.6mA                        | 31,200Ω        | 15,210Ω            | 7mA            | 8mA             | 130H           | 130H          | 77H            | 62H   |
| DC                |                            | RY2, RY22      |           | RM2, RY4, RY42 |                              | RY2, RY22      | RM2, RY4, RY42     | N/A            |                 |                |               |                |       |
|                   | 6V                         | 128mA          |           | 150mA          |                              | 47Ω            | 40Ω                |                |                 |                |               |                |       |
|                   | 12V                        | 64mA           |           | 75mA           |                              | 188Ω           | 160Ω               |                |                 |                |               |                |       |
|                   | 24V                        | 32mA           |           | 36.9mA         |                              | 750Ω           | 650Ω               |                |                 |                |               |                |       |
|                   | 48V                        | 18mA           |           | 18.5mA         |                              | 2,660Ω         | 2,600Ω             |                |                 |                |               |                |       |
| 110V‡             | —                          |                | 9.1mA     |                | —                            | 12,100Ω        |                    |                |                 |                |               |                |       |

\* For RY4/RY42/RM2 relays = AC110/120V AC.

† For RY4/RY42/RM2 relays = 220/240V AC.

‡ For RY4/RY42/RM2 relays = 100/110V DC.



### Contact Ratings (gold plated) RY4, RY2

| Voltage | Contact | Resistive |     | Inductive |      |
|---------|---------|-----------|-----|-----------|------|
|         |         | UL        | CSA | UL        | CSA  |
| 30V DC  | DPDT    | 3A        | 3A  | 3A        | 1.5A |
|         | 4PDT    | 5A        | 5A  | 5A        | 1.5A |
| 100V DC | DPDT    | 0.2A      | —   | 0.2A      | 0.2A |
|         | 4PDT    | 0.2A      | —   | 0.2A      | 0.2A |
| 120V AC | DPDT    | 3A        | 3A  | 1.5A      | 1.5A |
|         | 4PDT    | 5A        | 5A  | 5A        | 5A   |
| 240V AC | DPDT    | 3A        | 3A  | 0.8A      | 0.8A |
|         | 4PDT    | 5A        | 5A  | 5A        | 5A   |

### Contact Ratings (bifurcated) RY42, RY22

| Voltage | Resistive UL/CSA | Inductive UL/CSA |
|---------|------------------|------------------|
| 30V DC  | 1A               | 0.5A             |
| 120V AC | 1A               | 0.5A             |
| 240V AC | 0.8A             | 0.4A             |

### Contact Ratings RM2

| Voltage | Resistive |      |     | Inductive |      |      |
|---------|-----------|------|-----|-----------|------|------|
|         | Nominal   | UL   | CSA | Nominal   | UL   | CSA  |
| 30V DC  | 5A        | 5A   | 5A  | 2.5A      | —    | 2.5A |
| 110V DC | 0.4A      | 0.4A | —   | 0.4A      | —    | 0.4A |
| 120V AC | 5A        | 5A   | 5A  | 2.5A      | 2.5A | 2.5A |
| 240V AC | 5A        | 5A   | 5A  | 2A        | 2A   | 2A   |

**Applicable Sockets**

**Part Numbers: Sockets**

| Relay                       | Standard DIN Rail Mount | Finger-Safe DIN Rail Mount | Panel Mount | PC Mount           |
|-----------------------------|-------------------------|----------------------------|-------------|--------------------|
| <b>RY2S</b><br><b>RY22S</b> | SY2S-05                 | SY2S-05C                   | SY2S-51     | SY2S-61            |
| <b>RM2</b>                  | SM2S-05                 | SM2S-05C                   | SM2S-51     | SY4S-61<br>SY4S-62 |
| <b>RY4S</b><br><b>RY42S</b> | SY4S-05                 | SY4S-05C                   | SY4S-51     |                    |

| Springs (optional)                 |               |
|------------------------------------|---------------|
| Part Number                        | Use With      |
| SY2S-02F1③<br>SFA-101①<br>SFA-202② | SY2S-05, -05C |
| SFA-301①<br>SFA-302②<br>SY4S-51F1③ | SY2S-51, -61  |
| SY4S-02F1③<br>SFA-101①<br>SFA-202② | SY2S-05, -05C |
| SFA-301①<br>SFA-302②<br>SY4S-51F1③ | SY4S-51, -61  |



See Section F for details on sockets. All DIN rail mount sockets shown above can be mounted using DIN rail BNDN1000.



- ① Top latch
- ② Side latch
- ③ Pullover spring

**E**

Relays

**Internal Circuits**

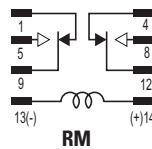
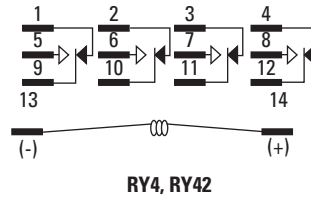
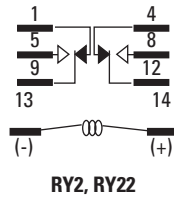
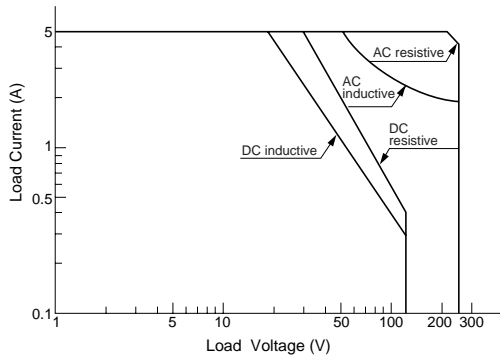


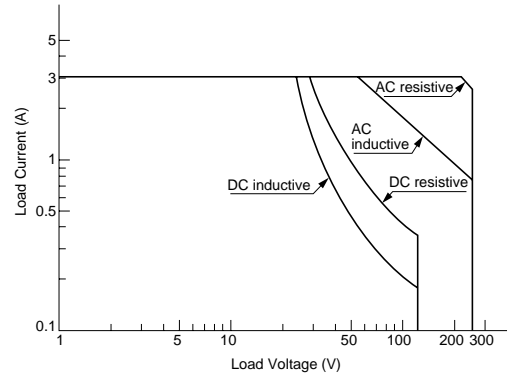
Image as viewed from bottom of relay. Refer to socket for exact wiring layout (Section F).

## Maximum Switching Capacity

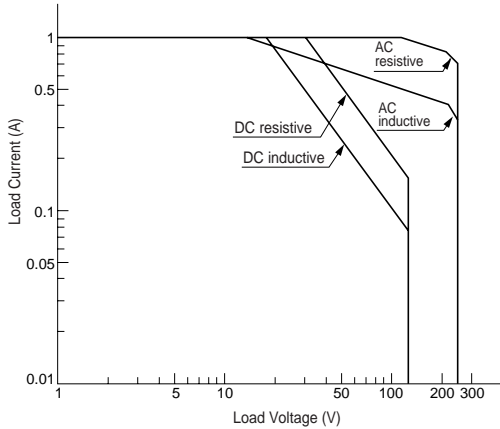
**RY4/RM2**



**RY2**

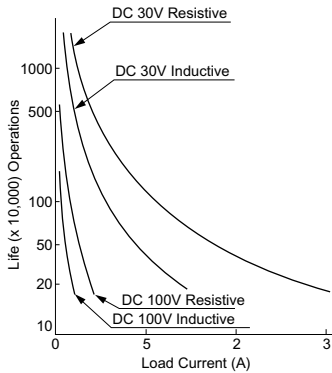
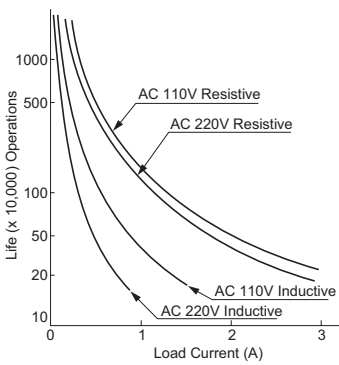


**RY Bifurcated**

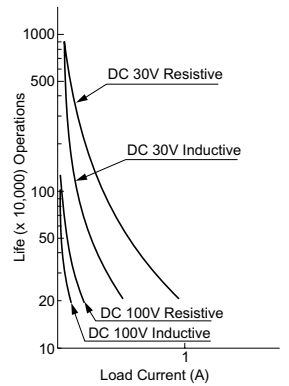
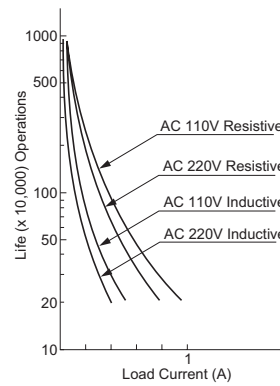


## Electrical Life Curves

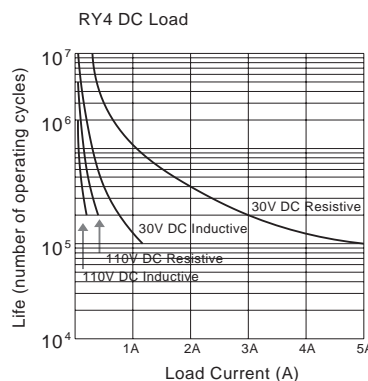
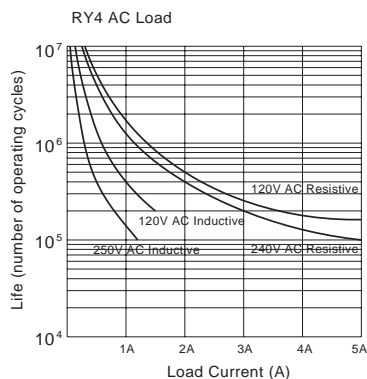
**RY2**



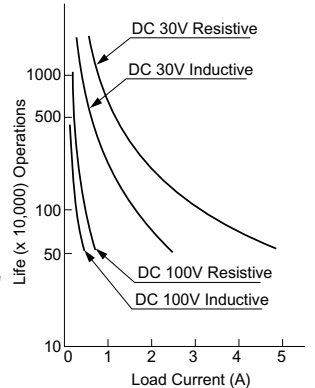
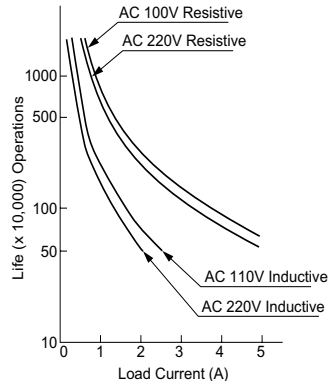
**Bifurcated Contacts RY42, RY22**



**RY4**

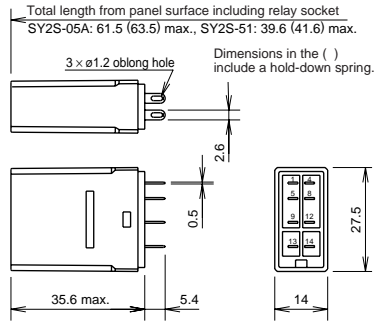


**RM2**

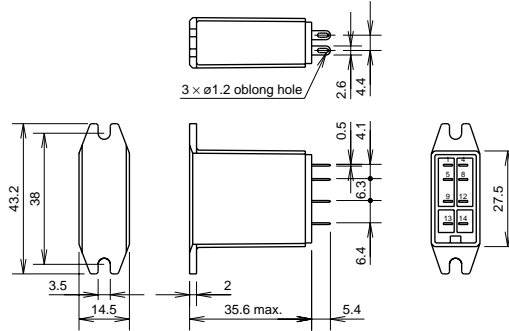


**Dimensions**

**Solder Terminal  
Plug-in  
RY2S  
RY22S**

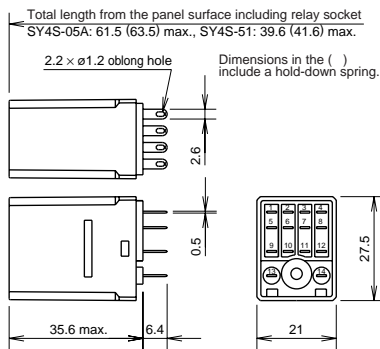


**With Top Bracket  
Plug-in  
RY2S-UT, RY22S-UT**

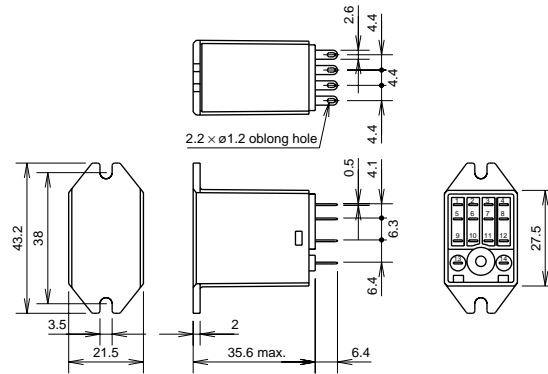


E

**RY4S  
RY42S**

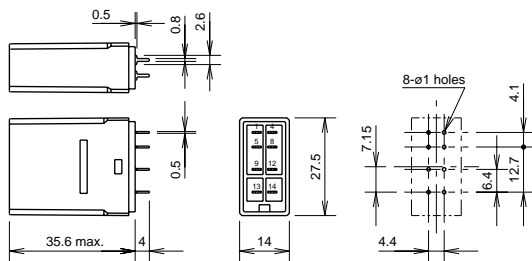


**RY4S-UT  
RY42S-UT**

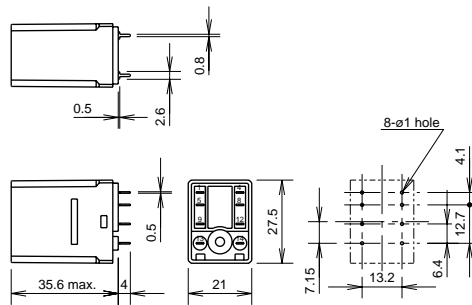


Relays

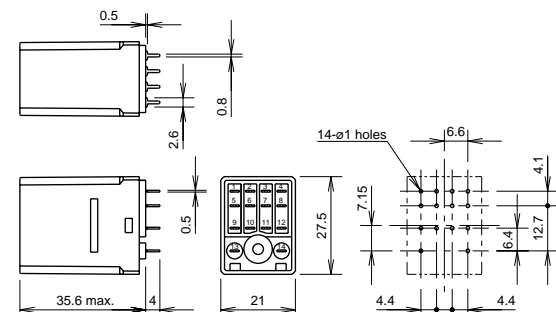
**PCB Terminal  
RY2V  
RY22V**



**PCB Terminal  
RM2S, RM2V**



**PCB Terminal  
RY4V, RY42V**



All dimensions in mm.

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