

## RJ Series Relays

### Features

- Compact size:  
Blade: 12.7 x 27 x 28.8 mm  
PCB: 12.7 x 25.5 x 28.8 mm
- Contact rating:  
Blade: 8A (DPDT), 12A (SPDT)  
PCB: 8A (DPDT & DPST-NO), 12A (SPDT & SPST-NO),  
16A (SPDT & SPST-NO)
- Operational life:  
200K cycles at full resistive AC load;  
50 million cycles, no load
- Blade model has optional green, non-polarized LED
- RoHS compliant



### Specifications

|                     |                                   | Blade Models                        |      | PCB Models                                      |                         |               |
|---------------------|-----------------------------------|-------------------------------------|------|-------------------------------------------------|-------------------------|---------------|
|                     |                                   | RJ1S                                | RJ2S | RJ1V                                            | RJ1V<br>(High Capacity) | RJ2V          |
| General Information | No. of poles                      | 1                                   | 2    | 1                                               | 1                       | 2             |
|                     | Contact Configuration             | SPDT                                | DPDT | SPDT, SPST-NO                                   |                         | DPDT, DPST-NO |
|                     | Contact Rating                    | 12A                                 | 8A   | 12A                                             | 16A                     | 8A            |
|                     | Contact Material                  | AgNi                                |      | AgNi                                            | AgSnIn                  | AgNi          |
|                     | Enclosure Ratings                 | —                                   |      | Flux protection                                 |                         |               |
|                     | Contact Resistance                | 50 milliohms max                    |      | 50 milliohms max <sup>Note 1</sup>              |                         |               |
|                     | Operating Time                    | 15ms max                            |      | 15ms max <sup>Note 2</sup>                      |                         |               |
|                     | Release Time                      | 10ms max                            |      | 10ms max <sup>Note 2</sup>                      |                         |               |
|                     | Dielectric Strength               | Between contact & coil              |      | 5,000V AC, 1 minute                             |                         |               |
|                     |                                   | Between contacts of same poles      |      | 1,000V AC, 1 minute                             |                         |               |
|                     |                                   | Between contacts of different poles |      | — 3,000V AC, 1 min.                             |                         |               |
|                     | Vibration Resistance              | Damage limits                       |      | 10-55Hz, amplitude 0.75mm                       |                         |               |
|                     |                                   | Operating extremes                  |      | 10-55Hz, amplitude 0.75mm                       |                         |               |
|                     | Shock Resistance                  | Damage limits                       |      | 100m/s <sup>2</sup> min (10G)                   |                         |               |
|                     |                                   | Operating extremes                  |      | 1,000m/s <sup>2</sup> min (100G)                |                         |               |
|                     | Mechanical Life                   | AC                                  |      | 30,000,000 operations                           |                         |               |
|                     |                                   | DC                                  |      | 50,000,000 operations                           |                         |               |
|                     | Electrical Life @ Full Rated Load | AC                                  |      | 200,000 operations                              |                         |               |
|                     |                                   | DC                                  |      | 100,000 operations                              |                         |               |
|                     | Operating Temperature             | -40 to 70° C                        |      | -40 to 70° C <sup>Note 3</sup>                  |                         |               |
|                     | Operating Humidity                | 5 to 85% RH                         |      | 5 to 85% RH                                     |                         |               |
|                     | Dimensions (H x W x D mm)         | 12.7 x 27 x 28.8                    |      | 12.7 x 25.5 x 28.8                              |                         |               |
|                     | Weight (Approx.)                  | 19g                                 |      | SPDT: 17g, SPST-NO: 16g DPDT: 17g, DPST-NO: 16g |                         |               |

Notes:

1. Measured using 5V DC, 1A voltage drop method.
2. Measured at the rated voltage (at 20°C), excluding contact bounce time.
3. 100% rated voltage.



### Ordering Information

#### Blade Models

| Contact Configuration | Options                     | Coil Voltage                                                                                                           |
|-----------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------|
| 1 - SPDT<br>2 - DPDT  | Blank - Standard<br>L - LED | D12 - 12V DC<br>D24 - 24V DC<br>D48 - 48V DC<br>D100 - 100-110V DC<br>A24 - 24V AC<br>A120 - 120V AC<br>A240 - 240V AC |

#### PCB Models

| Number of Poles                              | Contact Configuration                                        | Contact Configuration                                 | Coil Voltage                                                                                                                                       |
|----------------------------------------------|--------------------------------------------------------------|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 - SP (Single Pole)<br>2 - DP (Double Pole) | C - FORM C (DT Double Throw)<br>A - FORM A (ST Single Throw) | Blank - Standard<br>H - High Capacity Type (RJ1 only) | D5 - 5V DC<br>D6 - 6V DC<br>D12 - 12V DC<br>D24 - 24V DC<br>D48 - 48V DC<br>D100 - 100-110V DC<br>A24 - 24V AC<br>A120 - 120V AC<br>A240 - 240V AC |

## Contact Ratings

| Contact Ratings    | Type         |         | Contact       | Allowable Contact Power |                | Rated Load |                |                                   | Allowable Switching Current | Allowable Switching Voltage | Minimum Applicable Load |               |
|--------------------|--------------|---------|---------------|-------------------------|----------------|------------|----------------|-----------------------------------|-----------------------------|-----------------------------|-------------------------|---------------|
|                    |              |         |               | Resistive Load          | Inductive Load | Voltage    | Resistive Load | Inductive Load<br>cos_0.3 L/R=7ms |                             |                             |                         |               |
|                    | Blade Models | 1 pole  | NO            | AC3000V                 | AC1875VA       | 250V AC    | 12A            | 7.5A                              | 6A                          | AC250V<br>DC30V             | DC5V<br>100mA           |               |
|                    |              |         | NC            | AC3000V                 | AC1875VA       | 250V AC    | 12A            | 7.5A                              | 6A/3A                       |                             |                         |               |
|                    |              | 2 poles | NO            | AC2000V                 | AC1000VA       | 250V AC    | 8A             | 4A                                | 4A                          | AC250V<br>DC30V             | DC5V<br>100mA           |               |
|                    |              |         | NC            | AC2000V                 | AC1000VA       | 250V AC    | 8A             | 4A                                | 4A/2A                       |                             |                         |               |
|                    | PCB Models   | 1 pole  | Standard Type | NO                      | AC3000V        | AC1875VA   | AC250V         | 12A                               | 7.5A                        | 12A                         | AC250V<br>DC125V        | DC5V<br>100mA |
|                    |              |         |               |                         | DC360W         | DC180W     | DC30V          | 12A                               | 6A                          |                             |                         |               |
|                    |              |         |               | NC                      | AC3000V        | AC1875VA   | AC250V         | 12A                               | 7.5A                        |                             |                         |               |
|                    |              |         | DC180W        |                         | DC90W          | DC30V      | 6A             | 3A                                |                             |                             |                         |               |
| High Capacity Type |              |         | NO            | AC4000V                 | AC2000VA       | AC250V     | 16A            | 8A                                | 16A                         | AC250V<br>DC125V            | DC5V<br>100mA           |               |
|                    |              |         |               | DC480W                  | DC240W         | DC30V      | 16A            | 8A                                |                             |                             |                         |               |
|                    |              | NC      | AC4000V       | AC2000VA                | AC250V         | 16A        | 8A             |                                   |                             |                             |                         |               |
| DC240W             |              |         | DC120W        | DC30V                   | 8A             | 4A         |                |                                   |                             |                             |                         |               |
| 2 poles            |              | NO      | AC2000V       | AC1000VA                | AC250V         | 8A         | 4A             | 8A                                | AC250V<br>DC125V            | DC5V<br>10mA                |                         |               |
|                    |              |         | DC240W        | DC120W                  | DC30V          | 8A         | 4A             |                                   |                             |                             |                         |               |
|                    |              |         | NC            | AC2000V                 | AC1000VA       | AC250V     | 8A             |                                   |                             |                             | 4A                      |               |
|                    |              |         |               | DC120W                  | DC60W          | DC30V      | 4A             |                                   |                             |                             | 2A                      |               |

## Coil Ratings

| AC   | Rated Voltage      |          | Coil Voltage Code | Rated Current (mA)<br>±15% (at 20°C) |           |                                            |                            | Coil Resistance<br>(ohms)±10%<br>(at 20°C) | Operating Characteristics² |                   |                            | Power Consumption |
|------|--------------------|----------|-------------------|--------------------------------------|-----------|--------------------------------------------|----------------------------|--------------------------------------------|----------------------------|-------------------|----------------------------|-------------------|
|      |                    |          |                   | Without LED¹                         |           | With LED¹                                  |                            |                                            | Minimum Pickup Voltage     | Dropout Voltage   | Maximum Allowable Voltage³ |                   |
|      |                    |          |                   | 50Hz                                 | 60Hz      | 50Hz                                       | 60Hz                       |                                            |                            |                   |                            |                   |
|      | Blade & PCB Models | 24V      | A24               | 43.9                                 | 37.5      | 47.5                                       | 41.1                       | 243                                        | 80% max                    | 30% min           | 140%                       | 0.9VA (60Hz)      |
| 120V |                    | A120     | 8.8               | 7.5                                  | 8.7       | 7.4                                        | 6,400                      |                                            |                            |                   |                            |                   |
| 240V |                    | A240     | 4.3               | 3.7                                  | 4.3       | 3.7                                        | 25,570                     |                                            |                            |                   |                            |                   |
| DC   | Rated Voltage      |          | Coil Voltage Code | Rated Current (mA)<br>±15% (at 20°C) |           | Coil Resistance<br>(ohms)±10%<br>(at 20°C) | Operating Characteristics² |                                            |                            | Power Consumption |                            |                   |
|      |                    |          |                   | Without LED¹                         | With LED¹ |                                            | Minimum Pickup Voltage     | Dropout Voltage                            | Maximum Allowable Voltage³ |                   |                            |                   |
|      | Blade Models       | 12V      | D12               | 44.2                                 | 48.0      | 271                                        |                            |                                            |                            | 70% max           | 10% min                    | 170%              |
|      |                    | 24V      | D24               | 22.1                                 | 25.7      | 1,080                                      |                            |                                            |                            |                   |                            |                   |
|      |                    | 48V      | D48               | 11.0                                 | 10.7      | 4,340                                      |                            |                                            |                            |                   |                            |                   |
|      |                    | 100-110V | D100              | 5.3 - 5.8                            | 5.2 - 5.7 | 18,870                                     | 160%                       |                                            |                            |                   |                            |                   |
|      | PCB Models         | 5V       | D5                | 106                                  | —         | 47.2                                       | 70% max                    | 10% min                                    | 170%                       | 0.53-0.64W        |                            |                   |
|      |                    | 6V       | D6                | 88.3                                 | —         | 67.9                                       |                            |                                            |                            |                   |                            |                   |
|      |                    | 12V      | D12               | 44.2                                 | —         | 271                                        |                            |                                            |                            |                   |                            |                   |
|      |                    | 24V      | D24               | 22.1                                 | —         | 1,080                                      |                            |                                            |                            |                   |                            |                   |
|      |                    | 48V      | D48               | 11.0                                 | —         | 4,340                                      |                            |                                            |                            |                   |                            |                   |
|      | 100-110V           | D100     | 5.3 - 5.8         | —                                    | 18,870    | 160%                                       |                            |                                            |                            |                   |                            |                   |

Notes:

1. LED Indicator is only available on Blade relays.

2. Operating characteristics are against rated values at 20°C.

3. The maximum allowable voltage is the maximum value which can be applied to the relay coils.

## Accessories

### Socket Part Numbers

|              | Relay Type         | Socket Type         | Socket Part Number |
|--------------|--------------------|---------------------|--------------------|
| Blade Models | RJ1S (Std)         | DIN Rail Standard   | SJ1S-05B           |
|              |                    | DIN Rail Fingersafe | SJ1S-07L           |
|              |                    | PCB Mount           | SJ1S-61            |
|              | RJ1S-□H (HC), RJ2S | DIN Rail Standard   | SJ2S-05B           |
|              |                    | DIN Rail Fingersafe | SJ2S-07L           |
| PCB Models   | RJ1V (Std)         | PCB Mount           | SJ2S-61            |
|              |                    | DIN Rail Fingersafe | SQ1V-07B*          |
|              | RJ1V-□H (HC), RJ2V | PCB Mount           | SQ1V-63            |
|              |                    | DIN Rail Fingersafe | SQ2V-07B*          |
|              |                    | PCB Mount           | SQ2V-63            |

\*Hold-down clip or spring must be removed to use with RJ relays.

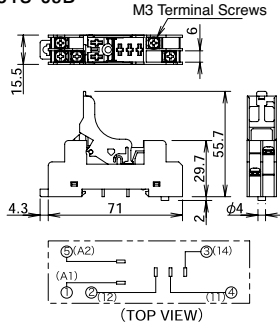
### Socket Specifications

|                |                              | SJ1S                      | SJ2S |
|----------------|------------------------------|---------------------------|------|
|                |                              |                           |      |
| Specifications | Rated Insulation Voltage     | 250V AC/DC                |      |
|                | Applicable Wire              | Max up to 2 - #14 AWG     |      |
|                | Applicable Crimping Terminal | 2mm <sup>2</sup> x 2      |      |
|                | Screw Size                   | M3 Slotted-Phillips screw |      |
|                | Weight                       | 30g                       | 34g  |
|                |                              |                           |      |

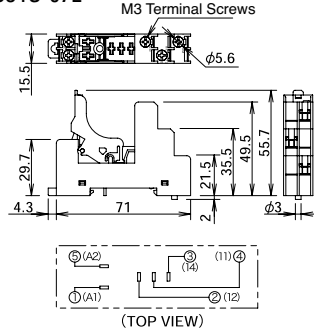


## Socket Dimensions - for Blade Relays (mm)

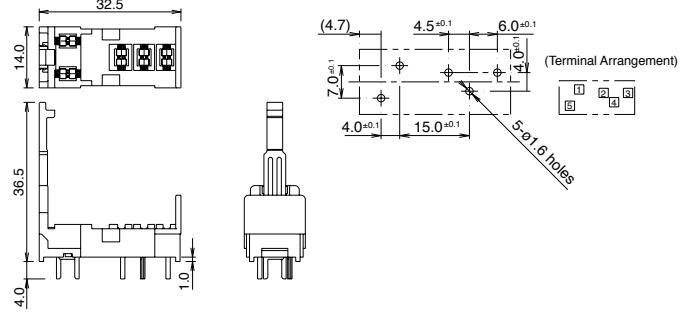
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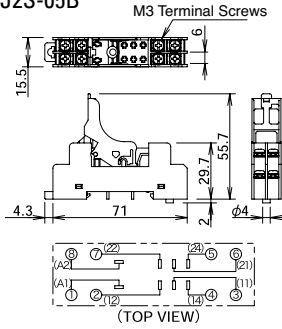
SJ1S-07L



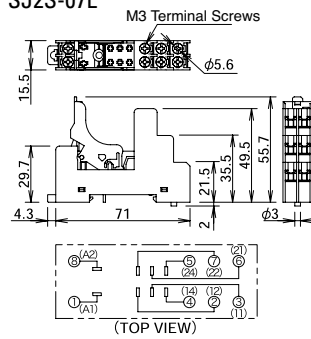
SJ1S-61



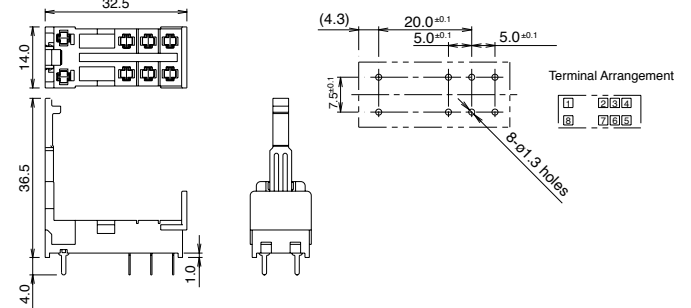
SJ2S-05B



SJ2S-07L

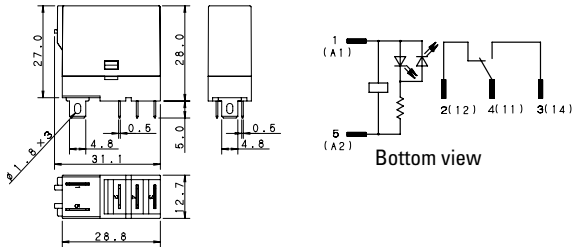


SJ1S-61

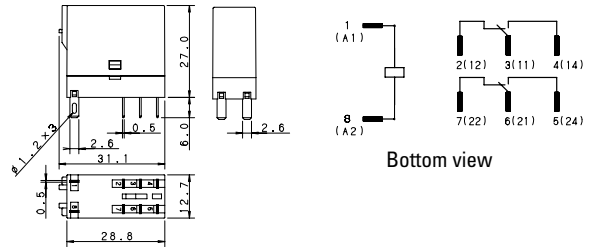


## Blade Relay Dimensions (mm)

RJ1S

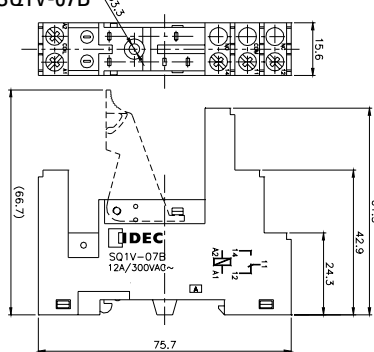


RJ2S

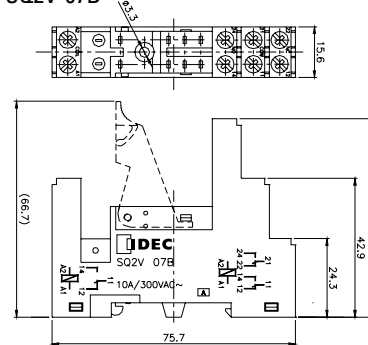


## SQ Socket Dimensions - for PCB Relays (mm)

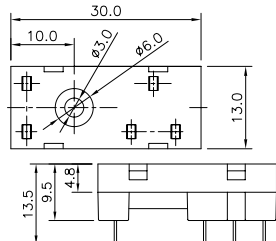
SQ1V-07B



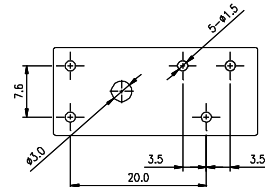
SQ2V-07B



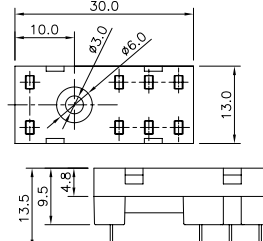
SQ1V-63



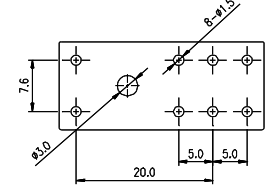
SQ1V-63 PCB pin layout



SQ2V-63



SQ2V-63 PCB pin layout

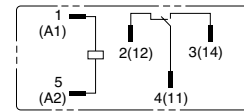
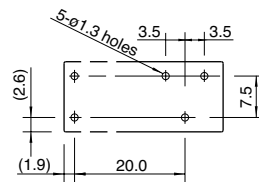
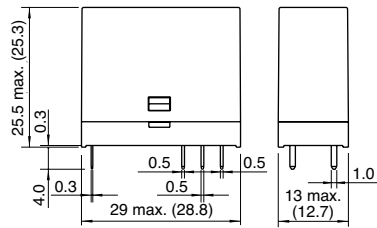


## PCB Relay Dimensions (mm)

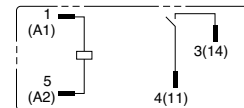
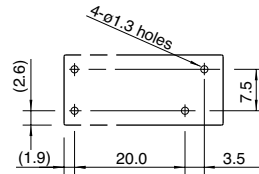
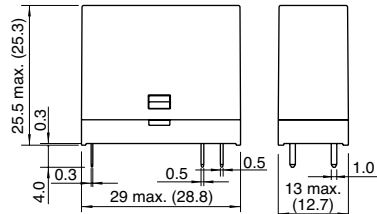
## PCB Mounting Hole Layout (Bottom View)

## PCB Internal Circuit Diagrams (Bottom View)

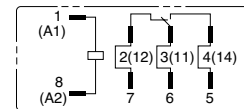
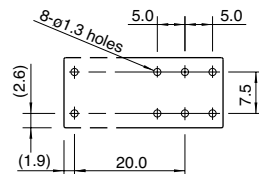
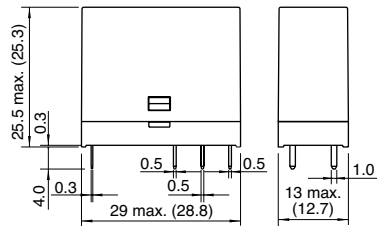
RJ1V-C-  
SPDT



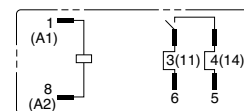
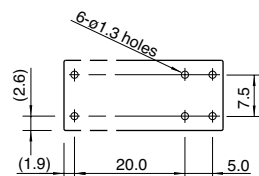
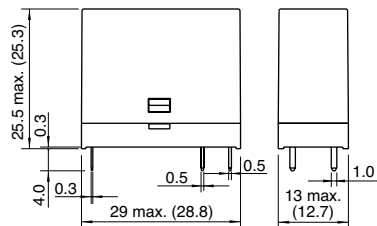
RJ1V-A-  
SPST-NO



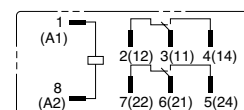
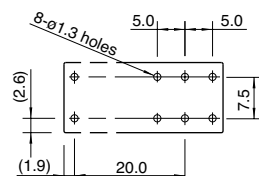
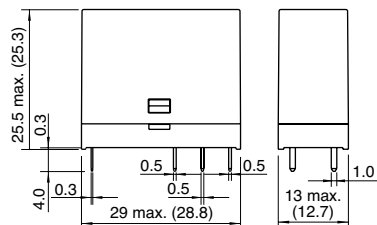
RJ1V-CH-  
SPDT  
High Capacity



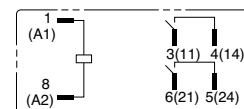
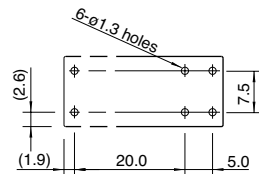
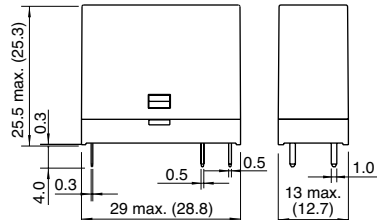
RJ1V-AH-  
SPST-NO  
High Capacity



RJ2V-C-  
DPDT



RJ1V-A-  
DPST-NO



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