Compact high capacity
(25A max)
Slim heat sink combined type
joining the lineup

AQ-J RELAYS

FEATURES
1. Compact Size
   Approx 40% reduction in required space achieved in the footprint area compared with the previous model (AQ-R relay)
2. Built-in varistor
3. Reverse input connection prevention function
4. Labor Saving (tab terminal)
5. Output arrangement 1a and 1a × 2 available in the heat sink combined type

Note: * International standards are acquired for AQ-J SSR stand-alone, not applied to heat sink combined type.

ORDERING INFORMATION

AQJ Solid State Relays
Output type
1: 10A, 75V to 264V AC
2: 15A, 75V to 264V AC
4: 25A, 75V to 264V AC

Terminal
1: Plug-in terminal, Zero-cross
2: Plug-in terminal, Random*

Input voltage
2: 4 to 6 V DC
6: 18 to 28 V DC
9: 10 to 18 V DC

Functions
V: Built-in varistor

Slim heat sink combined type
None: Without a heat sink
Y: 1a type
W: 1a × 2 type

Note: * Random type is available by custom order.

TYPICAL APPLICATIONS
1. Kitchen appliances
2. Vending machine
3. Injection molding machine
4. Packing machine
5. Amusement machine

TYPES
1. AQ-J Solid State Relays

<table>
<thead>
<tr>
<th>Type</th>
<th>Load current</th>
<th>Load voltage</th>
<th>Input voltage</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero-cross*</td>
<td>10A</td>
<td>75V to 264V AC</td>
<td>4 to 6V DC</td>
<td>AQJ112V</td>
</tr>
<tr>
<td></td>
<td>15A</td>
<td></td>
<td>10 to 18V DC</td>
<td>AQJ118V</td>
</tr>
<tr>
<td></td>
<td>25A</td>
<td></td>
<td>4 to 6V DC</td>
<td>AQJ212V</td>
</tr>
</tbody>
</table>

Note: * Random type also available. Please inquire.
## 2. AQ-J SSR Slim Heat Sink Combined Type

<table>
<thead>
<tr>
<th>Output configuration</th>
<th>Type</th>
<th>Load current</th>
<th>Load voltage</th>
<th>Input voltage</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a</td>
<td></td>
<td>10A</td>
<td></td>
<td>4 to 6V DC</td>
<td>AQJ112V</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>75V to 264V AC</td>
<td>10 to 18V DC</td>
<td>AQJ119V</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>18 to 28V DC</td>
<td>AQJ116V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20A</td>
<td></td>
<td>4 to 6V DC</td>
<td>AQJ112V</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>75V to 264V AC</td>
<td>10 to 18V DC</td>
<td>AQJ119V</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>18 to 28V DC</td>
<td>AQJ116V</td>
</tr>
<tr>
<td>1a × 2</td>
<td></td>
<td>10A (per 1a)</td>
<td></td>
<td>4 to 6V DC</td>
<td>AQJ112V</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>75V to 264V AC</td>
<td>10 to 18V DC</td>
<td>AQJ119V</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>18 to 28V DC</td>
<td>AQJ116V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15A (per 1a)</td>
<td></td>
<td>4 to 6V DC</td>
<td>AQJ112V</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>75V to 264V AC</td>
<td>10 to 18V DC</td>
<td>AQJ119V</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>18 to 28V DC</td>
<td>AQJ116V</td>
</tr>
</tbody>
</table>

Standard Packing: no carton, case: 10 pcs.
Note: * Random type also available. Please inquire.

### 3. Accessories

<table>
<thead>
<tr>
<th>DIN rail mounting plate</th>
<th>Type</th>
<th>Packaged quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>AQP-DPJ</td>
<td></td>
<td>5 in a carton, 50 in a case</td>
</tr>
<tr>
<td>AQP-HS-SJ10A</td>
<td></td>
<td>No carton, 10 in a case</td>
</tr>
<tr>
<td>AQP-HS-SJ20A</td>
<td></td>
<td>No carton, 6 in a case</td>
</tr>
<tr>
<td>AQP-HS-J10A</td>
<td></td>
<td>5 in a carton, 20 in a case</td>
</tr>
<tr>
<td>AQP-HS-J25A</td>
<td></td>
<td>No carton, 5 in a case</td>
</tr>
</tbody>
</table>

### SPECIFICATIONS

#### 1. Ratings (Test sample: AQ-J stand-alone, Measurement condition: at 20°C 68°F, input ripple: 1% or less)

1) Input side

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Item</th>
<th>Rated voltage</th>
<th>Input voltage</th>
<th>Input impedance</th>
<th>Drop-out voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>AQJ112V</td>
<td></td>
<td>5V DC</td>
<td>4 to 6V DC</td>
<td>Approx. 260Ω</td>
<td>Min. 1V DC</td>
</tr>
<tr>
<td>AQJ119V</td>
<td></td>
<td>12V DC</td>
<td>10 to 18V DC</td>
<td>Approx. 800Ω</td>
<td></td>
</tr>
<tr>
<td>AQJ116V</td>
<td></td>
<td>24V DC</td>
<td>18 to 28V DC</td>
<td>Approx. 1.6kΩ</td>
<td></td>
</tr>
</tbody>
</table>

2) Output side

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Item</th>
<th>Max. load current</th>
<th>Load voltage</th>
<th>Frequency</th>
<th>Non-repetitive surge current</th>
<th>Max. &quot;OFF-state&quot; leakage current</th>
<th>Max. &quot;ON-state&quot; voltage drop</th>
<th>Min. load current</th>
</tr>
</thead>
<tbody>
<tr>
<td>AQJ112V</td>
<td></td>
<td>10A</td>
<td>75 to 264V AC</td>
<td>45Hz to 65Hz</td>
<td>100A</td>
<td>5mA</td>
<td>1.6V</td>
<td>50mA</td>
</tr>
<tr>
<td>AQJ119V</td>
<td></td>
<td>15A</td>
<td></td>
<td></td>
<td>150A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AQJ116V</td>
<td></td>
<td>25A</td>
<td></td>
<td></td>
<td>250A</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: * When the load current is less than the rated minimum load current, please refer to Cautions for Use

#### 2. Ratings (Test sample: AQ-J slim heat sink combined type, Measurement condition: at 20°C 68°F, input ripple: 1 % or less)

1) Input side

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Item</th>
<th>Rated voltage</th>
<th>Input voltage</th>
<th>Input impedance</th>
<th>Drop-out voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>AQJ112V(Y·W)</td>
<td></td>
<td>5V DC</td>
<td>4 to 6V DC</td>
<td>Approx. 260Ω</td>
<td>Min. 1V DC</td>
</tr>
<tr>
<td>AQJ119V(Y·W)</td>
<td></td>
<td>12V DC</td>
<td>10 to 18V DC</td>
<td>Approx. 800Ω</td>
<td></td>
</tr>
<tr>
<td>AQJ116V(Y·W)</td>
<td></td>
<td>24V DC</td>
<td>18 to 28V DC</td>
<td>Approx. 1.6kΩ</td>
<td></td>
</tr>
</tbody>
</table>

2) Output side

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Item</th>
<th>Max. load current**</th>
<th>Load voltage</th>
<th>Frequency</th>
<th>Non-repetitive surge current</th>
<th>Max. &quot;OFF-state&quot; leakage current</th>
<th>Max. &quot;ON-state&quot; voltage drop</th>
<th>Min. load current</th>
</tr>
</thead>
<tbody>
<tr>
<td>AQJ112V</td>
<td></td>
<td>10A</td>
<td>75 to 264V AC</td>
<td>45Hz to 65Hz</td>
<td>100A</td>
<td>5mA</td>
<td>1.6V</td>
<td>50mA</td>
</tr>
<tr>
<td>AQJ119V</td>
<td></td>
<td>20A</td>
<td></td>
<td></td>
<td>250A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AQJ116V</td>
<td></td>
<td>15A</td>
<td></td>
<td></td>
<td>250A</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: *1 Please refer to REFERENCE DATA, "1. Load current vs. ambient temperature" below.
*2 When the load current is less than the rated minimum load current, please refer to Cautions for Use
3. Characteristics (Measurement condition: at 20°C 68°F, input ripple: 1% or less)

<table>
<thead>
<tr>
<th>Item</th>
<th>Characteristics</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operate time, max.</td>
<td>(1/2 cycle of voltage sine wave) + 1ms</td>
<td></td>
</tr>
<tr>
<td>Release time, max.</td>
<td>(1/2 cycle of voltage sine wave) + 1ms</td>
<td></td>
</tr>
<tr>
<td>Insulation resistance, min.</td>
<td>100MΩ between input to output to case</td>
<td>Using 500 VDC megger</td>
</tr>
<tr>
<td>Breakdown voltage</td>
<td>2,500 Vrms between input, output and case for 1min.</td>
<td></td>
</tr>
<tr>
<td>Vibration resistance</td>
<td>SSR stand-alone: 10 to 55Hz, double amplitude of 1.5mm</td>
<td>X, Y, Z axes</td>
</tr>
<tr>
<td></td>
<td>Slim heat sink combined type: 10 to 55Hz, double amplitude of 0.75mm</td>
<td>X, Y, Z axes</td>
</tr>
<tr>
<td>Shock resistance</td>
<td>SSR stand-alone: Min. 197m/s²</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Slim heat sink combined type: Min. 980m/s²</td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-30 to +80°C -22 to +176°F</td>
<td>Non-condensing at low temperatures</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-30 to +100°C -22 to +212°F</td>
<td></td>
</tr>
<tr>
<td>Operational method</td>
<td>Zero-cross (Turn ON and Turn OFF)</td>
<td></td>
</tr>
</tbody>
</table>

### REFERENCE DATA

1. **AQ-J Solid State Relays**

2. **Load current vs. ambient temperature**

   **Use load current within range specified in the figure below**

   - **Tested condition:**
     1) If attached to a heat sink, use a heat conductive compound (Ex. Toshiba silicon YG6111 or TSK5303) of similar coating to improve cooling.
     2) Without external heat sink
     If the mounting surface is not metallic and a heat sink is not used, expose the bottom surface and plate surface to improve heat dissipation.
     3) The current value is per 1a.

   - **(1) 10 A type (when using heat sink or iron plate)**
   - **(2)-1. 15 A type (when using iron plate)**
   - **(2)-2. 15 A type (when using a heat sink)**
   - **(3)-1. 25 A type (when using iron plate)**
   - **(3)-2. 25 A type (when using a heat sink)**

2. **Non-repetitive surge current vs. carrying time**

3. **Input current vs. input voltage characteristics**

   **(10A, 15A and 25A common)**

   - **(A) slim heat sink** AQP-HS-SJ20A
   - **(B) slim heat sink** AQP-HS-SJ10A
   - **(C) standard heat sink** AQP-HS-J10A
   - **(D) DIN rail mounting plate** AQP-DPJ
   - **(E) standard heat sink** AQP-HS-J25A
AQ-J

(2) AQ-J SSR Slim Heat Sink Combined Type

1. Load current vs. ambient temperature Use load current within range specified in the figure below
(1) Output arrangement: 1a
(2) Output arrangement: 1a × 2

Note:
When two contacts are operated simultaneously. In the case of a single-contact operation, the rating of (1) AQJ11+VY, AQJ41+VY applies.

2. Surge current vs. carrying time
3. Input current vs. input voltage characteristics
**DIMENSIONS** (mm inch)

1. **AQ-J Stand Alone**

   **External dimensions**

   ![Diagram of AQ-J Stand Alone]

   **Schematic**

   ![Schematic of AQ-J Stand Alone]

   **Mounting dimensions**

   - **Output side** and **Input side** terminals: #25 type, ±0.8/0.031
   - **Input side** terminals: #110 type, ±0.5/0.020

   **Note:** When using on a DIN rail, please install so that the “A” part is on top.

2. **(1) Slim Heat Sink Combined Type**

   **Output Arrangement:** 1a

   **External dimensions**

   ![Diagram of Slim Heat Sink Combined Type 1a]

   **Schematic**

   ![Schematic of Slim Heat Sink Combined Type 1a]

   **Mounting dimensions (Top view)**

   **Note:** Use caution for AQ-J terminal numbers.

3. **(2) Slim Heat Sink Combined Type**

   **Output Arrangement:** 1a × 2

   **External dimensions**

   ![Diagram of Slim Heat Sink Combined Type 1a × 2]

   **Schematic**

   ![Schematic of Slim Heat Sink Combined Type 1a × 2]

   **Mounting dimensions (Top view)**

   **Note:** When using on a DIN rail, please install so that the “A” part is on top.

---

**Load power**

- **source**

**Input power**

- **source**

---

**Download CAD Data from our Web site.**
ACCESSORIES

AQP-HSJ10A Slim Heat Sink

External dimensions

Mounting dimensions (Top view)

Note: When using on a DIN rail, please install so that the “A” part is on top.

AQP-HSJ20A Slim Heat Sink

External dimensions

Mounting dimensions (Top view)

Note: When using on a DIN rail, please install so that the “A” part is on top.

AQP-HSJ10A Standard Heat Sink
(for 10A and 15A types)

External dimensions

Mounting dimensions

Note: When using on a DIN rail, please install so that the “A” part is on top.
AQP-HS-J25A Standard Heat Sink
(for 25A type)

Cautions for Use