TITLE	SPECIFICATIONS FOR SOLID STATE RELAY	PAGE 1/7
NAME	AQ-J Solid State Relay	AQJ*1*V

1. TYPE ; AQJ112V, AQJ119V, AQJ116V, AQJ212V, AQJ219V, AQJ216V, AQJ412V, AQJ419V, AQJ416V, AQJ111V, AQJ211V, AQJ411V (Zero-cross Built-in varistor type)

2. DRAWING NO. ; AQJ112V

3. RATING

3- 1 Rating (at 20℃, Input ripple: 1% or less)

(1) Input side

Type / Item	AQJ112V AQJ212V AQJ412V	AQJ119V AQJ219V AQJ419V	AQJ116V AQJ216V AQJ416V	AQJ111V AQJ211V AQJ411V
Rated voltage	5V DC	12V DC	24V DC	—
Input voltage	4 to 6V DC	10 to 18V DC	18 to 28V DC	4 to 28V DC
Input impedance	Approx. 260Ω	Approx. 800Ω	Approx. 1.6kΩ	—
Drop-out voltage	Min. 1V DC			

(2) Output side

Type / Item	AQJ112V AQJ119V AQJ116V AQJ111V	AQJ212V AQJ219V AQJ216V AQJ211V	AQJ416V AQJ419V AQJ416V AQJ411V
Max. load current	10A	15A	25A
Load voltage	75 to 264V		
Frequency	45 to 65Hz		
Non-repetitive surge current	100A	150A	250A
Max. "OFF-state" leakage current	Max. 5mA		
Max. "ON-state" voltage drop	Max. 1.6V		
Min. load current *1	50mA		

*1 See 5. CAUTIONS FOR USE (Using be below the specified load)

Panasonic Corporation Automation Controls Business Unit	DESIGNED y. nagashima	REFERENCE ONLY DATE: Feb. 22. '12 MAR. -8. 2012 Panasonic Corporation Ise Factory
	CHECKED	
	ENACTED	

3- 2 Characteristics (at 20℃, Input ripple: 1% or less)

Item	Value
Operate time, Max.	(1/2 cycle of voltage sine wave)+1ms
Release time, Max.	(1/2 cycle of voltage sine wave)+1ms
Insulation resistance, Min. *1	100MΩ between input and output
Breakdown voltage *2	3000Vrms between input and output 2500Vrms between input, output and case
Vibration resistance *3	10 to 55Hz at double amplitude of 1.5mm
Shock resistance *3	Min. 980m/s^2
Ambient temperature *4	-30 to 80℃
Storage temperature *4	-30 to 100℃
Operational method	Zero-cross (Turn-ON and Turn-OFF)

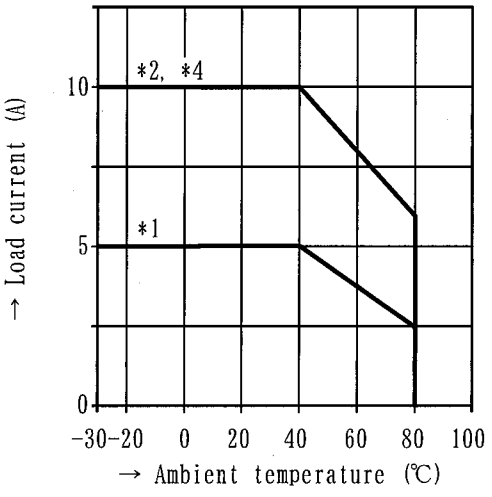
*1 Using 500V DC megger
*2 Initial for 1min.
*3 X, Y, Z axes
*4 Non-condensing at low temperatures

4. REFERENCE DATA

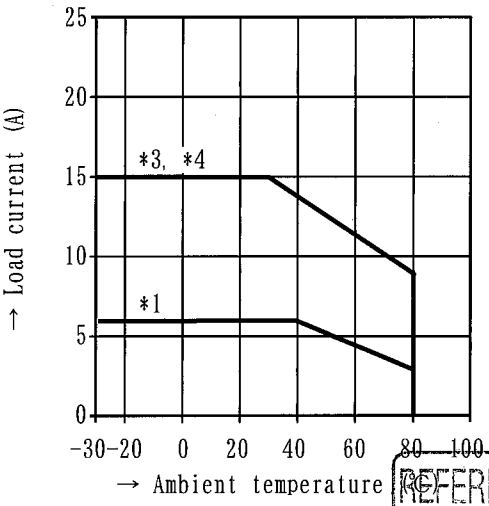
4- 1 Load current vs. ambient temperature

Use load current within range specified in the figure below.
Tested condition
*1 When used alone
*2 When mounting on 100×100×t1.6(mm) iron plate
*3 When mounting on 200×200×t2(mm) iron plate
*4 When mounting a standard heat sink (AQP808)
If attached to a heat sink, use a heat conductive compound (Ex. Momentive Performance Materials YG6111 or TSK5303) of similar coating to improve cooling.
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.

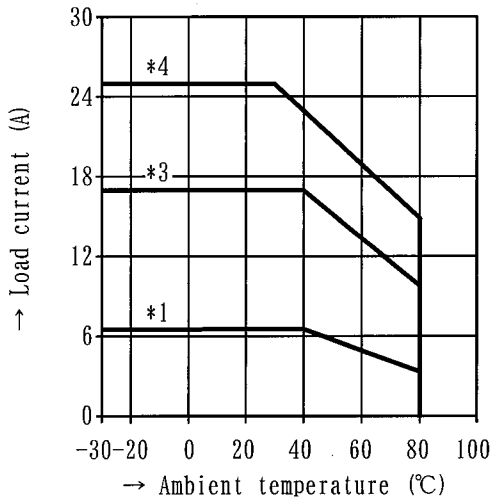
(1) AQJ11*V



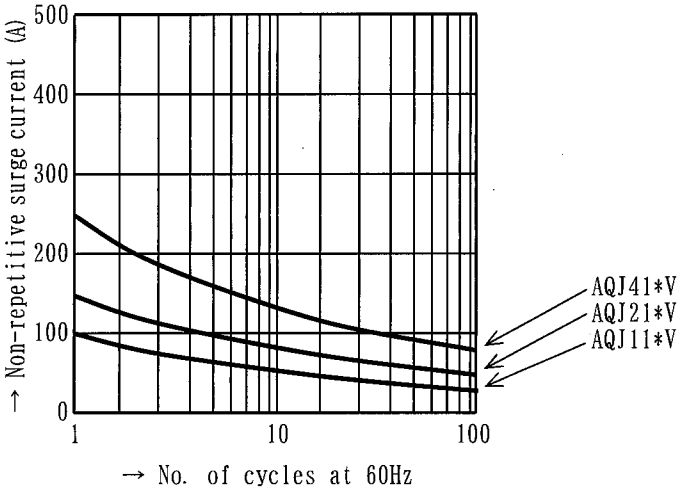
(2) AQJ21*V



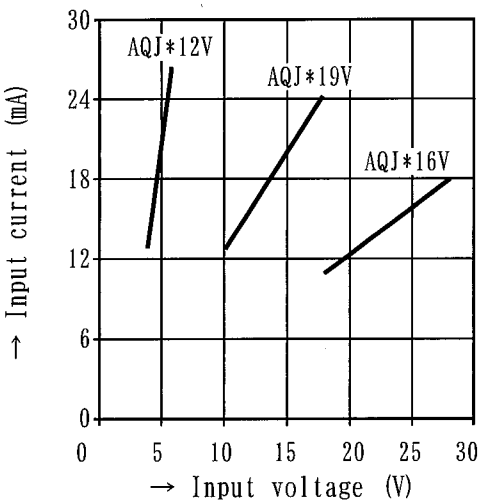
(3) AQJ41*V

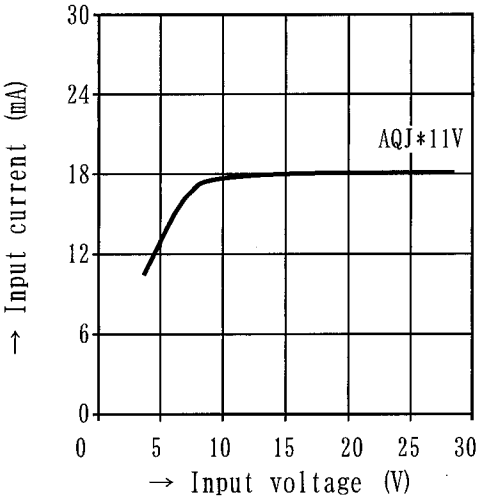


4- 2 Non-repetitive surge current vs. carrying time

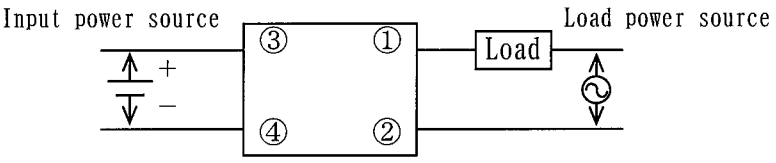


4- 3 Input current vs. input voltage

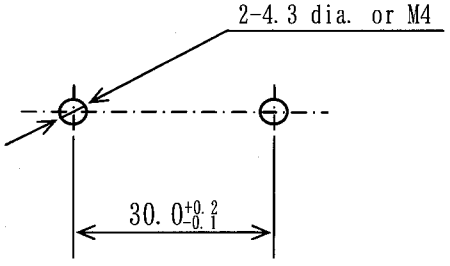




4- 4 Schematic



4- 5 Mounting dimensions (BOTTOM VIEW)



5. CAUTIONS FOR USE

5- 1 Regarding cautions for use and explanation of technical terms, please refer to our general catalog.

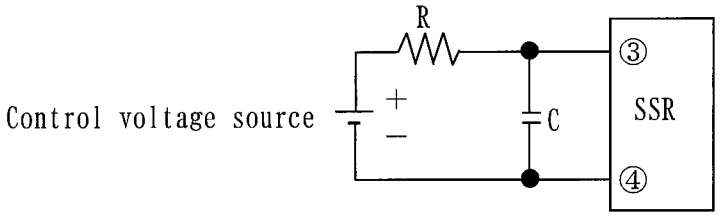
5- 2 About derating design

Derating is essential in any reliable design and is a significant factor for product life. Even if the conditions of use (temperature, current, voltage, etc.) of the product fall within the absolute maximum ratings, reliability can be reduced remarkably when used under high load (high temperature, high humidity, high current, high voltage, etc.). Therefore, please derate sufficiently below the absolute maximum rating and verify operation of the actual design before using.

5- 3 Input

(1) Noise and surge protection at the input side

A high noise surge voltage applied to the SSR input circuit can cause malfunction or permanent damage to the device. If such a high surge is anticipated, use C or R noise absorber in the input circuit.

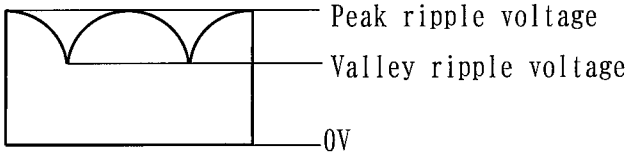


(2) When the input terminals are connected with reverse polarity

Reversing the polarity will not cause damage to the device, due to the presence of a protection diode, but the device will not operate.

(3) In the case of operating voltage containing ripple

If the SSR control voltage contains ripple, the peak of the ripple should not exceed the maximum rated control voltage, and the bottom of the ripple should exceed the minimum rated control voltage.

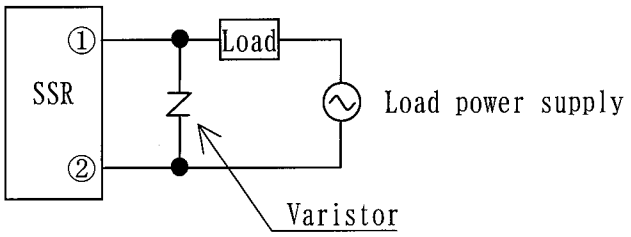


Part No.	Peak ripple voltage	Valley ripple voltage
AQJ*12V	Max. 6V	Min. 4V
AQJ*19V	Max. 18V	Min. 10V
AQJ*16V	Max. 28V	Min. 18V
AQJ*11V	Max. 28V	Min. 4V

5- 4 Output

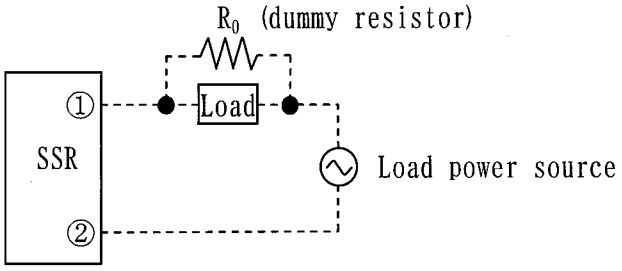
(1) Regarding output noise surge protection

A high noise surge voltage applied to the SSR load circuit can cause malfunction or permanent damage to the device. If such a high surge is anticipated, use a varistor across the SSR output.



(2) When used for the load less than rated

An SSR may malfunction if it is used below the specified load. In such an event, use a dummy resistor in parallel with the load.



Set a value of dummy resistor so that the load current becomes 50 mA or greater due to the dummy resistor and load.

5- 5 Others

(1) If an SSR is used in close proximity to another SSR or heat-generating device, its ambient temperature may exceed the allowable level. Carefully plan SSR layout and ventilation.

(2) Terminal connections should be made by referring to the associated wiring diagram.

(3) For higher reliability, check device quality under actual operating conditions.

5- 6 Transportation and storage

(1) Extreme vibration during transport will warp the lead or damage the relay. Handle the outer and inner boxes with care.

(2) Storage under extreme conditions will cause external appearance defects, and deterioration of the characteristics. The following storage conditions are recommended :

- Temperature : 0 to 45℃
- Humidity : Less than 70% R.H.
- Atmosphere : No harmful gasses such as sulfurous acid gas, minimal dust.

6. WARRANTY

Panasonic corporation will do our utmost to keep our product to be free from defects. However:

(1) To avoid uses of the product not in accordance with its specifications, Panasonic corporation asks the purchaser to present the purchaser's specification, the final destination, application of the final product and the method of installation of the product.

(2) If the purchaser believes that the possibility exists that the installation or anticipated use of the product may cause personal injury, death or property damage, Panasonic corporation advises the purchaser to be broad-minded about conditions and performance requirements listed on this specification and to take precautions such as applying a double-circuit.

(3) The warranty period of this product is one year from the date of arrival of the product at the location of the purchaser, and is limited to the listed items on this specification. If upon arrival any defect due to Panasonic corporation's failure to perform becomes apparent, Panasonic corporation will replace exchange or repair the defective product on the site where it was received.

The following are excluded from the warranty conditions:

① Any consequential damages or loss of profits are resulting from malfunctions or defects of the product.

② The product is affected by the use, the storage and the transport after the delivery.

③ An unforeseen situation arises which was unable to be predicted by the technology level at the time of shipment.

④ A natural or man-made disaster which is outside of Panasonic corporation's control occurs such as earthquake, flood, fire or social strife.