

Slim type SSR for 1A and 2A control

AQ-G RELAYS



RoHS compliant

FEATURES

- Space saving, Vertical size with a maximum thickness of 4.5 mm.**
Mounting space has been reduced to 30% (compared to conventional SSR's) while meeting high density PC board mounting requirements.
- Snubber circuit preventing malfunction**
- Zero-cross type and Random type available**
- High dielectric strength of 3,000V AC**
(between input and output)
- Snubber circuit integrated**
The snubber circuit is integrated to prevent malfunction caused by the rapid rise of voltage on the output side, such as inductive load and current.

TYPICAL APPLICATIONS

- Household appliances such as air conditioners, refrigerators and humidifiers
- Healthcare and medical equipment
- Industrial machinery such as NC machines, mounters, injection molders, and robots
- Microcomputer boards
- Amusement and amenity related equipment

ORDERING INFORMATION

	AQG					
Load current						
1: 1 A						
2: 2 A						
Load voltage						
2: 75 to 264 V AC						
Type						
1: Zero-cross (3,000 V)						
2: Random (3,000 V)						
Input voltage						
05: 5 V DC						
12: 12 V DC						
24: 24 V DC						

TYPES

Type	Load current	Load voltage	Input voltage	Part No.
Zero-cross	1A	75 to 264 V AC	5 V DC	AQG12105
			12 V DC	AQG12112
			24 V DC	AQG12124
	2A	75 to 264 V AC	5 V DC	AQG22105
			12 V DC	AQG22112
			24 V DC	AQG22124
Random	1A	75 to 264 V AC	5 V DC	AQG12205
			12 V DC	AQG12212
			24 V DC	AQG12224
	2A	75 to 264 V AC	5 V DC	AQG22205
			12 V DC	AQG22212
			24 V DC	AQG22224

Standard packing: Carton 20 pcs., Case 500 pcs.

RATING

1. Ratings (Ambient temperature: 20°C 68°F, Input voltage ripple: 1% or less)

1) Zero-cross type

Item	Type	Part No.						Remarks
		AQG12105	AQG12112	AQG12124	AQG22105	AQG22112	AQG22124	
Input side	Input voltage	4 to 6 V DC	9.6 to 14.4 V DC	19.2 to 28.8 V DC	4 to 6 V DC	9.6 to 14.4 V DC	19.2 to 28.8 V DC	*1
	Input impedance	Approx. 0.3k Ω	Approx. 0.8k Ω	Approx. 1.6k Ω	Approx. 0.3k Ω	Approx. 0.8k Ω	Approx. 1.6k Ω	
	Drop-out voltage, min.	1 V						
	Reverse voltage	3 V						
Load side	Max. load current	1 A AC*2			2 A AC*2			1A: Ta = Max. 40°C 104°F 2A: Ta = Max. 25°C 77°F
	Load voltage	75 to 264 V AC						
	Frequency	45 to 65 Hz						
	Non-repetitive surge current	8 A*3			30 A*3			In one cycle at 60 Hz
	Max. “OFF-state” leakage current	1.5 mA						at 60 Hz at 200 V AC
	Max. “ON-state” voltage drop	1.6 V						at Max. carrying current
	Min. load current	20 mA*4						

2) Random type

Part No.		Remarks						
Item	Type	AQG12205	AQG12212	AQG12224	AQG22205	AQG22212	AQG22224	Remarks
Input side	Input voltage	4 to 6 V DC	9.6 to 14.4 V DC	19.2 to 28.8 V DC	4 to 6 V DC	9.6 to 14.4 V DC	19.2 to 28.8 V DC	*1
	Input impedance	Approx. 0.3k Ω	Approx. 0.8k Ω	Approx. 1.6k Ω	Approx. 0.3k Ω	Approx. 0.8k Ω	Approx. 1.6k Ω	
	Drop-out voltage, min.	1 V						
	Reverse voltage	3 V						
Load side	Max. load current	1 A AC*2			2 A AC*2			1A: Ta = Max. 40°C 104°F 2A: Ta = Max. 25°C 77°F
	Load voltage	75 to 264 V AC						
	Frequency	45 to 65 Hz						
	Non-repetitive surge current	8 A*3			30 A*3			In one cycle at 60 Hz
	Max. "OFF-state" leakage current	1.5 mA						at 60 Hz at 200 V AC
	Max. "ON-state" voltage drop	1.6 V						at Max. carrying current
	Min. load current	20 mA*4						

Notes: *1. Refer to REFERENCE DATA "3. Input current vs. input voltage characteristics".

*2. Refer to REFERENCE DATA "1. Load current vs. ambient temperature".

*3. Refer to REFERENCE DATA "2. Non-repetitive surge current vs. carrying time".

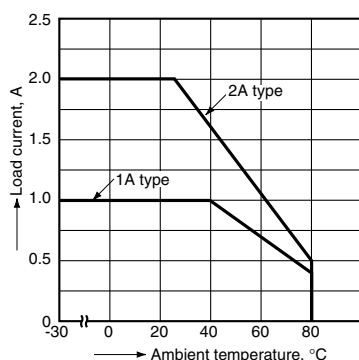
*4. When the load current is less than the rated minimum load current, please refer to "Cautions for Use of SSR".

2. Characteristics (Ambient temperature: 20°C 68°F, Input voltage ripple: 1% or less)

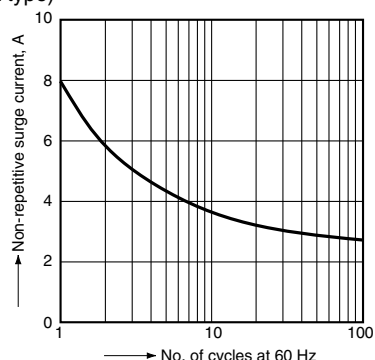
Item	Zero-cross type	Random type	Remarks
Operate time max.	1/2 cycle of voltage sine wave + 1 ms	1 ms	
Release time, max.	1/2 cycle of voltage sine wave + 1 ms		
Insulation resistance, min.	10 ⁹ Ω between input and output		at 500 V DC
Breakdown voltage	3,000 Vrms between input and output		for 1 min.
Vibration resistance	10 to 55 Hz double amplitude of 0.75 mm		X, Y, Z axes
Shock resistance	Min. 1,000 m/s ²		X, Y, Z axes
Ambient temperature	-30°C to +80°C -22°F to +176°F		Non-condensing at low temperatures
Storage temperature	-30°C to +100°C -22°F to +212°F		
Operational method	Zero-cross (Turn-ON and Turn-OFF)	Random turn ON, zero-cross turn OFF	

REFERENCE DATA

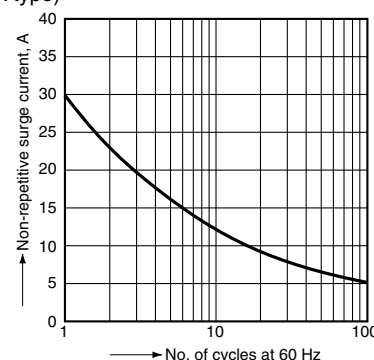
1. Load current vs. ambient temperature



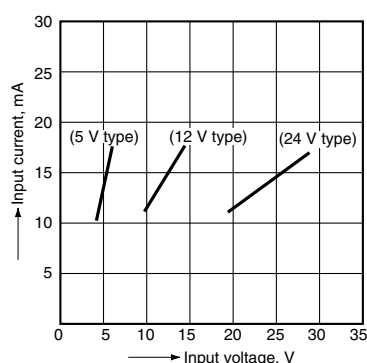
2.-(1) Non-repetitive surge current vs. carrying time (1A type)



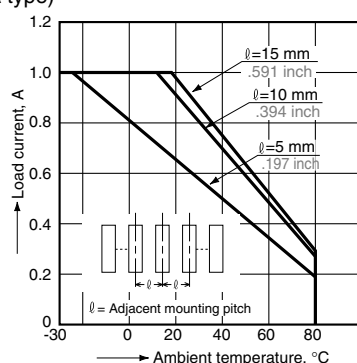
2.-(2) Non-repetitive surge current vs. carrying time (2A type)



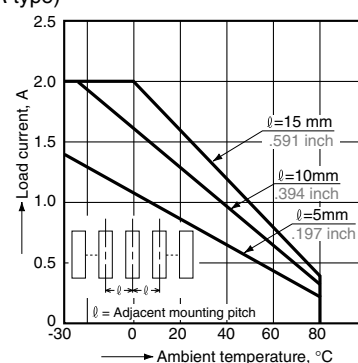
3. Input current vs. input voltage characteristics



4.-(1) Load current vs. ambient temperature characteristics for adjacent mounting (1A type)



4.-(2) Load current vs. ambient temperature characteristics for adjacent mounting (2A type)



DIMENSIONS (mm inch)

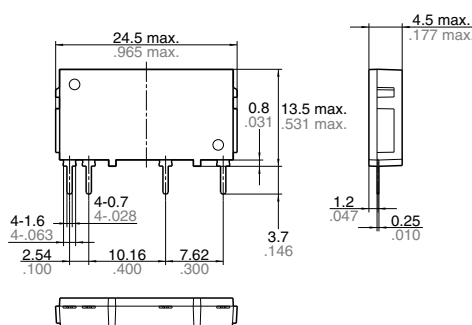
1. 1A type

CAD Data



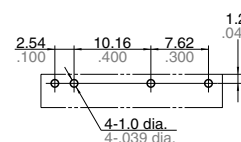
The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://industrial.panasonic.com/ac/e/>

External dimensions



General tolerance: $\pm 0.2 \pm .008$

PC board pattern (Bottom view)



Tolerance: $\pm 0.1 \pm .004$

Schematic

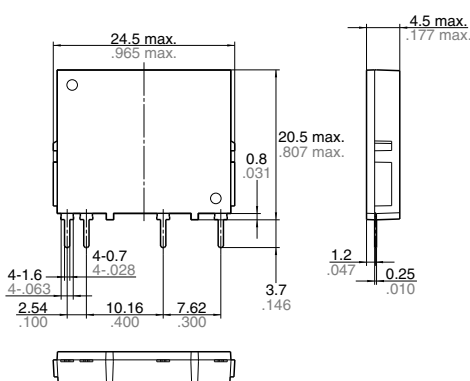


2. 2A type

CAD Data

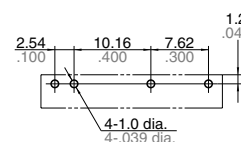


External dimensions



General tolerance: $\pm 0.2 \pm .008$

PC board pattern (Bottom view)

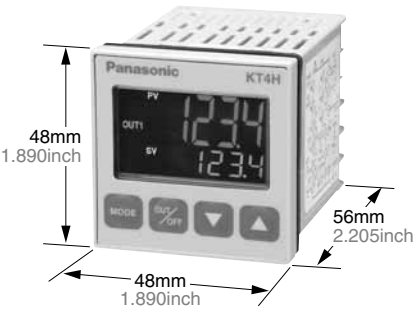


Tolerance: $\pm 0.1 \pm .004$

Schematic



Recommended Temperature Controllers



<KT4H Temperature Controller>
Our temperature controller is recommended for use with our Solid State Relays.

- Features**
- Space saving requiring only a depth of 65 mm
 - Data collection possible through a PLC using RS485 communication
 - Tool port is standard for easy data setting
 - Inverted LCD + backlight for good legibility with large characters
 - Excellent operability and rich optional control functions

Substitute part numbers

Power supply	Control output	Part No.
100 to 240 V AC	Non-contact voltage output	AKT4H112100

* For detailed product information about temperature controllers, please refer to our website:
<http://industrial.panasonic.com/ac/e/>