



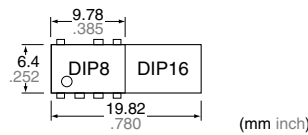
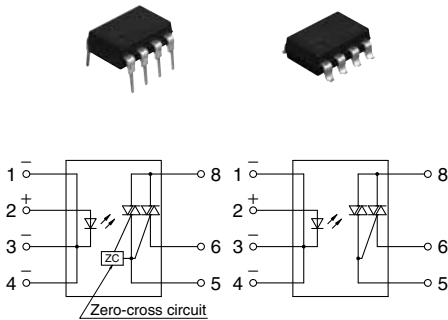
**Compact DIP type SSR**  
Ideal for AC load control

AQ-H RELAYS

### FEATURES

1. Supports 0.3 A, 0.6 A, 0.9 A and 1.2 A ON-state RMS currents.
2. The 1.2 A type saves space with a DIP 8-pin package.

4. High dielectric strength: 5,000 Vrms (between input and output)
5. Two types available: Zero-cross type and Random type



### 3. Handles both 100 and 200 Vrms loads

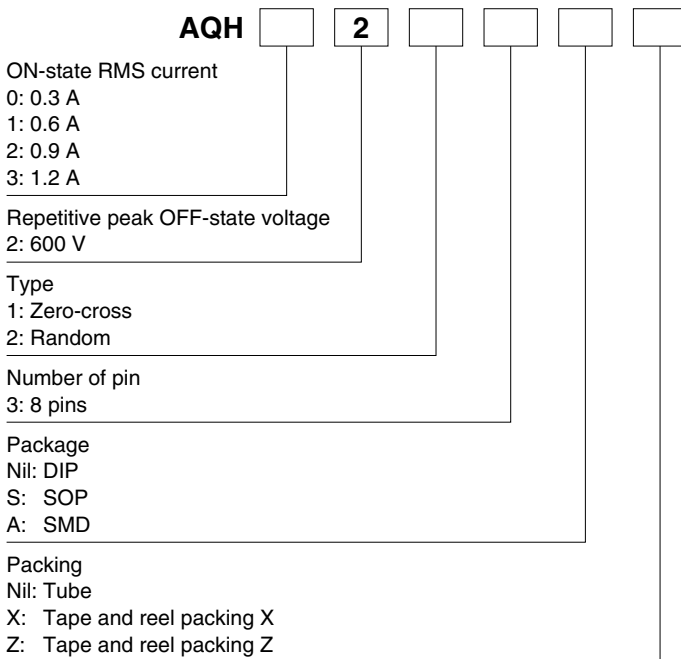
This relay handles both voltages in a single product. It is not necessary for users that use both types to manage separate part numbers.

### TYPICAL APPLICATIONS

1. Home appliances (air conditioner, microwave oven, washing machine, personal hygiene system, refrigerator, fan heater, inductive heating cooker, rice cooker and humidifier, etc.)
2. Industrial equipment

**RoHS compliant**

### ORDERING INFORMATION



**TYPES**

Type	Output rating*		Type	Part No.				Packing quantity	
				Through hole terminal	Surface-mount terminal				
	Repetitive peak OFF-state voltage	ON-state RMS current		Tube packing style	Tube packing style	Tape and reel packing style		Tube	Tape and reel
AC type	600 V	0.3 A	Zero-cross	AQH0213	AQH0213A	AQH0213AX	AQH0213AZ		
		0.6 A		AQH1213	AQH1213A	AQH1213AX	AQH1213AZ		
		0.9 A		AQH2213	AQH2213A	AQH2213AX	AQH2213AZ		
		1.2 A		AQH3213	AQH3213A	AQH3213AX	AQH3213AZ		
		0.3 A	Random	AQH0223	AQH0223A	AQH0223AX	AQH0223AZ		
		0.6 A		AQH1223	AQH1223A	AQH1223AX	AQH1223AZ		
		0.9 A		AQH2223	AQH2223A	AQH2223AX	AQH2223AZ		
		1.2 A		AQH3223	AQH3223A	AQH3223AX	AQH3223AZ		

\* Indicate the repetitive peak OFF-state voltage and ON-state RMS current; peak AC.  
 Note: For space reasons, the SMD terminal shape indicator "A" and the package type indicator "X" and "Z" are omitted from the seal.

**RATING**

**1. Absolute maximum ratings (Ambient temperature: 25°C 77°F)**

Item	Symbol	AQH0213, AQH0223	AQH1213, AQH1223	AQH2213, AQH2223	AQH3213, AQH3223	Remarks
Input	LED forward current	I <sub>F</sub>	50 mA			
	LED reverse voltage	V <sub>R</sub>	6 V			
	Peak forward current	I <sub>FP</sub>	1 A			
Output	Repetitive peak OFF-state voltage	V <sub>DRM</sub>	600 V			
	ON-state RMS current	I <sub>T (RMS)</sub>	0.3 A	0.6 A	0.9 A	1.2 A
	Non-repetitive surge current	I <sub>TSM</sub>	3 A	6 A	9 A	12 A
I/O isolation voltage	V <sub>iso</sub>	5,000 Vrms				
Operating temperature	T <sub>opr</sub>	-30 to +85°C -22 to +185°F				Non-condensing at low temperatures
Storage temperature	T <sub>stg</sub>	-40 to +125°C -40 to +257°F				

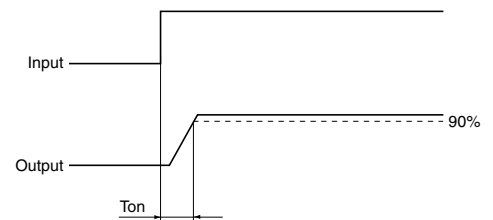
Note: "A", "AX" and "AZ" at the end of the part numbers have been omitted.

**2. Characteristics (Ambient temperature: 25°C 77°F)**

Item	Symbol	AQH0213, AQH1213, AQH2213, AQH3213	AQH0223, AQH1223, AQH2223, AQH3223	Remarks
Input	LED dropout voltage	Typical	1.21 V	I <sub>F</sub> = 20 mA
		Maximum	1.3 V	
	LED reverse current	Typical	—	V <sub>R</sub> = 6 V
Maximum		10 μA		
Output	Peak OFF-state current	Typical	—	I <sub>F</sub> = 0 mA V <sub>DRM</sub> = 600 V
		Maximum	100 μA	
	Peak ON-state voltage	Typical	—	I <sub>F</sub> = 10 mA I <sub>TM</sub> = Max.
		Maximum	2.5 V	
Holding current	Typical	—	25 mA	
	Maximum	—		
Critical rate of rise of OFF-state voltage	Minimum	dv/dt	200 V/μs	V <sub>DRM</sub> = 600 V × 1/√2
Transfer characteristics	Trigger LED current	Maximum	I <sub>FT</sub>	10 mA V <sub>D</sub> = 6 V R <sub>L</sub> = 100 Ω
	Zero-cross voltage	Maximum	V <sub>ZC</sub>	50 V I <sub>F</sub> = 10 mA
	Turn on time*1	Maximum	T <sub>ON</sub>	100 μs I <sub>F</sub> = 20 mA V <sub>D</sub> = 6 V R <sub>L</sub> = 100 Ω
	I/O isolation resistance	Minimum	R <sub>iso</sub>	50 GΩ

Notes: 1. For type of connection, see "SCHEMATIC AND WIRING DIAGRAMS".  
 2. "A", "AX" and "AZ" at the end of the part numbers have been omitted.

**\*1 Turn on time**



**RECOMMENDED OPERATING CONDITIONS**

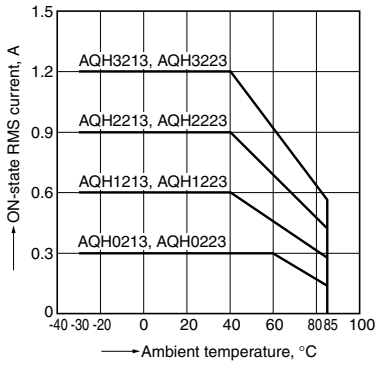
Please use under recommended operating conditions to obtain expected characteristics.

Item	Symbol	Min.	Max.	Unit
Input LED current	I <sub>F</sub>	15	25	mA

# REFERENCE DATA

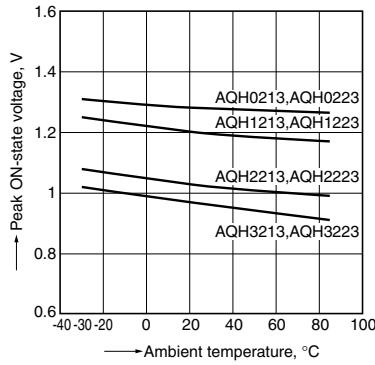
## 1. ON-state RMS current vs. Ambient temperature characteristics

Allowable ambient temperature:  
-30 to +85°C -22 to +185°F



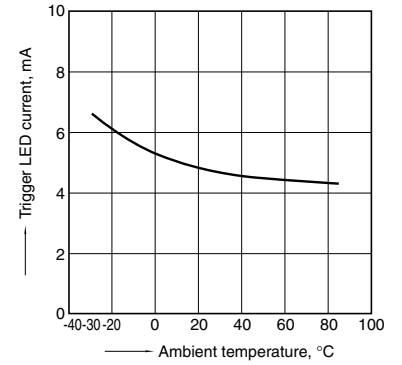
## 2. Peak ON-state voltage vs. Ambient temperature characteristics

LED current: 10 mA; ON current: Max.  
Measured portion: between terminals 6 and 8



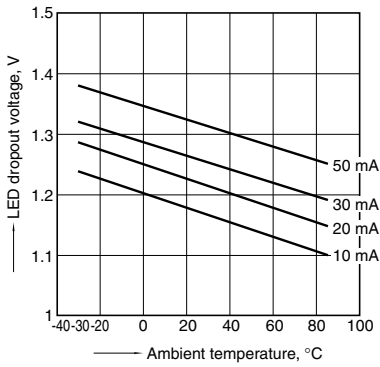
## 3. Trigger LED current vs. Ambient temperature characteristics

Load voltage: 6 V DC;  
Load resistance: 100 Ω



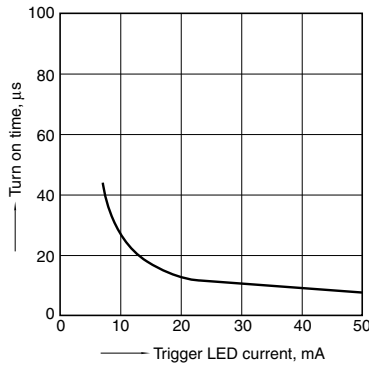
## 4. LED dropout voltage vs. Ambient temperature characteristics

LED current: 10 to 50 mA



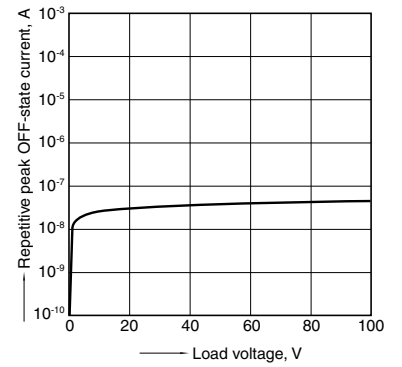
## 5. Turn on time vs. LED current characteristics

Load voltage: 6 V DC; Load resistance: 100 Ω  
Measured portion: between terminals 6 and 8

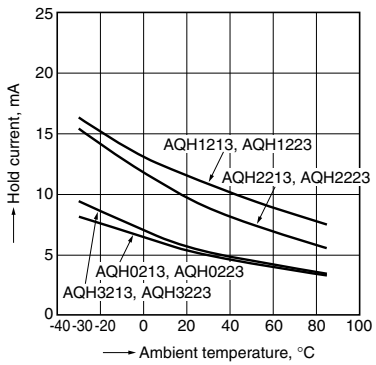


## 6. Repetitive peak OFF-state current vs. Load voltage characteristics

Ambient temperature: 25°C 77°F; Measured portion: between terminals 6 and 8; LED current: 0 mA

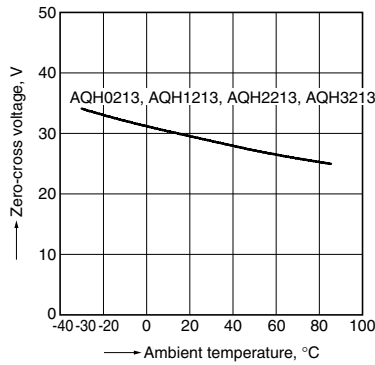


## 7. Hold current vs. Ambient temperature characteristics



## 8. Zero-cross voltage vs. Ambient temperature characteristics

LED current: 10 mA



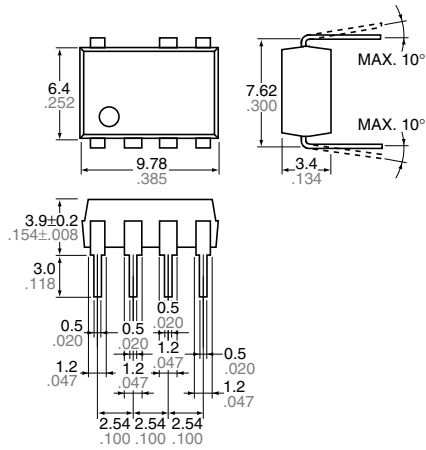
**DIMENSIONS** (mm inch)

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

**Through hole terminal type**

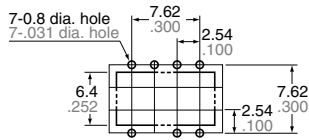
**CAD**

External dimensions



Terminal thickness: 0.25 .010  
General tolerance: ±0.1 ±.004

PC board pattern (BOTTOM VIEW)

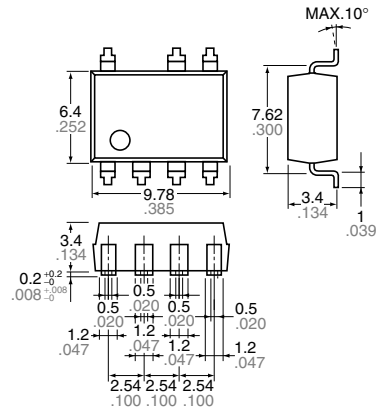


Tolerance: ±0.1 ±.004

**Surface mount terminal type**

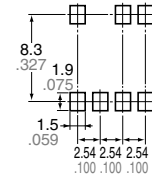
**CAD**

External dimensions



Terminal thickness: 0.25 .010  
General tolerance: ±0.1 ±.004

Recommended mounting pad (TOP VIEW)



Tolerance: ±0.1 ±.004

**SCHEMATIC AND WIRING DIAGRAMS**

Schematic	Output configuration	Load	Wiring diagram
	1 Form A	AC	
	1 Form A	AC	

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Please contact .....

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