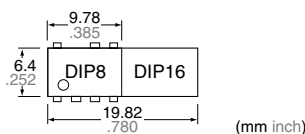


### FEATURES

1. Compact DIP type SSR that's ideal for AC load control
2. Supports 0.3 A, 0.6 A, 0.9 A and 1.2 A ON-state RMS currents.
3. The 1.2 A type saves space with a DIP 8-pin package. (Competitor only provides a 16-pin type.)



4. Handles both 100 and 200 V AC 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.

5. High dielectric strength: 5,000 V AC (between input and output)
6. Two types available: Zero-cross type and Non-zero-cross type

### TYPICAL APPLICATIONS

1. Home appliances (air conditioners, microwave ovens, washing machines, personal hygiene systems, refrigerators, fan heaters, inductive heating cooker, and water heaters, etc.)
2. Industrial equipment market.

RoHS Directive compatibility information  
<http://www.nais-e.com/>

### TYPES

Type	Output rating*		Type	Part No.				Packing quantity	
				Through hole terminal	Surface-mount terminal			Tube	Tape and reel
	Tube packing style				Tape and reel packing style				
Repetitive peak OFF-state voltage	ON-state RMS current	Picked from the 1/2/3/4-pin side	Picked from the 5/6/8-pin side						
AC type	600 V	Zero-cross	AQH0213	AQH0213A	AQH0213AX	AQH0213AZ	1 tube contains 40 pcs. 1 batch contains 400 pcs.	1,000 pcs.	
			AQH1213	AQH1213A	AQH1213AX	AQH1213AZ			
			AQH2213	AQH2213A	AQH2213AX	AQH2213AZ			
			AQH3213	AQH3213A	AQH3213AX	AQH3213AZ			
		Non zero-cross	AQH0223	AQH0223A	AQH0223AX	AQH0223AZ			
			AQH1223	AQH1223A	AQH1223AX	AQH1223AZ			
			AQH2223	AQH2223A	AQH2223AX	AQH2223AZ			
			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(A)	AQH0223(A)	AQH1213(A)	AQH1223(A)	AQH2213(A)	AQH2223(A)	AQH3213(A)	AQH3223(A)	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		60Hz, 1 cycle
I/O isolation voltage	V <sub>iso</sub>	5,000 V AC								
Temperature limits	Operating	T <sub>opr</sub> -30°C to +85°C -22°F to +185°F								
	Storage	T <sub>stg</sub> -40°C to +125°C -40°F to +257°F								

# AQ-H

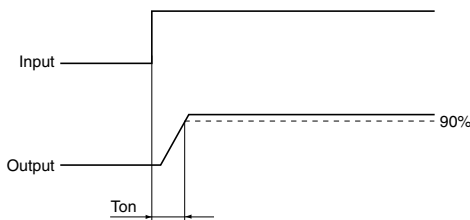
## 2. Electrical characteristics (Ambient temperature: 25°C 77°F)

Item		Symbol	AQH0213(A)	AQH1213(A)	AQH2213(A)	AQH3213(A)	AQH0223(A)	AQH1223(A)	AQH2223(A)	AQH3223(A)	Condition
Input	LED dropout voltage	Typical	1.18 V						$I_F = 10 \text{ mA}$		
		Maximum	1.3 V								
	LED reverse current	Typical	—						$V_R = 6 \text{ V}$		
		Maximum	10 $\mu\text{A}$								
Output	Peak OFF-state current	Typical	—						$I_F = 0 \text{ mA}$ $V_{\text{DRM}} = 600 \text{ V}$		
		Maximum	100 $\mu\text{A}$								
	Peak ON-state voltage	Typical	—						$I_F = 10 \text{ mA}$ $I_{\text{TM}} = \text{Max.}$		
		Maximum	2.5 V								
Holding current	Typical	—									
	Maximum	25 mA									
	Critical rate of rise of OFF-state voltage	Minimum	200 V/ $\mu\text{s}$						$V_{\text{DRM}} = 600 \text{ V} \times 1/\sqrt{2}$		
Transfer characteristics	Trigger LED current*	Maximum	10 mA						$V_D = 6 \text{ V}$ $R_L = 100 \Omega$		
	Zero-cross voltage**	Maximum	50 V			—			$I_F = 10 \text{ mA}$		
	Turn on time***	Maximum	100 $\mu\text{s}$						$I_F = 20 \text{ mA}$ $V_D = 6 \text{ V}$ $R_L = 100 \Omega$		
	I/O isolation resistance	Minimum	50 G $\Omega$						500 V DC		

Notes: \*Recommended LED current  $I_F$ : 20 mA

\*\*Applicable part No.: AQH0213, AQH1213, AQH2213 and AQH3213.

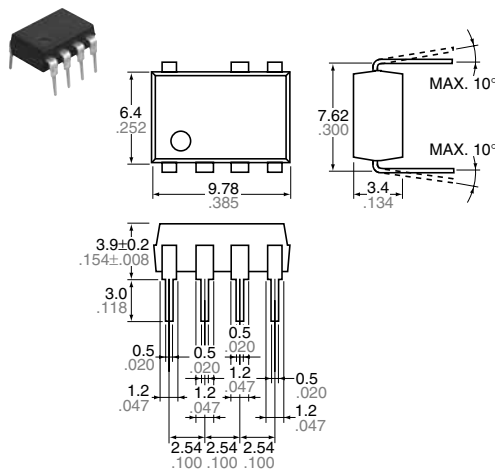
\*\*\*Turn on time



## DIMENSIONS

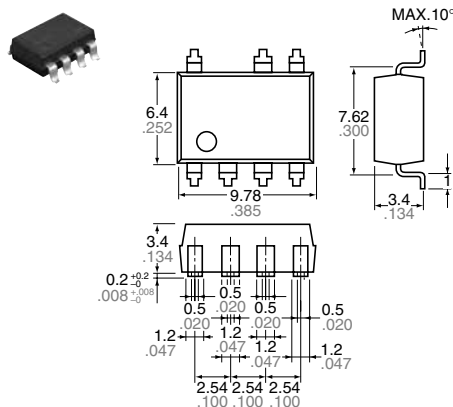
mm inch

Through hole terminal type



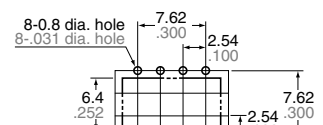
Terminal thickness: 0.25 .010  
General tolerance:  $\pm 0.1 \pm .004$

Surface mount terminal type



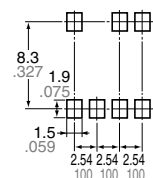
Terminal thickness: 0.25 .010  
General tolerance:  $\pm 0.1 \pm .004$

PC board pattern (BOTTOM VIEW)



Tolerance:  $\pm 0.1 \pm .004$

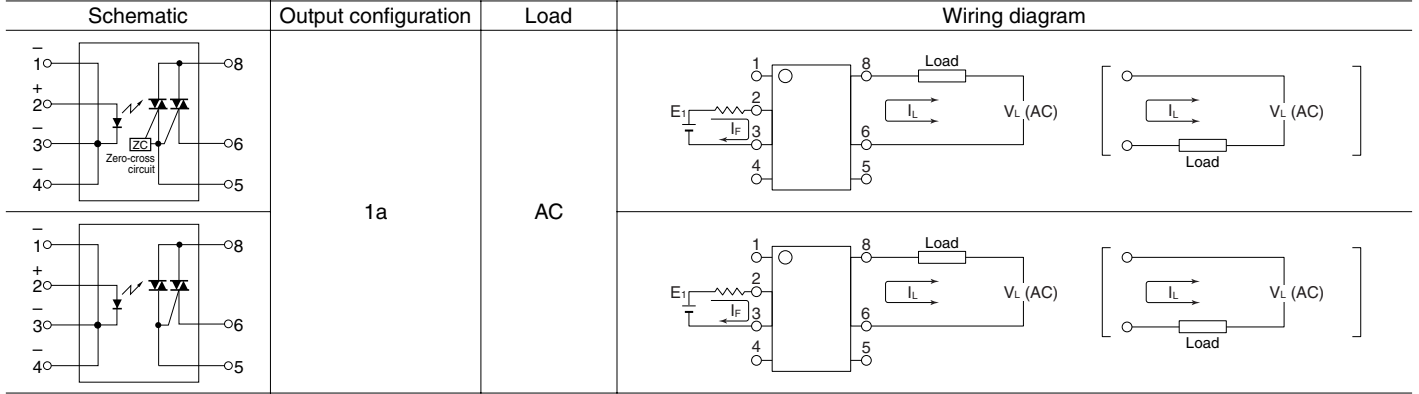
Recommended mounting pad (TOP VIEW)



Tolerance:  $\pm 0.1 \pm .004$

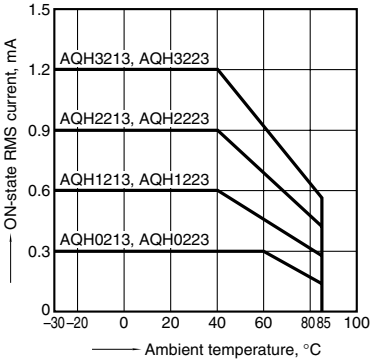
# SCHEMATIC AND WIRING DIAGRAMS

Notes: E<sub>1</sub>: Power source at input side; I<sub>F</sub>: Trigger LED forward current; V<sub>L</sub>: Load voltage; I<sub>L</sub>: Load current;

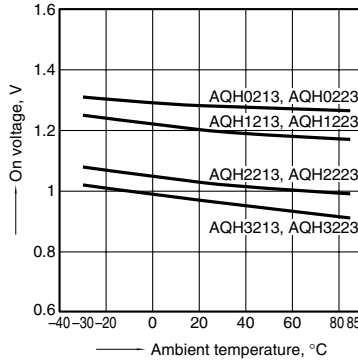


## REFERENCE DATA

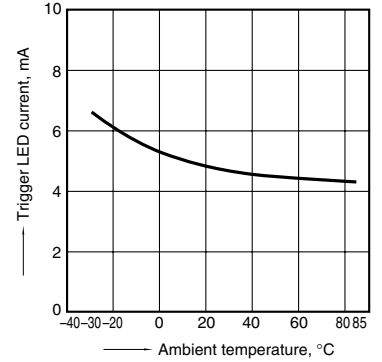
1. ON-state RMS current vs. Ambient temperature characteristics  
 Allowable ambient temperature: -30°C to +85°C -22°F to +185°F



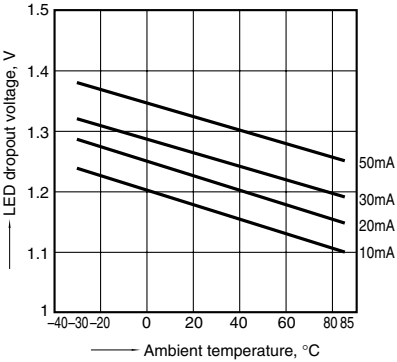
2. On voltage vs. Ambient temperature characteristics  
 LED current: 10 mA; ON current: Max.  
 Measured portion: between terminals 6 and 8



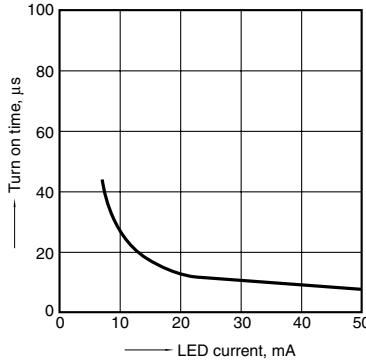
3. Trigger LED current vs. Ambient temperature characteristics  
 Load voltage: 6 V DC;  
 Load resistance: 100Ω



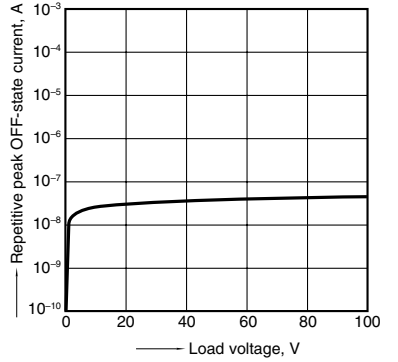
4. LED dropout voltage vs. Ambient temperature characteristics  
 LED current: 10 to 50 mA



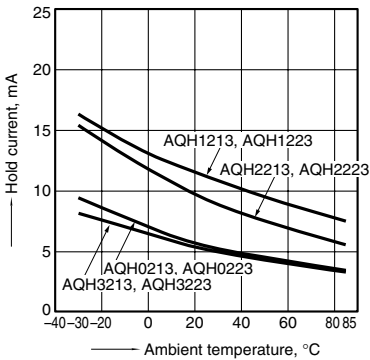
5. Turn on time vs. LED current characteristics  
 Load voltage: 6 V DC; Load resistance: 100Ω  
 Measured portion: between terminals 6 and 8



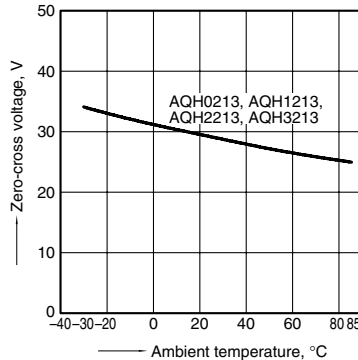
6. Repetitive peak OFF-state current vs. Load voltage characteristics  
 LED current: 0 mA; Measured portion: between terminals 6 and 8; Ambient temperature: 25°C 77°F



7. Hold current vs. Ambient temperature characteristics



8. Zero-cross voltage vs. Ambient temperature characteristics  
 LED current: 10 mA



## For Cautions for Use