

mm inch

### FEATURES

**1. Reinforced insulation 5,000 V type**  
More than 0.4 mm internal insulation distance between inputs and outputs. Conforms to EN41003, EN60950 (reinforced insulation).

**2. Compact 8-pin DIP size**  
The device comes in a compact (W) 6.4×(L)9.86×(H)3.2 mm (W).252×(L).388×(H).126 inch, 8-pin DIP size (through hole terminal type).

**3. Applicable for 1 Form A 1 Form B use as well as two independent 1 Form A and 1 Form B use**

**4. Controls low-level analog signals**  
PhotoMOS relays feature extremely low closed-circuit offset voltage to enable control of low-level analog signals without distortion.

**5. High sensitivity, high speed response.**

Can control a maximum 0.14 A load current with a 5 mA input current. Fast operation speed of 0.5ms (typ.) [N.O.].(AQW610EH)

**6. Low-level off state leakage current**

### TYPICAL APPLICATIONS

- Modem
- Telephone equipment
- Security equipment
- Sensors

### TYPES

Type	I/O isolation voltage	Output rating*		Part No.				Packing quantity	
				Through hole terminal	Surface-mount terminal			Tube	Tape and reel
		Load voltage	Load current	Tube packing style		Tape and reel packing style			
AC/DC type	Reinforced 5,000 V	350 V	120 mA	AQW610EH	AQW610EHA	AQW610EHAX	AQW610EHAZ	1 tube contains 40 pcs. 1 batch contains 400 pcs.	1,000 pcs.
		400 V	100 mA	AQW614EH	AQW614EHA	AQW614EHAX	AQW614EHAZ		

\*Indicate the peak AC and DC values.

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	AQW610EH (A)	AQW614EH (A)	Remarks
Input	LED forward current	$I_F$	50 mA		
	LED reverse voltage	$V_R$	3 V		
	Peak forward current	$I_{FP}$	1 A		f = 100 Hz, Duty factor = 0.1%
	Power dissipation	$P_{in}$	75 mW		
Output	Load voltage (peak AC)	$V_L$	350 V	400 V	
	Continuous load current	$I_L$	0.12 A (0.14 A)	0.1 A (0.13 A)	( ) : in case of using only 1 channel
	Peak load current	$I_{peak}$	0.36 A	0.3 A	100 ms (1 shot), $V_L = DC$
	Power dissipation	$P_{out}$	800 mW		
Total power dissipation		$P_T$	850 mW		
I/O isolation voltage		$V_{iso}$	5,000 V AC		
Temperature limits	Operating	$T_{opr}$	-40°C to +85°C -40°F to +185°F		Non-condensing at low temperatures
	Storage	$T_{stg}$	-40°C to +100°C -40°F to +212°F		

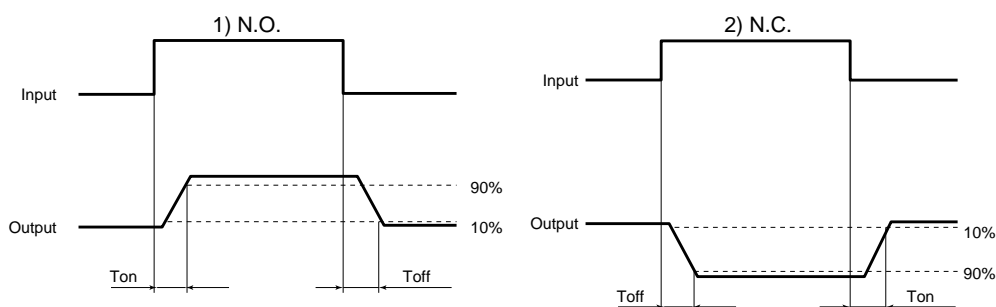
2. Electrical characteristics (Ambient temperature: 25°C 77°F)

Item		Symbol	AQW610EH (A)	AQW614EH (A)	Condition
Input	LED operate current	Typical	1.3 mA		I <sub>L</sub> =Max.
		Maximum	3.0 mA		
	LED reverse current	Minimum	0.4 mA		I <sub>L</sub> =Max.
		Typical	1.2 mA		
LED dropout voltage	Typical	1.14 (1.25 V at I <sub>F</sub> = 50 mA)		I <sub>F</sub> =5 mA	
	Maximum	1.5 V			
Output	On resistance	Typical	18Ω	26Ω	I <sub>F</sub> =5mA (N.O.) I <sub>F</sub> = 0mA (N.C.) I <sub>L</sub> = Max. Within 1 s on time
		Maximum	25Ω	35Ω	
	Off state leakage current	Maximum	1μA (N.O.) 10μA (N.C.)		I <sub>F</sub> =0 mA (N.O.) I <sub>F</sub> = 5 mA (N.C.) V <sub>L</sub> = Max.
Transfer characteristics	Operate (OFF) time*	Typical	0.5 ms (N.O.) 1.0 ms (N.C.)	0.5 ms (N.O.) 0.8 ms (N.C.)	I <sub>F</sub> = 0 mA-->5 mA I <sub>L</sub> = Max.
		Maximum	3.0 ms		
	Reverse (ON) time*	Typical	0.08ms (N.O.) 0.2ms (N.C.)		I <sub>F</sub> = 5 mA-->0 mA I <sub>L</sub> = Max.
		Maximum	1.0ms		
	I/O capacitance	Typical	0.8 pF		f = 1MHz V <sub>B</sub> = 0
Maximum		1.5 pF			
Initial I/O isolation resistance	Minimum	R <sub>iso</sub>	1,000MΩ		500 V DC

Note: Recommendable LED forward current I<sub>F</sub> = 5 to 10 mA.

For type of connection

\*Operate/Reverse time

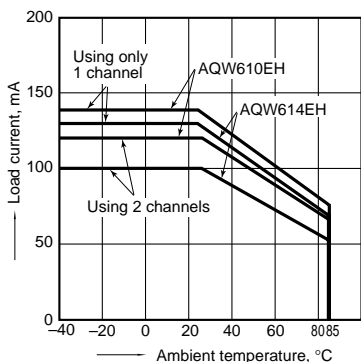


- For Dimensions, see Page 440.
- For Schematic and Wiring Diagrams, see Page 445.
- For Cautions for Use, see Page 449.

REFERENCE DATA

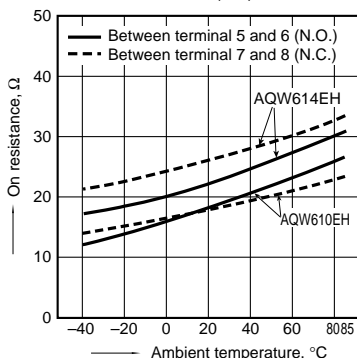
1. Load current vs. ambient temperature characteristics

Allowable ambient temperature: -40°C to +85°C  
-40°F to +185°F



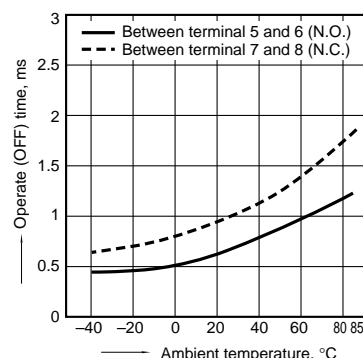
2. On resistance vs. ambient temperature characteristics

Measured portion: between terminals 5 and 6, 7 and 8;  
LED current: 5 mA; Load voltage; Max. (DC)  
Continuous load current: Max. (DC)



3. Operate time vs. ambient temperature characteristics

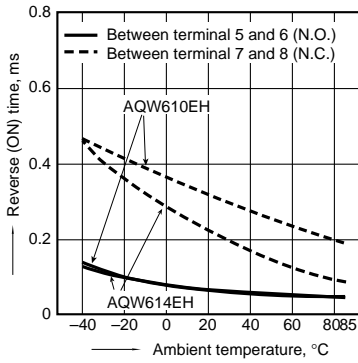
LED current: 5 mA; Load voltage: Max. (DC);  
Continuous load current: Max. (DC)



# AQW610EH

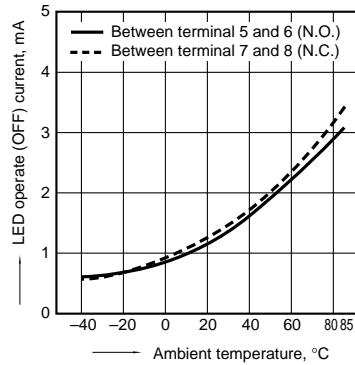
## 4. Reverse time vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: Max. (DC);  
Continuous load current: Max. (DC)



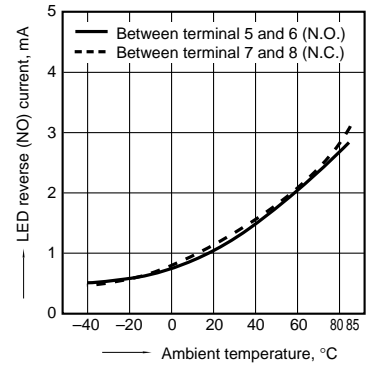
## 5. LED operate current vs. ambient temperature characteristics

Load voltage: Max. (DC);  
Continuous load current: Max. (DC)



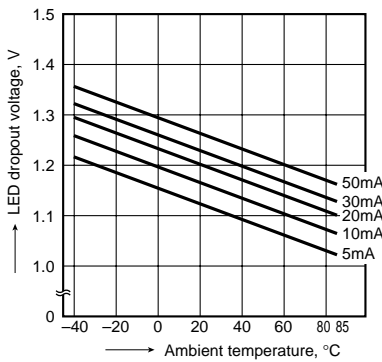
## 6. LED reverse current vs. ambient temperature characteristics

Load voltage: Max. (DC);  
Continuous load current: Max. (DC)



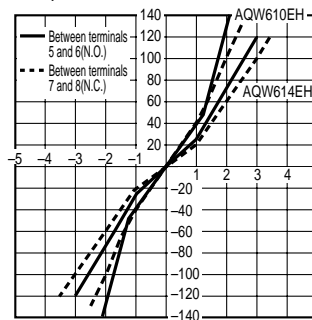
## 7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



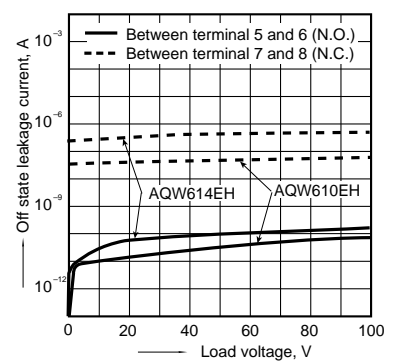
## 8. Voltage vs. current characteristics of output at MOS portion

Measured portion: between terminals 5 and 6, 7 and 8;  
Ambient temperature: 25°C 77°F



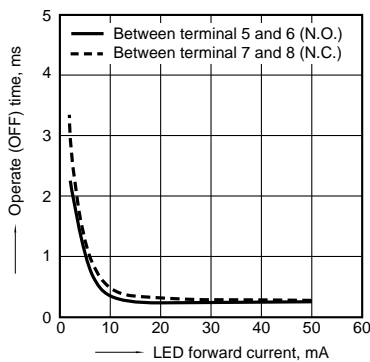
## 9. Off state leakage current

Measured portion: between terminals 5 and 6, 7 and 8;  
Ambient temperature: 25°C 77°F



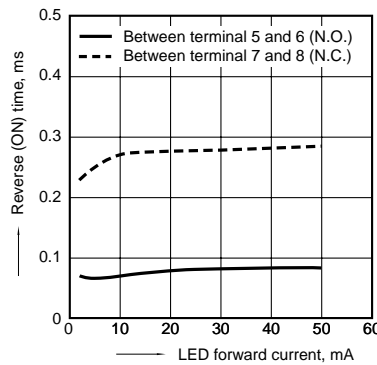
## 10. LED forward current vs. operate time characteristics

Measured portion: between terminals 5 and 6, 7 and 8;  
Load voltage: Max. (DC); Continuous load current: Max. (DC); Ambient temperature: 25°C 77°F



## 11. LED forward current vs. reverse (ON) time characteristics

Measured portion: between terminals 5 and 6, 7 and 8;  
Load voltage: Max. (DC); Continuous load current: Max. (DC); Ambient temperature: 25°C 77°F



## 12. Applied voltage vs. output capacitance characteristics

Measured portion: between terminals 5 and 6, 7 and 8;  
Frequency: 1 MHz; Ambient temperature: 25°C 77°F

