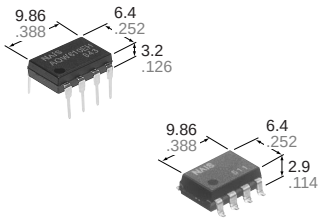
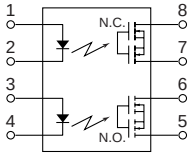
NAiS

GU (General Use)-E Type 2-Channel (Form A Form B) Type

PhotoMOS RELAYS



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				
		Load voltage	Load current	Tube packing style		Tape and reel packing style		Tube	Tape and reel
						Picked from the 1/2/3/4-pin side	Picked from the 5/6/7/8-pin side		
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 (0.13 A)	0.1 A (0.13 A)	Peak AC, DC ( ): in case of using only 1a or 1b, 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		

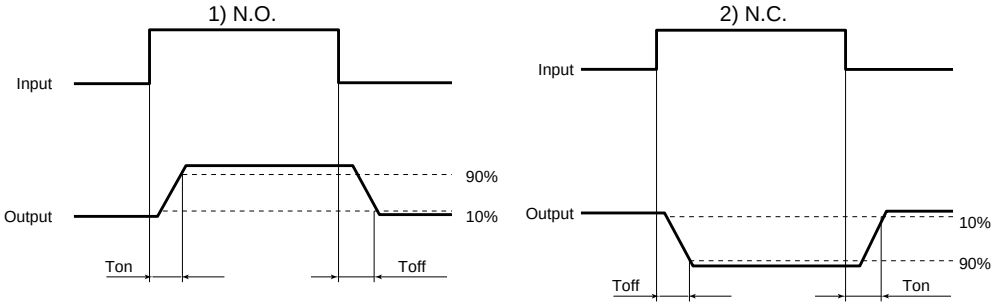
2. Electrical characteristics (Ambient temperature: 25°C 77°F)

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

Note: Recommendable LED forward current I_F = 5 to 10 mA.

For type of connection, see page 32.

*Operate/Reverse time

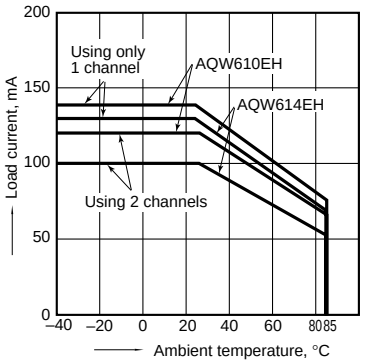


■ **For Dimensions, see Page 27.**
■ **For Schematic and Wiring Diagrams, see Page 32.**
■ **For Cautions for Use, see Page 36.**

REFERENCE DATA

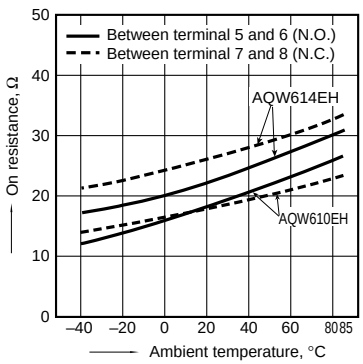
1. Load current vs. ambient temperature characteristics

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



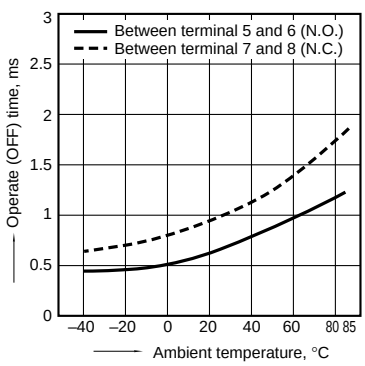
2. On resistance vs. ambient temperature characteristics

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



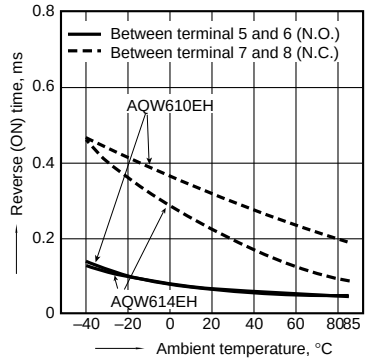
3. Operate time vs. ambient temperature characteristics

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



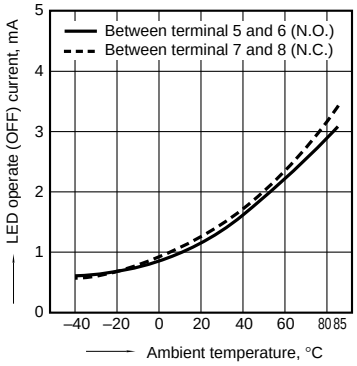
4. Reverse time vs. ambient temperature characteristics

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



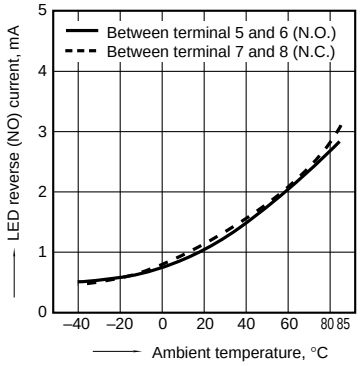
5. LED operate current vs. ambient temperature characteristics

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



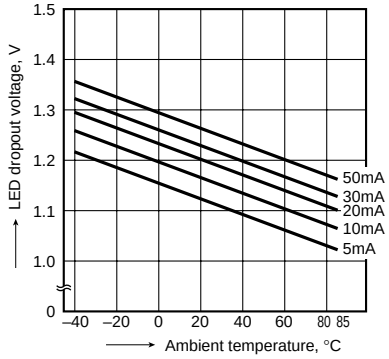
6. LED reverse current vs. ambient temperature characteristics

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



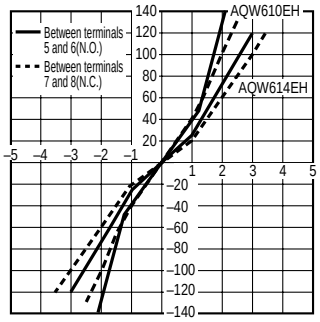
7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



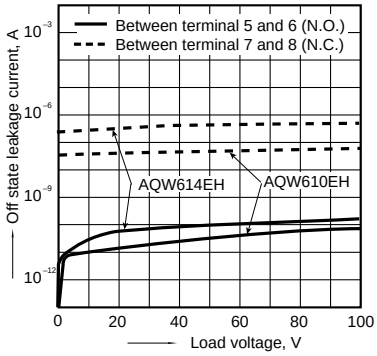
8. Voltage vs. current characteristics of output at MOS portion

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



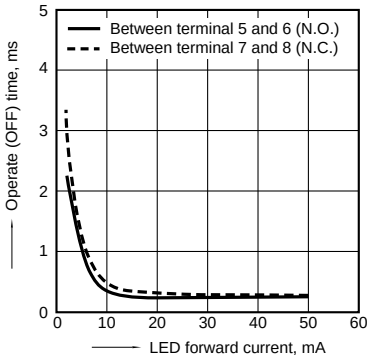
9. Off state leakage current

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



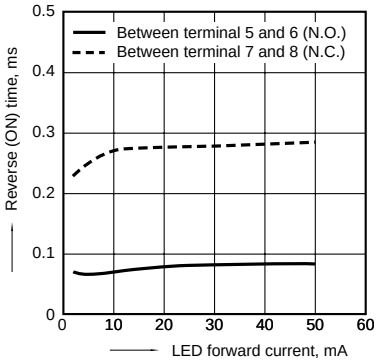
10. LED forward current vs. operate time characteristics

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