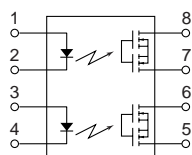
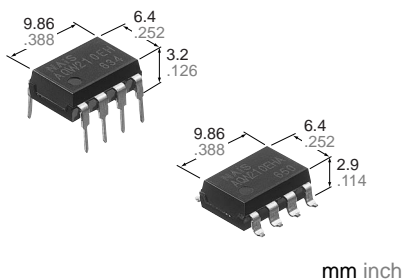


NAIS

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

PhotoMOS RELAYS

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 2 Form A use as well as two independent 1 Form A 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 0.5 ms (typical). (AQW210EH)

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
					Tube packing style		Tape and reel packing style		
AC/DC type	Reinforced 5,000 V	350 V	120 mA	AQW210EH	AQW210EHA	AQW210EHAX	AQW210EHAZ	1 tube contains 40 pcs. 1 batch contains 400 pcs.	1,000 pcs.
		400 V	100 mA	AQW214EH	AQW214EHA	AQW214EHAX	AQW214EHAZ		

*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	AQW210EH (A)	AQW214EH (A)	Remarks
Input	LED forward current	I_F	50mA		
	LED reverse voltage	V_R	3V		
	Peak forward current	I_{FP}	1A		$f = 100$ Hz, Duty factor = 0.1%
	Power dissipation	P_{in}	75mW		
Output	Load voltage (peak AC)	V_L	350 V	400 V	
	Continuous load current (peak AC)	I_L	0.12 A (0.14 A)	0.1 A (0.13 A)	Peak AC, DC (): 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}	800mW		
Total power dissipation		P_T	850mW		
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		

AQW210EH

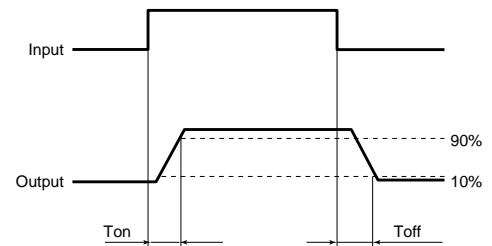
2. Electrical characteristics (Ambient temperature: 25°C 77°F)

Item		Symbol	AQW210EH (A)	AQW214EH (A)	Condition
Input	LED operate current	Typical	1.2mA		$I_L = \text{Max.}$
		Maximum	3.0mA		
	LED turn off current	Minimum	0.4mA		$I_L = \text{Max.}$
		Typical	1.1mA		
LED drop-out voltage	Typical	1.14 (1.25 V at $I_F = 50\text{mA}$)		$I_F = 5\text{mA}$	
	Maximum	1.5V			
Output	On resistance	Typical	18Ω	26Ω	$I_F = 5\text{mA}$ $I_L = \text{Max.}$ Within 1 s on time
		Maximum	25Ω	35Ω	
	Off state leakage current	Maximum	I_{Leak}	1μA	
Transfer characteristics	Turn on time*	Typical	0.5ms		$I_F = 5\text{mA}$ $I_L = \text{Max.}$
		Maximum	2.0ms		
	Turn off time*	Typical	0.08ms		$I_F = 5\text{mA}$ $I_L = \text{Max.}$
		Maximum	1.0ms		
	I/O capacitance	Typical	0.8pF		$f = 1\text{MHz}$ $V_B = 0$
Maximum		1.5pF			
Initial I/O isolation resistance	Minimum	R_{iso}	1,000MΩ		500V DC

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

For type of connection, see page 32.

*Turn on/Turn off time

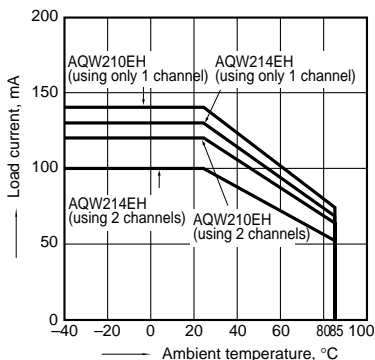


- For Dimensions, see Page 27.
- For Schematic and Wiring Diagrams, see Page 32.
- For Cautions for Use, see Page 36.

REFERENCE DATA

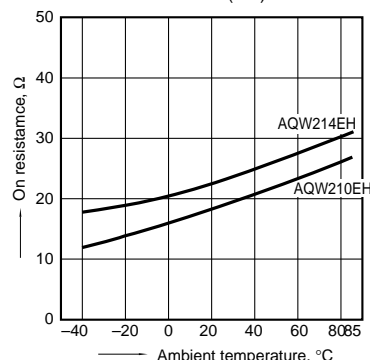
1. Load current vs. ambient temperature characteristics

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



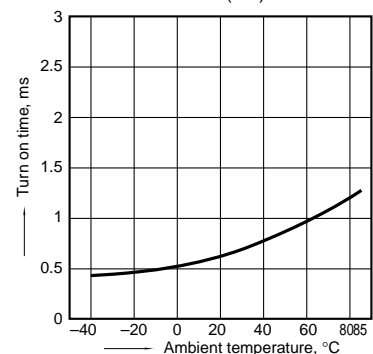
2. On resistance vs. ambient temperature characteristics

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



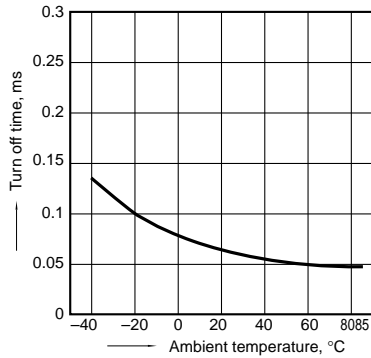
3. Turn on time vs. ambient temperature characteristics

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



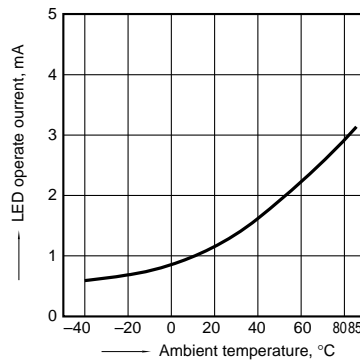
4. Turn off time vs. ambient temperature characteristics

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



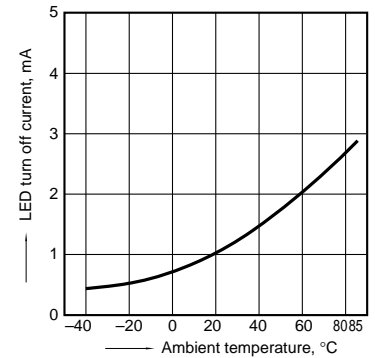
5. LED operate current vs. ambient temperature characteristics

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



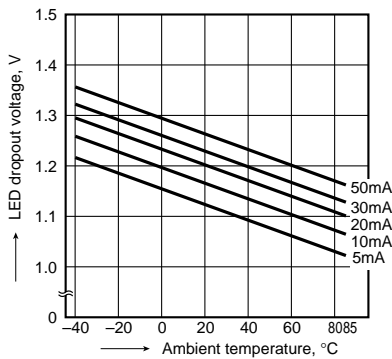
6. LED turn off current vs. ambient temperature characteristics

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



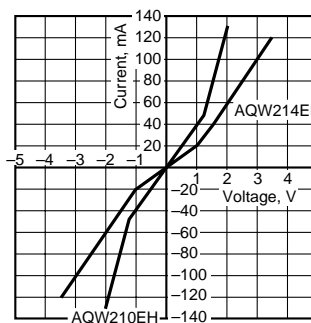
7. LED dropout voltage vs. ambient temperature characteristics

Sample: All types; LED current: 5 to 50 mA



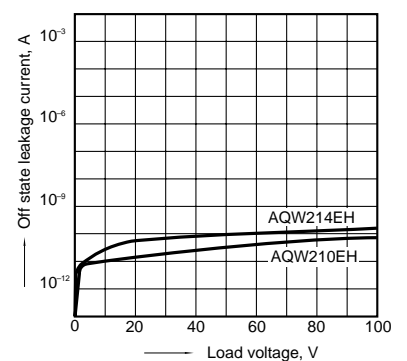
8. Voltage vs. current characteristics of output at MOS portion

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



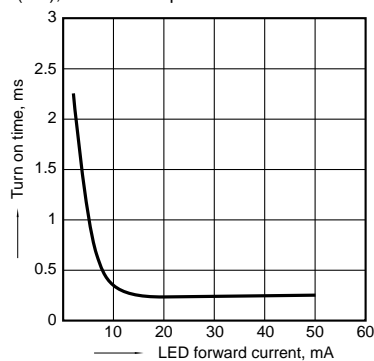
9. Off state leakage current

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



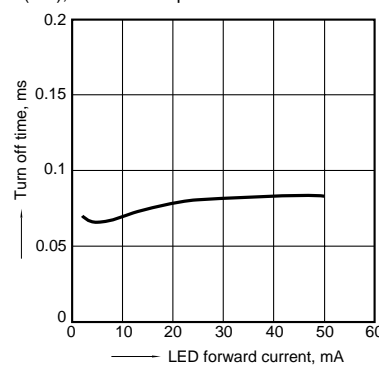
10. LED forward current vs. turn on time characteristics

Sample: All types
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. turn off time characteristics

Sample: All types
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

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

