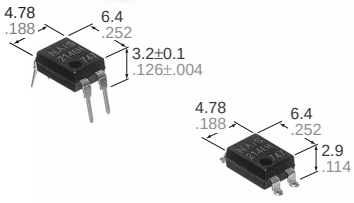
NAiS

GU (General Use)-E Type 1-Channel (Form A) 4-pin 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 4-pin DIP size
The device comes in a compact (W)6.4×(L)4.78×(H)3.2mm (W).252×(L).188×(H).126inch, 4-pin DIP size.

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

4. High sensitivity, low ON resistance
Can control a maximum 0.13 A load current with a 5 mA input current. Low ON resistance of 25Ω (AQY210EH). Stable operation because there are no metallic contact parts.

5. Low-level off state leakage current
The SSR has an off state leakage current of several milliamperes, whereas the PhotoMOS relay has only 100 pA even with the rated load voltage of 350 V (AQY210EH).

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-pin side	Picked from the 3/4-pin side		
AC/DC type	Reinforced 5,000 V	350 V	130 mA	AQY210EH	AQY210EHA	AQY210EHAX	AQY210EHAZ	1 tube contains 100 pcs. 1 batch contains 1,000 pcs.	1,000 pcs.
		400 V	120 mA	AQY214EH	AQY214EHA	AQY214EHAX	AQY214EHAZ		

*Indicate the peak AC and DC values.
Note: For space reasons, the initial letters of the product number "AQY", 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	AQY210EH (A)	AQY214EH (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	I_L	0.13 A	0.12 A	
	Peak load current	I_{peak}	0.4 A	0.3 A	100 ms (1 shot), V_L= DC
	Power dissipation	P_{out}	500mW		
Total power dissipation		P_T	550mW		
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		

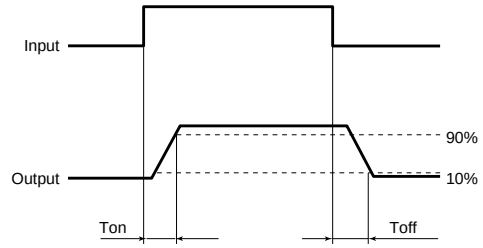
2. Electrical characteristics (Ambient temperature: 25°C 77°F)

Item			Symbol	AQY210EH (A)	AQY214EH (A)	Condition
Input	LED operate current	Typical	I_{Fon}	1.2mA		I_L=Max.
		Maximum		3.0mA		
	LED turn off current	Minimum	I_{Foff}	0.4mA		I_L=Max.
		Typical		1.1mA		
	LED dropout voltage	Typical	V_F	1.14 (1.25 V at I_F=50mA)		I_F=5mA
		Maximum		1.5V		
Output	On resistance	Typical	R_{on}	18Ω	26Ω	I_F=5mA I_L=Max. Within 1 s on time
		Maximum		25Ω	35Ω	
	Off state leakage current	Maximum	I_{Leak}	1μA		I_F=0 V_L=Max.
Transfer characteristics	Turn on time*	Typical	T_{on}	0.5ms		I_F=5mA I_L=Max.
		Maximum		2.0ms		
	Turn off time*	Typical	T_{off}	0.08ms		I_F=5mA I_L=Max.
		Maximum		1.0ms		
	I/O capacitance	Typical	C_{iso}	0.8pF		f =1MHz 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=5mA.

For type of connection

*Turn on/Turn off time

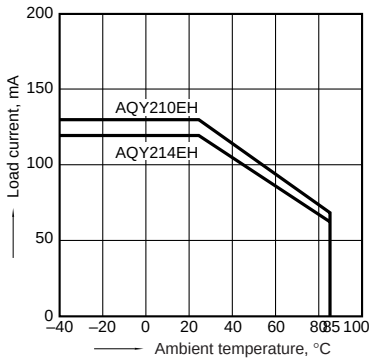


■ **For Dimensions, see Page 440.**
■ **For Schematic and Wiring Diagrams, see Page 444.**
■ **For Cautions for Use, see Page 449.**

REFERENCE DATA

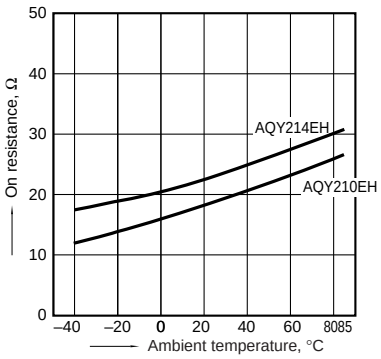
1. Load current vs. ambient temperature characteristics

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



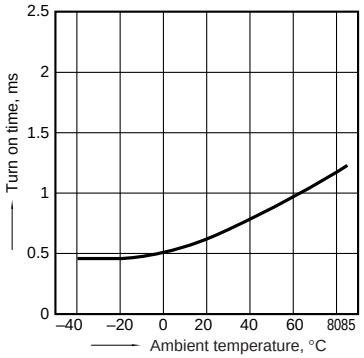
2. On resistance vs. ambient temperature characteristics

Measured portion: between terminals 3 and 4;
LED current: 5 mA; Load voltage: Max. (DC);
Continuous load current: Max. (DC)



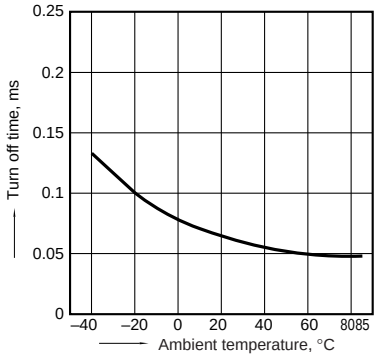
3. Turn on time vs. ambient temperature characteristics

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



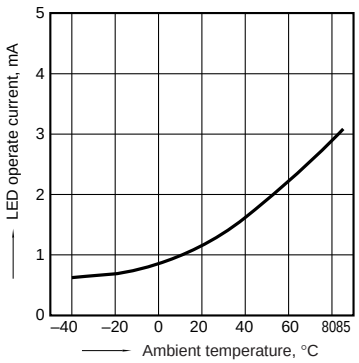
4. Turn off time vs. ambient temperature characteristics

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



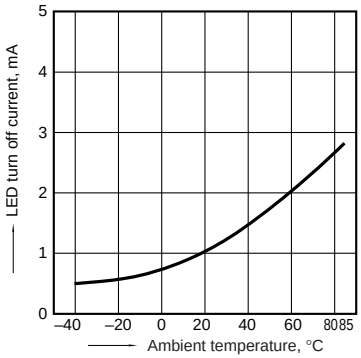
5. LED operate current vs. ambient temperature characteristics

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



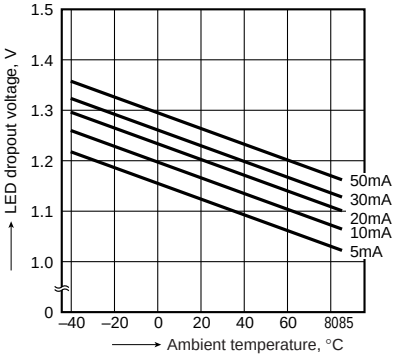
6. LED turn off current vs. ambient temperature characteristics

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



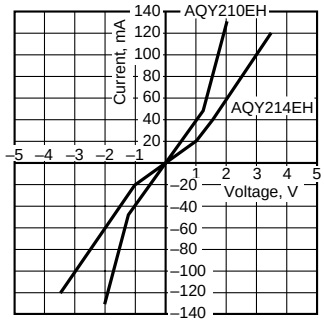
7. LED dropout voltage vs. ambient temperature characteristics

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



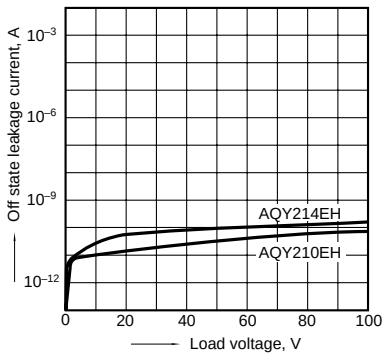
8. Voltage vs. current characteristics of output at MOS portion

Measured portion: between terminals 3 and 4; Ambient temperature: 25°C 77°F



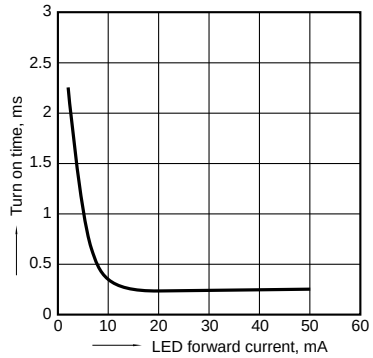
9. Off state leakage current

Measured portion: between terminals 3 and 4; Ambient temperature: 25°C 77°F



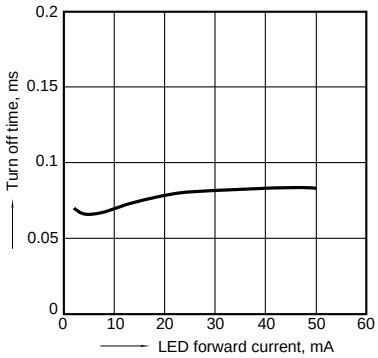
10. LED forward current vs. turn on time characteristics

Sample: All types
Measured portion: between terminals 3 and 4;
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 3 and 4;
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 3 and 4;
Frequency: 1 MHz; Ambient temperature: 25°C 77°F