

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 re-

sistance 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		Tube		
					Load voltage	Load current		Tube packing style	Tape and reel packing style
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		Sym- bol	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		

AQY210EH

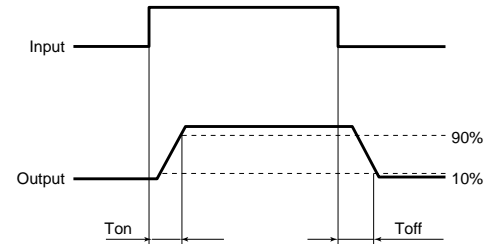
2. Electrical characteristics (Ambient temperature: 25°C 77°F)

Item		Symbol	AQY210EH (A)	AQY214EH (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 dropout 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	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 31.

*Turn on/Turn off time

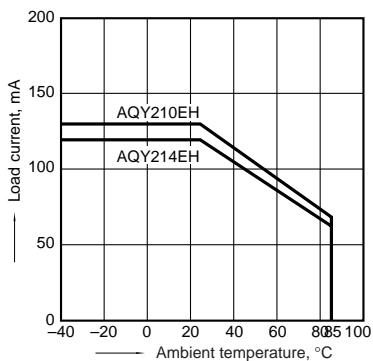


- For Dimensions, see Page 27.
- For Schematic and Wiring Diagrams, see Page 31.
- For Cautions for Use, see Page 36.

REFERENCE DATA

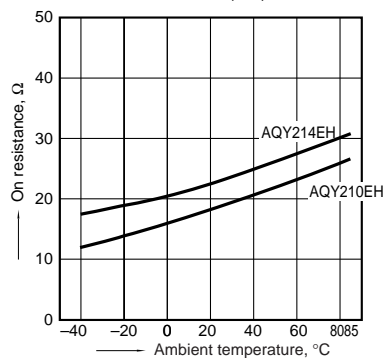
1. Load current vs. ambient temperature characteristics

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



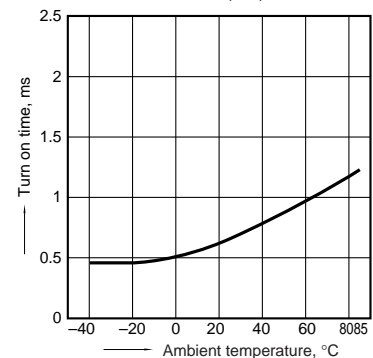
2. On resistance vs. ambient temperature characteristics

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



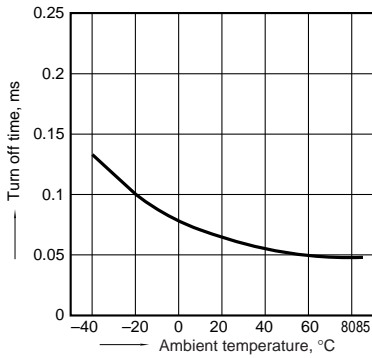
3. Turn on time vs. ambient temperature characteristics

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



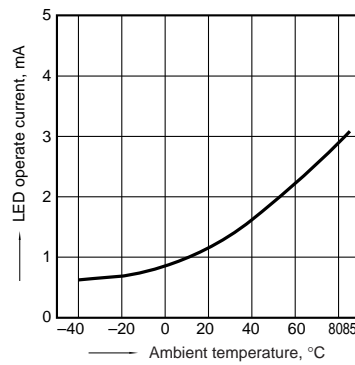
4. Turn off time vs. ambient temperature characteristics

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



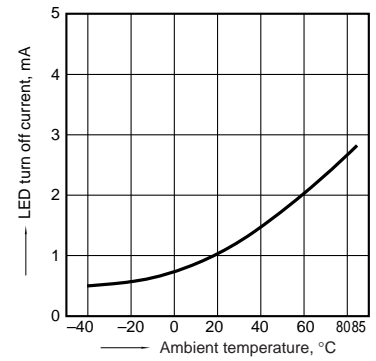
5. LED operate current vs. ambient temperature characteristics

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



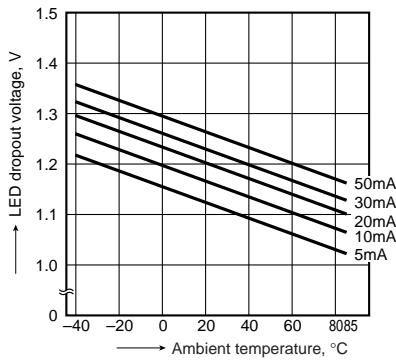
6. LED turn off current vs. ambient temperature characteristics

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



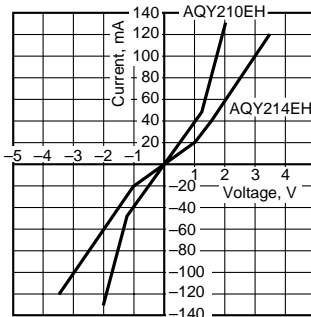
7. LED dropout voltage vs. ambient temperature characteristics

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



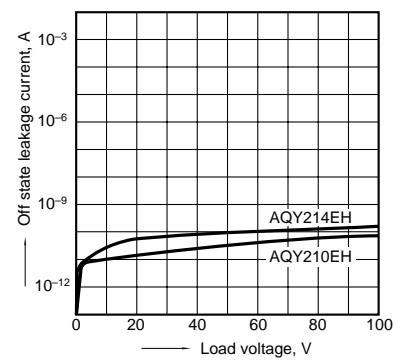
8. Voltage vs. current characteristics of output at MOS portion

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



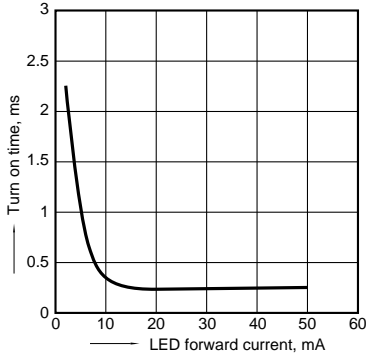
9. Off state leakage current

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



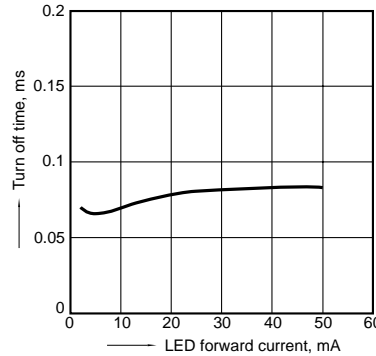
10. LED forward current vs. turn on time characteristics

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

