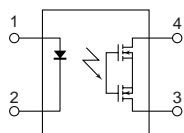
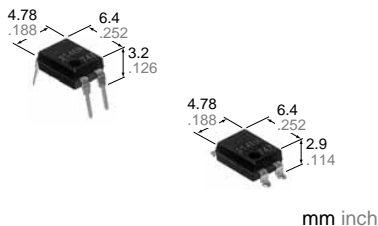


High cost-performance
DIP4-pin type with
reinforced insulation

PhotoMOS Relays
GU-E 1 Form A
(AQY210EH)



FEATURES

1. Reinforced insulation of 5,000 V

More than 0.4 mm internal insulation distance between inputs and outputs. Con-forms to EN41003, EN60950 (reinforced insulation).

2. Controls low-level analog signals

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

3. High sensitivity and low on-resistance

Can control max. 0.13 A load current with 5 mA input current.

Low on-resistance of typ. 25Ω (AQY211EH).

4. Low-level off state leakage current of max. 1 μA

TYPICAL APPLICATIONS

- Modem
- Telephone equipment
- Security equipment
- Sensing equipment

TYPES

	I/O isolation voltage	Output rating*		Package	Part No.				Packing quantity	
		Load voltage	Load current		Through hole terminal	Surface-mount terminal		Tube	Tape and reel	
						Tape and reel packing style				
					Tube packing style	Picked from the 1/2-pin side	Picked from the 3/4-pin side			
AC/DC dual use	Reinforced 5,000 V	30 V	1,000 mA	DIP4-pin	AQY211EH	AQY211EHA	AQY211EHAX	AQY211EHAZ	1 tube contains: 100 pcs. 1 batch contains: 1,000 pcs.	1,000 pcs.
		60 V	550 mA		AQY212EH	AQY212EHA	AQY212EHAX	AQY212EHAZ		
		350 V	130 mA		AQY210EH	AQY210EHA	AQY210EHAX	AQY210EHAZ		
		400 V	120 mA		AQY214EH	AQY214EHA	AQY214EHAX	AQY214EHAZ		
		600 V	50 mA		AQY216EH	AQY216EHA	AQY216EHAX	AQY216EHAZ		

*Indicate the peak AC and DC values.

Note: For space reasons, the initial letters of the part number "AQY", the surface mount terminal shape indicator "A" and the packing style indicator "X" or "Z" are not marked on the relay. (Ex. the label for product number AQY211EHAX is 211EH)

RATING

1. Absolute maximum ratings (Ambient temperature: 25°C 77°F)

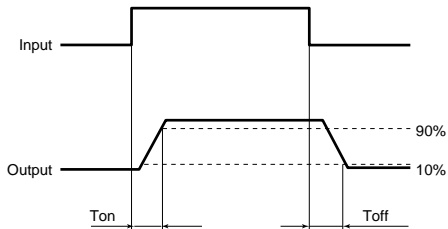
Item	Symbol	AQY211EH(A)	AQY212EH(A)	AQY210EH(A)	AQY214EH(A)	AQY216EH(A)	Remarks	
Input	LED forward current	I_F	50mA					
	LED reverse voltage	V_R	5 V					
	Peak forward current	I_{FP}	1 A				f = 100 Hz, Duty factor = 0.1%	
	Power dissipation	P_{in}	75mW					
Output	Load voltage (peak AC)	V_L	30 V	60 V	350 V	400 V	600 V	
	Continuous load current	I_L	1 A	0.55 A	0.13 A	0.12 A	0.05 A	Peak AC, DC
	Peak load current	I_{peak}	3 A	1.5 A	0.4 A	0.3 A	0.15 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					

GU-E 1 Form A (AQY210EH)

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

Item		Symbol	AQY211EH(A)	AQY212EH(A)	AQY210EH(A)	AQY214EH(A)	AQY216EH(A)	Condition
Input	LED operate current	Typical	1.2mA					I _L =Max.
		Maximum	3.0mA					
	LED turn off current	Minimum	0.4mA					I _L =Max.
		Typical	1.1mA					
LED dropout voltage	Typical	1.25 (1.14 V at I _F =5mA)					I _F =50mA	
	Maximum	1.5V						
Output	On resistance	Typical	0.25Ω	0.85Ω	18Ω	26Ω	52Ω	I _F =5mA I _L =Max. Within 1 s on time
		Maximum	0.5Ω	2.5Ω	25Ω	35Ω	120Ω	
	Off state leakage current	Maximum	1μA					
Transfer characteristics	Turn on time*	Typical	1.5ms	1ms	0.5ms		I _F =5mA I _L =Max.	
		Maximum	5ms	4ms	2.0ms			
	Turn off time*	Typical	0.1ms	0.05ms	0.08ms	0.04ms	I _F =5mA I _L =Max.	
		Maximum	1.0ms					
	I/O capacitance	Typical	0.8pF					f =1MHz V _B =0V
		Maximum	1.5pF					
Initial I/O isolation resistance	Minimum	1,000MΩ					500V DC	

*Turn on/Turn off time



RECOMMENDED OPERATING CONDITIONS

Please obey the following conditions to ensure proper relay operation and resetting.

Item	Symbol	Recommended value	Unit
Input LED current	I _F	5 to 10	mA

■ Dimensions

■ Schematic and Wiring Diagrams

■ Cautions for Use

■ These products are not designed for automotive use.

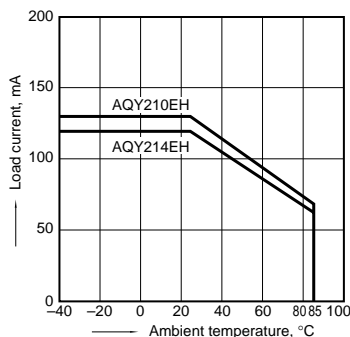
If you are considering to use these products for automotive applications, please contact your local Panasonic Electric Works technical representative.

Please refer to our information on [PhotoMOS Relays for Automotive Applications](#).

REFERENCE DATA

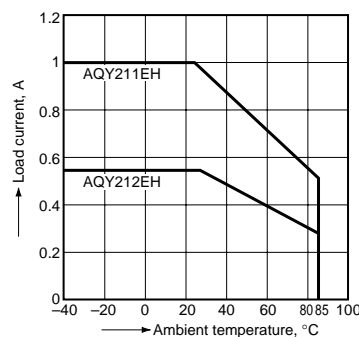
1-(1). Load current vs. ambient temperature characteristics

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



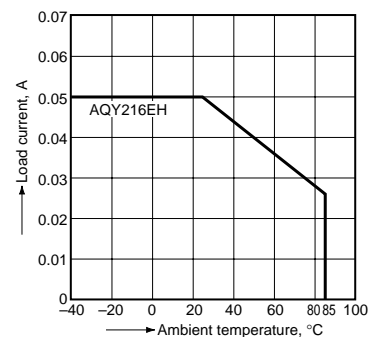
1-(2). Load current vs. ambient temperature characteristics

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



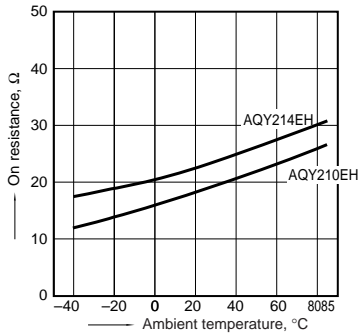
1-(3). Load current vs. ambient temperature characteristics

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



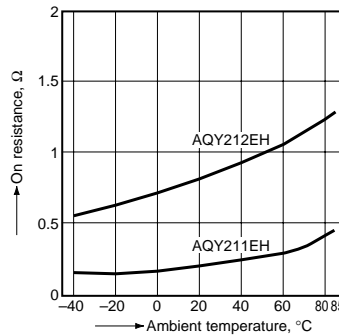
2-(1). On resistance vs. ambient temperature characteristics

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



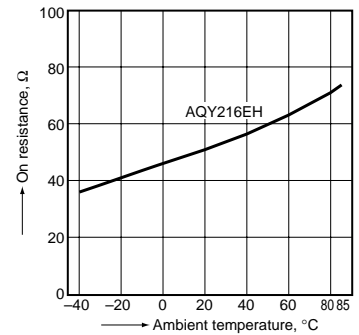
2-(2). On resistance vs. ambient temperature characteristics

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



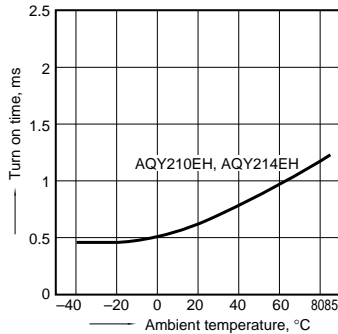
2-(3). On resistance vs. ambient temperature characteristics

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



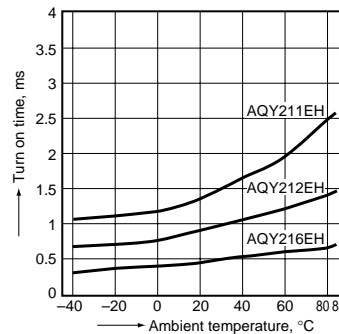
3-(1). Turn on time vs. ambient temperature characteristics

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



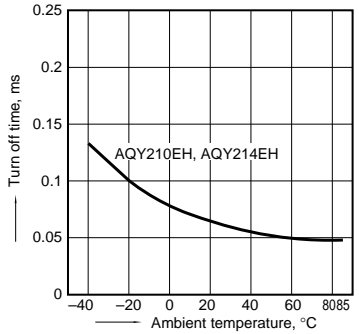
3-(2). Turn on time vs. ambient temperature characteristics

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



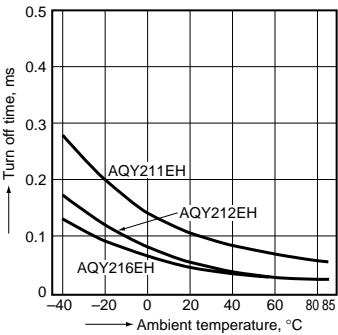
4-(1). Turn off time vs. ambient temperature characteristics

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



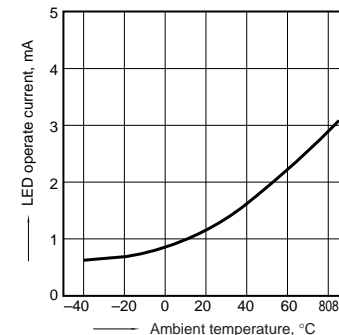
4-(2). Turn off time vs. ambient temperature characteristics

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



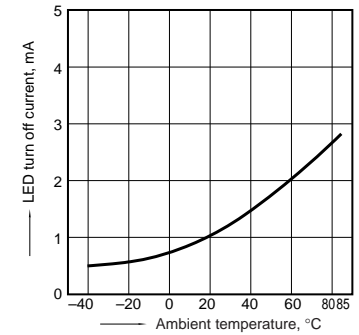
5. LED operate current vs. ambient temperature characteristics

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



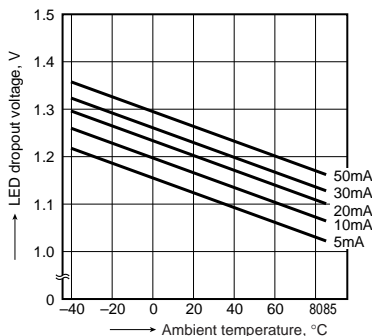
6. LED turn off current vs. ambient temperature characteristics

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



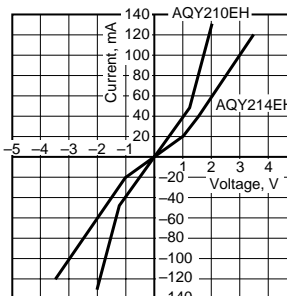
7. LED dropout voltage vs. ambient temperature characteristics

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



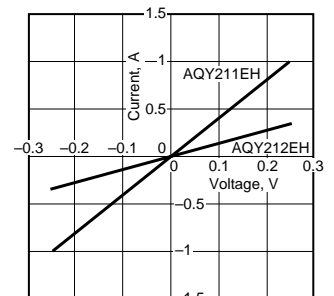
8-(1). Current vs. voltage characteristics of output at MOS portion

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



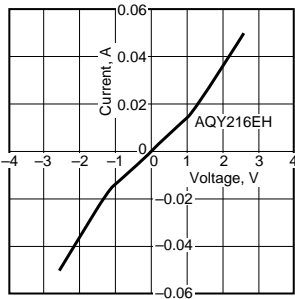
8-(2). Current vs. voltage characteristics of output at MOS portion

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

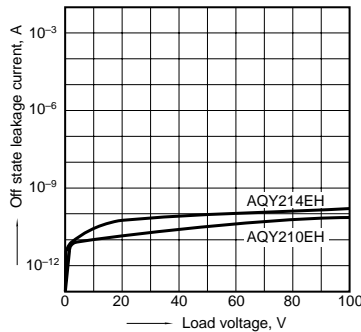


GU-E 1 Form A (AQY210EH)

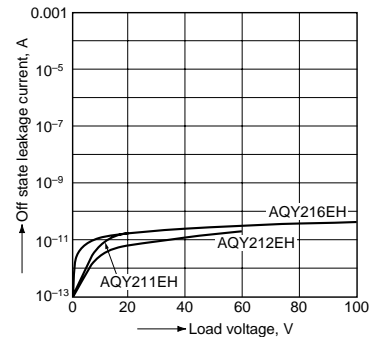
8-(3). Current vs. voltage characteristics of output at MOS portion
 Measured portion: between terminals 3 and 4;
 Ambient temperature: 25°C 77°F



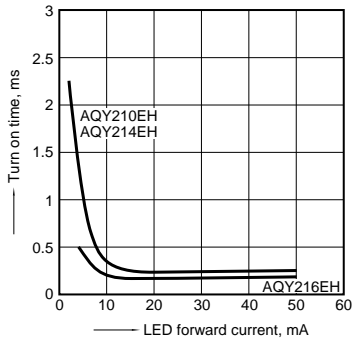
9-(1). Off state leakage current vs. load voltage characteristics
 Measured portion: between terminals 3 and 4;
 Ambient temperature: 25°C 77°F



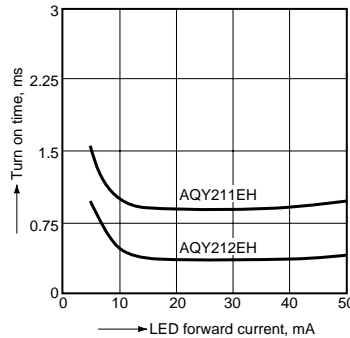
9-(2). Off state leakage current vs. load voltage characteristics
 Measured portion: between terminals 3 and 4;
 Ambient temperature: 25°C 77°F



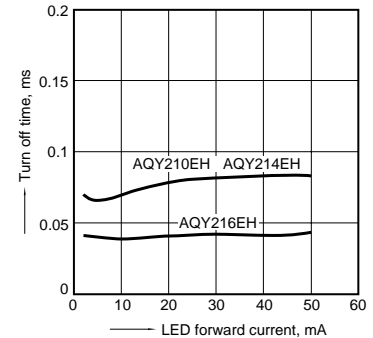
10-(1). Turn on time vs. LED forward current characteristics
 Measured portion: between terminals 3 and 4;
 Load voltage: Max. (DC); Continuous load current: Max. (DC); Ambient temperature: 25°C 77°F



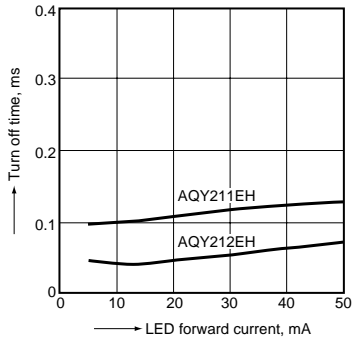
10-(2). Turn on time vs. LED forward current characteristics
 Measured portion: between terminals 3 and 4;
 Load voltage: Max. (DC); Continuous load current: Max. (DC); Ambient temperature: 25°C 77°F



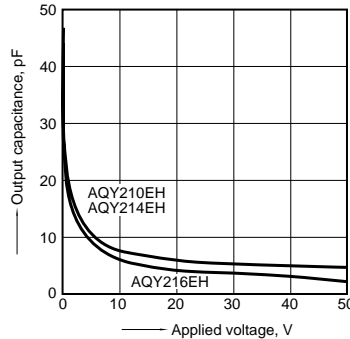
11-(1). Turn off time vs. LED forward current characteristics
 Measured portion: between terminals 3 and 4;
 Load voltage: Max. (DC); Continuous load current: Max. (DC); Ambient temperature: 25°C 77°F



11-(2). Turn off time vs. LED forward current characteristics
 Measured portion: between terminals 3 and 4;
 Load voltage: Max. (DC); Continuous load current: Max. (DC); Ambient temperature: 25°C 77°F



12-(1). Output capacitance vs. applied voltage characteristics
 Measured portion: between terminals 3 and 4;
 Frequency: 1 MHz; Ambient temperature: 25°C 77°F



12-(2). Output capacitance vs. applied voltage characteristics
 Measured portion: between terminals 3 and 4;
 Frequency: 1 MHz; Ambient temperature: 25°C 77°F

