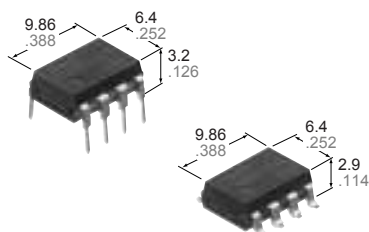


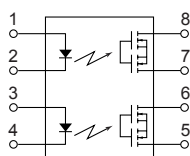
Panasonic
ideas for life

**General use and
economy type.
DIP (2 Form A) 8-pin type.
Reinforced insulation
5,000V type.**

**GU-E PhotoMOS
(AQW210EH)**



mm inch



FEATURES

1. Reinforced insulation 5,000 V type

More than 0.4 mm internal insulation distance between inputs and outputs. Con-forms 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				
		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	60 V	500 mA	AQW212EH	AQW212EHA	AQW212EHAX	AQW212EHAZ	1 tube contains 40 pcs. 1 batch contains 400 pcs.	1,000 pcs.
		350 V	120 mA	AQW210EH	AQW210EHA	AQW210EHAX	AQW210EHAZ		
		400 V	100 mA	AQW214EH	AQW214EHA	AQW214EHAX	AQW214EHAZ		
		600 V	40 mA	AQW216EH	AQW216EHA	AQW216EHAX	AQW216EHAZ		

*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	AQW212EH(A)		AQW210EH(A)	AQW214EH(A)	AQW216EH(A)	Remarks	
Input	LED forward current	I _F	50mA						
	LED reverse voltage	V _R	5V						
	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	60 V	350 V		400 V	600 V		
	Continuous load current (peak AC)	I _L	0.5 A (0.6 A)	0.12 A (0.14 A)		0.1 A (0.13 A)	0.04 A (0.05 A)	Peak AC, DC (): in case of using only 1 channel	
	Peak load current	I _{peak}	1.5 A	0.36 A		0.3 A	0.15 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						

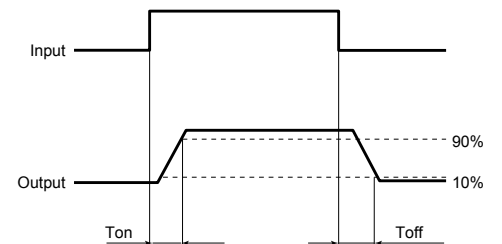
GU-E PhotoMOS (AQW21○EH)

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

Item			Symbol	AQW212EH(A)	AQW210EH(A)	AQW214EH(A)	AQW216EH(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	1.25 V (1.14 V at I _F =5mA)				I _F =50mA
		Maximum		1.5V				
Output	On resistance	Typical	R _{on}	0.83Ω	18Ω	26Ω	52Ω	I _F =5mA I _L =Max. Within 1 s on time
		Maximum		2.5Ω	25Ω	35Ω	120Ω	
	Off state leakage current	Maximum	I _{Leak}	1μA				
Transfer characteristics	Turn on time*	Typical	T _{on}	1ms	0.5ms			I _F =5mA
		Maximum		4ms	2.0ms			I _L =Max.
	Turn off time*	Typical	T _{off}	0.08ms			0.04ms	I _F =5mA
		Maximum		1.0ms				I _L =Max.
	I/O capacitance	Typical	C _{iso}	0.8pF			f =1MHz	
		Maximum		1.5pF			V _B =0V	
	Initial I/O isolation resistance	Minimum	R _{iso}	1,000MΩ				500V DC

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

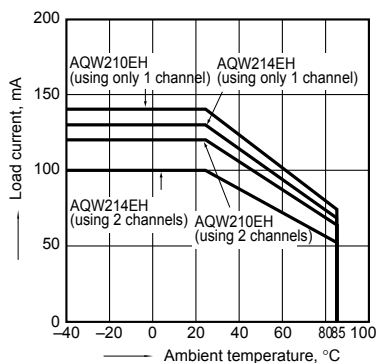
*Turn on/Turn off time



REFERENCE DATA

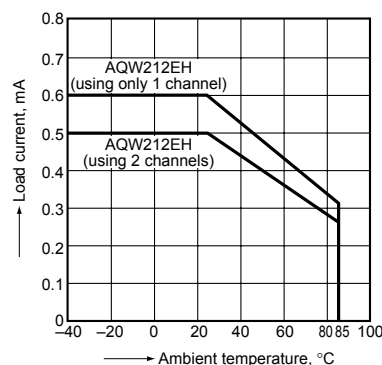
1-(1). Load current vs. ambient temperature characteristics

Allowable ambient temperature: -20°C to +85°C
-4°F to +185°F



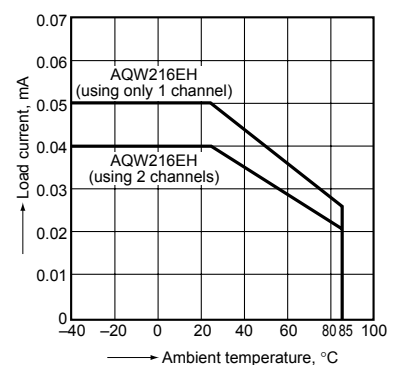
1-(2). Load current vs. ambient temperature characteristics

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



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

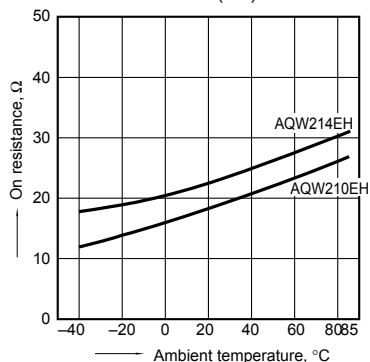
Allowable ambient temperature: -40°C to +85°C
-40°F to +185°F



GU-E PhotoMOS (AQW210EH)

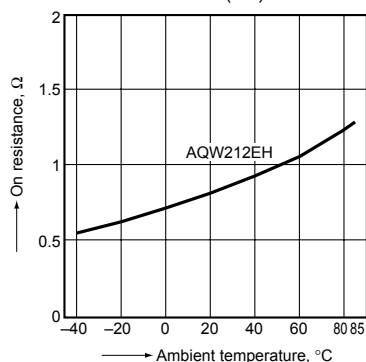
2-(1). On resistance vs. ambient temperature characteristics

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



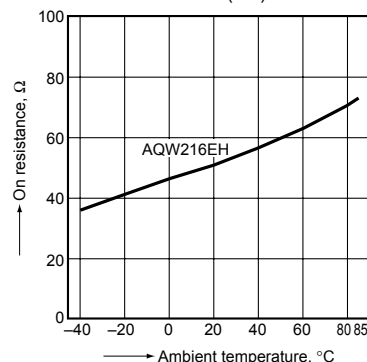
2-(2). On resistance vs. ambient temperature characteristics

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



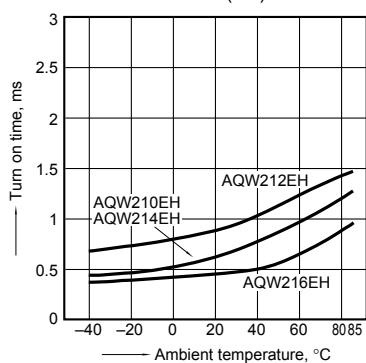
2-(3). On resistance vs. ambient temperature characteristics

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



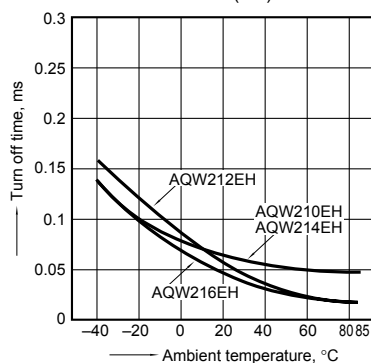
3. Turn on time vs. ambient temperature characteristics

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



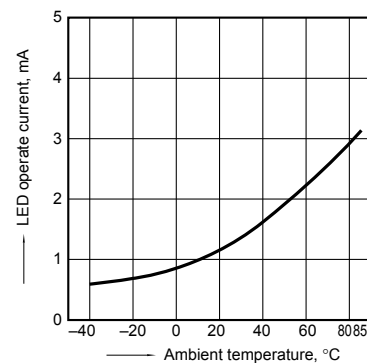
4. Turn off time vs. ambient temperature characteristics

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



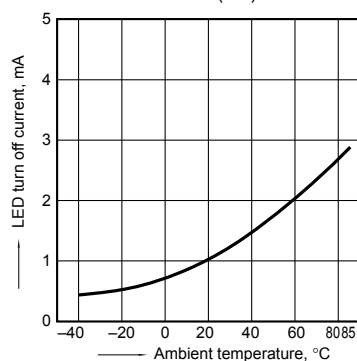
5. LED operate current vs. ambient temperature characteristics

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



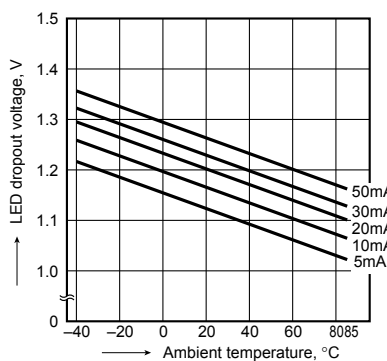
6. LED turn off current vs. ambient temperature characteristics

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



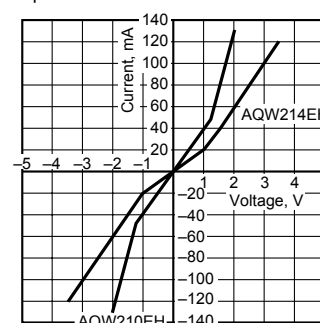
7. LED dropout voltage vs. ambient temperature characteristics

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



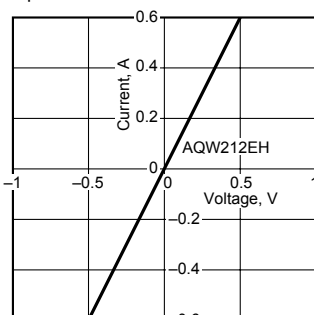
8-(1). Current vs. voltage characteristics of output at MOS portion

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



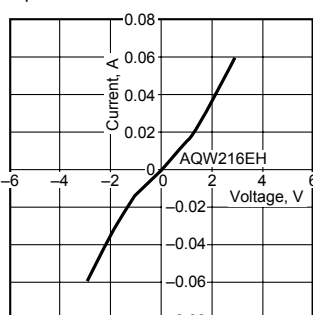
8-(2). Current vs. voltage characteristics of output at MOS portion

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



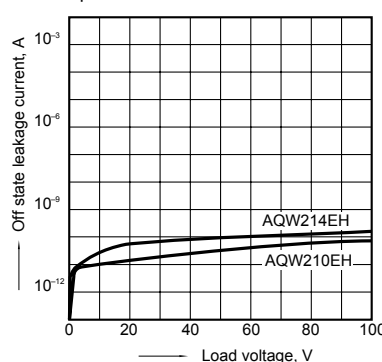
8-(3). Current vs. voltage characteristics of output at MOS portion

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



9-(1). Off state leakage current vs. load voltage characteristics

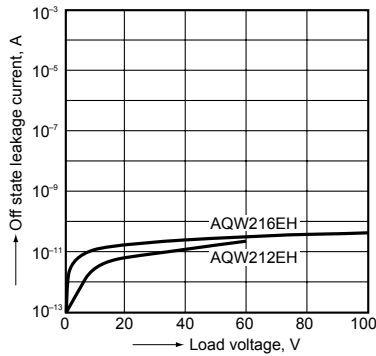
Measured portion: between terminals 5 and 6, 7 and 8;
Ambient temperature: 25°C 77°F



GU-E PhotoMOS (AQW21○EH)

9-(2). Off state leakage current vs. load voltage characteristics

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



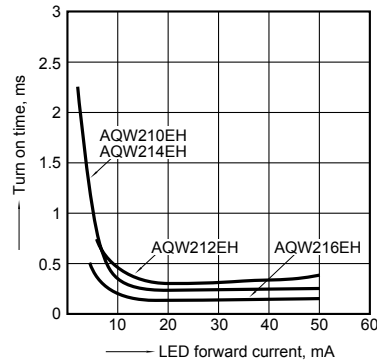
10. Turn on time vs. LED forward current characteristics

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



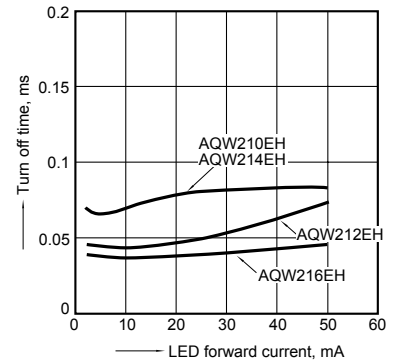
11. Turn off time vs. LED forward current characteristics

Sample: All types

Measured portion: between terminals 5 and 6, 7 and 8;

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

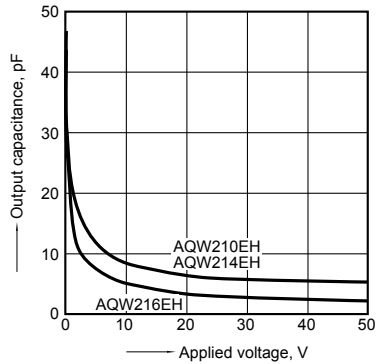
Max. (DC); Ambient temperature: 25°C 77°F



12-(1). Output capacitance vs. applied voltage characteristics

Measured portion: between terminals 5 and 6, 7 and 8;

Frequency: 1 MHz; Ambient temperature: 25°C 77°F



12-(2). Output capacitance vs. applied voltage characteristics

Measured portion: between terminals 5 and 6, 7 and 8;

Frequency: 1 MHz; Ambient temperature: 25°C 77°F

