



Both N.O. and N.C. contacts incorporated in a compact DIP8-pin Reinforced insulation

**PhotoMOS®
GE 1 Form A & 1 Form B
(AQW61○EH)**



(Height includes standoff)

mm inch



RoHS compliant

FEATURES

- 60V type couples high capacity (0.5A) with low on-resistance (Typ. 1Ω).**
- Reinforced insulation 5,000 V**
More than 0.4 mm internal insulation distance between inputs and outputs. Conforms to EN41003, EN60950 (reinforced insulation).
- Approx. 1/2 the space compared with the mounting area of a set of 1 Form A and 1 Form B PhotoMOS**
- Applicable for 1 Form A and 1 Form B use as well as two independent 1 Form A and 1 Form B use**
- Controls low-level analog signals**
PhotoMOS feature extremely low closed-circuit offset voltage to enable control of low-level analog signals without distortion.

6. High sensitivity and high speed response

Can control max. 0.14 A load current with 5 mA input current. Fast operation speed of Typ. 0.5 ms [N.O.] (AQW610EH).

7. Low-level off-state leakage current

TYPICAL APPLICATIONS

- Power supply
- Measuring instruments
- Security equipment
- Modem
- Telephone equipment
- Electricity, plant 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
						Tube packing style		Tape and reel packing style		
						Picked from the 1/2/3/4-pin side	Picked from the 5/6/7/8-pin side			
AC/DC dual use	Reinforced 5,000 Vrms	60 V	500 mA	DIP8-pin	AQW612EH	AQW612EHA	AQW612EHAX	AQW612EHAZ	1 tube contains: 50 pcs. 1 batch contains: 500 pcs.	1,000 pcs.
		350 V	120 mA		AQW610EH	AQW610EHA	AQW610EHAX	AQW610EHAZ		
		400 V	100 mA		AQW614EH	AQW614EHA	AQW614EHAX	AQW614EHAZ		

*Indicate the peak AC and DC values.

Note: The surface mount terminal shape indicator "A" and the packing style indicator "X" or "Z" are not marked on the device.

RATING

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

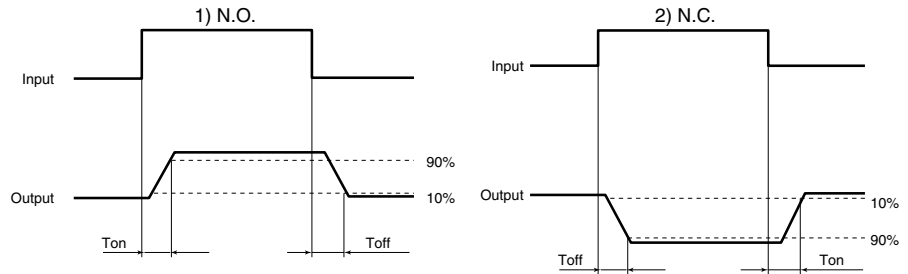
Item		Symbol	AQW612EH(A)	AQW610EH(A)	AQW614EH(A)	Remarks
Input	LED forward current	I _F	50 mA			
	LED reverse voltage	V _R	5 V			
	Peak forward current	I _{FP}	1 A			f = 100 Hz, Duty factor = 0.1%
	Power dissipation	P _{in}	75 mW			
Output	Load voltage (peak AC)	V _L	60 V	350 V	400 V	
	Continuous load current	I _L	0.5 A (0.6 A)	0.12 A (0.14 A)	0.1 A (0.13 A)	Peak AC, DC (): in case of using only 1a or 1b, 1 channel
	Peak load current	I _{peak}	1.5 A	0.36 A	0.3 A	100 ms (1 shot), V _L = DC
	Power dissipation	P _{out}	800 mW			
Total power dissipation		P _T	850 mW			
I/O isolation voltage		V _{iso}	5,000 Vrms			
Ambient temperature	Operating	T _{opr}	-40 to +85°C -40 to +185°F			(Non-icing at low temperatures)
	Storage	T _{stg}	-40 to +100°C -40 to +212°F			

GE 1 Form A & 1 Form B (AQW610EH)

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

Item		Symbol	AQW612EH(A)	AQW610EH(A)	AQW614EH(A)	Condition
Input	LED operate current	Typical	1.4 mA			I _L =Max.
		Maximum	3.0 mA			
	LED reverse current	Minimum	0.4 mA			I _L =Max.
		Typical	1.3 mA			
LED dropout voltage	Typical	V _F	1.25 (1.14 V at I _F = 5 mA)			I _F =50 mA
	Maximum		1.5 V			
Output	On resistance	Typical	1Ω	18Ω	26Ω	I _F =5mA (N.O.) I _F = 0mA (N.C.) I _L = Max. Within 1 s
		Maximum	2.5Ω	25Ω	35Ω	
	Off state leakage current	Maximum	1μA (N.O.), 10μA (N.C.)			I _F =0 mA (N.O.) I _F = 5 mA (N.C.) V _L = Max.
Transfer characteristics	Operate time*	Typical	1.0 ms (N.O.) 3.0 ms (N.C.)	0.5 ms (N.O.) 1.0 ms (N.C.)	0.5 ms (N.O.) 0.8 ms (N.C.)	I _F = 0 mA → 5 mA I _L = Max.
		Maximum	4.0 ms (N.O.) 10.0 ms (N.C.)	3.0 ms		
	Reverse time*	Typical	0.05ms (N.O.), 0.2ms (N.C.)	0.08ms (N.O.), 0.3ms (N.C.)	0.08ms (N.O.), 0.2ms (N.C.)	I _F = 5 mA → 0 mA I _L = Max.
		Maximum	1.0ms			
	I/O capacitance	Typical	0.8 pF			f = 1MHz V _B = 0 V
	Maximum	1.5 pF				
	Initial I/O isolation resistance	Minimum	1,000MΩ			500 V DC

*Operate/Reverse time



3. Recommended operating conditions (Ambient temperature: 25°C 77°F)

Please use under recommended operating conditions to obtain expected characteristics.

Item	Symbol	Number of used channels	Min.	Max.	Unit
LED current	I _F		5	30	mA
AQW612EH(A)	Load voltage (Peak AC)		—	48	V
	Continuous load current	1ch 2ch	—	0.6 0.5	A
AQW610EH(A)	Load voltage (Peak AC)		—	280	V
	Continuous load current	1ch 2ch	—	0.14 0.12	A
AQW614EH(A)	Load voltage (Peak AC)		—	320	V
	Continuous load current	1ch 2ch	—	0.13 0.1	A

■ These products are not designed for automotive use.

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

REFERENCE DATA

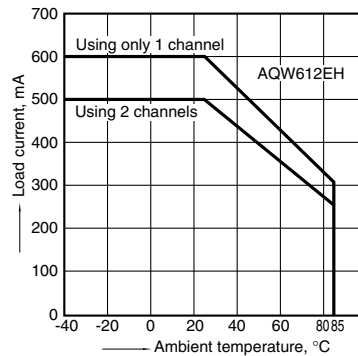
1-(1). Load current vs. ambient temperature characteristics

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



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

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



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)



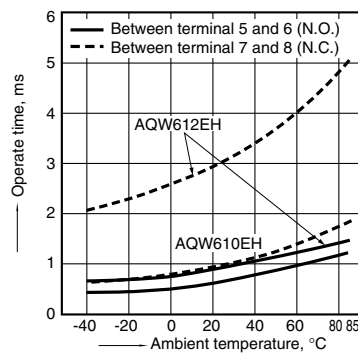
2-(2). On resistance vs. ambient temperature characteristics

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



3. Operate time vs. ambient temperature characteristics

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



4. Reverse time vs. ambient temperature characteristics

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



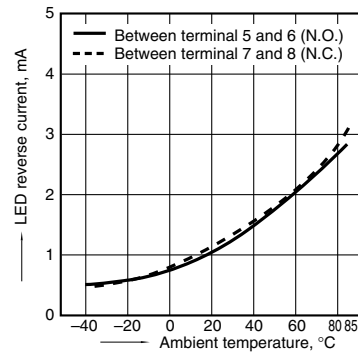
5. LED operate current vs. ambient temperature characteristics

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



6. LED reverse 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



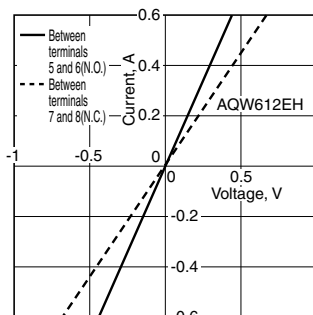
8-(1). Current vs. voltage characteristics of output at MOS portion

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



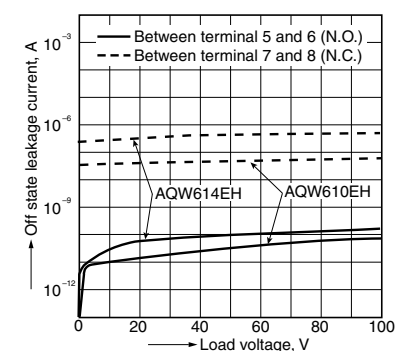
8-(2). Current vs. voltage characteristics of output at MOS portion

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



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

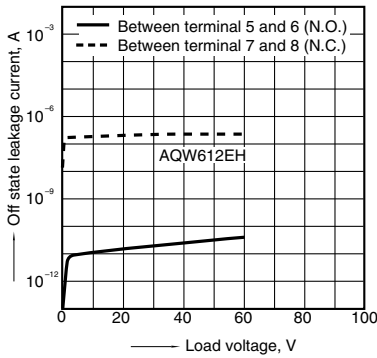
Measured portion: between terminals 5 and 6, 7 and 8;
Ambient temperature: 25°C 77°F



GE 1 Form A & 1 Form B (AQW61○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-(1). Operate time vs. LED forward current characteristics

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



10-(2). Operate time vs. LED forward current characteristics

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-(1). Reverse time vs. LED forward current characteristics

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



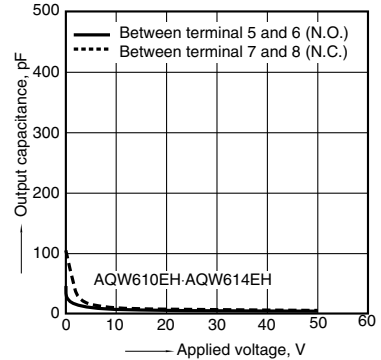
11-(2). Reverse time vs. LED forward current characteristics

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



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