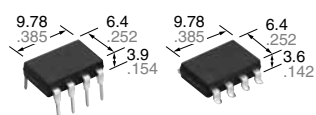


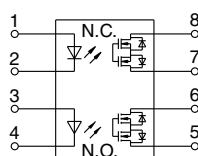
**Both N.O. and N.C. contacts
incorporated in a compact
DIP8-pin
Reinforced insulation**

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



(Height includes standoff)

mm inch



RoHS compliant

FEATURES

- 1. 60V type couples high capacity (0.5A) with low on-resistance (Typ. 1Ω).**
- 2. Reinforced insulation 5,000 V**
More than 0.4 mm internal insulation distance between inputs and outputs. Conforms to EN41003, EN60950 (reinforced insulation).
- 3. Approx. 1/2 the space compared with the mounting area of a set of 1 Form A and 1 Form B PhotoMOS**
- 4. Applicable for 1 Form A and 1 Form B use as well as two independent 1 Form A and 1 Form B use**
- 5. 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		
					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 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)

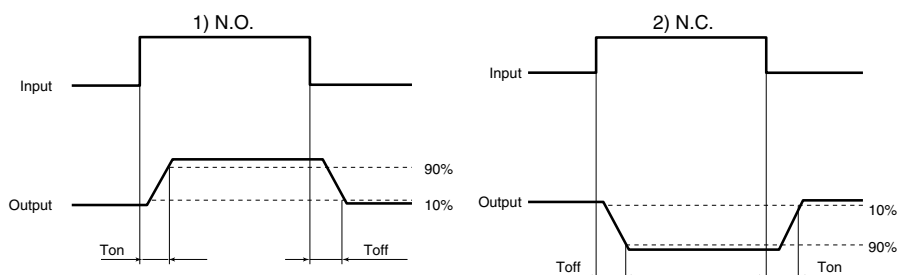
Item		Symbol	AQW612EH(A)	AQW610EH(A)	AQW614EH(A)	Remarks
Input	LED forward current	I _F	50 mA			
	LED reverse voltage	V _R	5 V			
	Peak forward current	I _{FP}	1 A			f = 100 Hz, Duty factor = 0.1%
	Power dissipation	P _{in}	75 mW			
Output	Load voltage (peak AC)	V _L	60 V	350 V	400 V	
	Continuous load 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 (AQW61○EH)

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

Item			Symbol	AQW612EH(A)	AQW610EH(A)	AQW614EH(A)	Condition	
Input	LED operate current	Typical	I _{Fon} (N.O.)	1.4 mA			I _L =Max.	
		Maximum	I _{Foff} (N.C.)	3.0 mA				
	LED reverse current	Minimum	I _{Foff} (N.O.)	0.4 mA			I _L =Max.	
		Typical	I _{Fon} (N.C.)	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	R _{on}	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	I _{Leak}	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	T _{on} (N.O.) T _{off} (N.C.)	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	T _{off} (N.O.) T _{on} (N.C.)	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	C _{iso}	0.8 pF			f = 1MHz V _B = 0 V	
		Maximum		1.5 pF				
	Initial I/O isolation resistance		Minimum	R _{iso}	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)	V_L		—	48	V
	Continuous load current	I_L	1ch	—	0.6	A
			2ch	—	0.5	A
AQW610EH(A)	Load voltage (Peak AC)	V_L		—	280	V
	Continuous load current	I_L	1ch	—	0.14	A
			2ch	—	0.12	A
AQW614EH(A)	Load voltage (Peak AC)	V_L		—	320	V
	Continuous load current	I_L	1ch	—	0.13	A
			2ch	—	0.1	A

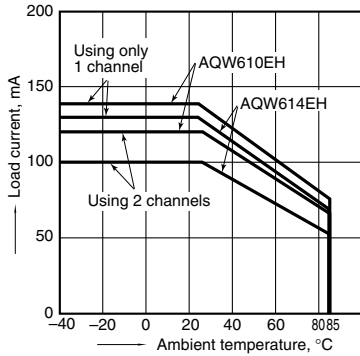
■ These products are not designed for automotive use.

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

REFERENCE DATA

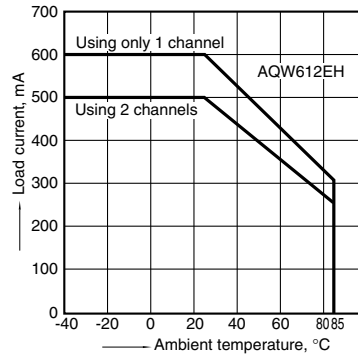
1-(1). Load current vs. ambient temperature characteristics

Allowable ambient temperature: -40 to $+85^{\circ}\text{C}$
 -40 to $+185^{\circ}\text{F}$



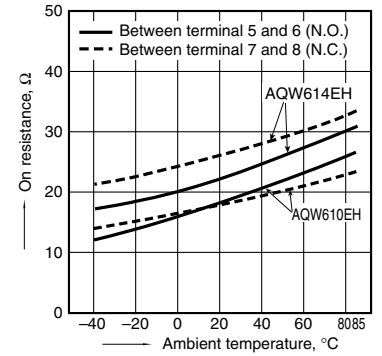
1-(2). Load current vs. ambient temperature characteristics

Allowable ambient temperature: -40 to $+85^{\circ}\text{C}$
 -40 to $+185^{\circ}\text{F}$



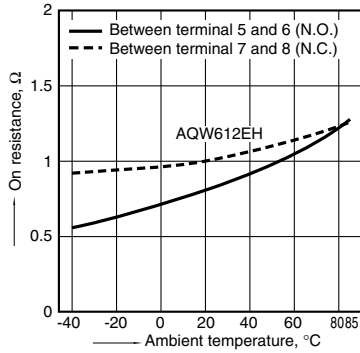
2-(1). On resistance vs. ambient temperature characteristics

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



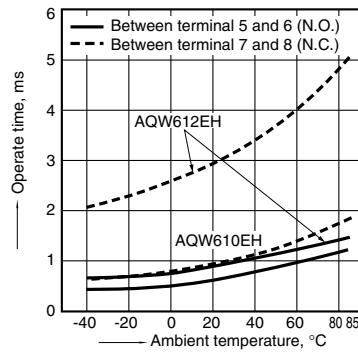
2-(2). On resistance vs. ambient temperature characteristics

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



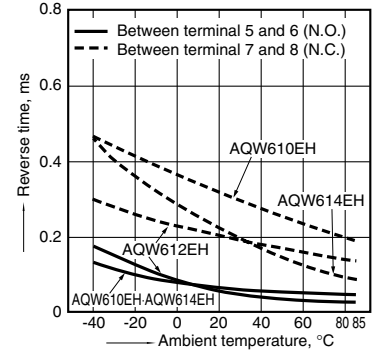
3. Operate time vs. ambient temperature characteristics

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



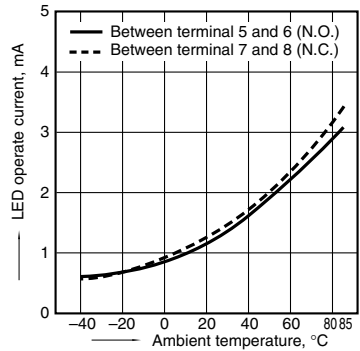
4. Reverse time vs. ambient temperature characteristics

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



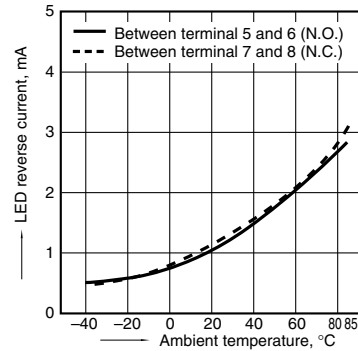
5. LED operate current vs. ambient temperature characteristics

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



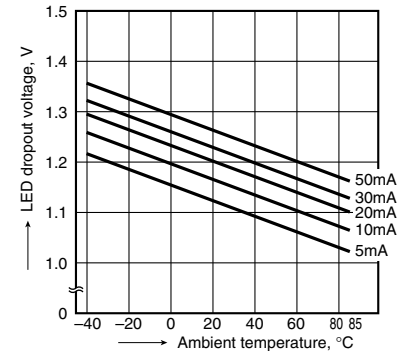
6. LED reverse current vs. ambient temperature characteristics

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



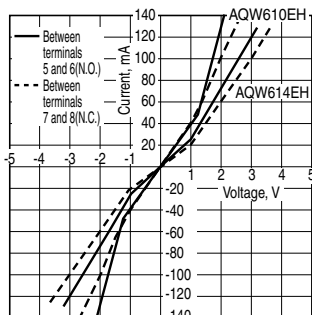
7. LED dropout voltage vs. ambient temperature characteristics

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



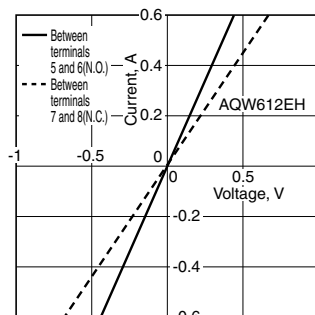
8-(1). Current vs. voltage characteristics of output at MOS portion

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



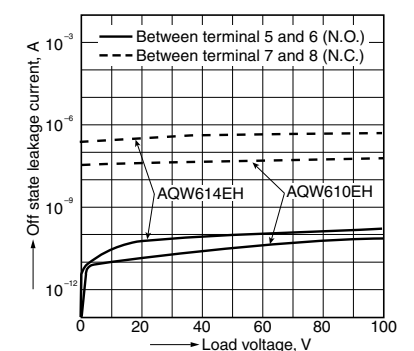
8-(2). Current vs. voltage characteristics of output at MOS portion

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



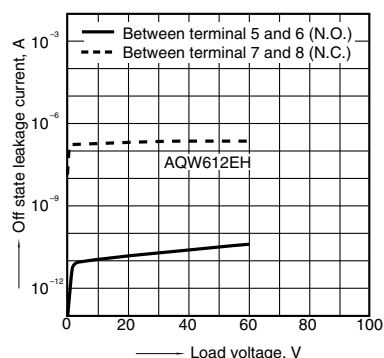
9-(1). Off state leakage current vs. load voltage characteristics

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



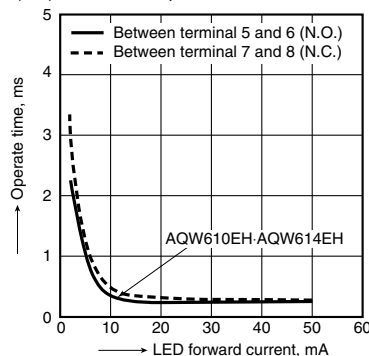
9-(2). Off state leakage current vs. load voltage characteristics

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



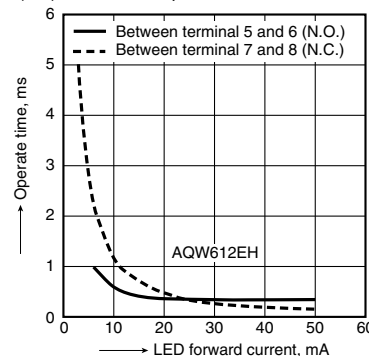
10-(1). Operate time vs. LED forward current characteristics

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



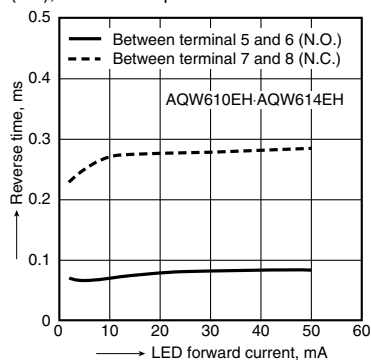
10-(2). Operate time vs. LED forward current characteristics

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



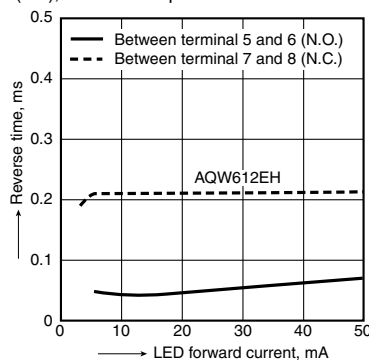
11-(1). Reverse time vs. LED forward current characteristics

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



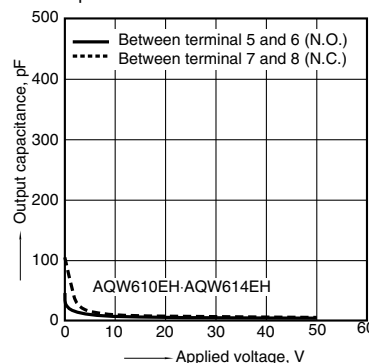
11-(2). Reverse time vs. LED forward current characteristics

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



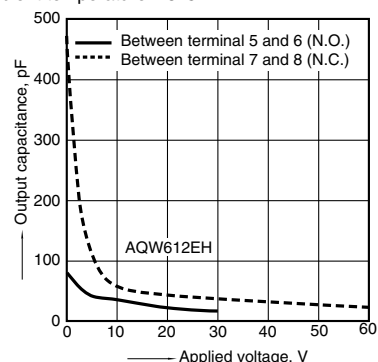
12-(1). Output capacitance vs. applied voltage characteristics

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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Please contact

Panasonic Corporation

Electromechanical Control Business Division

■ 1006, Oaza Kadoma, Kadoma-shi, Osaka 571-8506, Japan
industrial.panasonic.com/ac/e/

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