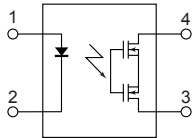
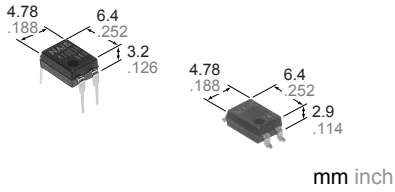


**Panasonic**  
ideas for life

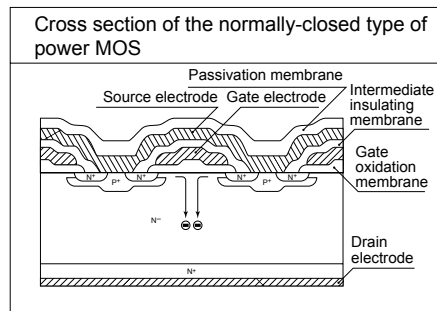
**General use and economy type.  
DIP (1 Form B) 4-pin type.  
Reinforced insulation  
5,000V type.**

**GU-E PhotoMOS  
(AQY410EH)**



**3. Normally closed type (1 Form B) is low on-resistance.  
(All AQ04 PhotoMOS are Form B types. And also the Form A types have a low on-resistance.)**

This has been realized thanks to the built-in MOSFET processed by our proprietary method, DSD (Double-diffused and Selective Doping) method. Cross section of the normally-closed type of power MOS



**4. Reinforced insulation 5,000 V type**  
More than 0.4 mm internal insulation distance between inputs and outputs. Conforms to EN41003, EN60950 (reinforced insulation).

**5. 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

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

**7. High sensitivity, low ON resistance**

Can control a maximum 0.13 A load current with a 5 mA input current. Low ON resistance of 18Ω (AQY410EH). Stable operation because there are no metallic contact parts.

**6. Low-level off-state leakage current**

## FEATURES

**1. 60V type couples high capacity (0.55A) with low on-resistance (1Ω)**

Item	GU-E type	
	AQY410EH	AQY412EH <b>NEW</b>
Load voltage	350V	60V
Continuous load current	0.13A	0.55A
ON resistance (typ.)	18Ω	1Ω

**2. This is the low-cost version PhotoMOS 1 Form B output type relay.**  
The attainment of economical pricing will broaden its market even further.

## TYPICAL APPLICATIONS

- Power supply
- Measuring equipment
- Security equipment
- Modem
- Telephone equipment
- Electricity, plant equipment
- Sensors

## TYPES

Type	I/O isolation voltage	Output rating*		Part No.				Packing quantity		
				Through hole terminal	Surface-mount terminal		Tube			Tape and reel
					Tube packing style					
AC/DC type	Reinforced 5,000 V	60 V	550 mA	AQY412EH	AQY412EHA	AQY412EHAX	AQY412EHAZ	1 tube contains 100 pcs. 1 batch contains 1,000 pcs.	1,000 pcs.	
		350 V	130 mA	AQY410EH	AQY410EHA	AQY410EHAX	AQY410EHAZ			
		400 V	120 mA	AQY414EH	AQY414EHA	AQY414EHAX	AQY414EHAZ			

\*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		Symbol	AQY412EH (A)	AQY410EH (A)	AQY414EH (A)	Remarks
Input	LED forward current	I <sub>F</sub>	50 mA			
	LED reverse voltage	V <sub>R</sub>	5 V			
	Peak forward current	I <sub>FP</sub>	1 A			f = 100 Hz, Duty factor = 0.1%
	Power dissipation	P <sub>in</sub>	75 mW			
Output	Load voltage (peak AC)	V <sub>L</sub>	60 V	350 V	400 V	
	Continuous load current	I <sub>L</sub>	0.55 A	0.13 A	0.12 A	
	Peak load current	I <sub>peak</sub>	1.5 A	0.4 A	0.3 A	100 ms (1 shot), V <sub>L</sub> = DC
	Power dissipation	P <sub>out</sub>	500 mW			
Total power dissipation		P <sub>T</sub>	550 mW			
I/O isolation voltage		V <sub>iso</sub>	5,000 V AC			
Temperature limits	Operating	T <sub>opr</sub>	-40°C to +85°C -40°F to +185°F			Non-condensing at low temperatures
	Storage	T <sub>stg</sub>	-40°C to +100°C -40°F to +212°F			

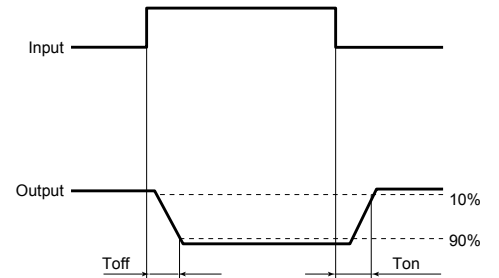
# GU-E PhotoMOS (AQY410EH)

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

Item		Symbol	AQY412EH (A)	AQY410EH (A)	AQY414EH (A)	Condition
Input	LED operate (OFF) current	Typical	1.4 mA			$I_L = \text{Max.}$
		Maximum	3.0 mA			
	LED reverse (ON) current	Minimum	0.4 mA			$I_L = \text{Max.}$
		Typical	1.3 mA			
LED dropout voltage	Typical	1.25 (1.14 V at $I_F = 5 \text{ mA}$ )			$I_F = 50 \text{ mA}$	
	Maximum	1.5 V				
Output	On resistance	Typical	1Ω	18Ω	26Ω	$I_F = 0 \text{ mA}$ $I_L = \text{Max.}$ Within 1 s on time
		Maximum	2.5Ω	25Ω	35Ω	
	Off state leakage current	Maximum	10μA			$I_F = 5 \text{ mA}$ $V_L = \text{Max.}$
Transfer characteristics	Operate (OFF) time*	Typical	3.0 ms	1.0 ms	0.8 ms	$I_F = 0 \text{ mA} \rightarrow 5 \text{ mA}$ $I_L = \text{Max.}$
		Maximum	10.0 ms	3.0 ms		
	Reverse (ON) time*	Typical	0.2 ms	0.3 ms	0.2 ms	$I_F = 5 \text{ mA} \rightarrow 0 \text{ mA}$ $I_L = \text{Max.}$
		Maximum	1.0 ms			
	I/O capacitance	Typical	0.8 pF			$f = 1\text{MHz}$ $V_B = 0 \text{ V}$
		Maximum	1.5 pF			
Initial I/O isolation resistance	Minimum	$R_{iso}$	1,000MΩ			500 V DC

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

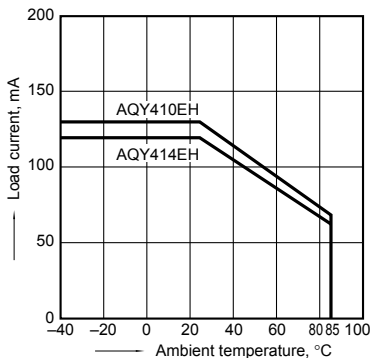
\*Operate/Reverse time



## REFERENCE DATA

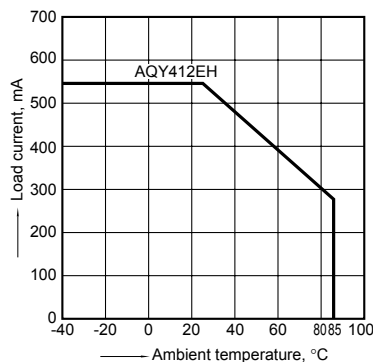
1-(1). Load current vs. ambient temperature characteristics

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



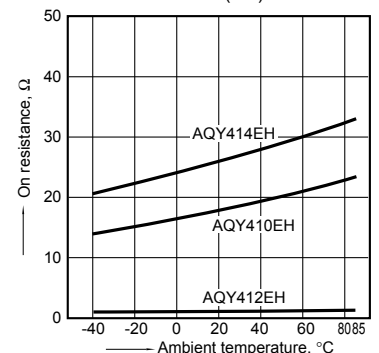
1-(2). Load current vs. ambient temperature characteristics

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



2. On resistance vs. ambient temperature characteristics

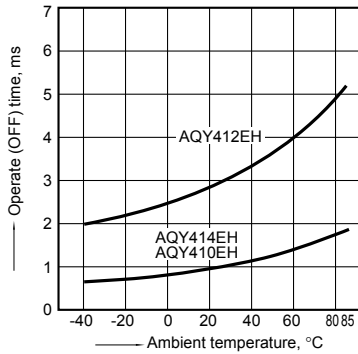
Measured portion: between terminals 3 and 4;  
LED current: 0 mA; Load voltage: Max. (DC);  
Continuous load current: Max. (DC)



# GU-E PhotoMOS (AQY410EH)

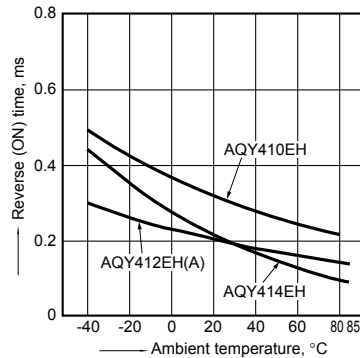
## 3. Operate (OFF) time vs. ambient temperature characteristics

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



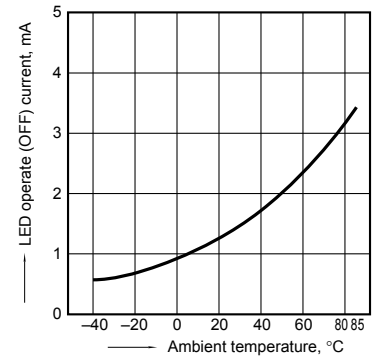
## 4. Reverse (ON) time vs. ambient temperature characteristics

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



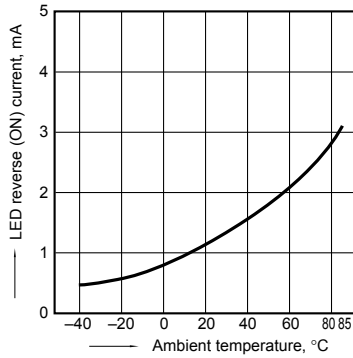
## 5. LED operate (OFF) current vs. ambient temperature characteristics

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



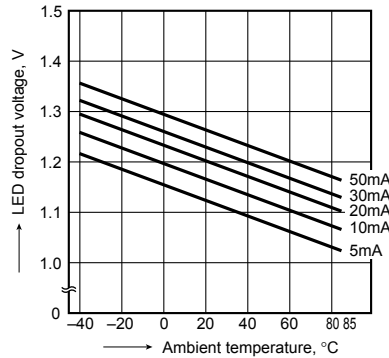
## 6. LED reverse (ON) current vs. ambient temperature characteristics

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



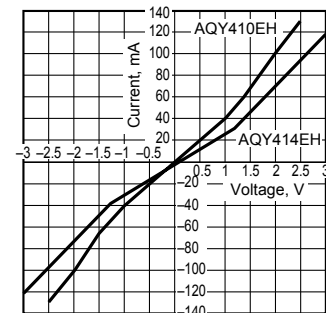
## 7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



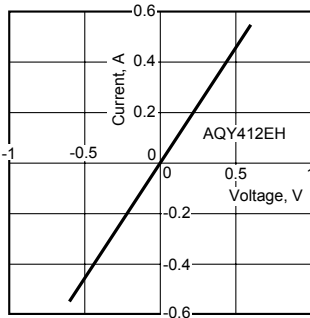
## 8-(1). Current vs. voltage characteristics of output at MOS portion

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



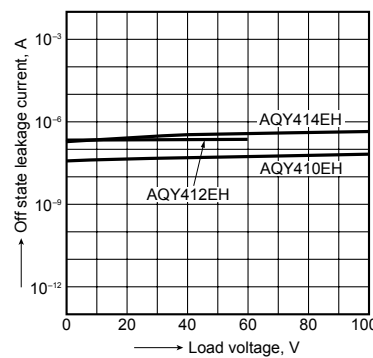
## 8-(2). Current vs. voltage characteristics of output at MOS portion

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



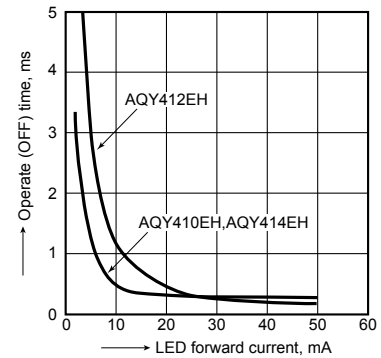
## 9. Off state leakage current vs. load voltage characteristics

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



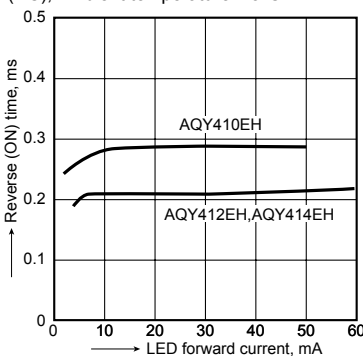
## 10. Operate (OFF) time vs. LED forward current characteristics

Measured portion: between terminals 3 and 4;  
Load voltage: Max. (DC); Continuous load current: Max. (DC);  
Ambient temperature: 25°C 77°F



## 11. Reverse (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



## 12. Output capacitance vs. applied voltage characteristics

Measured portion: between terminals 3 and 4;  
Frequency: 1 MHz; Ambient temperature: 25°C 77°F

