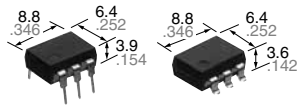


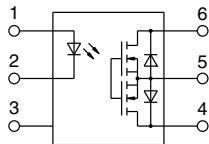


<b>DIP6-pin type, reinforced insulation available</b>	<b>PhotoMOS®</b> <b>GE 1 Form A</b> <b>(AQV210EH)</b>
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(Height includes standoff)

mm inch



**RoHS compliant**

### FEATURES

- Reinforced insulation of I/O isolation voltage 5,000V (Reinforced insulation type)**
- Controls low-level analog signals**  
PhotoMOS feature extremely low closed-circuit offset voltage to enable control of low-level analog signals without distortion.
- Stable on-resistance**
- Low-level off state leakage current of max. 1  $\mu$ A**

### TYPICAL APPLICATIONS

- High-speed inspection machines
- Telephone equipment
- Data communication equipment
- Computers

### TYPES

	I/O isolation	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 1/2/3-pin side	Picked from the 4/5/6-pin side			
AC/DC dual use	Reinforced 5,000 Vrms	350 V	130 mA	DIP6-pin	AQV210EH	AQV210EHA	AQV210EHAX	AQV210EHAZ	1 tube contains: 50 pcs. 1 batch contains: 500 pcs.	1,000 pcs.
		400 V	120 mA		AQV214EH	AQV214EHA	AQV214EHAX	AQV214EHAZ		

\*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)

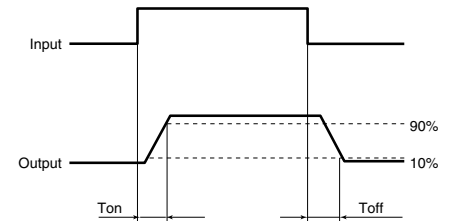
Item		Symbol	Type of connection	AQV210EH(A)	AQV214EH(A)	Remarks
Input	LED forward current	$I_F$		50 mA		
	LED reverse voltage	$V_R$		5 V		
	Peak forward current	$I_{FP}$		1 A		$f = 100$ Hz, Duty factor = 0.1%
	Power dissipation	$P_{in}$		75 mW		
Output	Load voltage (peak AC)	$V_L$		350 V	400 V	
	Continuous load current	$I_L$	A	0.13 A	0.12 A	A connection: Peak AC, DC B, C connection: DC
			B	0.15 A	0.13 A	
			C	0.17 A	0.15 A	
	Peak load current	$I_{peak}$		0.4 A	0.3 A	A connection: 100 ms (1 shot), $V_L=DC$
Power dissipation	$P_{out}$		500 mW			
Total power dissipation		$P_T$		550 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 (AQV210EH)

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

Item		Symbol	Type of connection	AQV210EH(A)	AQV214EH(A)	Condition	
Input	LED operate current	Typical	I <sub>Fon</sub>	—	1.6 mA	I <sub>L</sub> = Max.	
		Maximum			3 mA		
	LED turn off current	Minimum	I <sub>Foff</sub>	—	0.4 mA	I <sub>L</sub> = Max.	
		Typical			1.5 mA		
LED dropout voltage	Typical	V <sub>F</sub>	—	1.25 V (1.14 V at I <sub>F</sub> = 5 mA)		I <sub>F</sub> = 50 mA	
	Maximum			1.5 V			
Output	On resistance	Typical	R <sub>on</sub>	A	23 Ω	30 Ω	I <sub>F</sub> = 5 mA I <sub>L</sub> = Max. Within 1 s
		Maximum			35 Ω	50 Ω	
		Typical	R <sub>on</sub>	B	11.5 Ω	22.5 Ω	I <sub>F</sub> = 5 mA I <sub>L</sub> = Max. Within 1 s
		Maximum			17.5 Ω	25 Ω	
	Typical	R <sub>on</sub>	C	6.0 Ω	11.3 Ω	I <sub>F</sub> = 5 mA I <sub>L</sub> = Max. Within 1 s	
	Maximum			8.8 Ω	12.5 Ω		
Off state leakage current	Maximum	I <sub>Leak</sub>	—	1 μA		I <sub>F</sub> = 0 mA V <sub>L</sub> = Max.	
Transfer characteristics	Turn on time*	Typical	T <sub>on</sub>	—	0.7 ms	I <sub>F</sub> = 5 mA I <sub>L</sub> = Max.	
		Maximum			2.0 ms		
	Turn off time*	Typical	T <sub>off</sub>	—	0.05 ms	I <sub>F</sub> = 5 mA I <sub>L</sub> = Max.	
		Maximum			1.0 ms		
I/O capacitance	Typical	C <sub>iso</sub>	—	0.8 pF		f = 1 MHz V <sub>B</sub> = 0 V	
	Maximum			1.5 pF			
Initial I/O isolation resistance	Minimum	R <sub>iso</sub>	—	1,000 MΩ		500 V DC	

\*Turn on/Turn off time



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

Please use under recommended operating conditions to obtain expected characteristics.

Item		Symbol	Min.	Max.	Unit
LED current		I <sub>F</sub>	5	30	mA
AQV210EH(A)	Load voltage (Peak AC)	V <sub>L</sub>	—	280	V
	Continuous load current (A connection)	I <sub>L</sub>	—	0.13	A
AQV214EH(A)	Load voltage (Peak AC)	V <sub>L</sub>	—	320	V
	Continuous load current (A connection)	I <sub>L</sub>	—	0.12	A

■ These products are not designed for automotive use.

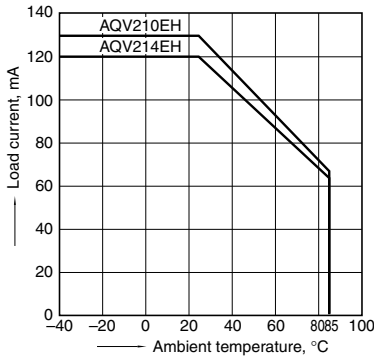
If you are considering to use these products for automotive applications, please contact your local Panasonic Corporation technical representative.

## REFERENCE DATA

### 1. Load current vs. ambient temperature characteristics

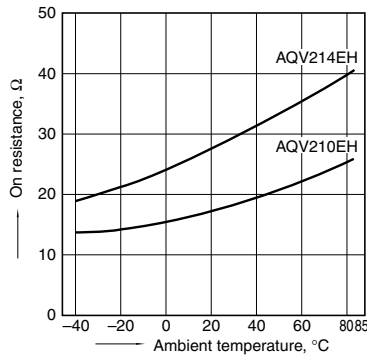
Allowable ambient temperature: -40 to +85°C  
-40 to +185°F

Type of connection: A



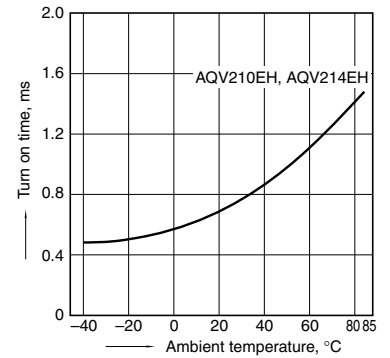
### 2. On-resistance vs. ambient temperature characteristics

Measured portion: between terminals 4 and 6;  
LED current: 5 mA; Load voltage: Max. (DC);  
Continuous load current: Max. (DC)



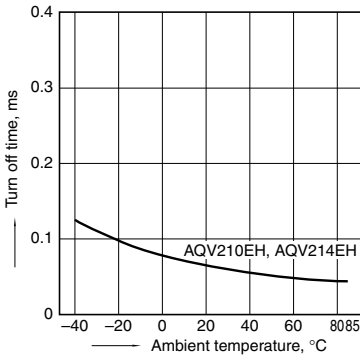
### 3. Turn on time vs. ambient temperature characteristics

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



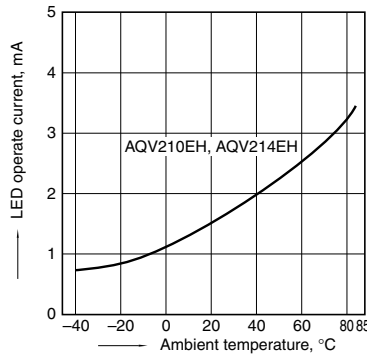
### 4. Turn off time vs. ambient temperature characteristics

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



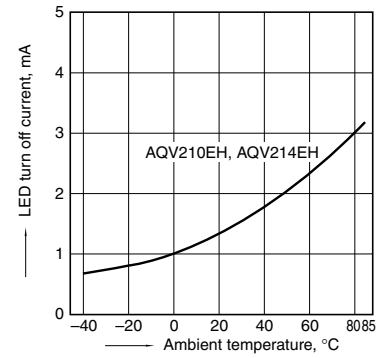
### 5. LED operate current vs. ambient temperature characteristics

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



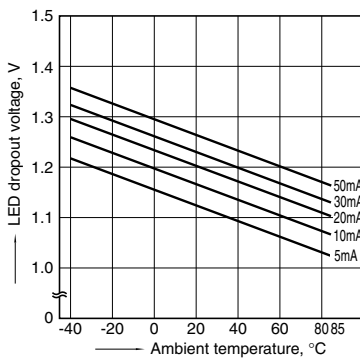
### 6. LED turn off current vs. ambient temperature characteristics

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



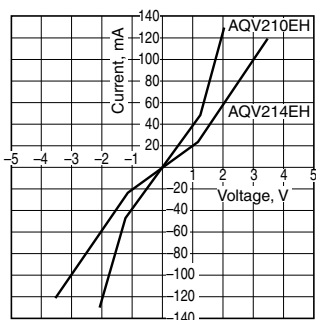
### 7. LED dropout voltage vs. ambient temperature characteristics

Sample: All types  
LED current: 5 to 50 mA



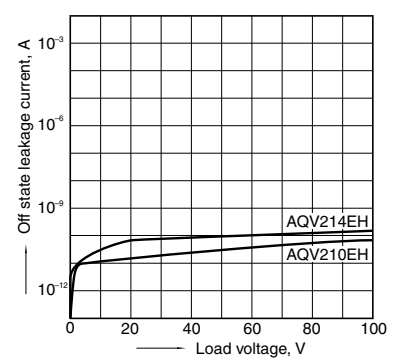
### 8. Current vs. voltage characteristics of output at MOS portion

Measured portion: between terminals 4 and 6;  
Ambient temperature: 25°C 77°F



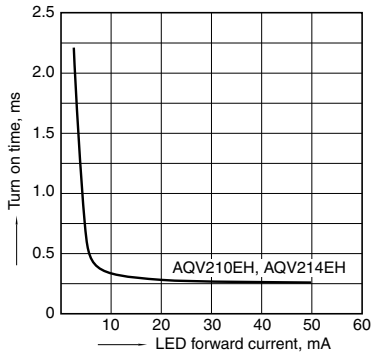
### 9. Off state leakage current vs. load voltage characteristics

Measured portion: between terminals 4 and 6;  
Ambient temperature: 25°C 77°F



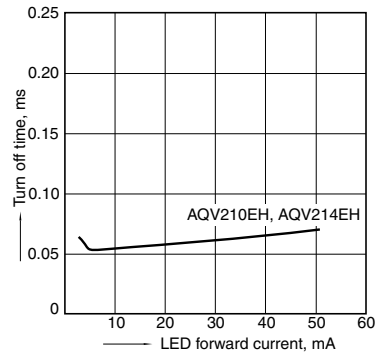
## 10. Turn on time vs. LED forward current characteristics

Measured portion: between terminals 4 and 6;  
 Load voltage: Max. (DC); Continuous load current:  
 Max. (DC); Ambient temperature: 25°C 77°F



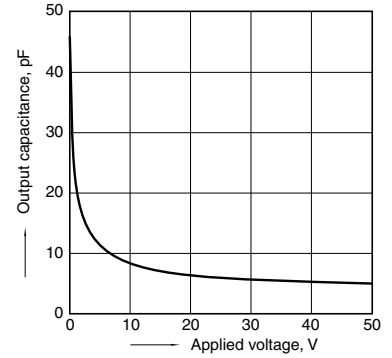
## 11. Turn off time vs. LED forward current characteristics

Measured portion: between terminals 4 and 6;  
 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 4 and 6;  
 Frequency: 1 MHz;  
 Ambient temperature: 25°C 77°F



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