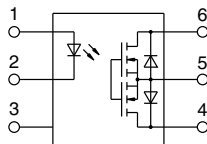
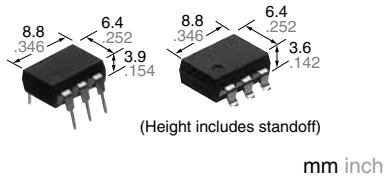




<b>Capable of 2A to 3A high-frequency load switching</b>	<b>PhotoMOS<sup>®</sup> HE 1 Form A High Capacity (AQV251G, AQV252G)</b>
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**RoHS compliant**

### FEATURES

- 1. Greatly increased load current in a compact DIP package**  
Continuous load current: 3.5A (AQV251G)
- 2. Greatly improved specifications allow you to use this in place of mercury and mechanical relays.**
- 3. Low on-resistance (Typ. 35mΩ, AQV251G)**

### TYPICAL APPLICATIONS

- **Measuring instrument market**  
(Testers etc.)
- **Industrial machinery and equipment**
- **Power supply controls**
- **Security/Disaster prevention market**  
I/O sections of warning devices, security systems, etc.

### TYPES

	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-pin side	Picked from the 4/5/6-pin side					
AC/DC dual use	30 V	3.5 A	DIP6-pin	AQV251G	AQV251GA	AQV251GAX	AQV251GAZ	1 tube contains: 50 pcs. 1 batch contains: 500 pcs.	1,000 pcs.
	60 V	2.5 A	DIP6-pin	AQV252G	AQV252GA	AQV252GAX	AQV252GAZ		

\*Indicate the peak AC and DC values.  
Note: The surface mount terminal 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)

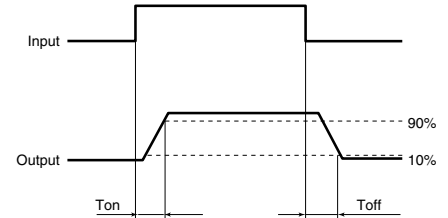
Item	Symbol	Type of connection	AQV251G(A)	AQV252G(A)	Remarks	
Input	LED forward current	I <sub>F</sub>	50 mA			
	LED reverse voltage	V <sub>R</sub>	5 V			
	Peak forward current	I <sub>FP</sub>	1 A		f = 100 Hz, Duty factor = 0.1%	
	Power dissipation	P <sub>in</sub>	75 mW			
Output	Load voltage (peak AC)	V <sub>L</sub>	30 V	60 V		
	Continuous load current	I <sub>L</sub>	A	3.5 A	2.5 A	A connection: Peak AC, DC B, C connection: DC
			B	4.0 A	3.5 A	
			C	6.0 A	5.0 A	
	Peak load current	I <sub>peak</sub>	6.0 A		100ms (1 shot), V <sub>L</sub> = DC	
Power dissipation	P <sub>out</sub>	600 mW				
Total power dissipation	P <sub>T</sub>	650 mW				
I/O isolation voltage	V <sub>iso</sub>	1,500 Vrms				
Ambient temperature	Operating	T <sub>opr</sub>	-40 to +85°C -40 to +185°F		(Non-icing at low temperatures)	
	Storage	T <sub>stg</sub>	-40 to +100°C -40 to +212°F			

# HE 1 Form A High Capacity (AQV251G, AQV252G)

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

Item		Symbol	Type of connection	AQV251G(A)	AQV252G(A)	Condition	
Input	LED operate current	Typical	I <sub>Fon</sub>	0.55 mA	0.5 mA	I <sub>L</sub> = 100mA	
		Maximum					
	LED turn off current	Minimum	I <sub>Foff</sub>	3 mA		I <sub>L</sub> = 100mA	
Typical		0.2 mA					
LED dropout voltage	Typical	V <sub>F</sub>	—	1.14 V (1.32 V at I <sub>F</sub> = 50 mA)		I <sub>F</sub> = 5 mA	
				Maximum	1.5 V		
Output	On resistance	Typical	R <sub>on</sub>	A	0.035 Ω	0.08 Ω	I <sub>F</sub> = 5 mA I <sub>L</sub> = Max. Within 1 s
					Maximum	0.08 Ω	
		Typical	R <sub>on</sub>	B	0.018 Ω	0.04 Ω	
					Maximum	0.04 Ω	
		Typical	R <sub>on</sub>	C	0.01 Ω	0.02 Ω	
					Maximum	0.02 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>	—	1.1 ms		I <sub>F</sub> = 5 mA, I <sub>L</sub> = 100 mA V <sub>L</sub> = 10 V
		Maximum			5.0 ms		
	Turn off time*	Typical	T <sub>off</sub>	—	0.1 ms	0.25 ms	I <sub>F</sub> = 5 mA, I <sub>L</sub> = 100 mA V <sub>L</sub> = 10 V
		Maximum			0.5 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	
Max. operating frequency	Maximum	—	—	10 cps	—	I <sub>F</sub> = 5 mA, duty = 50% V <sub>L</sub> × I <sub>L</sub> = 100 V·A	

\*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
AQV251G(A)	Load voltage (Peak AC)	V <sub>L</sub>	—	24	V
	Continuous load current (A connection)	I <sub>L</sub>	—	3.5	A
AQV252G(A)	Load voltage (Peak AC)	V <sub>L</sub>	—	48	V
	Continuous load current (A connection)	I <sub>L</sub>	—	2.5	A

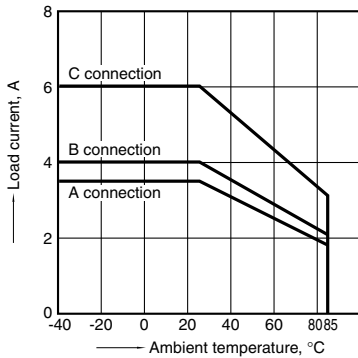
■ These products are not designed for automotive use.

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

## REFERENCE DATA

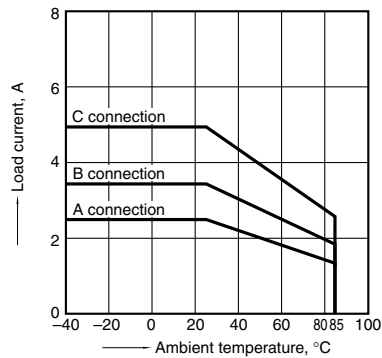
### 1.-(1) Load current vs. ambient temperature characteristics

Tested sample: AQV251G;  
Allowable ambient temperature: -40 to +85°C  
-40 to +185°F



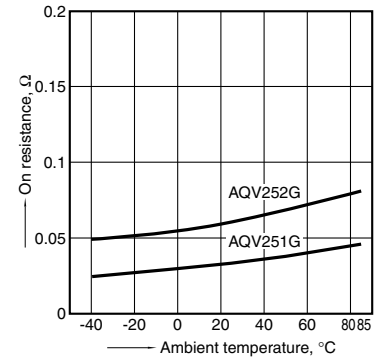
### 1.-(2) Load current vs. ambient temperature characteristics

Tested sample: AQV252G;  
Allowable ambient temperature: -40 to +85°C  
-40 to +185°F



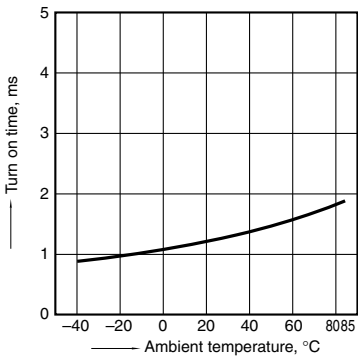
### 2. On resistance vs. ambient temperature characteristics

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



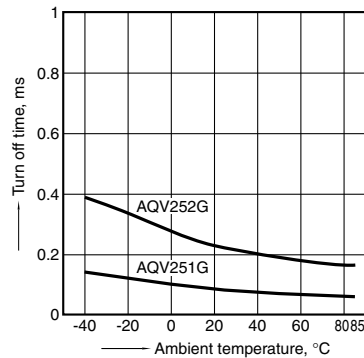
### 3. Turn on time vs. ambient temperature characteristics

Tested sample: All; LED current: 5 mA; Load voltage: 10 V (DC);  
Continuous load current: 100 mA (DC)



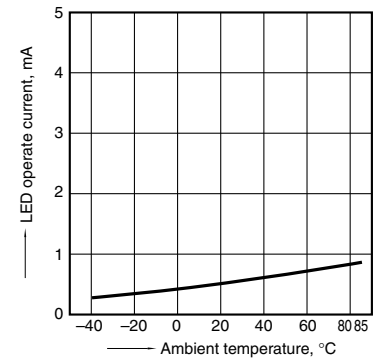
### 4. Turn off time vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: 10 V (DC);  
Continuous load current: 100 mA (DC)



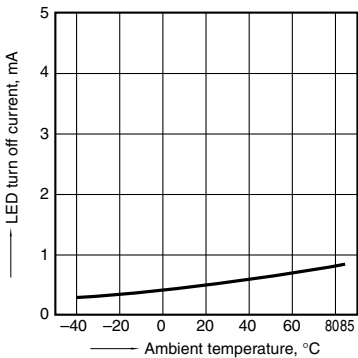
### 5. LED operate current vs. ambient temperature characteristics

Tested sample: All; Load voltage: 10 V (DC);  
Continuous load current: 100mA (DC)



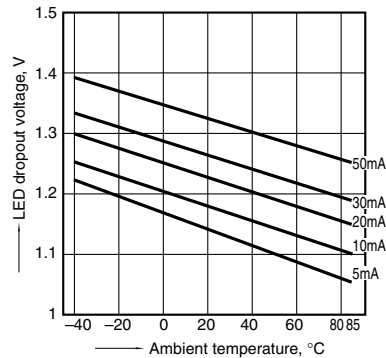
### 6. LED turn off current vs. ambient temperature characteristics

Tested sample: All; Load voltage: 10 V (DC);  
Continuous load current: 100mA (DC)



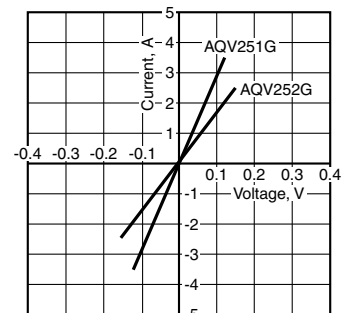
### 7. LED dropout voltage vs. ambient temperature characteristics

Tested sample: All;  
LED current: 5 to 50 mA



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

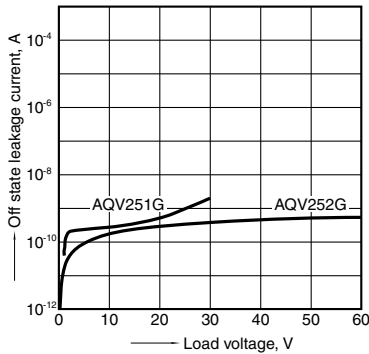
Measured portion: between terminals 4 and 6;  
Ambient temperature: 25°C 77°F



# HE 1 Form A High Capacity (AQV251G, AQV252G)

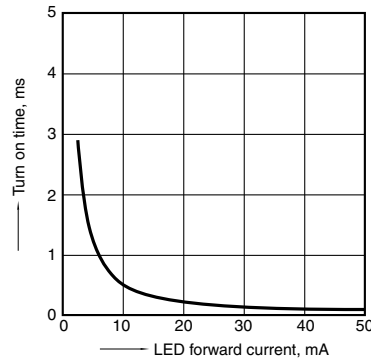
## 9. Off state leakage current vs. load voltage characteristics

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



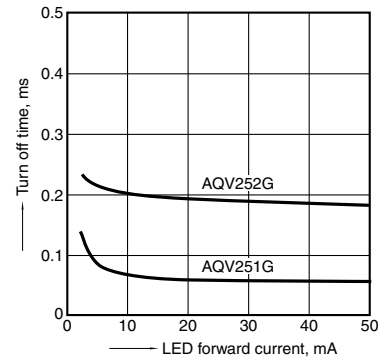
## 10. Turn on time vs. LED forward current characteristics

Measured portion: between terminals 4 and 6;  
Tested sample: All; Load voltage: 10 V (DC);  
Continuous load current: 100 mA (DC);  
Ambient temperature: 25°C 77°F



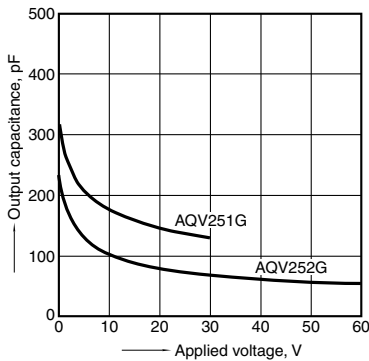
## 11. Turn off time vs. LED forward current characteristics

Measured portion: between terminals 4 and 6;  
Load voltage: 10 V (DC);  
Continuous load current: 100 mA (DC);  
Ambient temperature: 25°C 77°F



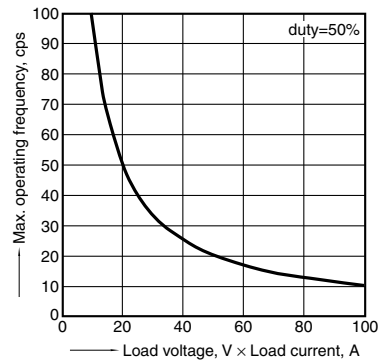
## 12. Output capacitance vs. applied voltage characteristics

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



## 13. Max. operating frequency vs. load voltage and current characteristics

Tested sample: AQV251G;  
LED current: 5 mA;  
Ambient temperature: 25°C 77°F



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Please contact .....

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**Panasonic Corporation**

Electromechanical Control Business Division

■ 1006, Oaza Kadoma, Kadoma-shi, Osaka 571-8506, Japan  
[industrial.panasonic.com/ac/e/](http://industrial.panasonic.com/ac/e/)

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