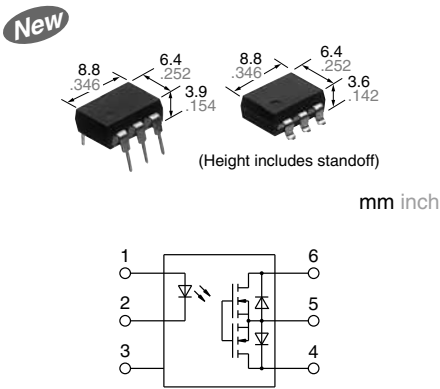


Capable of 2.4A to 3.5A
high capacity load
current control

PhotoMOS®
HE 1 Form A
High Capacity (AQV25○G3)



RoHS compliant

FEATURES

- 1. Greatly increased load current in a compact DIP package
Continuous load current: 3.5A (AQV252G3)
- 2. Greatly improved specifications allow you to use this in place of mercury and mechanical relays.
- 3. Low on-resistance (Typ. 33mΩ, AQV252G3)

TYPICAL APPLICATIONS

- Security equipment
- Fire-preventing system
- Industrial machine
- Thermostat (HVAC temperature controller)

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	New 60 V	3.5 A	DIP6-pin	AQV252G3	AQV252G3A	AQV252G3AX	AQV252G3AZ	1 tube contains: 50 pcs.	1,000 pcs.
	New 100 V	2.4 A	DIP6-pin	AQV255G3	AQV255G3A	AQV255G3AX	AQV255G3AZ	1 batch contains: 500 pcs.	

*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)

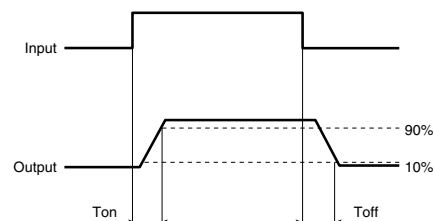
Item		Symbol	Type of connection	AQV252G3(A)	AQV255G3(A)	Remarks
Input	LED forward current	I _F		50 mA		
	LED reverse voltage	V _R		5 V		
	Peak forward current	I _{FP}		1 A		f = 100 Hz, Duty factor = 0.1%
	Power dissipation	P _{in}		75 mW		
Output	Load voltage (peak AC)	V _L		60 V	100 V	
	Continuous load current	I _L	A	3.5 A	2.4 A	A connection: Peak AC, DC B, C connection: DC
			B	5.0 A	3.2 A	
			C	7.0 A	4.8 A	
	Peak load current	I _{peak}		10 A	7.0 A	100ms (1 shot), V _L = DC at A connection
Power dissipation	P _{out}	600 mW				
Total power dissipation		P _T		650 mW		
I/O isolation voltage		V _{iso}		1,500 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		

HE 1 Form A High Capacity (AQV250G3)

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

Item			Symbol	Type of connection	AQV252G3(A)	AQV255G3(A)	Condition
Input	LED operate current	Typical	I _{Fon}	—	0.5 mA		I _L = 100mA
		Maximum			3 mA		
	LED turn off current	Minimum	I _{Foff}	—	0.2 mA		I _L = 100mA
		Typical			0.4 mA		
	LED dropout voltage	Typical	V _F	—	1.32 V (1.14 V at I _F = 5 mA)		I _F = 50 mA
		Maximum			1.5 V		
Output	On resistance	Typical	R _{on}	A	0.033 Ω	0.07 Ω	I _F = 5 mA I _L = Max. Within 1 s
		Maximum			0.06 Ω	0.12 Ω	
		Typical	R _{on}	B	0.017 Ω	0.035 Ω	
		Maximum			0.04 Ω	0.07 Ω	
		Typical	R _{on}	C	0.0095 Ω	0.02 Ω	
		Maximum			0.02 Ω	0.04 Ω	
	Off state leakage current	Maximum	I _{Leak}	—	1 μA		I _F = 0 mA, V _L = Max.
	Transfer characteristics	Turn on time*	Typical	T _{on}	—	1.8 ms	
Maximum			5 ms				
Turn off time*		Typical	T _{off}	—	0.15 ms		I _F = 5 mA, I _L = 100 mA V _L = 10 V
		Maximum			0.5 ms		
I/O capacitance		Typical	C _{iso}	—	0.8 pF		f = 1 MHz V _B = 0 V
		Maximum			1.5 pF		
Initial I/O isolation resistance		Minimum	R _{iso}	—	1,000 MΩ		500 V DC
Max. operating frequency	Maximum	—	—	2.5 cps		I _F = 5 mA, duty = 50% I _L = Max., V _L = Max.	

*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 forward current		I_F	5	30	mA
AQV252G3(A)	Load voltage (Peak AC)	V_L	—	48	V
	Continuous load current (A connection)	I_L	—	3.3	A
AQV255G3(A)	Load voltage (Peak AC)	V_L	—	80	V
	Continuous load current (A connection)	I_L	—	2.4	A

■ These products are not designed for automotive use.

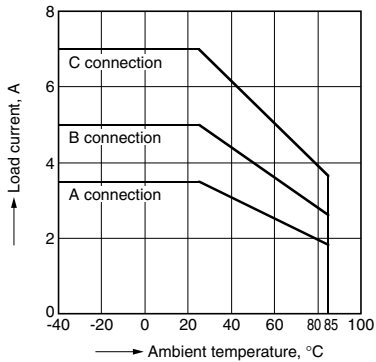
If you are considering to use these products for automotive applications, please contact your local Panasonic Corporation technical representative.

REFERENCE DATA

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

Sample: AQV252G3

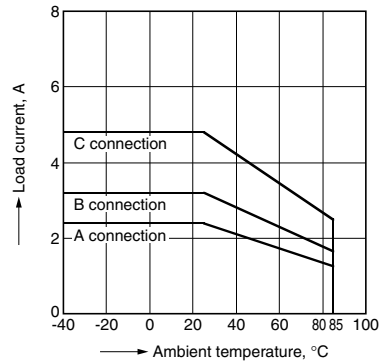
Allowable ambient temperature: -40 to $+85^{\circ}\text{C}$
 -40 to $+185^{\circ}\text{F}$



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

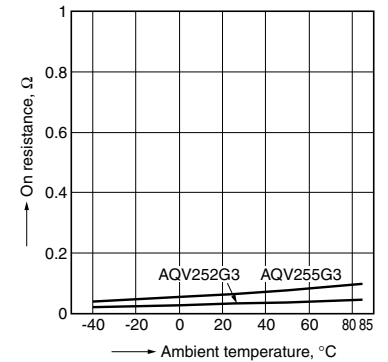
Sample: AQV255G3

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



2. On resistance vs. ambient temperature characteristics

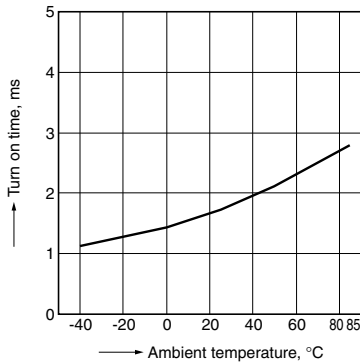
Measured portion: between terminals 4 and 6;
 LED current: 5 mA; Load voltage: Max. (DC)
 Continuous load current: Max. (DC)



3. Turn on time vs. ambient temperature characteristics

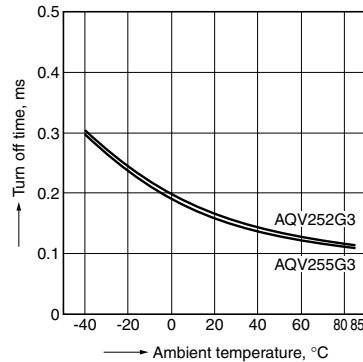
Tested sample: All;

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



4. Turn off time vs. ambient temperature characteristics

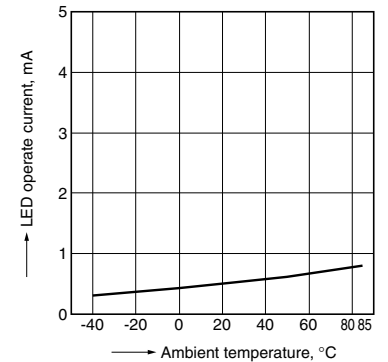
LED current: 5 mA; Load voltage: 10 V (DC);
 Continuous load current: 100 mA (DC)



5. LED operate current vs. ambient temperature characteristics

Tested sample: All;

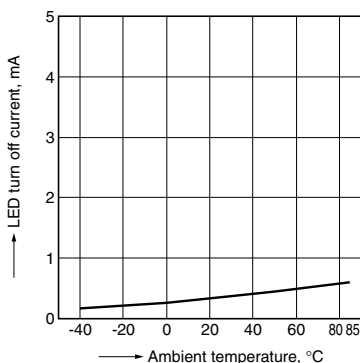
Load voltage: 10 V (DC);
 Continuous load current: 100 mA (DC)



6. LED turn off current vs. ambient temperature characteristics

Tested sample: All;

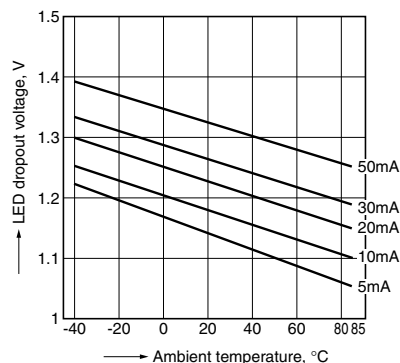
Load voltage: 10 V (DC);
 Continuous load current: 100 mA (DC)



7. LED dropout voltage vs. ambient temperature characteristics

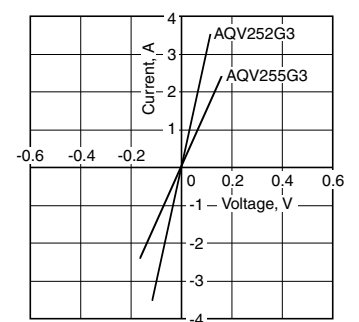
Tested sample: All;

LED current: 5 to 50 mA



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

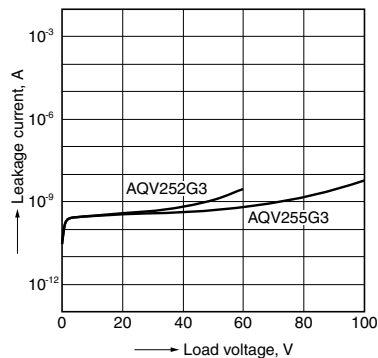
Measured portion: between terminals 4 and 6;
 Ambient temperature: 25°C 77°F



HE 1 Form A High Capacity (AQV250G3)

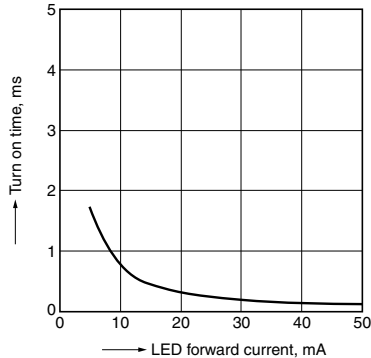
9. Off state leakage current vs. load voltage characteristics

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



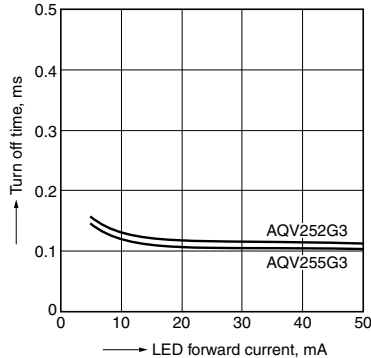
10. Turn on time vs. LED forward current characteristics

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



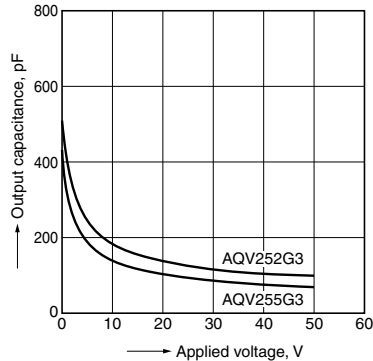
11. Turn off time vs. LED forward current characteristics

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



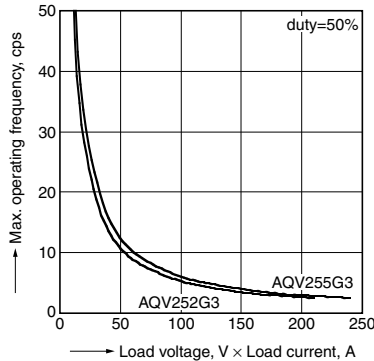
12. Output capacitance vs. applied voltage characteristics

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



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

LED current: 5 mA
Ambient temperature: 25°C 77°F



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