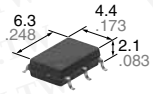
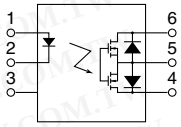
Miniature SOP6-pin type with high capacity of 3A load current

PhotoMOS®
HE SOP 1 Form A
High Capacity (AQV25○G○S)



mm inch



RoHS compliant

FEATURES

1. High capacity in a miniature SOP package
Continuous load current: Max. 3A
Load voltage: 50V and 80V
2. Greatly improved specifications allow you to use this in place of mercury and mechanical relays.

TYPICAL APPLICATIONS

- Security equipment
- Fire-preventing system
- Measuring instruments

TYPES

	Output rating*		Package	Part No.			Packing quantity	
				Surface-mount terminal				
	Load voltage	Load current		Tube packing style	Tape and reel packing style: Picked from the 1/2/3-pin side	Tape and reel packing style: Picked from the 4/5/6-pin side	Tube	Tape and reel
AC/DC dual use (New)	50 V	3.0 A	SOP6-pin	AQV252G2S	AQV252G2SX	AQV252G2SZ	1 tube contains: 75 pcs. 1 batch contains: 1,500 pcs.	1,000 pcs.
	80 V	1.25 A		AQV255GS	AQV255GSX	AQV255GSZ		

Note: For space reasons, the two initial letters of the part number "AQ" and the packing style indicator "X" or "Z" are not marked on the device.
* Indicate the peak AC and DC values.

RATING

1. Absolute maximum ratings (Ambient temperature: 25°C 77°F)

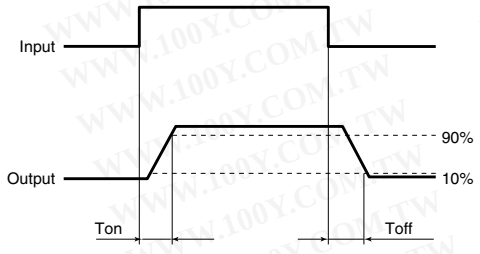
Item		Symbol	Type of connection	AQV252G2S	AQV255GS	Remarks
Input	LED forward current	I_F		50 mA		
	LED reverse voltage	V_R		5 V		
	Peak forward current	I_{FP}		1 A		f = 100 Hz, Duty factor = 0.1%
	Power dissipation	P_{in}		75 mW		
Output	Load voltage (peak AC)	V_L		50 V	80 V	
	Continuous load current	I_L	A	3.0 A	1.25 A	A connection: Peak AC, DC B, C connection: DC
			B	3.5 A	1.75 A	
			C	6.0 A	2.5 A	
	Peak load current	I_{peak}		6 A	3 A	100ms (1 shot), V_L = DC at A connection
	Power dissipation	P_{out}		450 mW		
Total power dissipation		P_T		500 mW		
I/O isolation voltage		V_{iso}		1,500 V AC		
Temperature limits	Operating	T_{opr}		–40°C to +85°C –40°F to +185°F		Non-condensing at low temperatures
	Storage	T_{stg}		–40°C to +100°C –40°F to +212°F		

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

Item			Symbol	Type of connection	AQV252G2S	AQV255GS	Condition
Input	LED operate current	Typical	I_{Fon}	—	0.6 mA	0.5 mA	I_L = 100mA
		Maximum			3 mA		
	LED turn off current	Minimum	I_{Foff}	—	0.2 mA		I_L = 100mA
		Typical			0.5 mA	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	0.04 Ω	0.09 Ω	A connection I_F = 5 mA, I_L = Max. Within 1 s on time
		Maximum			0.07 Ω	0.15 Ω	
		Typical	R_{on}	B	0.025 Ω	0.05 Ω	B connection I_F = 5 mA, I_L = Max. Within 1 s on time
		Maximum			0.04 Ω	0.12 Ω	
		Typical	R_{on}	C	0.01 Ω	0.03 Ω	C connection I_F = 5 mA, I_L = Max. Within 1 s on time
		Maximum			0.02 Ω	0.1 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}	—	1.5 ms	1.3 ms	I_F = 5 mA, I_L = 100 mA V_L = 10 V
		Maximum			5 ms		
	Turn off time*	Typical	T_{off}	—	0.08 ms	0.1 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. switching frequency	Maximum	—	—	2.5 times/s	5 times/s	I_F = 5 mA, duty = 50% I_L = Max., V_L = Max.

Note: Please refer to the “Schematic and Wiring Diagrams” for connection method.

*Turn on/Turn off time



RECOMMENDED OPERATING CONDITIONS

Please obey the following conditions to ensure proper device operation and resetting.

Item	Symbol	Recommended value	Unit
Input LED current	I_F	5 to 10	mA

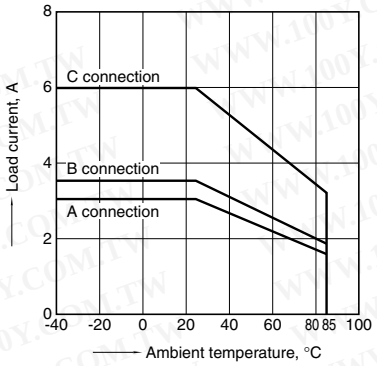
■ **These products are not designed for automotive use.**
If you are considering to use these products for automotive applications, please contact your local Panasonic Corporation technical representative.

REFERENCE DATA

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

Sample: AQV252G2S

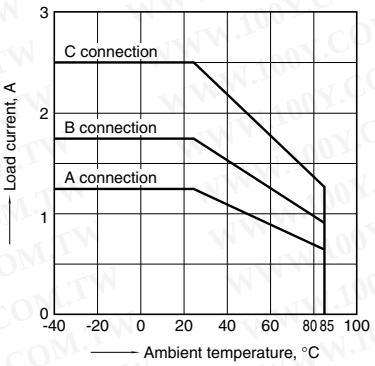
Allowable ambient temperature: –40°C to +85°C
–40°F to +185°F



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

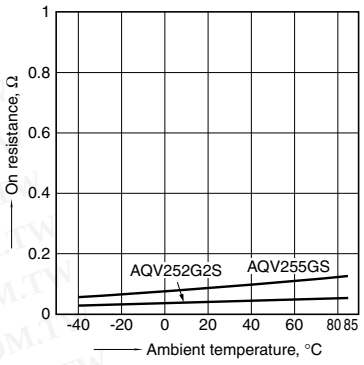
Sample: AQV255GS

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



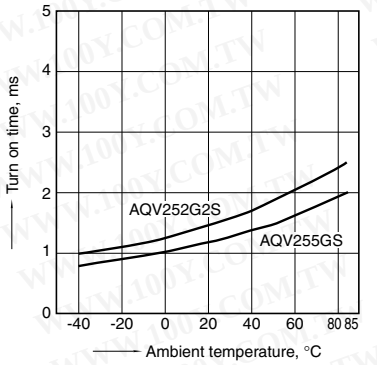
2. On resistance vs. ambient temperature characteristics

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



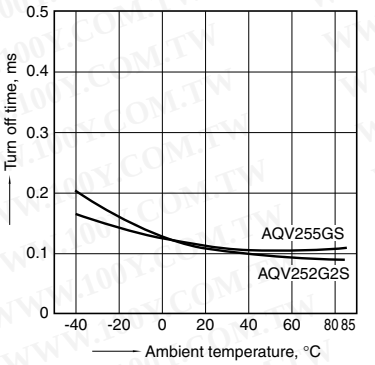
3. Turn on time vs. ambient temperature characteristics

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



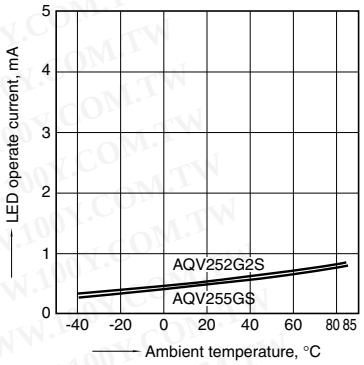
4. Turn off time vs. ambient temperature characteristics

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



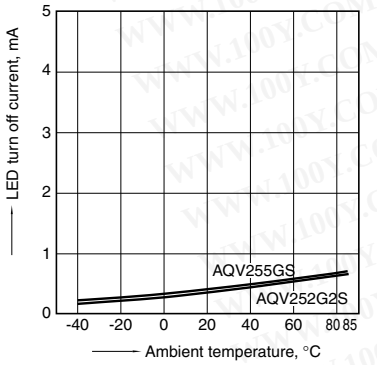
5. LED operate current vs. ambient temperature characteristics

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



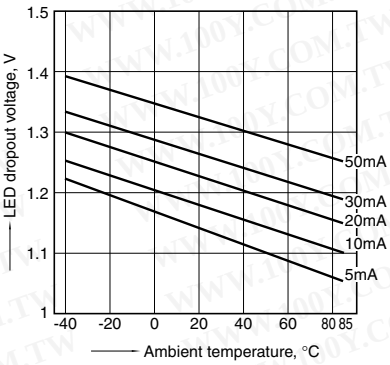
6. LED turn off current vs. ambient temperature characteristics

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



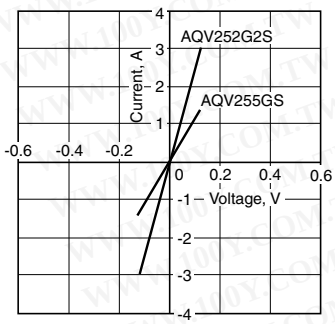
7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



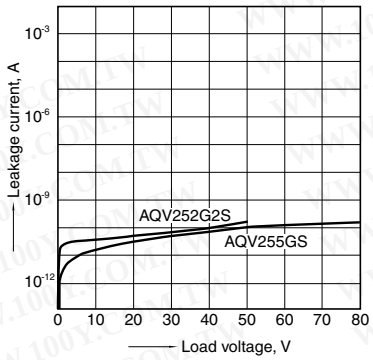
8. Current vs. voltage characteristics of output at MOS portion

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



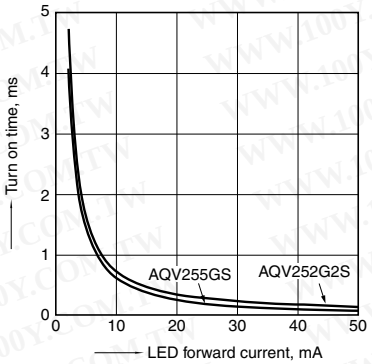
9. Off state leakage current vs. load voltage characteristics

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



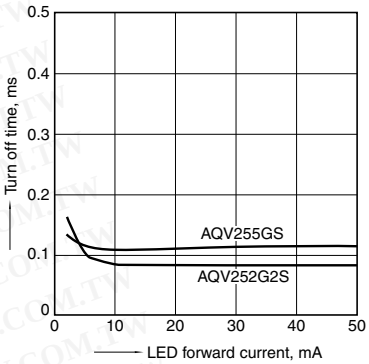
10. Turn on time vs. LED forward current characteristics

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



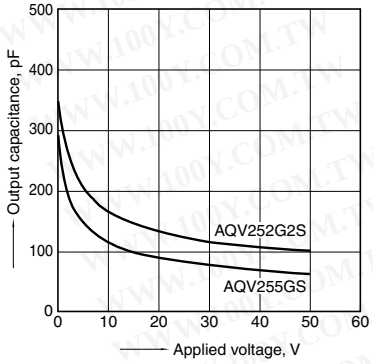
11. Turn off time vs. LED forward current characteristics

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. switching frequency vs. load voltage and load current

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