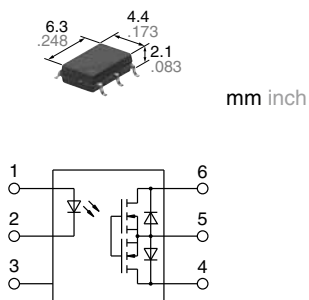


**Miniature SOP6-pin type  
with high capacity  
of 3.3A load current**

**PhotoMOS<sup>®</sup>  
HE SOP 1 Form A  
High Capacity (AQV250G3S)**



**RoHS compliant**

### FEATURES

**1. High capacity in a miniature SOP package**

Continuous load current: Max. 3.3A  
Load voltage: 60V and 100V

**2. Greatly improved specifications allow you to use this in place of mercury and mechanical relays.**

### TYPICAL APPLICATIONS

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

### TYPES

	Output rating*		Package	Part No.			Packing quantity	
	Load voltage	Load current		Surface-mount terminal			Tube	Tape and reel
				Tube packing style	Tape and reel packing style			
				Picked from the 1/2/3-pin side	Picked from the 4/5/6-pin side			
AC/DC dual use	<b>New</b> 60 V	3.3 A	SOP6-pin	AQV252G3S	AQV252G3SX	AQV252G3SZ	1 tube contains: 75 pcs. 1 batch contains: 1,500 pcs.	1,000 pcs.
	<b>New</b> 100 V	2.2 A		AQV255G3S	AQV255G3SX	AQV255G3SZ		

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)**

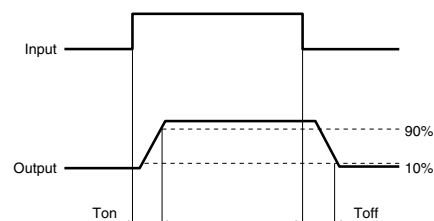
Item	Symbol	Type of connection	AQV252G3S		AQV255G3S		Remarks
			A	B	A	B	
Input	LED forward current	$I_F$	50 mA				
	LED reverse voltage	$V_R$	5 V				
	Peak forward current	$I_{FP}$	1 A				f = 100 Hz, Duty factor = 0.1%
	Power dissipation	$P_{in}$	75 mW				
Output	Load voltage (peak AC)	$V_L$	60 V		100 V		
	Continuous load current	$I_L$	A	3.3 A		2.2 A	A connection: Peak AC, DC B, C connection: DC
			B	3.5 A		2.4 A	
			C	6.6 A		4.4 A	
	Peak load current	$I_{peak}$	10 A		6.6 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 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 SOP 1 Form A High Capacity (AQV25○G3S)

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

Item			Symbol	Type of connection	AQV252G3S	AQV255G3S	Condition
Input	LED operate current	Typical	$I_{Fon}$	—	0.5 mA		$I_L = 100\text{mA}$
		Maximum			3 mA		
	LED turn off current	Minimum	$I_{Foff}$	—	0.2 mA		$I_L = 100\text{mA}$
		Typical			0.4 mA		
LED dropout voltage	Typical	$V_F$	—	1.32 V (1.14 V at $I_F = 5\text{ mA}$ )		$I_F = 50\text{ mA}$	
	Maximum			1.5 V			
Output	On resistance	Typical	$R_{on}$	A	0.033 $\Omega$	0.07 $\Omega$	A connection $I_F = 5\text{ mA}$ , $I_L = \text{Max.}$ Within 1 s
		Maximum			0.06 $\Omega$	0.12 $\Omega$	
		Typical	$R_{on}$	B	0.017 $\Omega$	0.035 $\Omega$	B connection $I_F = 5\text{ mA}$ , $I_L = \text{Max.}$ Within 1 s
		Maximum			0.04 $\Omega$	0.07 $\Omega$	
	Typical	$R_{on}$	C	0.0095 $\Omega$	0.02 $\Omega$	C connection $I_F = 5\text{ mA}$ , $I_L = \text{Max.}$ Within 1 s	
	Maximum			0.02 $\Omega$	0.04 $\Omega$		
Off state leakage current	Maximum	$I_{Leak}$	—	1 $\mu\text{A}$		$I_F = 0\text{ mA}$ , $V_L = \text{Max.}$	
Transfer characteristics	Turn on time*	Typical	$T_{on}$	—	1.8 ms		$I_F = 5\text{ mA}$ , $I_L = 100\text{ mA}$ $V_L = 10\text{ V}$
		Maximum			5 ms		
	Turn off time*	Typical	$T_{off}$	—	0.15 ms		$I_F = 5\text{ mA}$ , $I_L = 100\text{ mA}$ $V_L = 10\text{ V}$
		Maximum			0.5 ms		
	I/O capacitance	Typical	$C_{iso}$	—	0.8 pF		$f = 1\text{ MHz}$ $V_B = 0\text{ V}$
		Maximum			1.5 pF		
Initial I/O isolation resistance	Minimum	$R_{iso}$	—	1,000 M $\Omega$		500 V DC	
Max. operating frequency	Maximum	—	—	2.5 cps		$I_F = 5\text{ mA}$ , duty = 50% $I_L = \text{Max.}$ , $V_L = \text{Max.}$	

\*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 current		$I_F$	5	30	mA
AQV252G3S	Load voltage (Peak AC)	$V_L$	—	48	V
	Continuous load current (A connection)	$I_L$	—	3.3	A
AQV255G3S	Load voltage (Peak AC)	$V_L$	—	80	V
	Continuous load current (A connection)	$I_L$	—	2.2	A

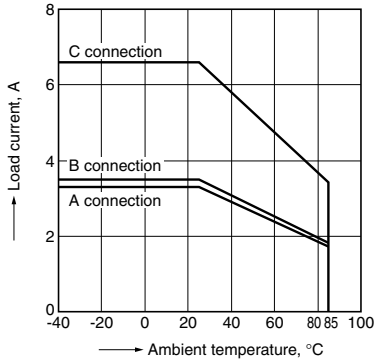
■ These products are not designed for automotive use.

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

## REFERENCE DATA

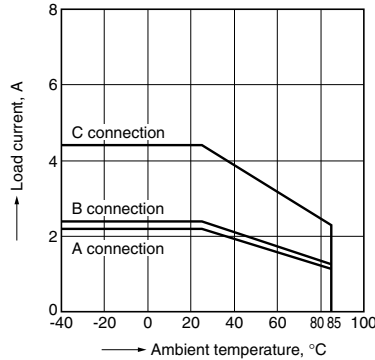
1.-(1) Load current vs. ambient temperature characteristics

Sample: AQV252G3S  
 Allowable ambient temperature: -40 to +85°C  
 -40 to +185°F



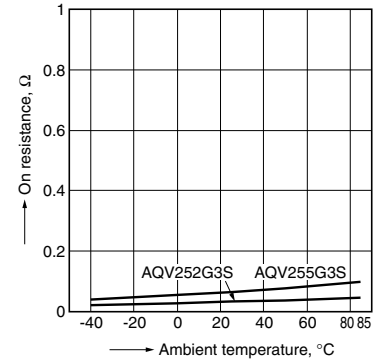
1.-(2) Load current vs. ambient temperature characteristics

Sample: AQV255G3S  
 Allowable ambient temperature: -40 to +85°C  
 -40 to +185°F



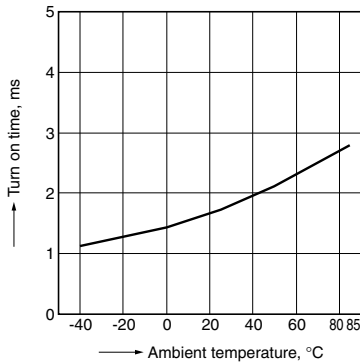
2. On resistance vs. ambient temperature characteristics

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



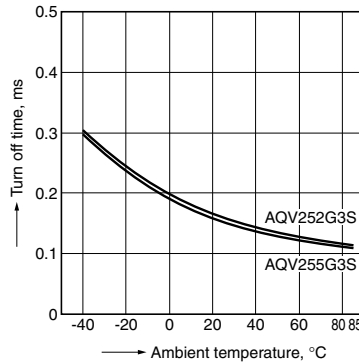
3. Turn on time vs. ambient temperature characteristics

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



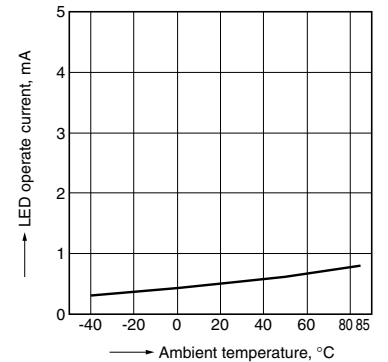
4. Turn off time vs. ambient temperature characteristics

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



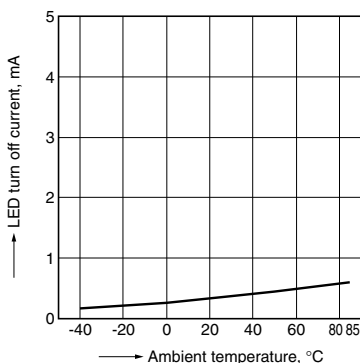
5. LED operate current vs. ambient temperature characteristics

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



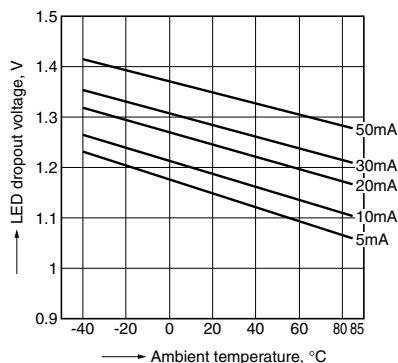
6. LED turn off current vs. ambient temperature characteristics

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



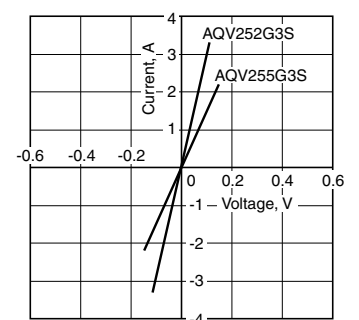
7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



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

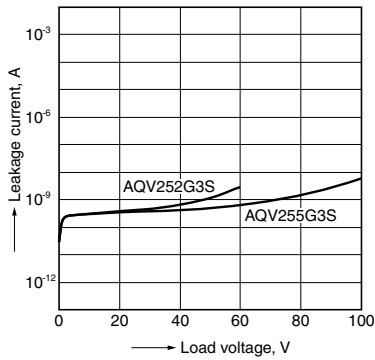
Measured portion: between terminals 4 and 6;  
 Ambient temperature: 25°C 77°F



# HE SOP 1 Form A High Capacity (AQV25○G3S)

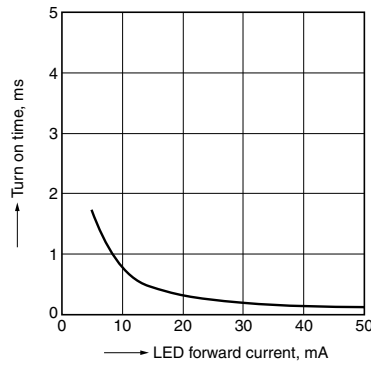
## 9. Off state leakage current vs. load voltage characteristics

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



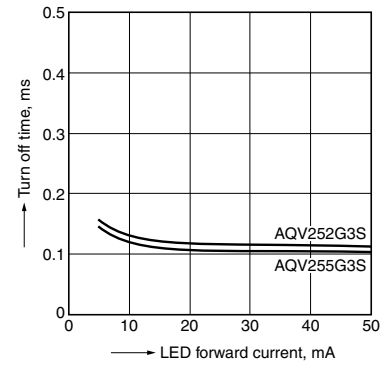
## 10. Turn on time vs. LED forward current characteristics

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



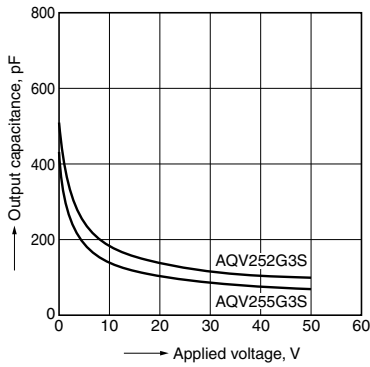
## 11. Turn off time vs. LED forward current characteristics

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



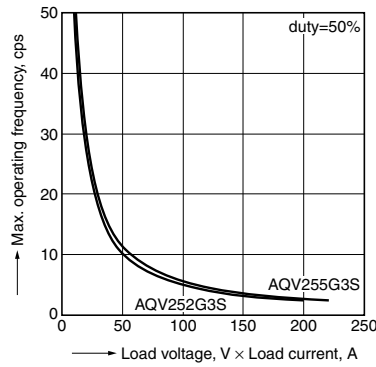
## 12. Output capacitance vs. applied voltage characteristics

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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