

Standard type:  (AQV258)



/

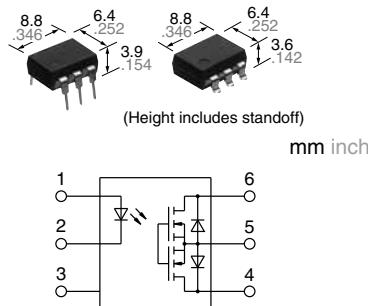
Reinforced type:  (AQV253H, AQV254H)

 (AQV256H)

**DIP6-pin type with
low on-resistance and
reinforced insulation**

PhotoMOS®

**HE 1 Form A
(AQV25O, AQV25OH)**



RoHS compliant

FEATURES

1. Wide variation of 40V, 60V, 100V, 200V, 250V, 400V, 600V, 1,000V and 1,500V load voltage
2. Low on-resistance of Typ. 0.6Ω (AQV251)
3. Reinforced insulation type of 5,000Vrms I/O isolation available

TYPICAL APPLICATIONS

- Measuring instruments
- Data communication equipment
- Telephone equipment
- Automatic meter reading device

TYPES

I/O isolation	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	
AC/DC dual use	1,500Vrms	40 V	500 mA	AQV251	AQV251A	AQV251AX	AQV251AZ	1 tube contains: 50 pcs. 1 batch contains: 500 pcs.
		60 V	400 mA	AQV252	AQV252A	AQV252AX	AQV252AZ	
		100 V	350 mA	AQV255	AQV255A	AQV255AX	AQV255AZ	
		200 V	250 mA	AQV257	AQV257A	AQV257AX	AQV257AZ	
		250 V	200 mA	AQV253	AQV253A	AQV253AX	AQV253AZ	
		400 V	150 mA	AQV254	AQV254A	AQV254AX	AQV254AZ	
		1,000 V	30 mA	AQV259	AQV259A	AQV259AX	AQV259AZ	
		1,500 V	20 mA	AQV258	AQV258A	AQV258AX	AQV258AZ	
	Reinforced 5,000Vrms	250 V	200 mA	AQV253H	AQV253HA	AQV253HAX	AQV253HAZ	
		400 V	150 mA	AQV254H	AQV254HA	AQV254HAX	AQV254HAZ	
		600 V	130 mA	AQV256H	AQV256HA	AQV256HAX	AQV256HAZ	

*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.

HE 1 Form A (AQV25O, AQV25OH)

RATING

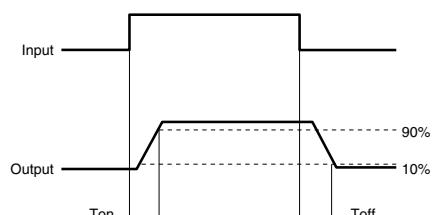
1. Absolute maximum ratings (Ambient temperature: 25°C 77°F)

Item		Symbol	Type of connection	AQV251(A)	AQV252(A)	AQV255(A)	AQV257(A)	AQV253(A)	AQV254(A)	AQV259(A)	AQV258(A)	AQV253H(A)	AQV254H(A)	AQV256H(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	A	40V	60V	100V	200V	250V	400V	1,000V	1,500V	250V	400V	600V	
	Continuous load current	I _L		0.5A	0.4A	0.35A	0.25A	0.2A	0.15A	0.03A	0.02A	0.2A	0.15A	0.13A	A connection: Peak AC, DC B, C connection: DC
				0.7A	0.6A	0.45A	0.35A	0.3A	0.18A	0.04A	0.025A	0.3A	0.18A	0.14A	
	Peak load current	I _{peak}	C	1.0A	0.8A	0.70A	0.5A	0.4A	0.25A	0.05A	0.04A	0.4A	0.25A	0.16A	A connection: 100 ms (1 shot) V _L = DC
	Power dissipation	P _{out}		360 mW											
	Total power dissipation	P _T		410 mW											
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												

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

Item		Symbol	Type of connection	AQV251(A)	AQV252(A)	AQV255(A)	AQV257(A)	AQV253(A)	AQV254(A)	AQV259(A)	AQV258(A)	AQV253H(A)	AQV254H(A)	AQV256H(A)	Condition					
Input	LED operate current	Typical	I _{Fon}	—	0.9 mA								1.4 mA		I _L = Max.					
		Maximum			3 mA															
	LED turn off current	Minimum	I _{Foff}	—	0.4 mA										I _L = Max.					
		Typical			0.8 mA								1.3 mA							
Output	LED dropout voltage	Typical	V _F	—	1.25 V (1.14 V at I _F = 5 mA)											I _F = 50 mA				
		Maximum			1.5 V															
	On resistance	Typical	R _{on}	A	0.6 Ω	0.74 Ω	1.8 Ω	2.6 Ω	5.5 Ω	12.4 Ω	85 Ω	345 Ω	5.5 Ω	12.4 Ω	20 Ω	I _F = 5 mA I _L = Max. Within 1 s				
		Maximum			1 Ω	1.4 Ω	2.5 Ω	4 Ω	8 Ω	16 Ω	200 Ω	500 Ω	8 Ω	16 Ω	30 Ω					
		Typical	R _{on}	B	0.3Ω	0.37Ω	0.9Ω	1.4Ω	2.7Ω	6.2Ω	60Ω	345Ω	2.7Ω	6.2Ω	15Ω	I _F = 5 mA I _L = Max. Within 1 s				
		Maximum			0.5Ω	0.7Ω	1.25Ω	2Ω	4Ω	8Ω	100Ω	500Ω	4Ω	8Ω	20Ω					
	Off state leakage current	Typical	R _{on}	C	0.15Ω	0.18Ω	0.45Ω	0.7Ω	1.4Ω	3.1Ω	30Ω	160Ω	1.4Ω	3.1Ω	7.5Ω	I _F = 5 mA I _L = Max. Within 1 s				
		Maximum			0.25Ω	0.35Ω	0.63Ω	1Ω	2Ω	4Ω	50Ω	250Ω	2Ω	4Ω	10Ω					
Transfer characteristics	Maximum	I _{Leak}	—	1 μA								10 μA		1 μA		I _F = 0 mA V _L = Max.				
	Turn on time*	Typical	T _{on}	—	1.7 ms	1.4 ms	0.9 ms	1.5 ms	0.8 ms	0.6 ms	0.35 ms	2.4 ms	1.8 ms	1.2 ms	I _F = 5 mA I _L = Max.					
		Maximum			3 ms	2 ms	3 ms	2 ms	1 ms	4 ms	3 ms					I _F = 5 mA I _L = Max.				
	Turn off time*	Typical	T _{off}	—	0.07 ms	0.09 ms	0.1 ms	0.06 ms	0.05 ms	0.04 ms	0.06 ms	0.05 ms	0.06 ms			f = 1 MHz V _B = 0 V				
		Maximum			0.2 ms															
	I/O capacitance	C _{iso}	—	1.3 pF																
	Initial I/O isolation resistance	Minimum	R _{iso}	—	3 pF											500 V DC				
				1,000 MΩ																

*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
AQV251(A)	Load voltage (Peak AC)	V_L	—	32
	Continuous load current (A connection)	I_L	—	0.5
AQV252(A)	Load voltage (Peak AC)	V_L	—	48
	Continuous load current (A connection)	I_L	—	0.4
AQV255(A)	Load voltage (Peak AC)	V_L	—	80
	Continuous load current (A connection)	I_L	—	0.35
AQV257(A)	Load voltage (Peak AC)	V_L	—	160
	Continuous load current (A connection)	I_L	—	0.25
AQV253(A)	Load voltage (Peak AC)	V_L	—	200
	Continuous load current (A connection)	I_L	—	0.2
AQV254(A)	Load voltage (Peak AC)	V_L	—	320
	Continuous load current (A connection)	I_L	—	0.15
AQV259(A)	Load voltage (Peak AC)	V_L	—	800
	Continuous load current (A connection)	I_L	—	0.03
AQV258(A)	Load voltage (Peak AC)	V_L	—	1200
	Continuous load current (A connection)	I_L	—	0.02
AQV253H(A)	Load voltage (Peak AC)	V_L	—	200
	Continuous load current (A connection)	I_L	—	0.2
AQV254H(A)	Load voltage (Peak AC)	V_L	—	320
	Continuous load current (A connection)	I_L	—	0.15
AQV256H(A)	Load voltage (Peak AC)	V_L	—	480
	Continuous load current (A connection)	I_L	—	0.13

■ 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.

■ Continual DC bias (for AQV258, AQV259**)**

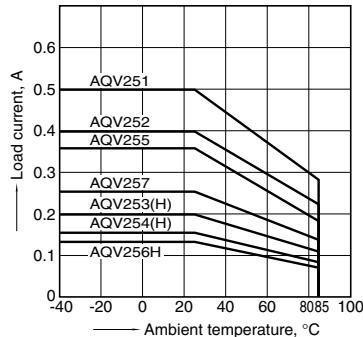
In cases in which a continual DC bias is applied between the input and output, the output-side MOS-FET may deteriorate due to the voltage. Therefore, please verify operation of the actual design before using. An example of a circuit that might undergo MOS-FET deterioration due to voltage is given below.

REFERENCE DATA

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

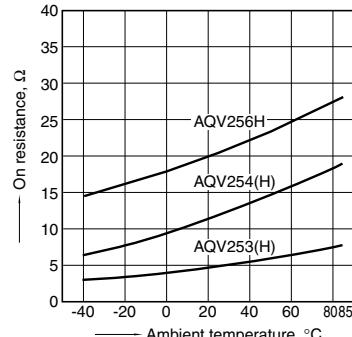
Allowable ambient temperature: -40 to +85°C
-40 to +185°F ;

Type of connection: A



2.-(2) On resistance vs. ambient temperature characteristics

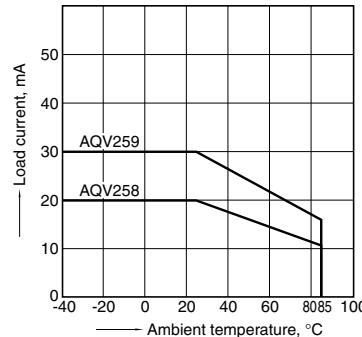
Measured portion: between terminals 4 and 6;
LED current: 5 mA;
Continuous load current: Max. (DC)



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

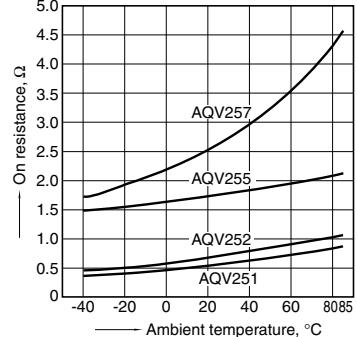
Allowable ambient temperature: -40 to +85°C
-40 to +185°F ;

Type of connection: A



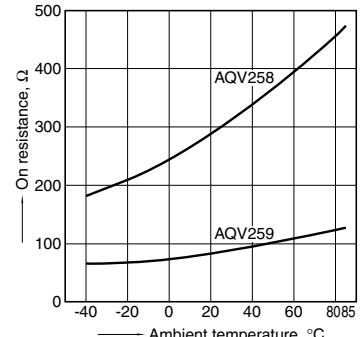
2.-(1) On resistance vs. ambient temperature characteristics

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



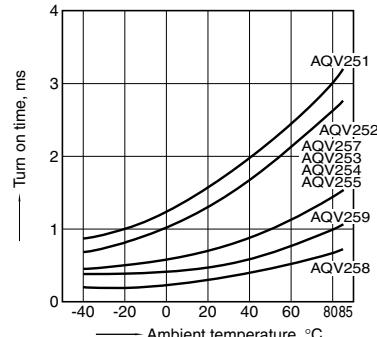
2.-(3) On resistance vs. ambient temperature characteristics

Measured portion: between terminals 4 and 6;
LED current: 5 mA;
Continuous load current: 30 mA (DC)



3.-(1) Turn on time vs. ambient temperature characteristics

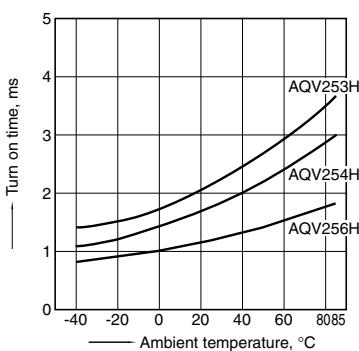
LED current: 5 mA;
Load voltage: Max. (DC);
Continuous load current: Max. (DC)



HE 1 Form A (AQV25O, AQV25OH)

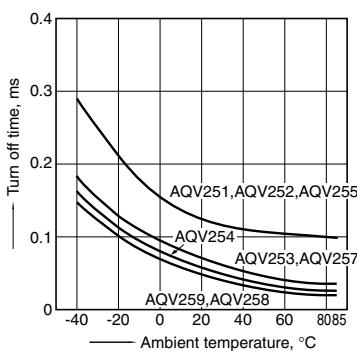
3.- (2) Turn on time vs. ambient temperature characteristics

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



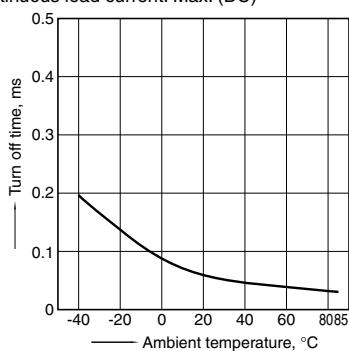
4.- (1) Turn off time vs. ambient temperature characteristics

Sample: AQV251, AQV252, AQV253, AQV254, AQV255, AQV257, AQV258, AQV259; Load voltage: Max. (DC); Continuous load current: Max. (DC)



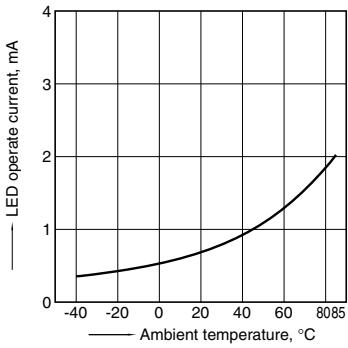
4.- (2) Turn off time vs. ambient temperature characteristics

Sample: AQV253H, AQV254H, AQV256H; LED current: 5 mA; Load voltage: Max. (DC); Continuous load current: Max. (DC)



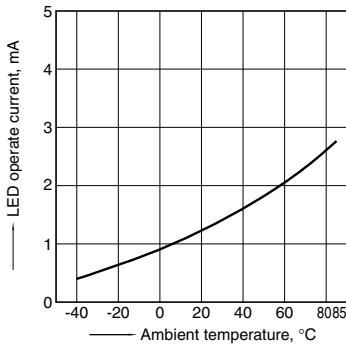
5.- (1) LED operate current vs. ambient temperature characteristics

Sample: AQV251, AQV252, AQV253, AQV254, AQV255, AQV257, AQV258, AQV259; Load voltage: Max. (DC); Continuous load current: Max. (DC)



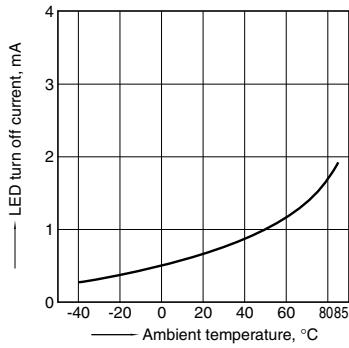
5.- (2) LED operate current vs. ambient temperature characteristics

Sample: AQV253H, AQV254H, AQV256H; Load voltage: Max. (DC); Continuous load current: Max. (DC)



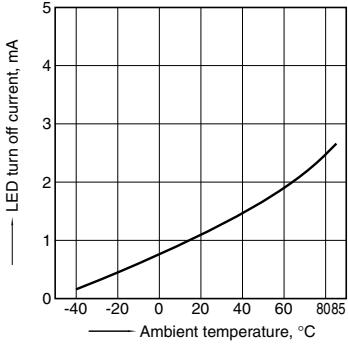
6.- (1) LED turn off current vs. ambient temperature characteristics

Sample: AQV251, AQV252, AQV253, AQV254, AQV255, AQV257, AQV258, AQV259; Load voltage: Max. (DC); Continuous load current: Max. (DC)



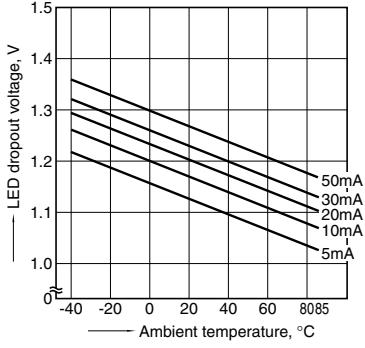
6.- (2) LED turn off current vs. ambient temperature characteristics

Sample: AQV253H, AQV254H, AQV256H; Load voltage: Max. (DC); Continuous load current: Max. (DC)



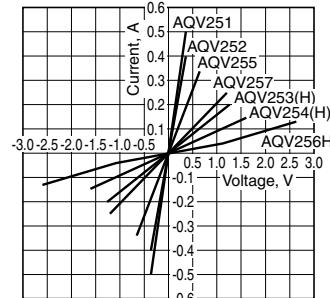
7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



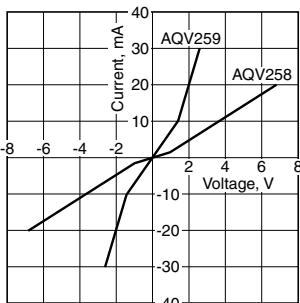
8.- (1) Current vs. voltage characteristics of output at MOS portion

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



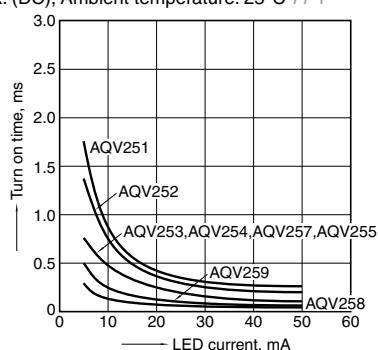
8.- (2) Current vs. voltage characteristics of output at MOS portion

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



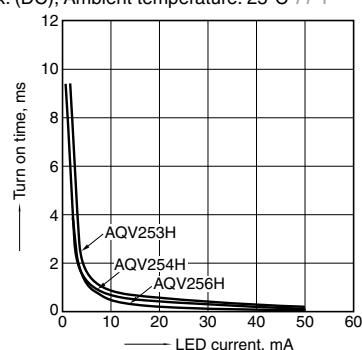
10-(1). Turn on time vs. LED forward current characteristics

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



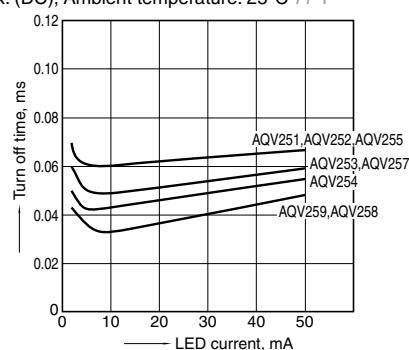
10-(2). Turn on time vs. LED forward current characteristics

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



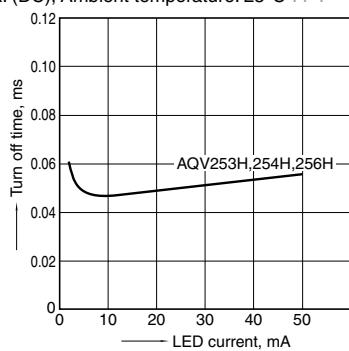
11-(1). Turn off time vs. LED forward current characteristics

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



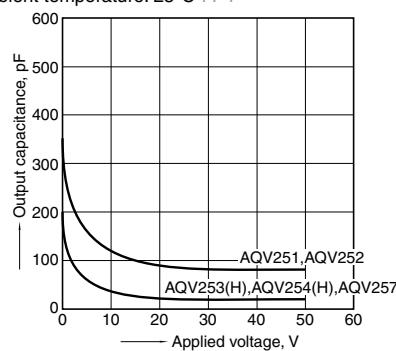
11-(2). Turn off time vs. LED forward current characteristics

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



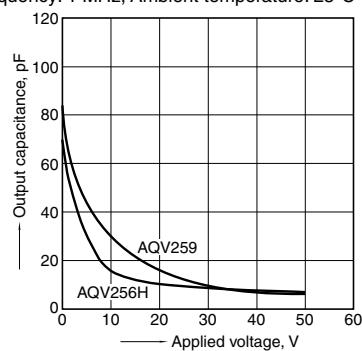
12.- (1) Output capacitance vs. applied voltage characteristics

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



12.- (2) Output capacitance vs. applied voltage characteristics

Sample: AQV259;
Measured portion: between terminals 4 and 6;
Frequency: 1 MHz; Ambient temperature: 25°C 77°F



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- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



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