

Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from Europe, America and south Asia, supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts, Customers Priority, Honest Operation, and Considerate Service", our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip, ALPS, ROHM, Xilinx, Pulse, ON, Everlight and Freescale. Main products comprise IC, Modules, Potentiometer, IC Socket, Relay, Connector. Our parts cover such applications as commercial, industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

Standard type:  Reinforced type:  

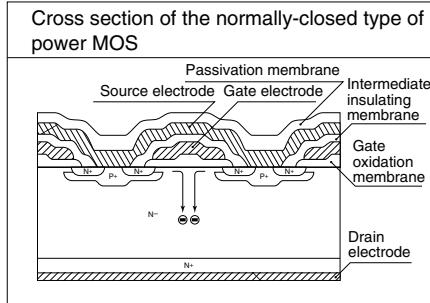
**Normally closed
DIP6-pin type
Low on-resistance with
250V/400V load voltage**

**PhotoMOS®
HE 1 Form B
(AQV45○, AQV454H)**

FEATURES

1. 1 Form B (Normally-closed) type with low on-resistance

This has been achieved thanks to the built-in MOSFET processed by our proprietary method, DSD (Double-diffused and Selective Doping) method.

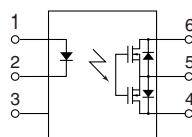


3. High sensitivity and low on-resistance

Can control max. 0.2 A load current with 5 mA input current. Low on-resistance of typ. 5.5 Ω (AQV453).

4. Reinforced insulation 5,000 V type also available.

More than 0.4 mm .016 inch internal insulation distance between inputs and outputs. Conforms to IEC950 (reinforced insulation).



RoHS compliant

2. Controls low-level analog signals

PhotoMOS feature extremely low closed-circuit offset voltage to enable control of low-level analog signals without distortion.

TYPICAL APPLICATIONS

- Security equipment
- High-speed inspection machines
- Measuring instruments
- Telephone equipment
- Sensing equipment

TYPES

I/O isolation	Output rating*	Output rating*		Package	Part No.			Packing quantity		
		Load voltage	Load current		Through hole terminal	Surface-mount terminal				
					Tube packing style		Tape and reel packing style			
AC/DC dual use	1,500 V AC	250 V	200 mA	DIP6-pin	AQV453	AQV453A	AQV453AX	AQV453AZ		
		400 V	150 mA		AQV454	AQV454A	AQV454AX	AQV454AZ		
	Reinforced 5,000 V AC				AQV454H	AQV454HA	AQV454HAX	AQV454HAZ		

RATING

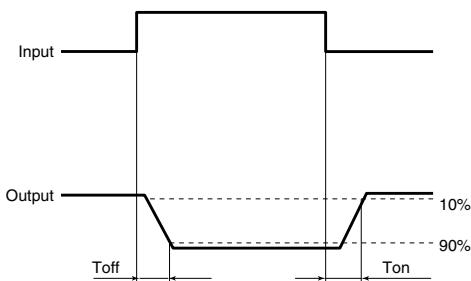
1. Absolute maximum ratings (Ambient temperature: 25°C 77°F)

Item	Symbol	Type of connection	AQV453(A)	AQV454(A)	AQV454H(A)	Remarks		
Input	LED forward current	I _F	50 mA					
	LED reverse voltage		5 V					
	Peak forward current		1 A			f = 100 Hz, Duty factor = 0.1%		
	Power dissipation		75 mW					
Output	Load voltage (peak AC)	V _L	250 V	400 V				
	Continuous load current		A	0.2 A	0.15 A			
			B	0.3 A	0.18 A	A connection: Peak AC, DC		
	Peak load current		C	0.4 A	0.25 A	B, C connection: DC		
Total power dissipation	Power dissipation	P _{OUT}	0.6 A	0.5 A		A connection: 100 ms (1 shot), V _L = DC		
			360 mW					
			410 mW					
			1,500 V AC	5,000 V AC				
Temperature limits	Operating	T _{opr}	-40°C to +85°C					
	Storage	T _{stg}	-40°C to +100°C			-40°F to +185°F		
-40°C to +100°C			-40°F to +212°F			Non-condensing at low temperatures		

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

Item	Symbol	Type of connection	AQV453(A)	AQV454(A)	AQV454H(A)	Remarks
Input	LED operate (OFF) current	Typical	I _{Foff}	—	1 mA	0.9 mA
					3 mA	
	LED reverse (ON) current	Minimum	I _{Fon}	—	0.4 mA	
					0.9 mA	0.8 mA
Output	LED dropout voltage	Typical	V _F	—	1.25 V (1.14 V at I _F =5 mA)	
					1.5 V	
	On resistance	Maximum	R _{on}	A	5.5 Ω	11 Ω
					8 Ω	16 Ω
Transfer characteristics	Off state leakage current	Maximum	I _{Leak}	—	1 μA	1 μA
	Operate (OFF) time*	Typical	T _{off}	—	1.52 ms	1.2 ms
					3 ms	2.0 ms
	Reverse (ON) time*	Maximum	T _{on}	—	0.4 ms	0.36 ms
	I/O capacitance	Typical	C _{iso}	—	1.3 pF	
					3 pF	
Initial I/O isolation resistance		Minimum	R _{iso}	—	1,000 MΩ	
					500 V DC	

*Operate/Reverse 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	Standard type: 5 Reinforced insulation type: 5 to 10	mA

■ These products are not designed for automotive use.

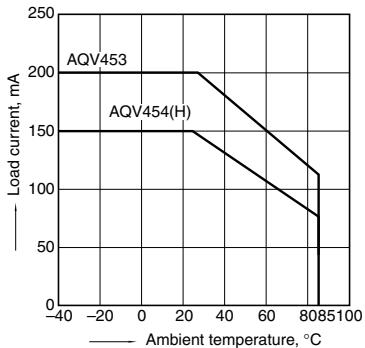
If you are considering to use these products for automotive applications, please contact your local Panasonic Corporation technical representative.

REFERENCE DATA

1. Load current vs. ambient temperature characteristics

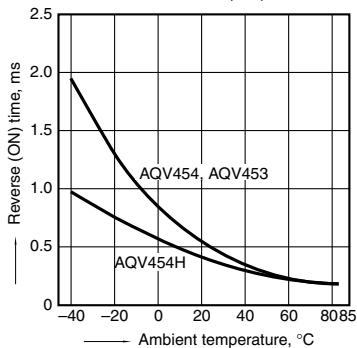
Allowable ambient temperature: -40°C to $+85^{\circ}\text{C}$
 -40°F to $+185^{\circ}\text{F}$

Type of connection: A



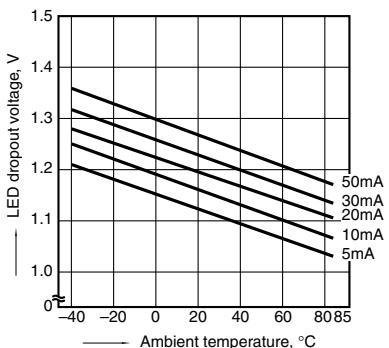
4. Reverse (ON) time vs. ambient temperature characteristics

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



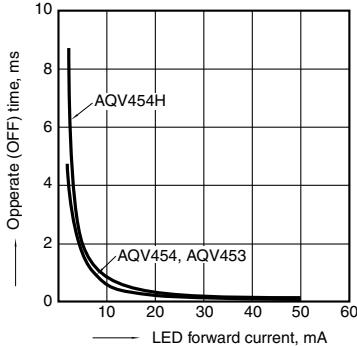
7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



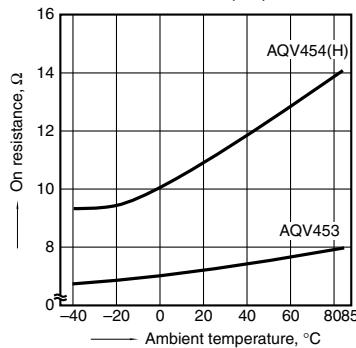
10. Operate (OFF) time vs. LED forward current characteristics

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



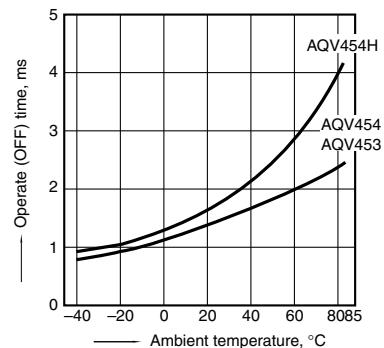
2. On resistance vs. ambient temperature characteristics

Measured portion: between terminals 4 and 6;
 LED current: 0 mA; Load voltage: Max. (DC);
 Continuous load current: Max. (DC)



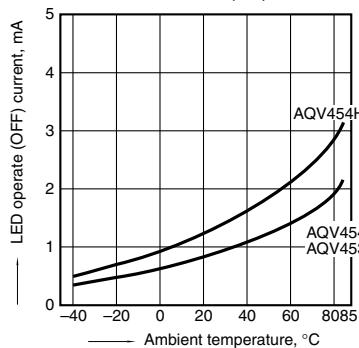
3. Operate (OFF) time vs. ambient temperature characteristics

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



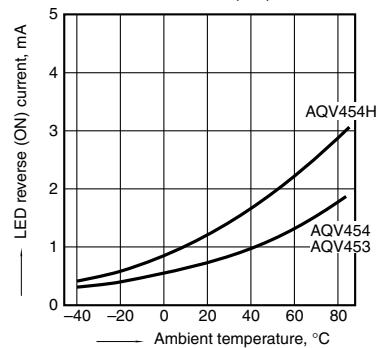
5. LED operate (OFF) current vs. ambient temperature characteristics

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



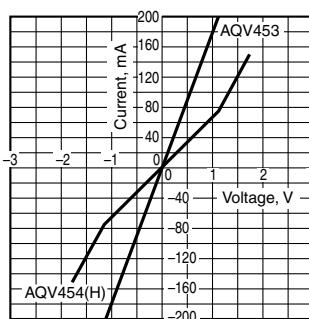
6. LED reverse (ON) current vs. ambient temperature characteristics

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



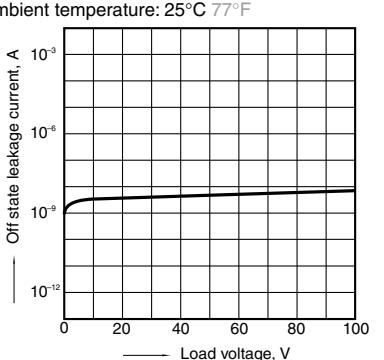
8. Current vs. voltage characteristics of output at MOS portion

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



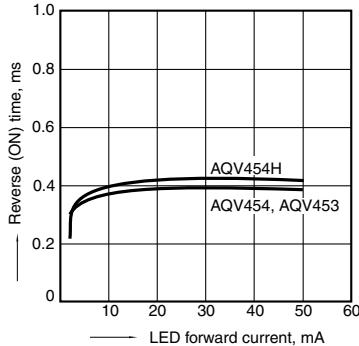
9. Off state leakage current vs. load voltage characteristics

Sample: AQV454;
 Measured portion: between terminals 4 and 6;
 Ambient temperature: 25°C 77°F



11. Reverse (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



12. Output capacitance vs. applied voltage characteristics

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

