

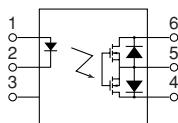
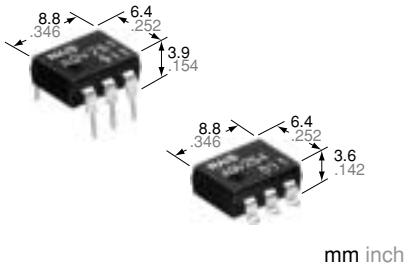
Panasonic
ideas for life

High sensitivity and low on-resistance.
DIP (1 Form A) 6-pin type.

HE PhotoMOS
(AQV25O)

FEATURES

1. **Highly sensitive and low on-resistance**
2. **Controls various types of loads such as relays, motors, lamps and solenoids.**
3. **Optical coupling for extremely high isolation**
5,000 Vrms I/O isolation available.
4. **Low-level off state leakage current**
5. **Eliminates the need for a power supply to drive the power MOSFET**
A power supply used to drive the power MOSFET is unnecessary because of the built-in optoelectronic device. This results in easy circuit design and small PC board area.
6. **Low thermal electromotive force (Approx. 1 µV)**



TYPICAL APPLICATIONS

- High-speed inspection machines
- Telephone equipment
- Data communication equipment

TYPES

1. I/O isolation voltage: 1,500 V AC

Output rating*		Part No.			Packing quantity	
		Through hole terminal	Surface-mount terminal			
Load voltage	Load current	Tube packing style		Tape and reel packing style		Tube
				Picked from the 1/2/3-pin side	Picked from the 4/5/6-pin side	
40 V	500 mA	AQV251	AQV251A	AQV251AX	AQV251AZ	
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	

2. I/O isolation voltage: Reinforced 5,000 V

Output rating*		Part No.			Packing quantity	
		Through hole terminal	Surface-mount terminal			
Load voltage	Load current	Tube packing style		Tape and reel packing style		Tube
				Picked from the 1/2/3-pin side	Picked from the 4/5/6-pin side	
250 V	200 mA	AQV253H	AQV253HA	AQV253HAX	AQV253HAZ	
400 V	150 mA	AQV254H	AQV254HA	AQV254HAX	AQV254HAZ	

1 tube contains
50 pcs.
1 batch contains
500 pcs.

1,000 pcs.

*Indicate the peak AC and DC values.

Note: For space reasons, the SMD terminal shape indicator "A" and the package type indicator "X" and "Z" are omitted from the seal.

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)	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		40 V	60 V	100 V	200 V	250 V	400 V	1,000 V	1,500 V	250 V	400 V		
	Continuous load current	I _L		A	0.5 A	0.4 A	0.35 A	0.25 A	0.2 A	0.15 A	0.03 A	0.02 A	0.2 A	0.15 A	
				B	0.7 A	0.6 A	0.45 A	0.35 A	0.3 A	0.18 A	0.04 A	0.025 A	0.3 A	0.18 A	
				C	1.0 A	0.8 A	0.70 A	0.5 A	0.4 A	0.25 A	0.05 A	0.04 A	0.4 A	0.25 A	
	Peak load current	I _{peak}		1.8 A	1.5 A	1.0 A	0.75 A	0.6 A	0.5 A	0.09 A	0.06 A	0.6 A	0.5 A	A connection: 100 ms (1 shot) V _L = DC	
Power dissipation		P _{out}	360 mW												
Total power dissipation		P _T	410 mW												
I/O isolation voltage		V _{iso}	1,500 V AC										5,000 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	AQV251(A)	AQV252(A)	AQV255(A)	AQV257(A)	AQV253(A)	AQV254(A)	AQV259(A)	AQV258(A)	AQV253H(A)	AQV254H(A)	Condition	
Input	LED operate current	I _{Fon}	—	0.9 mA										I _L = Max.	
	Maximum			3 mA											
	LED turn off current	I _{Foff}	—	0.4 mA										I _L = Max.	
	Typical			0.8 mA											
Output	LED dropout voltage	V _F	—	1.25 V (1.14 V at I _F = 5 mA)										I _F = 50 mA	
	Maximum			1.5 V											
	On resistance	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	I _F = 5 mA I _L = Max. Within 1 s on time	
				1 Ω	1.4 Ω	2.5 Ω	4 Ω	8 Ω	16 Ω	200 Ω	500 Ω	8 Ω	16 Ω		
		R _{on}	B	0.3Ω	0.37 Ω	0.9 Ω	1.4 Ω	2.7 Ω	6.2 Ω	60 Ω	345 Ω	2.7 Ω	6.2 Ω	I _F = 5 mA I _L = Max. Within 1 s on time	
				0.5 Ω	0.7 Ω	1.25 Ω	2 Ω	4 Ω	8 Ω	100 Ω	500 Ω	4 Ω	8 Ω		
		R _{on}	C	0.15 Ω	0.18 Ω	0.45 Ω	0.7 Ω	1.4 Ω	3.1 Ω	30 Ω	160 Ω	1.4 Ω	3.1 Ω	I _F = 5 mA I _L = Max. Within 1 s on time	
				0.25 Ω	0.35 Ω	0.63 Ω	1 Ω	2 Ω	4 Ω	50 Ω	250 Ω	2 Ω	4 Ω		
Transfer characteristics	Off state leakage current	Maximum	—	1 μA										I _F = 0 mA V _L = Max.	
	Switching speed	T _{on}	—	1.7 ms	1.4 ms	0.9 ms	1.5 ms	0.8ms	0.8ms	0.6ms	0.35 ms	2.4ms	1.8ms	I _F = 5 mA I _L = Max.	
				3 ms											
	Turn off time*	T _{off}	—	0.07 ms										I _F = 5 mA I _L = Max.	
				0.09 ms											
	I/O capacitance	C _{iso}	—	0.1 ms										f = 1 MHz V _B = 0 V	
	Typical			0.06 ms											
	Maximum			0.05 ms											
	Initial I/O isolation resistance	Minimum	R _{iso}	1,000 MΩ										500 V DC	

Note: Recommendable LED forward current

Standard type: 5 mA

Reinforced type: 5 to 10 mA

*Turn on/Turn off time

