

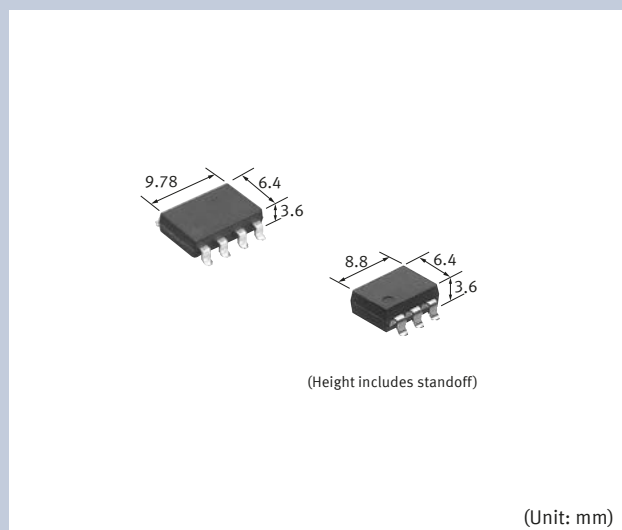
PhotoMOS for Automotive Applications

- DIP6-pin 1 Form A SMD type
(A Q V 2 1 9 H A X C * 9 , A Q V 2 5 8 H A X C * 9)
- DIP8-pin 2 Form A SMD type
(A Q W 2 1 6 H A X C * 8)

**IN Your
Future**

PhotoMOS for Automotive Applications

Most popular types for Automotive applications



FEATURES

- Successfully in automotive market for many years
- Tested according to AEC-Q101
- 1,500 V switching voltage type available (AQV258HAX C*9)
- Absolute minimal leakage current (typ. < 1 nA)
- Turn on time: Max. 0.5 ms/2.0 ms
Turn off time: Max. 0.2 ms/0.5 ms
- Input/output isolation up to 5 kVrms
- Linear output characteristics
- No threshold voltage
- Stable on-resistance over the entire lifetime
- Compact housing
- Highly shock and vibration resistant

TYPICAL APPLICATIONS

- Isolation Monitoring
- High Voltage Measurement

TYPES

Output rating*1		Package	Contact configuration	Part number*2	Packing quantity
Load voltage	Load current				
600 V	40 mA	DIP8-pin (SMD)	2 Form A	AQW216HAX C*8	1-reel: 1,000 pcs. Outer carton: 1,000 pcs.
900 V	15 mA	DIP6-pin (SMD)	1 Form A	AQV219HAX C*9	
1,500 V	20 mA			AQV258HAX C*9	

*1: Indicate the peak AC and DC values.

*2: For other products or applications, please contact us

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RATING

Absolute maximum ratings (Ambient temperature: 25°C)

Item		Symbol	Part number			Remarks
			AQW216HAX C*8	AQV219HAX C*9	AQV258HAX C*9	
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/DC)	V_L	600 V	900 V	1,500 V	
	Continuous load current (Peak AC/DC)	I_L	40 mA (50 mA)	15 mA	20 mA	(): in case of using only 1 channel
	Peak load current	I_{peak}	120 mA	45 mA	60 mA	100 ms (1 shot), $V_L = DC$
	Power dissipation	P_{out}	800 mW	360 mW	360 mW	
Total power dissipation		P_T	850 mW	410 mW	410 mW	
I/O isolation voltage		V_{iso}	Up to 5,000 Vrms			
Ambient temperature*	Operating	T_{opr}	-40 to +85°C			(Non-icing at low temperatures)
	Storage	T_{stg}	-40 to +100°C			

* In case of using -40 to +105°C, please contact us

Electrical characteristics (Ambient temperature: 25°C)

Item			Symbol	Part number			Condition
				AQW216HAX C*8	AQV219HAX C*9	AQV258HAX C*9	
Input	LED operate current	Typical	I_{fon}	1 mA	1.4 mA	1.2 mA	$I_L = Max.$
		Maximum		3 mA	3 mA	3 mA	
	LED turn off current	Minimum	I_{foff}	0.2 mA	0.2 mA	0.2 mA	
		Typical		0.8 mA	1.3 mA	1.1 mA	
LED dropout voltage	Typical	V_F	1.25 V	1.35 V	1.35 V	$I_F = 50 mA$	
	Maximum		1.5 V	1.5 V	1.5 V		
Output	On resistance	Typical	R_{on}	70 Ω	310 Ω	305 Ω	$I_F = 10 mA$
		Maximum		150 Ω	500 Ω	500 Ω	$I_L = Max.$
	Off-state leakage current	Maximum	I_{Leak}	1 μA	1 μA	10 μA	$I_F = 0 mA,$ $V_L = Max.$
Transfer characteristics	Turn on time	Typical	T_{on}	0.2 ms	0.08 ms	0.3 ms	$I_F = 10 mA$ $I_L = Max.$
		Maximum		0.5 ms	0.5 ms	2 ms	
	Turn off time	Typical	T_{off}	0.04 ms	0.03 ms	0.1 ms	
		Maximum		0.4 ms	0.2 ms	0.5 ms	

Note) For special electrical characteristics requirements, please contact us

Recommended operating conditions (Ambient temperature: 25°C)*1

Item	Symbol	Part number		
		AQW216HAX C*8	AQV219HAX C*9	AQV258HAX C*9
LED forward current	I_F	10 mA	10 mA	10 mA
Load voltage (Peak AC/DC)	V_L	360 V or less	540 V or less	900 V or less
Continuous load current	I_L	20 mA (25 mA)*2 or less	7.5 mA or less	10 mA or less

*1: For other use conditions, please contact us

*2: In case of using only 1 channel

PhotoMOS® for Automotive Applications

■ Before Selecting PhotoMOS® for Automotive Applications

Automotive grade PhotoMOS® are generally used in automotive environment since stricter enhanced quality controls are needed.

The user is cautioned and asked to inquire with our sales representative before designing the products in such environments.

■ About Specification Reviews

Automotive applications require specification reviews. This is important and necessary in order to prevent performance, quality and reliability problems. The following parameters should be reviewed with our sales representative:

- Targeted application
- Targeted levels of quality and reliability
- Circuits description of load level, driving methods, etc.
- Usage conditions
- Influence at failure and failsafe concepts, etc.

■ About Derating Design

Derating is essential in any reliable design and a significant factor in consideration of product life. Sufficient derating is needed absolute maximum rating when designing a system.

It is recommended using a derated voltage of 60% (or less) of absolute maximum load voltage rating, and 50% (or less) of absolute maximum load current ratings.

It is the responsibility of the customer to design the safety of the equipment by installing protective circuits and redundant circuits, and to conduct safety tests.

All automotive products are handled as special orders.
Please contact our sales representative for confirmation
of usage conditions, etc.

PhotoMOS for Automotive Applications

DIMENSIONS (Unit: mm)

CAD The CAD data of the products with a "CAD" mark can be downloaded from our Website.

Part number	Dimensions	
<p>AQW216HAX C*8</p>	<p>CAD</p> <p>Surface mount terminal type External dimensions</p> <p>Terminal thickness: $t = 0.2$ General tolerance: ± 0.1</p>	<p>Recommended mounting pad (TOP VIEW)</p> <p>Tolerance: ± 0.1</p>
<p>AQV219HAX C*9 AQV258HAX C*9</p>	<p>CAD</p> <p>Surface mount terminal type External dimensions</p> <p>Terminal thickness: $t = 0.25$ General tolerance: ± 0.1</p>	<p>Recommended mounting pad (TOP VIEW)</p> <p>Tolerance: ± 0.1</p>

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WIRING DIAGRAMS

Part number	Output configuration	Load type	Connection	Wiring diagram
AQW216HAX C*8	2 Form A	AC/DC	-	(1) Two independent 1 Form A use
				(2) 2 Form A use
AQV219HAX C*9 AQV258HAX C*9	1 Form A	AC/DC	-	

* Terminal 3 cannot be used, since it is in the internal circuit of the device.

PACKING FORMAT

Package	Tape dimensions	Dimensions of tape reel
DIP8-pin Surface mount terminal		<p>*Quality of material: Paper</p>
DIP6-pin Surface mount terminal		<p>*Quality of material: PS</p>

CAUTIONS FOR USE

For cautions for general use, please read "PhotoMOS® Cautions for Use" at Automation Control WEB site (as described in footer of catalog)

Please refer to "the latest product specifications" when designing your product.

- Requests to customers:
<https://industrial.panasonic.com/ac/e/salespolicies/>

■Global Sales Network Information: industrial.panasonic.com/ac/e/salesnetwork

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