

# PhotoMOS Relays for Automotive Applications

## Before Selecting PhotoMOS Relays for Automotive Applications

Some changes in specification parameters are needed when PhotoMOS relays are used in certain automotive applications. Automotive grade

PhotoMOS relays are generally used in automotive environment since stricter enhanced quality controls are needed. The user is cautioned and asked to

inquire with a local Panasonic 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 a local Panasonic sales representative:

- Targeted application
- Targeted levels of quality and reliability
- Circuits description of load level, driving methods, etc.
- Service 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 against maximum rating when designing a system. Please contact your local Panasonic sales representative to determine derated percentages of the maximum load

voltage and maximum load current ratings. Relays should be examined using measurement equipment. Derated voltages must be considered according to the operating and environmental conditions the relay will be subjected to.

In case of automotive applications, more allowance should be given to maximum ratings and installation of safety measures (i.e. use of double circuits). Misuse of the products listed in this document shall be made at the users' own risk.

## Typical Products for Automotive Applications

### Types and absolute maximum ratings (Ambient temperature: 25°C 77°F)

Part number	Type	Package	Contact configuration	Load voltage (V <sub>L</sub> )*1	Continuous load current (I <sub>L</sub> )*1	Temperature limits	
						Operating (T <sub>opr</sub> )	Storage (T <sub>stg</sub> )
AQW216HAX○○○	GU	DIP8pin (SMD)	2 Form A	600V	40mA (50mA)*2	-40°C to +85°C -40°F to +185°F	-40°C to +100°C -40°F to +212°F
AQW212HAX○○○	GU	DIP8pin (SMD)	2 Form A	60V	500mA (600mA)*2		
AQV258HAX○○○	HE	DIP6pin (SMD)	1 Form A	1500V	20mA		

\*1 Indicate the peak AC and DC values.

\*2 In case of using only 1 channel

### Electric characteristics (Ambient temperature: 25°C 77°F)

Item			Symbol	Part number			Test conditions
				AQW216HAX○○○	AQW212HAX○○○	AQV258HAX○○○	
Input	LED operate current	Typ.	I <sub>Fon</sub>	1mA	1mA	0.8mA	I <sub>L</sub> = Max.
		Max.		3mA	3mA	3mA	
	LED turn off current	Typ.	I <sub>Foff</sub>	0.2mA	0.2mA	0.2mA	
		Max.		0.8mA	0.8mA	0.7mA	
	LED dropout voltage	Typ.	V <sub>F</sub>	1.25V	1.25V	1.25V	I <sub>F</sub> = 50mA
		Max.		1.5V	1.5V	1.5V	
Output	On resistance	Typ.	R <sub>on</sub>	70Ω	0.83Ω	305Ω	I <sub>F</sub> = 10mA (AQW216HAX○○○, AQW212HAX○○○) I <sub>F</sub> = 7.5mA (AQV258HAX○○○) I <sub>L</sub> = Max.
		Max.		150Ω	2.5Ω	500Ω	
	Off state leakage current	Max.	I <sub>Leak</sub>	1μA	1μA	10μA	
Transfer characteristics	Turn on time	Typ.	T <sub>on</sub>	0.2ms	0.5ms	0.28ms	I <sub>F</sub> = 10mA (AQW216HAX○○○, AQW212HAX○○○) I <sub>F</sub> = 7.5mA (AQV258HAX○○○) I <sub>L</sub> = Max.
		Max.		0.5ms	2ms	1ms	
	Turn off time	Typ.	T <sub>off</sub>	0.04ms	0.08ms	0.1ms	
		Max.		0.5ms	0.5ms	0.5ms	

For further particulars on automotive grade PhotoMOS relays, please inquire with a Panasonic sales representative.