

# AQV210 / AQV210A

HIGH VOLTAGE, PHOTO MOS RELAY

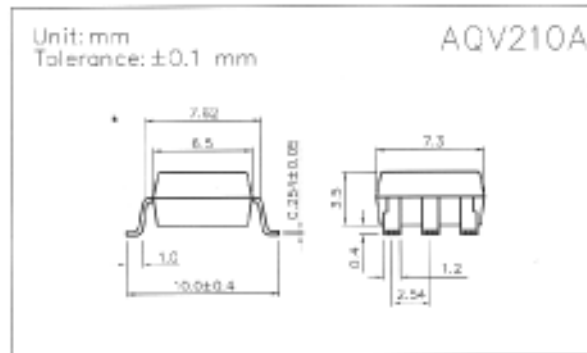
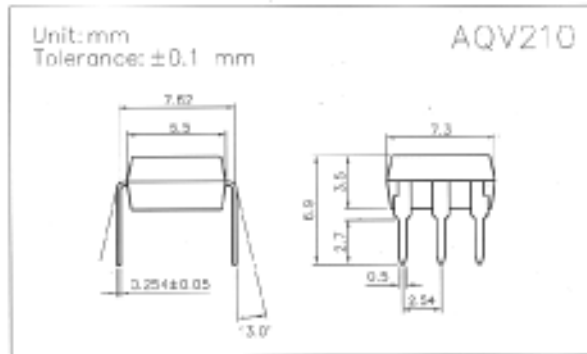
## FEATURES

- Normally Open, Single Pole Single Throw
- Control 350 VAC or DC Voltage
- Switch 130 mA Loads
- LED Control Current, 2mA
- Low ON-Resistance
- $dv/dt$ , >500 V/ms
- Isolation Test Voltage, 3750 VAC<sub>RMS</sub>
- UL, CSA, FCC compatible
- Applications
  - Telecommunications
  - Telecom Switching
  - Tip/Ring Circuits
  - Modem Switching (Laptop, Notebook, Pocket Size)
  - Hookswitch
  - Dial Pulsing
  - Ground Start
  - Ringer Injection
  - Instrumentation
  - Multiplexers
  - Data Acquisition
  - Electronic Switching
  - I/O Subsystems
  - Meters (Watt-Hour, Water, Gas)
  - Medical Equipment
  - High Voltage Test Equipment
  - TRIAC Driver
  - Motor Control
  - Security
  - Aerospace
  - Industrial Controls

## DESCRIPTION

The AQV210 is a single pole single throw (SPST), normally open (NO), Mos Relay. The relay can control AC or DC loads currents up to 130 mA, with a supply voltage up to 350 V. The device is packaged in a six pin SMD and dual-in line package. Those package offer an insulation dielectric withstand of 3750 VAC<sub>RMS</sub>.

The coupler consists of a AlGaAs LED that is optically coupled to a dielectrically isolated photodiode array which drives two series connected high voltage MOS transistors. The typical ON-Resistance is 20Ω at 25 mA and is linear up to 50mA. The incremental resistance drops to less than 30Ω beyond 50 mA while reducing internal power dissipation at high load currents.



## Absolute Maximum Ratings (T<sub>A</sub> = 25°C)

### Emitter (Input)

Reverse Voltage.....	5.0V
Continuous Forward Current.....	50mA
Peak Forward Current (I <sub>s</sub> ).....	1A
Power Dissipation.....	100mW
Derate Linearly from 25°C.....	1.3mW/°C

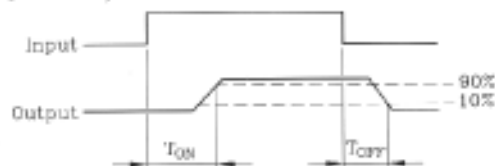
### Detector (Output)

Output Breakdown Voltage.....	±350V
Continuous Load Current.....	±130mA
Power Dissipation.....	500mW

### General Characteristics

Isolation Test Voltage.....	3750VAC <sub>RMS</sub>
Isolation Resistance	
V <sub>IO</sub> = 500V, T <sub>A</sub> = 25°C.....	≥10 <sup>10</sup> Ω
Total Power Dissipation.....	550mW
Derate Linearly from 25°C.....	2.5mW/°C
Storage Temperature Range.....	-40 to +150°C
Operating Temperature Range.....	-40 to +85°C
Junction Temperature.....	100°C
Soldering Temperature, 2mm from case, 10 sec.....	260°C

## ● Turn on/Turn off time



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Characteristics

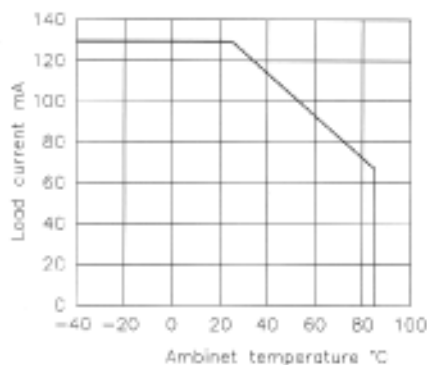
(T<sub>A</sub> = 25°C)

Description	Symbol	Min.	Typ.	Max.	Unit	Test Condition	
<b>Emitter (Input)</b>							
Forward Voltage	V <sub>F</sub>		1.8	2.0	V	I <sub>F</sub> = 10 mA	
Operation Input Current	I <sub>TON</sub>			5	mA	V <sub>L</sub> = ± 20 V, I <sub>L</sub> = 100 mA, t = 10 ms	
Recovery Input Current	I <sub>TOFF</sub>	0.2			mA	V <sub>L</sub> = ± 20 V, I <sub>L</sub> = < 5 μA	
<b>Detector (output)</b>							
Output Breakdown Voltage	V <sub>B</sub>	350			V	I <sub>R</sub> = 50 μA	
Output Off-State Leakage	I <sub>T(OFF)</sub>		0.2	1	μA	V <sub>T</sub> = 100 V, I <sub>F</sub> = 0 mA	
I/O Capacitance	C <sub>ISO</sub>		6		μF	I <sub>F</sub> = 0, f = 1 MHz	
ON Resistance	Con- nection	A	R <sub>ON</sub>	20	30	Ω	I <sub>L</sub> = 100 mA, I <sub>F</sub> = 10 mA
		B		10	15		
		C		5	7.5		
Turn-on Time	T <sub>ON</sub>		0.3	1.0	ms	I <sub>F</sub> = 10 mA, V <sub>L</sub> = ± 20 V	
Turn-off Time	T <sub>OFF</sub>		0.7	1.5	ms	t = 10 ms, I <sub>L</sub> = ± 100 mA	

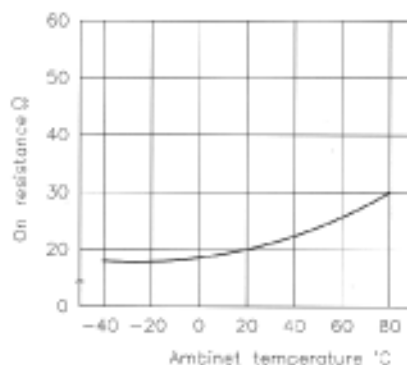
Mos Relay Schematic and Wiring Diagrams					
Type	Schematic	Output configuration	Load	Con- nection	Wiring diagram
AQV210 & AQV210A		Ia	AC/DC	A	
			DC	B	
			DC	C	

DATA CURVE

Load current vs. ambient temperature  
Allowable ambient temperature:  
-40°C to + 85°C



On resistance vs. ambient temperature  
Across terminals 4 and 6 pin  
LED current: 5 mA  
Continuous load current: 130 mA(DC)



Turn on time vs. ambient temperature  
Load voltage 350 V(DC)  
LED current : 5 mA  
Continuous load current: 130 mA(DC)

