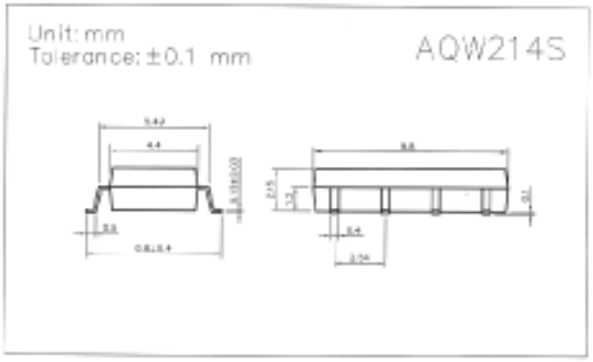
AQW214S

HIGH VOLTAGE, PHOTO MOS RELAY

FEATURES

- **Normally Open, Single Pole Single Throw**
- **Control 400 VAC or DC Voltage**
- **Switch 130 mA Loads**
- **LED Control Current, 2mA**
- **Low ON-Resistance**
- **dv/dt, >500 V/ms**
- **Isolation Test Voltage, 1500 VAC_{RMS}**
- **UL, CSA, FCC compatible**
- **Applications**
  - **Telecommunications**
  - **- Telecom Switching**
  - **- Tip/Ring Circuits**
  - **- Modem Switching (Laptop, Notebook, Pocket Size)**
  - **- Hookswitch**
  - **- Dial Pulsing**
  - **- Ground Start**
  - **- Ringer Injection**
  - **Insturmentation**
  - **- 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 AQW214S 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 400 V. The device is packaged in a 8 pin SO package. This package offers an insulation dielectric withstand of 1500 VAC_{RMS}.

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_A = 25℃)

Emitter (Input)

Reverse Voltage	5.0V
Continuous Forward Current	50mA
Peak Forward Current (1s)	1A
Power Dissipation	100mW
Derate Linearly from 25℃	1.3mW/℃

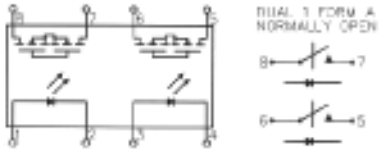
Detector (Output)

Output Breakdown Voltage	±400V
Continous Load Current	±130mA
Power Dissipation	500mW

General Characteristics

Isolation Test Voltage	1500VAC_{RMS}
Isolation Resistance	
V_{IO} = 500V, T_A = 25℃	≥10^{10}Ω
Total Power Dissipation	550mW
Derate Linearly from 25℃	2.5mW/℃
Storage Temperature Range	-40 to + 150℃
Operating Temperature Range	-40 to + 85℃
Junction Temperature	100℃
Soldering Temperature, 2mm from case, 10 sec...	260℃

● Turn on/Turn off time



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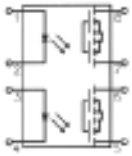
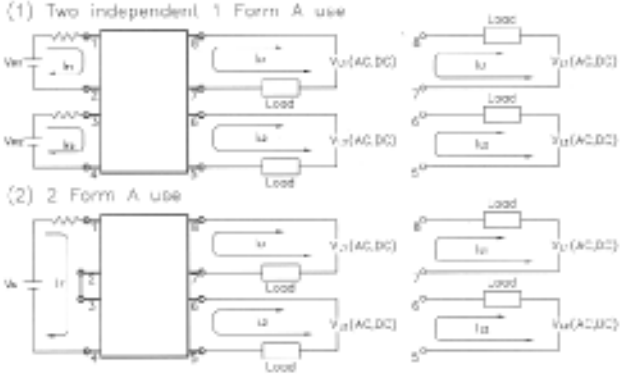
Characteristics ($T_A = 25°C$)

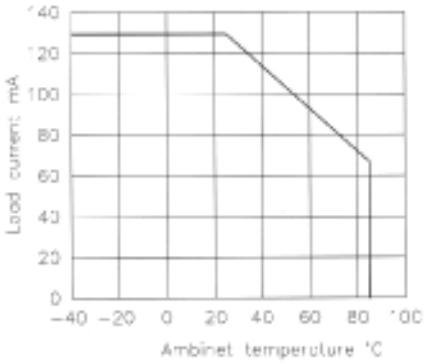
Description	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Emitter (Input)						
Forward Voltage	V_F		1.8	2.0	V	I_F = 10 mA
Operation Input Current	I_{FON}			5	mA	$V_L = \pm 20$ V, I_L = 100 mA, t = 10 ms
Recovery Input Current	I_{FOFF}	0.2			mA	$V_L = \pm 20$ V, I_L = < 5 μA
Detector (output)						
Output Breakdown Voltage	V_B	400			V	I_B = 50 μA
Output Off-State Leakage	$I_{T(OFF)}$		0.2	1	μA	V_T = 100 V, I_F = 0 mA
I/O Capacitance	C_{ISO}		6		pF	I_F = 0, f = 1 MHz
ON Resistance	R_{ON}		20	30	Ω	$V_T = \pm 25$ mV, I_F = 10 mA
Turn-on Time	T_{ON}		0.3	1.0	ms	I_F = 10 mA, $V_L = \pm 20$ V
Turn-off Time	T_{OFF}		0.7	1.5	ms	t = 10 ms, $I_L = \pm 100$ mA

Mos Relay Schematic and Wiring Diagrams

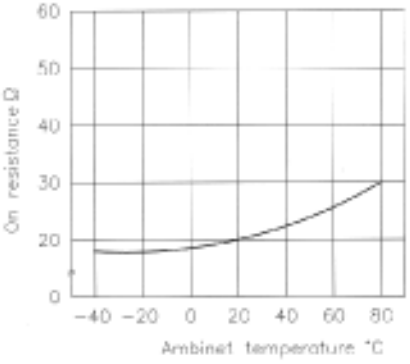
Type	Schematic	Output configuration	Load	Connection	Wiring diagram
AQW214S		2a	AC/DC	-	

DATA CURVE

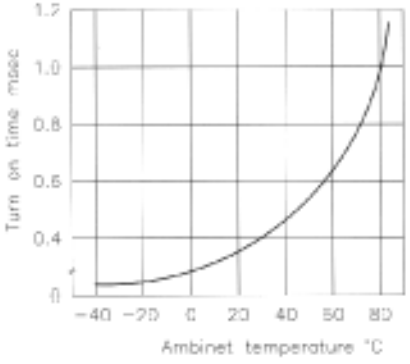
Load current vs. ambient temperature
Allowable ambient temperature:
-40°C to + 85°C



On resistance vs. ambient temperature
Across terminals 5,7 and 6,8 pin
LED current: 5 mA
Continuous load current: 130 mA(DC)



Turn on time vs. ambient temperature
Load voltage 400 V(DC)
LED current : 5 mA
Continuous load current: 130 mA(DC)



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