

### FEATURES

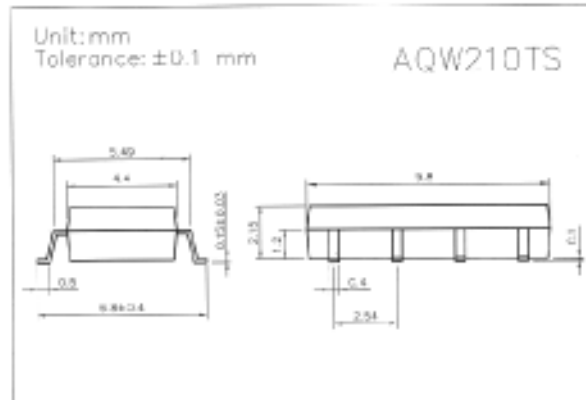
- Photo Mos Relay and Optocoupler in One Package
- Package - Single 8 Pin SO
- I/O Isolation, 1500 V<sub>RMS</sub>
- Surface Mount Option
- Optocoupler
  - Bi-directional Current Detection
- Mos Relay
  - Typical R<sub>ON</sub> 20Ω
  - Load Voltage 400 V
  - Load Current 130 mA
  - High Surge Capability
  - Linear, AC/DC Operation
  - Clean Bounce Free Switching
  - Low Power Consumption
  - High Reliability Monolithic Receptor
- Applications
  - Telecommunications
    - Telecom Switching
    - Tip/Ring Circuits
    - Modem Switching (Laptop, Notebook, Pocket Size)
  - Hookswitch
  - Dial Pulsing
  - Ground Start
  - Ringer Injection
  - Loop Detect
  - Ring Detect

### DESCRIPTION

The AQW210TS Telecom switch consists of an optically coupled Photo Mos Relay and a bi-directional input optocoupler. The Relay is ideal for performing switchhook and dial-pulse switching while the optocoupler performs ring detection and loop current sensing functions. Both the Relay and opto coupler provide 1500 V<sub>RMS</sub> of input to output isolation.

The Relay uses high voltage DMOS technology. The Relay features low ON-resistance, high breakdown voltage that protects the relay from telephone line induced lightning surges.

The optocoupler provides bi-directional current sensing via two antiparallel GaAs infrared emitting diodes. The opto channel provides a minimum CTR of 30% at ±1 mA.



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

#### Emitter (Input)

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

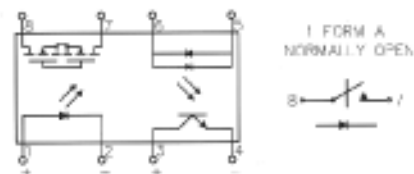
#### Detector (Output)

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

#### General Characteristics

Isolation Test Voltage.....	1500VAC <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  
Relay



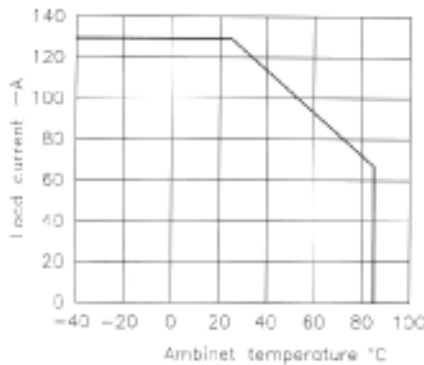
Characteristics

( $T_A = 25^\circ\text{C}$ )

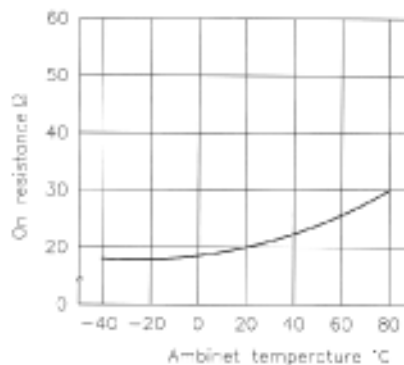
Description	Symbol	Min.	Typ.	Max.	Unit	Test Condition
<b>Emitter (Input)</b>						
Forward Voltage	$V_F$		1.8	2.0	V	$I_F = 10\text{ mA}$
Operation Input Current	$I_{FON}$			5	mA	$V_L = \pm 20\text{ V}$ , $I_L = 100\text{ mA}$ , $t = 10\text{ ms}$
Recovery Input Current	$I_{FOFF}$	0.2			mA	$V_L = \pm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

**DATA CURVE**

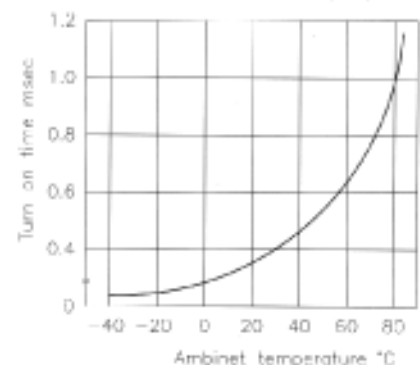
Load current vs. ambient temperature  
 Allowable ambient temperature:  
 -40°C to +85°C



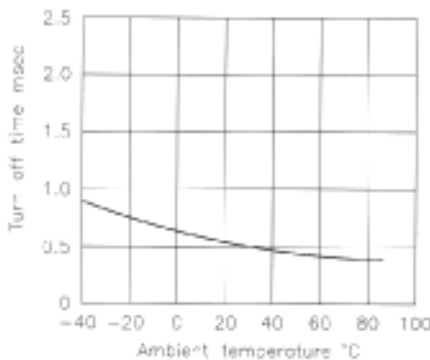
On resistance vs. ambient temperature  
 Across terminals 7 and 8 pin  
 LED current: 5 mA  
 Continuous load current: 130 mA(DC)



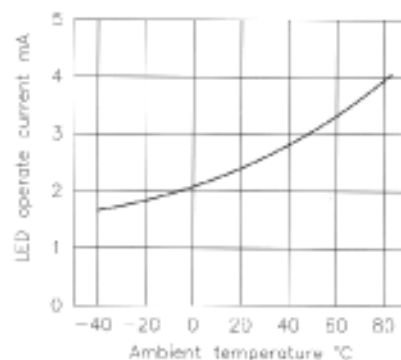
Turn on time vs. ambient temperature  
 Load voltage 400 V(DC)  
 LED current : 5 mA  
 Continuous load current: 130 mA(DC)



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



LED operate vs. ambient temperature  
 Load voltage: 400 V (DC)  
 Continuous load current: 130 mA(DC)



LED turn off current vs. ambient temperature;  
 Load voltage: 400 V (DC)  
 Continuous load current: 130 mA(DC)

