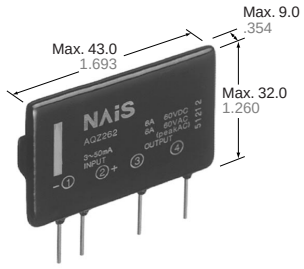
NAiS

POWER PhotoMOS RELAYS (High capacity type)

PhotoMOS RELAYS



mm inch

FEATURES

1. High capacity type power photoMOS relay.
Can switch a wide range of currents and voltages. Can control various types of loads, from very small loads to a maximum 6A AC/DC current for sequencers, motors, and lamps.

2. Low ON resistance and high sensitivity.
Low ON resistance of less than 50 mW on a par with mechanical relays (AQZ262). High sensitivity LED operate current of 3 mA (at 25°C 77°F).

3. AC/DC dual use
Bi-directional control is possible. There is no need to differentiate depending on the load as was necessary with the conventional SSR.

4. 4-pin SIL type.
4-pin SIL type of (L) 43.0 mm × (W) 9.0 mm × (H) 32.0 mm (L) 1.693 inch× (W) .354 inch× (H) 1.260 inch.

5. Low-level off state leakage current
In contrast to the SSR with an off state leakage current of several milliamps, the PhotoMOS relay features a very small off state leakage current of only 10mA even at the rated load voltage.

6. Controls low-level analog signals
The triac, photocoupler, or SSR cannot be used to control signals of less than several hundred mV. The high capacity type power PhotoMOS relay feature extremely low closed-circuit offset voltage to enable control of low-level analog signals without distortion.

TYPICAL APPLICATIONS

- Mercury relay replacement
- Railroad, traffic signals
- Compact motors, lamps, heaters
- OA equipment
- Measurement instruments

TYPES

AC/DC type

Output rating*		Part No.	Packing quantity	
Load voltage	Load current		Inner carton	Outer carton
60 V	6.0 A	AQZ262	20 pcs	200 pcs
400 V	1.0 A	AQZ264		

* Indicate the peak AC and DC values.

RATING

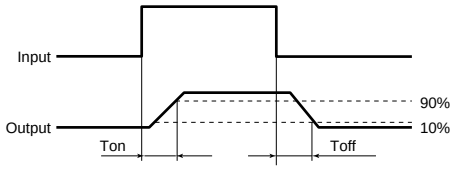
1) Absolute maximum ratings (Ambient temperature: 25°C 77°F)

Item		Symbol	AQZ262	AQZ264	Remarks
Input	LED forward current	I_F	50 mA		
	LED reverse voltage	V_R	3 V		
	Peak forward current	I_{FP}	1 A		f = 100Hz, Duty factor = 0.1%
	Power dissipation	P_{in}	75 mA		
Output	Load voltage (Peak AC)	V_L	60 V	400 V	
	Continuous load current (Peak AC)	I_L	6.0 A	1.0 A	
	Peak load current	I_{peak}	10.0 A	3.0 A	100 ms (1shot), V_L = DC
	Power dissipation	P_{out}	3.0 W		
Total power dissipation		P_T	3.0 W		
I/O isolation voltage		Viso	1,500 V AC		
Temperature limits	Operating	T_{opr}	–40°C to +85°C –40°F to 185°F		Non-condensing at low temperatures
	Storage	Tstg	–40°C to +100°C –40°F to 212°F		

2) Electrical characteristics (Ambient temperature: 25°C 77°F)

Item				Symbol	AQZ262	AQZ264	Remarks
Input	LED operate current		Typical	I_{Fon}	1.0 mA		I_L = 100 mA V_L = 10 V
			Maximum		3.0 mA		
	LED turn off current		Minimum	I_{Foff}	0.4 mA		I_L = 100 mA V_L = 10 V
			Typical		0.9 mA		
	LED dropout voltage		Typical	V_F	1.25 V (1.16 V at I_F = 10 mA)		I_F = 50 mA
			Maximum		1.5 V		
Output	On resistance		Typical	R_{on}	0.036 Ω	1.0 Ω	I_F = 10 mA I_L = max. Within 1 s on time
			Maximum		0.05 Ω	1.4 Ω	
	Off state leakage current		Maximum	I_{Leak}	10 μA		I_F = 0 V_L = max.
Transfer characteristics	Switching speed	Turn on time*	Typical	T_{on}	5 ms	4 ms	I_F = 10 mA I_L = 100 mA V_L = 10 V
			Maximum		10 ms		
		Turn off time*	Typical	T_{off}	0.32 ms	0.14 ms	I_F = 10 mA I_L = 100 mA V_L = 10 V
			Maximum		3.0 ms		
	I/O capacitance		Typical	C_{iso}	2.0 pF		f = 1 MHz V_B = 0
			Maximum		4.0 pF		
	Initial I/O isolation resistance		Minimum	R_{iso}	1,000 MΩ		500 V DC
	Maximum operating frequency		Maximum	—	0.5 cps		I_F = 10 mA Duty factor = 50% I_L = Max., V_L = Max.

Note: Recommendable LED forward current I_F = 5 to 10 mA.
*Turn on/off time

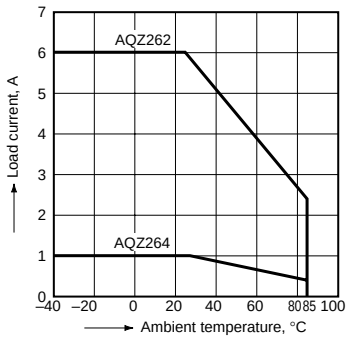


■ **For Dimensions, see Page 442.**
■ **For Schematic and Wiring Diagrams, see Page 448.**
■ **For Cautions for Use, see Page 453.**

REFERENCE DATA

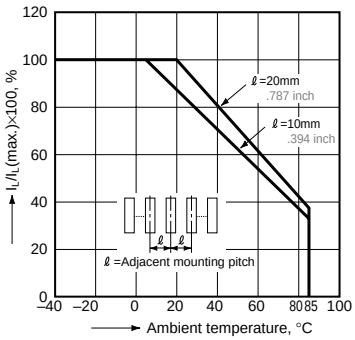
1. Load current vs. ambient temperature characteristics

Allowable ambient temperature: –40°C to +85°C
–40°F to +185°F



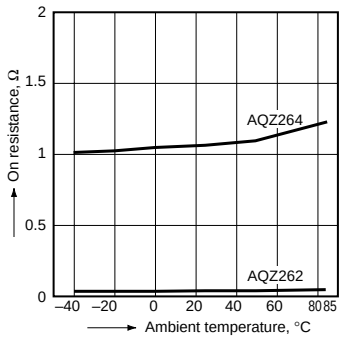
2. Load current vs. ambient temperature characteristics in adjacent mounting

I_L: Load current;
I_L (max.): Maximum continuous load current



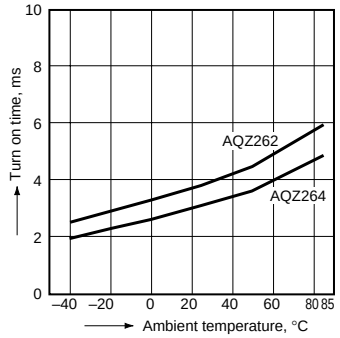
3. On resistance vs. ambient temperature characteristics

LED current: 10 mA;
Continuous load current: 6A (DC)(AQZ262)
1A (DC)(AQZ264)



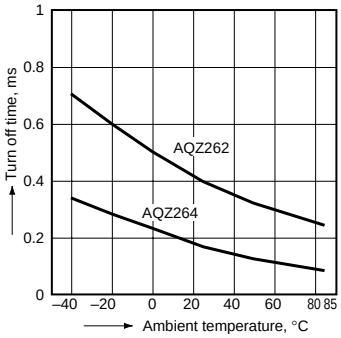
4. Turn on time vs. ambient temperature characteristics

LED current: 10 mA; Load voltage: 10 V (DC);
Continuous load current: 100 mA (DC)



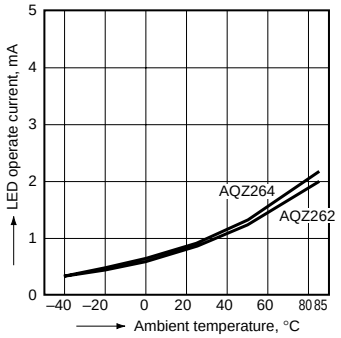
5. Turn off time vs. ambient temperature characteristics

LED current: 10 mA; Load voltage: 10 V (DC);
Continuous load current: 100 mA (DC)



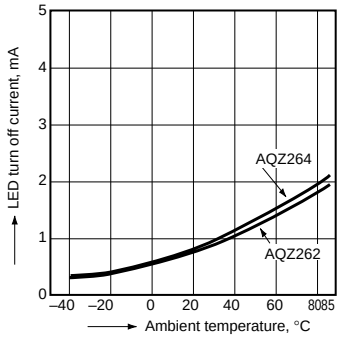
6. LED operate vs. ambient temperature characteristics

Load voltage: 10 V (DC);
Continuous load current: 100 mA (DC)



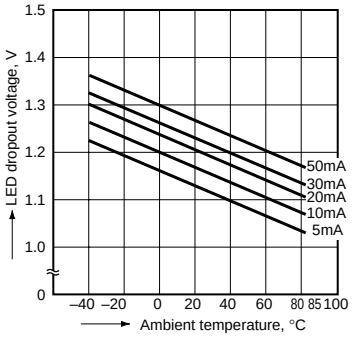
7. LED turn off current vs. ambient temperature characteristics

Load voltage: 10 V (DC);
Continuous load current: 100 mA (DC)



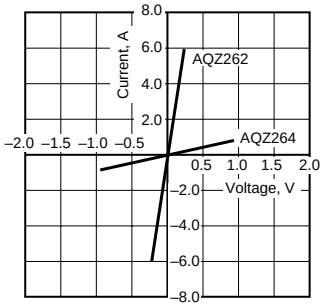
8. LED dropout voltage vs. ambient temperature characteristics

Sample: all types; LED current: 5 to 50 mA



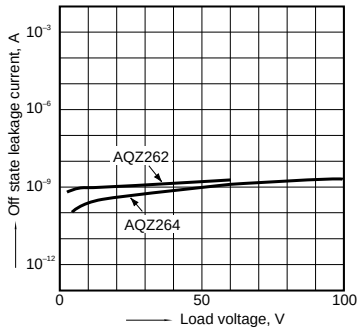
9. Voltage vs. current characteristics of output at MOS portion

Ambient temperature: 25°C 77°F



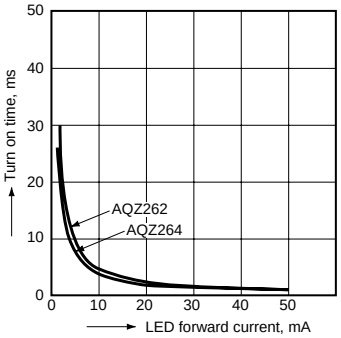
10. Off state leakage current

Ambient temperature: 25°C 77°F



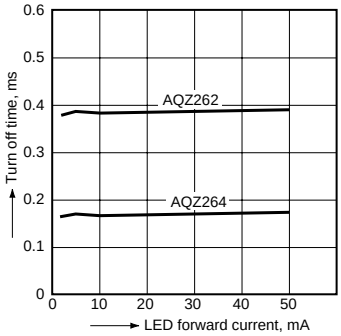
11. LED forward current vs. turn on time characteristics

Load voltage: 10 V (DC); Continuous load current: 100 mA (DC); Ambient temperature: 25°C 77°F



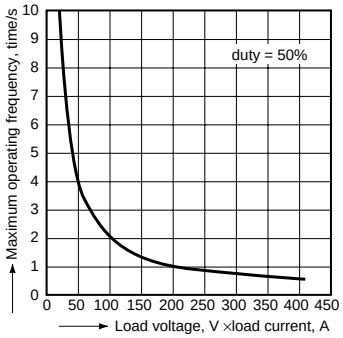
12. LED forward current vs. turn off time characteristics

Load voltage: 10 V (DC); Continuous load current: 100 mA (DC); Ambient temperature: 25°C 77°F



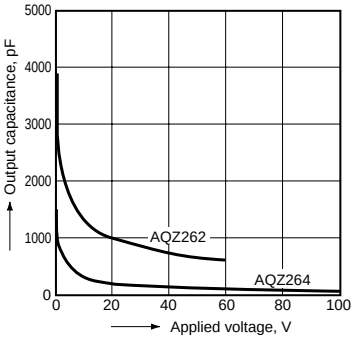
13. Maximum operating frequency vs. load voltage/current characteristics

LED current: 10 mA; Ambient temperature: 25°C 77°F



14. Applied voltage vs. output capacitance characteristics

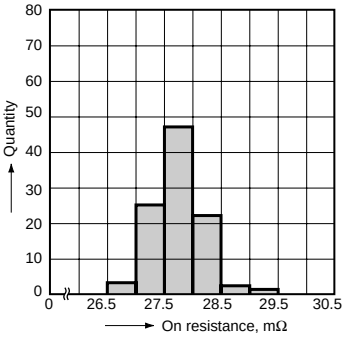
Frequency: 10 KHz; Ambient temperature: 25°C 77°F



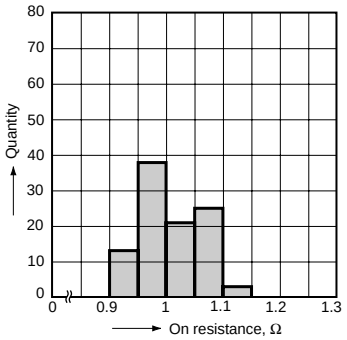
15.-(1) On resistance distribution

Sample: AQZ262

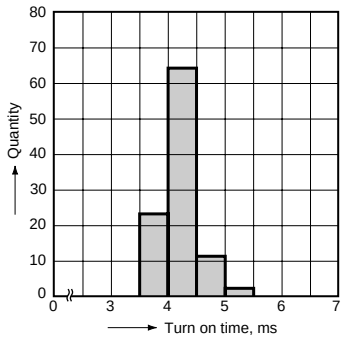
LED current: 10 mA; Continuous load current: 6 A (DC): Quantity. n=100; Ambient temperature: 25°C 77°F



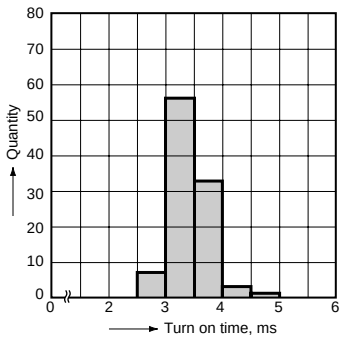
15.-(2) On resistance distribution
Sample: AQZ264
LED current: 10 mA;
Continuous load current: 1 A (DC); Quantity, n=100;
Ambient temperature: 25°C 77°F



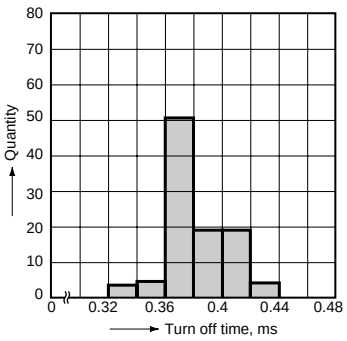
16.-(1) Turn on time distribution
Sample: AQZ262
Load voltage: 10 V (DC); Continuous load current:
100 mA (DC); Quantity, n=100;
Ambient temperature: 25°C 77°F



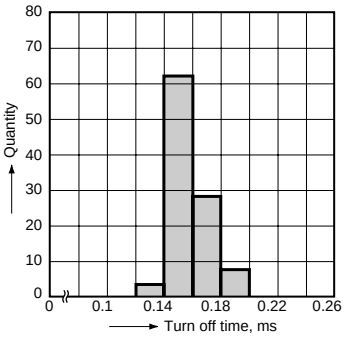
16.-(2) Turn on time distribution
Sample: AQZ264
Load voltage: 10 V (DC); Continuous load current:
100 mA (DC); Quantity, n=100;
Ambient temperature: 25°C 77°F



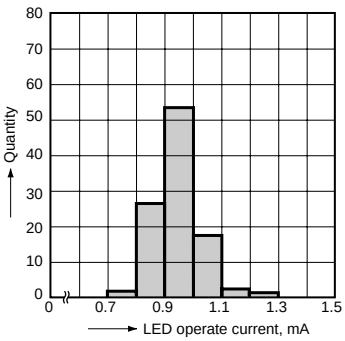
17.-(1) Turn off time distribution
Sample: AQZ262
Load voltage: 10 V (DC); Continuous load current:
100 mA (DC); Quantity, n=100;
Ambient temperature: 25°C 77°F



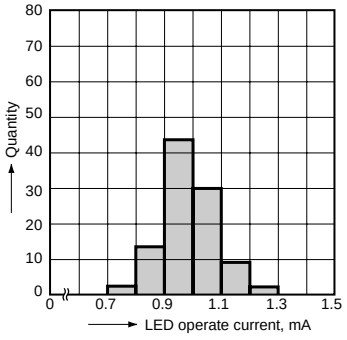
17.-(2) Turn off time distribution
Sample: AQZ264
Load voltage: 10 V (DC); Continuous load current:
100 mA (DC); Quantity, n=100;
Ambient temperature: 25°C 77°F



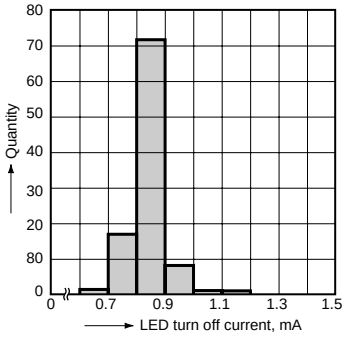
18.-(1) LED operate current distribution
Sample: AQZ262
Load voltage: 10 V (DC); Continuous load current:
100 mA (DC); Quantity, n=100;
Ambient temperature: 25°C 77°F



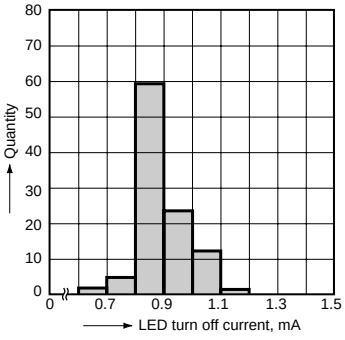
18.-(2) LED operate current distribution
Sample: AQZ264
Load voltage: 10 V (DC); Continuous load current:
100 mA (DC); Quantity, n=100;
Ambient temperature: 25°C 77°F



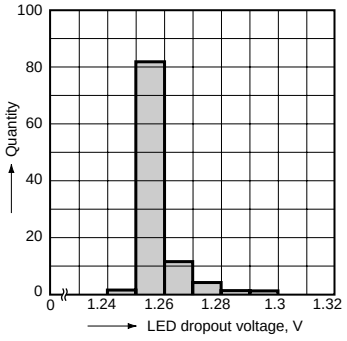
19.-(1) LED turn off current distribution
Sample: AQZ262
Load voltage: 10 V (DC); Continuous load current:
100 mA (DC); Quantity, n=100;
Ambient temperature: 25°C 77°F



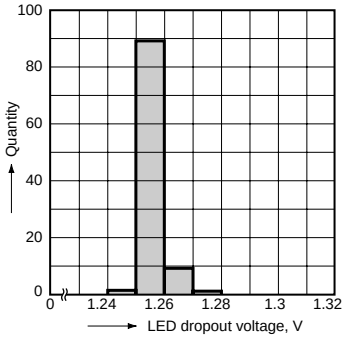
19.-(2) LED turn off current distribution
Sample: AQZ264
Load voltage: 10 V (DC); Continuous load current:
100 mA (DC); Quantity, n=100;
Ambient temperature: 25°C 77°F



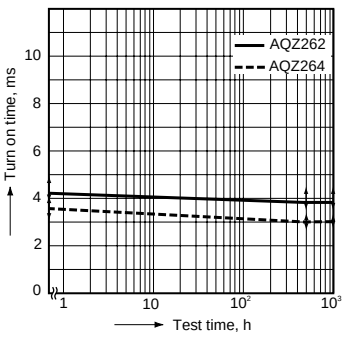
20.-(1) LED dropout voltage distribution
Sample: AQZ262
LED current: 50 mA; Quantity, n=100;
Ambient temperature: 25°C 77°F



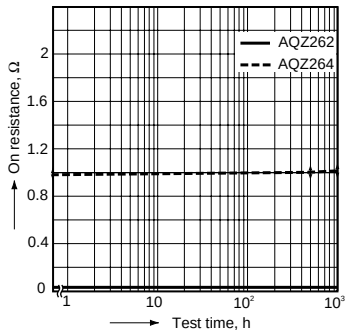
20.-(2) LED dropout voltage distribution
Sample: AQZ264
LED current: 50 mA; Quantity, n=100;
Ambient temperature: 25°C 77°F



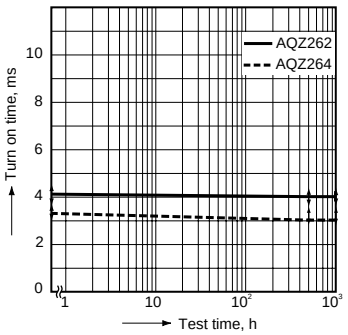
21.-(1) Bias test at high temperature and high humidity (change of turn on time)
Quantity, n=10; Ambient temperature: 85°C 185°F
Humidity: 85%, VL=Max. × 0.8



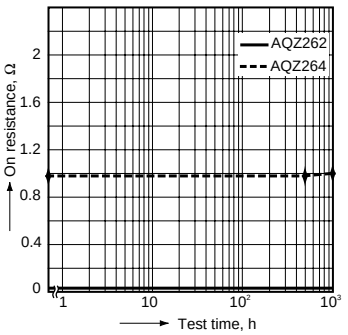
21.-(2) Bias test at high temperature and high humidity (change of on resistance)
Quantity, n=10; Ambient temperature: 85 °C 185°F
Humidity: 85%, VL=Max. × 0.8



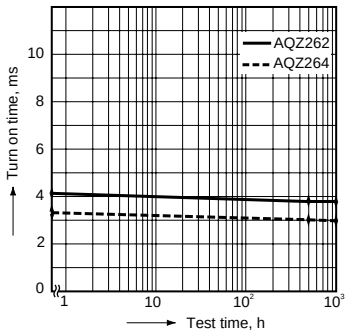
22.-(1) Low temperature storage test (change of turn on time)
Quantity, n=10; Ambient temperature: –40°C –40°F



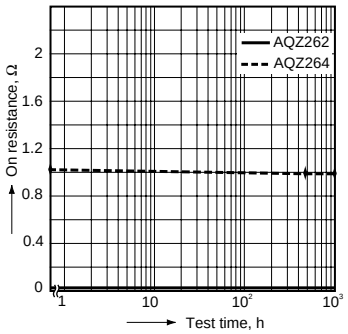
22.-(2) Low temperature storage test (change of on resistance)
Quantity, n=10; Ambient temperature: –40°C –40°F



23.-(1) High temperature storage test (change of turn on time)
Quantity, n=10; Ambient temperature: 100°C 212°F



23.-(2) High temperature storage test (change of on resistance)
Quantity, n=10; Ambient temperature: 100°C 212°F



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