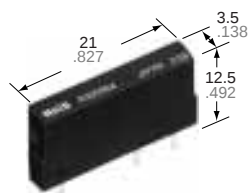


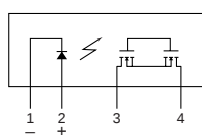
Panasonic
ideas for life

**High capacity
PhotoMOS Relay.
(Load current Max. 4A)
DC load type is available.**

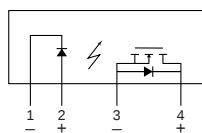
**Power PhotoMOS
(AQZ10○, 20○)**



mm inch



AC/DC type



DC type

FEATURES

- 1. High capacity PhotoMOS Relay in a compact and slim 4-pin SIL**
- 2. Extremely low ON resistance**
- 3. Control low-level signal**
Power Photo MOS relays feature extremely low closed-circuit offset voltage to enable control of low-level analog signals without distortion.
- 4. Low-level off state leakage current**
- 5. High I/O isolation voltage 2,500 V**
- 6. Eliminates the need for a counter electromotive protection diode in the drive circuit on the input side**
- 7. Eliminate the need for a power supply to drive the power MOSFET**
- 8. PC board layout is simplified**
- 9. No restriction on mounting direction**
- 10. Varistor incorporated type is also available.**

TYPICAL APPLICATIONS

- High-speed inspection machines
- IC checker
- NC machine, Robots
- Of ce machines
- Telecommunication
- Automotive

TYPES

1. AC/DC type

Output rating		Part No.	Packing quantity	
Load voltage	Load current		Inner carton	Outer carton
60 V	3.0 A	AQZ202	25 pcs.	500 pcs.
100 V	2.0 A	AQZ205		
200 V	1.0 A	AQZ207		
400 V	0.5 A	AQZ204		

2. DC type

Output rating		Part No.	Packing quantity	
Load voltage	Load current		Inner carton	Outer carton
60 V	4.0 A	AQZ102	25 pcs.	500 pcs.
100 V	2.6 A	AQZ105		
200 V	1.3 A	AQZ107		
400 V	0.7 A	AQZ104		

Notes: Load voltage and current of AC/DC type: Peak AC/DC.

Load voltage and current of DC type: DC

RATING**1. AC/DC type**

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

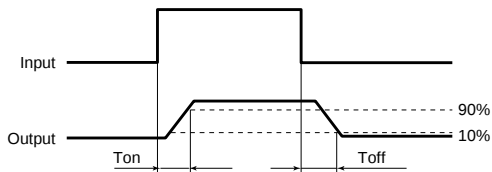
Item		Symbol	AQZ202	AQZ205	AQZ207	AQZ204	Remarks
Input	LED forward current	I_F	50 mA				
	LED reverse voltage	V_R	5 V				
	Peak forward current	I_{FP}	1 A				$f = 100 \text{ Hz}$, Duty factor = 0.1%
	Power dissipation	P_{in}	75 mW				
Output	Load voltage (Peak AC)	V_L	60 V	100 V	200 V	400 V	
	Continuous load current	I_L	3.0 A	2.0 A	1.0 A	0.5 A	
	Peak load current	I_{peak}	9.0 A	6.0 A	3.0 A	1.5 A	100 ms (1 shot), $V_L = \text{DC}$
	Power dissipation	P_{out}	1.6 W				
Total power dissipation		P_T	1.6 W				
I/O isolation voltage		V_{iso}	2,500 V AC				
Temperature limits	Operating	T_{opr}	-40°C to +85°C -40°F to +185°F				Non-condensing at low temperatures
	Storage	T_{stg}	-40°C to +100°C -40°F to +212°F				

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

Item			Symbol	AQZ202	AQZ205	AQZ207	AQZ204	Condition			
Input	LED operate current	Typical	I _{Fon}	1.0 mA				I _L = 100 mA			
		Maximum		3.0 mA				V _L = 10 V			
	LED turn off current	Minimum	I _{Foff}	0.4 mA				I _L = 100 mA			
		Typical		0.9 mA				V _L = 10 V			
	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}	0.11 Ω	0.23 Ω	0.7 Ω	2.1 Ω	I _F = 10 mA I _L =Max. Within 1 s on time			
		Maximum		0.18 Ω	0.34 Ω	1.1 Ω	3.2 Ω				
	Off state leakage current	Maximum	—	10 μA				I _F = 0 mA V _L = Max.			
Transfer characteristics	Switching speed	Turn on time*	T _{on}	2.46 ms	2.40 ms	1.12 ms	1.65 ms	I _F = 10 mA I _L = 100 mA V _L = 10 V			
				5.0 ms							
				5.64 ms	5.65 ms	2.57 ms	3.88 ms				
				10.0 ms							
		Turn off time*	T _{off}	0.22 ms	0.21 ms	0.10 ms	0.08 ms	I _F = 5 mA or 10 mA I _L = 100 mA V _L = 10 V			
				3.0 ms							
				I/O capacitance		Typical	C _{iso}		0.8 pF		f = 1 MHz V _B = 0 V
						Maximum			1.5 pF		
	Initial I/O isolation resistance		Minimum	R _{iso}	1,000 MΩ				500 V DC		
	Maximum operating speed		Maximum	—	0.5 cps				I _F = 10 mA Duty factor = 50% I _L = Max., V _L = Max.		
	Vibration resistance		Minimum	—	10 to 55 Hz at double amplitude of 3 mm				2 hours for 3 axes		
	Shock resistance		Minimum	—	4,900 m/s² {500 G} 1 ms				3 times for 3 axes		

Note: Recommendable LED forward current $I_F = 5$ to 10 mA.

*Turn on/off time



Power PhotoMOS (AQZ10○, 20○)

2. DC type

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

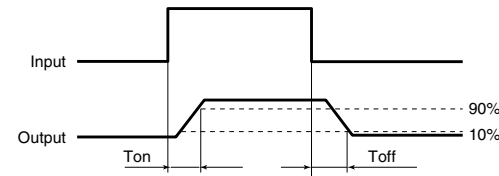
Item		Symbol	AQZ102	AQZ105	AQZ107	AQZ104	Remarks
Input	LED forward current	I _F	50 mA				
	LED reverse voltage	V _R	5 V				
	Peak forward current	I _{FP}	1 A				f = 100 Hz, Duty factor = 0.1%
	Power dissipation	P _{in}	75 mW				
Output	Load voltage (DC)	V _L	60 V	100 V	200 V	400 V	
	Continuous load current (DC)	I _L	4.0 A	2.6 A	1.3 A	0.7 A	
	Peak load current	I _{peak}	9.0 A	6.0 A	3.0 A	1.5 A	100 ms (1 shot), V _L = DC
	Power dissipation	P _{out}	1.35 W				
Total power dissipation		P _T	1.35 W				
I/O isolation voltage		V _{iso}	2,500 V AC				
Temperature limits	Operating	T _{opr}	−40°C to +85°C −40°F to +185°F				Non-condensing at low temperatures
	Storage	T _{stg}	−40°C to +100°C −40°F to +212°F				

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

Item			Symbol	AQZ102	AQZ105	AQZ107	AQZ104	Condition	
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}	0.05 Ω	0.081 Ω	0.34 Ω	1.06 Ω	I _F = 10 mA I _L =Max. Within 1 s on time	
		Maximum		0.09 Ω	0.17 Ω	0.55 Ω	1.6 Ω		
	Off state leakage current	Maximum	—	10 μA				I _F = 0 mA V _L = Max.	
Transfer characteristics	Switching speed	Turn on time*	Typical	T _{on}	1.66 ms	1.89 ms	0.83 ms	1.01 ms	I _F = 10 mA I _L = 100 mA V _L = 10 V
			Maximum		5.0 ms				
			Typical		3.79 ms	4.50 ms	1.75 ms	2.34 ms	
			Maximum		10.0 ms				
	Turn off time*	Typical	T _{off}	0.15 ms	0.19 ms	0.08 ms	0.08 ms	I _F = 5 mA or 10 mA I _L = 100 mA V _L = 10 V	
		Maximum		3.0 ms					
	I/O capacitance	Typical	C _{iso}	0.8 pF				f = 1 MHz V _B = 0 V	
		Maximum		1.5 pF					
	Initial I/O isolation resistance		Minimum	R _{iso}	1,000 MΩ				500 V DC
	Maximum operating speed		Maximum	—	0.5 cps				I _F = 10 mA Duty factor = 50% I _L ×V _L = 200 (VA)
Vibration resistance		Minimum	—	10 to 55 Hz at double amplitude of 3 mm				2 hours for 3 axes	
Shock resistance		Minimum	—	4,900 m/s² {500 G} 1 ms				3 times for 3 axes	

Note: Recommendable LED forward current I_F= 5 to 10 mA.

*Turn on/off time



REFERENCE DATA

1.-(1) Load current vs. ambient temperature characteristics (AC/DC type)
Allowable ambient temperature: -40°C to +85°C
-40°F to +185°F

1.-(2) Load current vs. ambient temperature characteristics (DC type)
Allowable ambient temperature: -40°C to +85°C
-40°F to +185°F

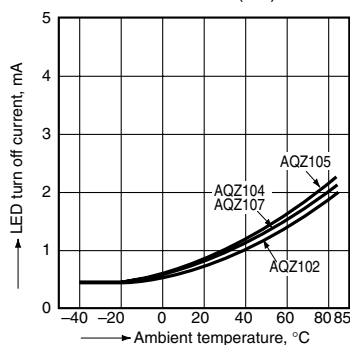
2. Load current vs. ambient temperature characteristics in adjacent mounting
I_L : Load current;
I_L (max.): Maximum continuous load current

Power PhotoMOS (AQZ10○, 20○)

7.-(2) LED turn off current vs. ambient temperature characteristics (DC type)

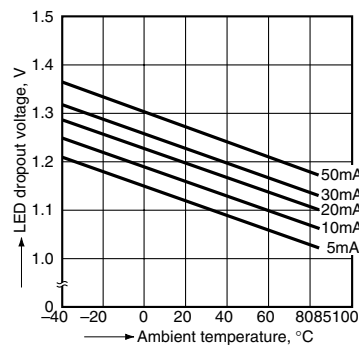
Load voltage: 10 V (DC);

Continuous load current: 100 mA (DC)



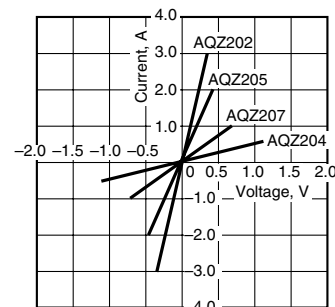
8. LED dropout voltage vs. ambient temperature characteristics

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



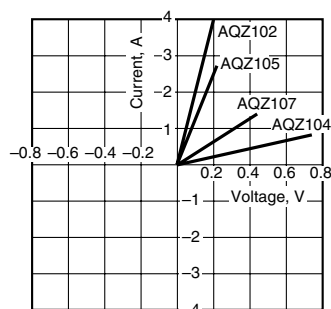
9.-(1) Current vs. voltage characteristics of output at MOS portion (AC/DC type)

Ambient temperature: 25°C 77°F



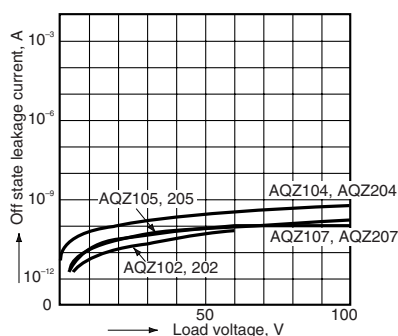
9.-(2) Current vs. voltage characteristics of output at MOS portion (DC type)

Ambient temperature: 25°C 77°F



10. Off state leakage current vs. load voltage characteristics

Ambient temperature: 25°C 77°F

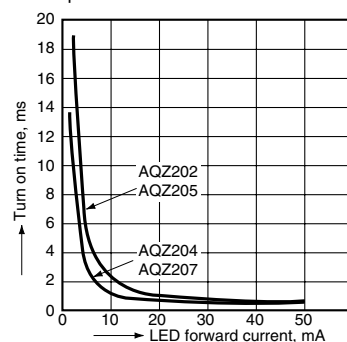


11.-(1) Turn on time vs. LED forward current characteristics (AC/DC type)

Load voltage: 10 V (DC);

Continuous load current: 100 mA (DC);

Ambient temperature: 25°C 77°F

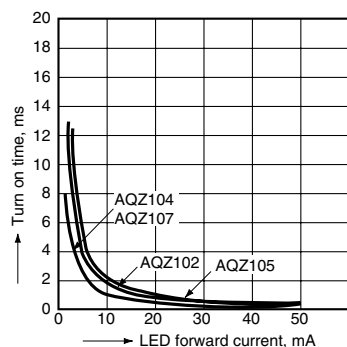


11.-(2) Turn on time vs. LED forward current characteristics (DC type)

Load voltage: 10 V (DC);

Continuous load current: 100 mA (DC);

Ambient temperature: 25°C 77°F

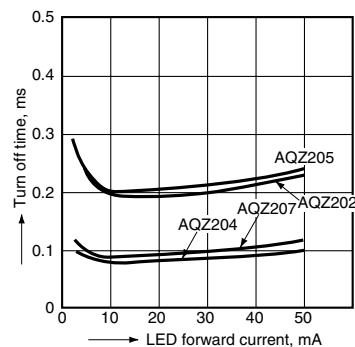


12.-(1) Turn off time vs. LED forward current characteristics (AC/DC type)

Load voltage: 10 V (DC);

Continuous load current: 100 mA (DC);

Ambient temperature: 25°C 77°F



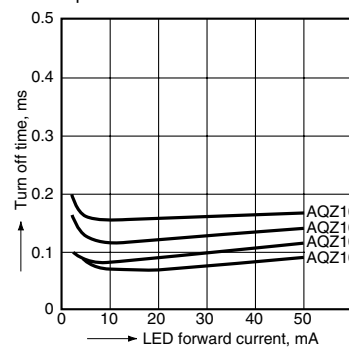
12.-(2) Turn off time vs. LED forward current characteristics (DC type)

Measured portion: between terminals 4 and 6;

Load voltage: 10 V (DC);

Continuous load current: 100 mA (DC);

Ambient temperature: 25°C 77°F

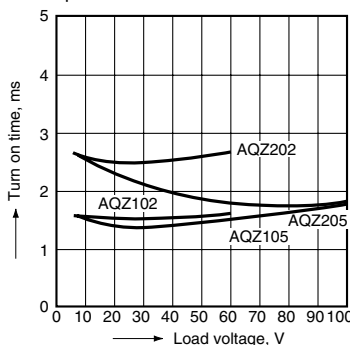


13.-(1) Turn on time vs. load voltage characteristics (Load voltage: 60, 100 V type)

LED current: 10 mA;

Continuous load current: 100 mA;

Ambient temperature: 25°C 77°F

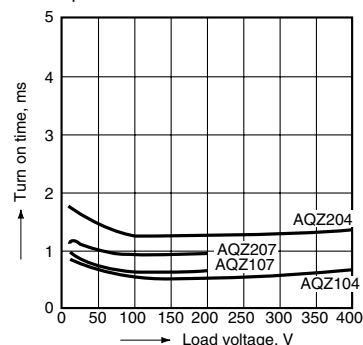


13.-(2) Turn on time vs. load voltage characteristics (Load voltage: 200, 400 V type)

LED current: 10 mA;

Continuous load current: 100 mA;

Ambient temperature: 25°C 77°F

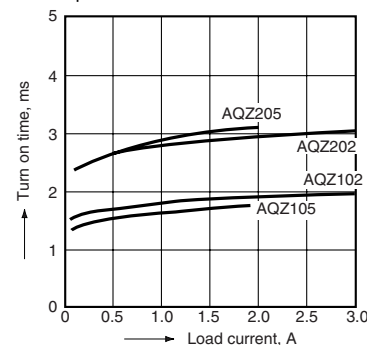


14.-(1) Turn on time vs. load current characteristics (Load voltage: 60, 100 V type)

LED current: 10 mA;

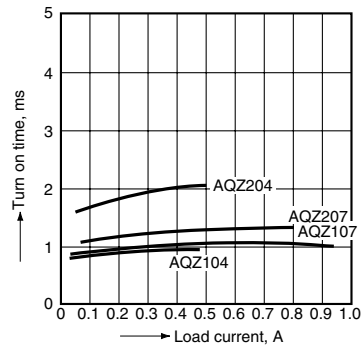
Load voltage: 10 V (DC);

Ambient temperature: 25°C 77°F

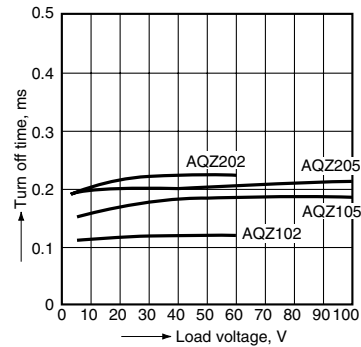


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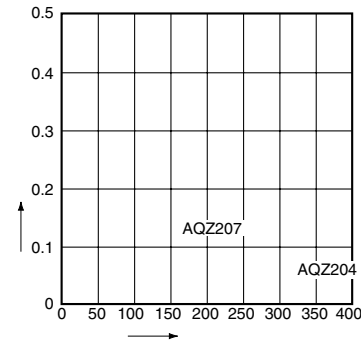
14.-(2) Turn on time vs. load current
characteristics (Load voltage: 200, 400 V type)
LED current: 10 mA;
Load voltage: 10 V (DC);
Ambient temperature: 25°C 77°F



15.-(1) Turn off time vs. load voltage
characteristics (Load voltage: 60, 100 V type)
LED current: 10 mA;
Continuous load current: 100 mA;
Ambient temperature: 25°C 77°F



15.-(2) Turn off time vs. load voltage
characteristics (Load voltage: 200, 400 V type)
LED current: 10 mA;
Continuous load current: 100 mA;
Ambient temperature: 25°C 77°F



ACCESSORY

mm inch