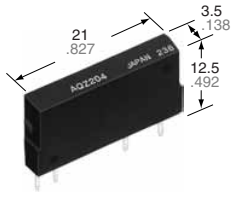
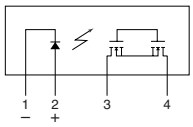
Panasonic
ideas for life

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

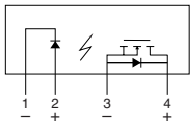
Power PhotoMOS (AQZ10❍, 20❍)



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
- Office 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)

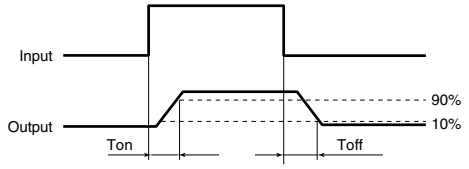
Item		Symbol	AQZ202	AQZ205	AQZ207	AQZ204	Remarks
Input	LED forward current	I_F	50 mA				
	LED reverse voltage	V_R	5 V				
	Peak forward current	I_{FP}	1 A				f = 100 Hz, Duty factor = 0.1%
	Power dissipation	P_{in}	75 mW				
Output	Load voltage (Peak AC)	V_L	60 V	100 V	200 V	400 V	
	Continuous load current	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 = 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 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}	0.11 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*	Typical	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
			Maximum		5.0 ms				
			Typical		5.64 ms	5.65 ms	2.57 ms	3.88 ms	I_F = 5 mA I_L = 100 mA V_L = 10 V
			Maximum		10.0 ms				
		Turn off time*	Typical	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
			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 = 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. For type of connection.

*Turn on/off time



2. DC type

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

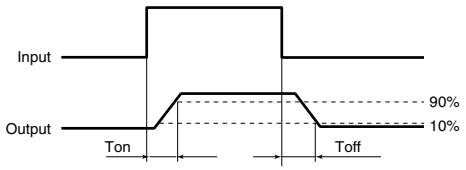
Item		Symbol	AQZ102	AQZ105	AQZ107	AQZ104	Remarks
Input	LED forward current	I_F	50 mA				
	LED reverse voltage	V_R	5 V				
	Peak forward current	I_{FP}	1 A				f = 100 Hz, Duty factor = 0.1%
	Power dissipation	P_{in}	75 mW				
Output	Load voltage (DC)	V_L	60 V	100 V	200 V	400 V	
	Continuous load current (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	I_F = 5 mA I_L = 100 mA V_L = 10 V
			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% $I_L \times V_L$= 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. For type of connection.

*Turn on/off time



■ For Dimensions.
■ For Schematic and Wiring Diagrams.
■ For Cautions for Use.