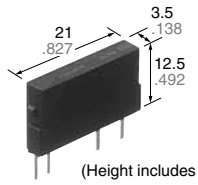
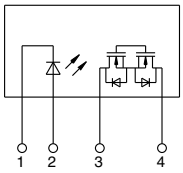
Normally closed type in a slim SIL package Load voltage 400V

PhotoMOS®
Power 1 Form B
(AQZ404)



mm inch



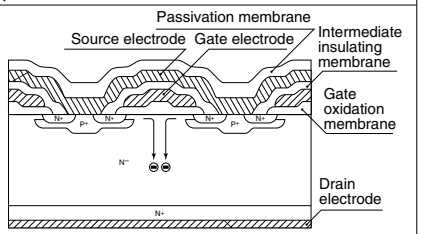
RoHS compliant

FEATURES

1. High sensitivity and low on-resistance
Max. 0.5A load can be controlled with 5 mA input current. The on-resistance is low at Typ. 2.8Ω.

2. Normally closed (1 Form B) contact
This has been realized thanks to the built-in MOSFET processed by our proprietary method, DSD (Double-diffused and Selective Doping) method.

Cross section of the normally-closed type of power MOS



3. Slim SIL4-pin package
(W) 3.5 × (D) 21.0 × (H) 12.5 mm
(W) .138 × (D) .827 × (H) .492 inch
The compact size of the 4-pin SIL package allows high density mounting.

4. Sockets are also available
(PA1a-PS, PA1a-PS-H)

5. Can be installed on the RT-3 relay terminal (Power PhotoMOS type)

TYPICAL APPLICATIONS

- Traffic signals
- Measuring instruments
- Industrial machines

TYPES

	Output rating*		Package	Part No.	Packing quantity	
	Load voltage	Load current			Inner carton	Outer carton
AC/DC dual use	400 V	0.5 A	SIL4-pin	AQZ404	25 pcs	500 pcs

*Indicate the peak AC and DC values.

RATING

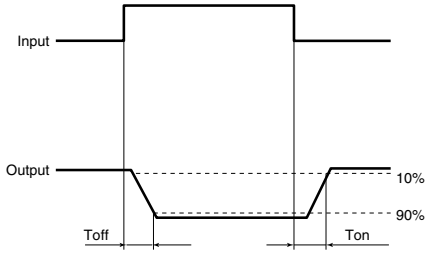
1. Absolute maximum ratings (Ambient temperature: 25°C 77°F)

Item		Symbol	AQZ404	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	400 V	
	Continuous load current	I_L	0.5 A	Peak AC, DC
	Peak load current	I_{peak}	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 Vrms	
Ambient temperature	Operating	T_{opr}	–40 to +85°C –40 to +185°F	(Non-icing at low temperatures)
	Storage	T_{stg}	–40 to +100°C –40 to +212°F	

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

Item			Symbol	AQZ404	Condition
Input	LED operate (OFF) current	Typical	I_{Foff}	1.0 mA	I_L= 100 mA V_L= 10 V
		Maximum		3.0 mA	
	LED reverse (ON) current	Minimum	I_{Fon}	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}	2.8 Ω	I_F = 0 mA, I_L = Max. Within 1 s
		Maximum		4.0 Ω	
	Off state leakage current	Maximum	I_{Leak}	10 μA	I_F = 10mA, V_L = Max.
Transfer characteristics	Operating (OFF) time*	Typical	T_{off}	3.9 ms	I_F = 0 → 10 mA I_L = 100 mA, V_L = 10 V
		Maximum		7.5 ms	
		Typical		9.4 ms	I_F = 0 → 5 mA I_L = 100 mA, V_L = 10 V
		Maximum		15 ms	
	Reverse (ON) time*	Typical	T_{on}	0.8 ms	I_F = 5 mA → 0 or 10 mA → 0 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
	Max. operating frequency	Maximum	—	0.5 cps	I_F = 10 mA, Duty factor = 50% I_L=Max., V_L=Max.

*Operate/Reverse time



3. Recommended operating conditions (Ambient temperature: 25°C 77°F)

Please use under recommended operating conditions to obtain expected characteristics.

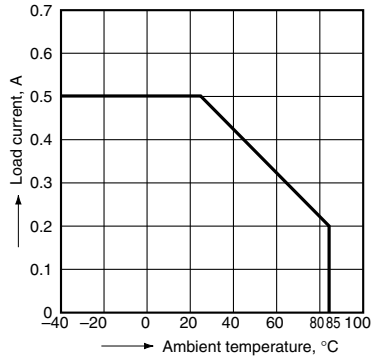
Item		Symbol	Min.	Max.	Unit
LED current		I_F	5	30	mA
AQZ404	Load voltage (Peak AC)	V_L	—	320	V
	Continuous load current	I_L	—	0.5	A

■ **These products are not designed for automotive use.**
If you are considering to use these products for automotive applications, please contact your local Panasonic Corporation technical representative.

REFERENCE DATA

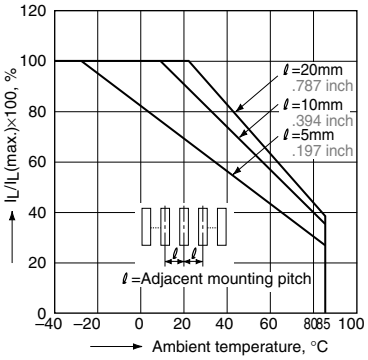
1. Load current vs. ambient temperature characteristics

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



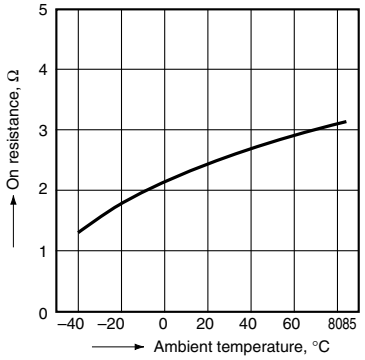
2. Load current vs. ambient temperature characteristics in adjacent mounting

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



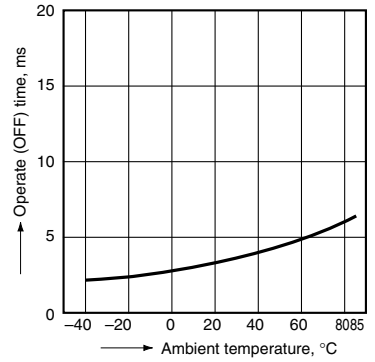
3. On resistance vs. ambient temperature characteristics

LED current: 0 mA; Load voltage: Max. (DC)
Continuous load current: Max. (DC)



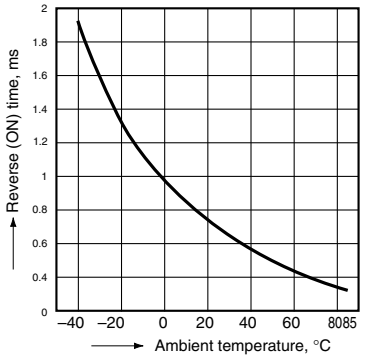
4. Operate (OFF) time vs. ambient temperature characteristics

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



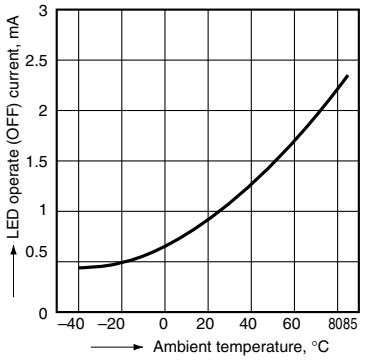
5. Reverse (ON) time vs. ambient temperature characteristics

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



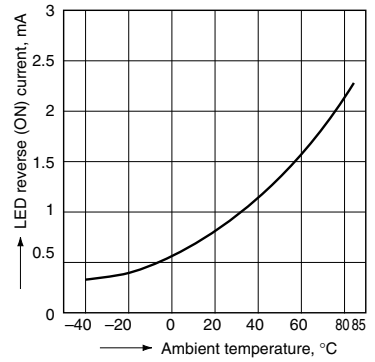
6. LED operate (OFF) current vs. ambient temperature characteristics

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



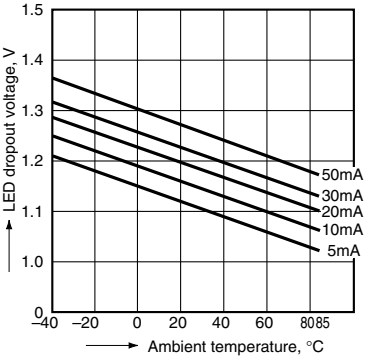
7. LED reverse (ON) current vs. ambient temperature characteristics

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



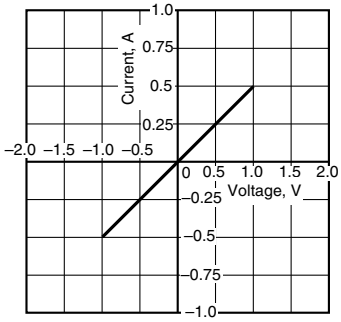
8. LED dropout voltage vs. ambient temperature characteristics

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



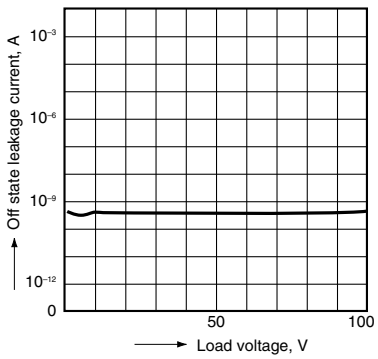
9. Current vs. voltage characteristics of output at MOS portion

Ambient temperature: 25°C 77°F



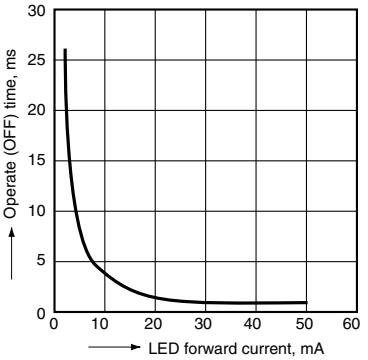
10. Off state leakage current vs. load voltage characteristics

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



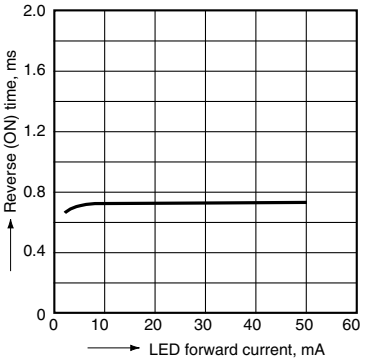
11. Operate (OFF) time vs. LED forward current characteristics

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



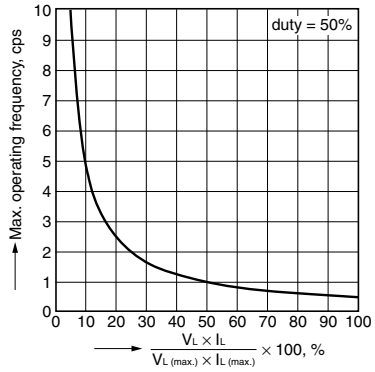
12. Reverse (ON) time vs. LED forward current characteristics

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



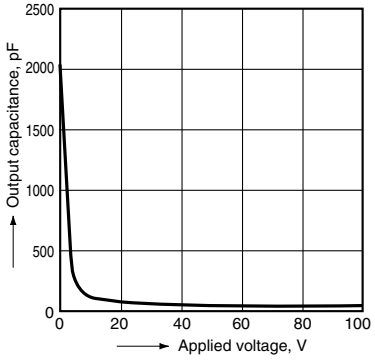
13. Max. operating frequency vs. load voltage/ current characteristics

LED current: 10 mA;
Ambient temperature: 25°C 77°F
V_L: Load voltage, V_L (Max.): Max. rated load voltage
I_L: Load current, I_L (Max.): Max. rated continuous load current



14. Output capacitance vs. applied voltage characteristics

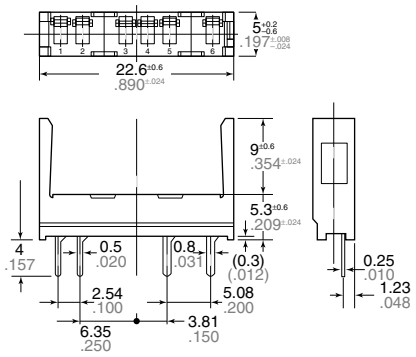
LED current: 10 mA; Frequency: 1 MHz;
Ambient temperature: 25°C 77°F



ACCESSORY (mm inch)

Socket

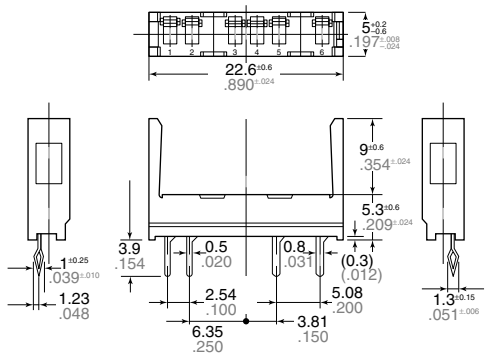
PA1a-PS



Standard type

General Tolerance: ±0.3 ±.012

PA1a-PS-H

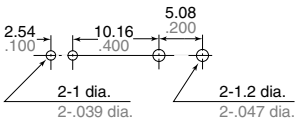


Self clinching type

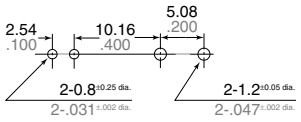
General Tolerance: ±0.3 ±.012

PC board pattern (BOTTOM VIEW)

Standard type



Self clinching type



Tolerance: ±0.1 ±.004

Please contact .....

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