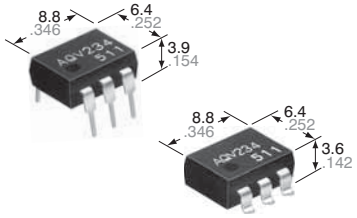
Panasonic
ideas for life

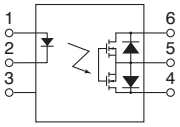
DIP6-pin type featuring high sensitivity

PhotoMOS® HS 1 Form A (AQV234)



CAD Data

mm inch



FEATURES

1. High sensitivity
LED operate current: 0.31mA (typ.)
Recommended LED input current: 2mA
2. Low-level off state leakage current of max. 1 μA
3. Controls low-level analog signals
PhotoMOS relays feature extremely low closed-circuit offset voltage to enable control of low-level analog signals without distortion.

TYPICAL APPLICATIONS

1. High-speed inspection machines
Scanner, IC checker, Board tester, etc.
2. Telephone and data communication equipment

TYPES

	Output rating*		Package	Part No.				Packing quantity	
				Through hole terminal	Surface-mount terminal				
	Load voltage	Load current		Tube packing style		Tape and reel packing style		Tube	Tape and reel
						Picked from the 1/2/3-pin side	Picked from the 4/5/6-pin side		
AC/DC dual use	400 V	120 mA	DIP6-pin	AQV234	AQV234A	AQV234AX	AQV234AZ	1 tube contains: 50 pcs. 1 batch contains: 500 pcs.	1,000 pcs.

*Indicate the peak AC and DC values.
Note: The surface mount terminal indicator “A” and the packing style indicator “X” or “Z” are not marked on the relay.

RATING

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

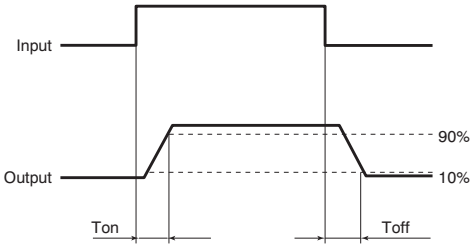
Item		Symbol	Type of connection	AQV234(A)	Remarks
Input	LED forward current	I_F		50 mA	
	LED reverse voltage	V_R		5 V	
	Peak forward current	I_{FP}		1 A	f = 100 Hz, Duty factor = 0.1%
	Power dissipation	P_{in}		75 mW	
Output	Load voltage (Peak AC)	V_L		400 V	
	Continuous load current	I_L	A	0.12 A	A connection: Peak AC, DC B, C connection: DC
			B	0.13 A	
			C	0.15 A	
	Peak load current	I_{peak}		0.3 A	A connection: 100 ms (1 shot), V_L = DC
	Power dissipation	P_{out}		500 mW	
Total power dissipation		P_T		550 mW	
I/O isolation voltage		V_{iso}		1,500 V AC	
Temperature limits	Operating	T_{opr}		–40°C to +85°C –40°F to +185°F	Non-condensing at low temperature
	Storage	T_{stg}		–40°C to +100°C –40°F to +212°F	

HS 1 Form A (AQV234)

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

Item			Symbol	Type of connection	AQV234(A)	Remarks
Input	LED operate current	Typical	I_{Fon}	—	0.31 mA	$\Delta I_F/\Delta t$ Q Min. 100 μA/s I_L = Max.
		Maximum			0.5 mA	
	LED turn off current	Minimum	I_{Foff}	—	0.1 mA	$\Delta I_F/\Delta t$ Q Min. 100 μA/s I_L = Max.
		Typical			0.29 mA	
	LED dropout voltage	Typical	V_F	—	1.25 V (1.1 V at I_F = 2 mA)	I_F = 50 mA
		Maximum			1.5 V	
Output	On resistance	Typical	R_{on}	A	30 Ω	I_F = 2 mA, I_L = Max. Within 1 s on time
		Maximum			50 Ω	
		Typical	R_{on}	B	22.5 Ω	I_F = 2 mA, I_L = Max. Within 1 s on time
		Maximum			25 Ω	
		Typical	R_{on}	C	11.3 Ω	I_F = 2 mA, I_L = Max. Within 1 s on time
		Maximum			12.5 Ω	
	Off state leakage current	Maximum	I_{Leak}	—	1 μA	I_F = 0 mA, V_L = Max.
Transistor characteristics	Turn on time*	Typical	T_{on}	—	0.89 ms	I_F = 2 mA I_L = Max.
		Maximum			2 ms	
	Turn off time*	Typical	T_{off}	—	0.22 ms	I_F = 2 mA I_L = Max.
		Maximum			1 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

*Turn on/Turn off time



RECOMMENDED OPERATING CONDITIONS

Please obey the following conditions to ensure proper relay operation and resetting.

Item	Symbol	Recommended value	Unit
Input LED current	I_F	2	mA

■ Dimensions

■ Schematic and Wiring Diagrams

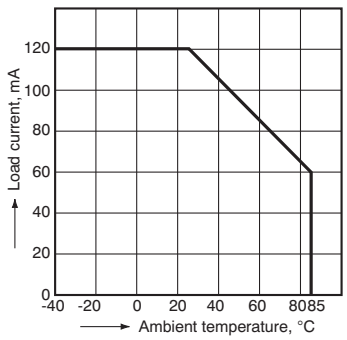
■ Cautions for Use

■ These products are not designed for automotive use.
If you are considering to use these products for automotive applications, please contact your local Panasonic technical representative.
Please refer to our information on PhotoMOS Relays for Automotive Applications.

REFERENCE DATA

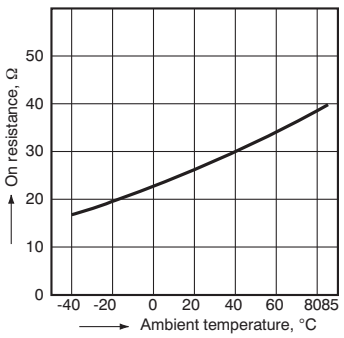
1. Load current vs. ambient temperature characteristics

Allowable ambient temperature: –40°C to +85°C
–40°F to +185°F
Type of connection: A



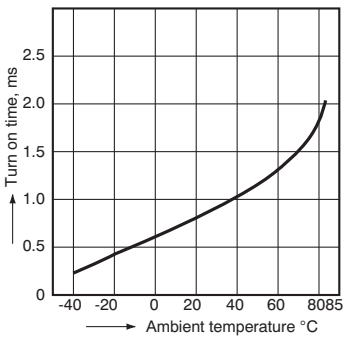
2. On resistance vs. ambient temperature characteristics

Measured portion: between terminals 4 and 6;
LED current: 2 mA; Load voltage: 400 V (DC);
Continuous load current: 120 mA (DC)



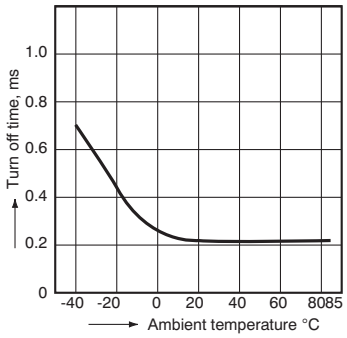
3. Turn on time vs. ambient temperature characteristics

LED current: 2 mA;
Load voltage: 400 V (DC);
Continuous load current: 120 mA (DC)



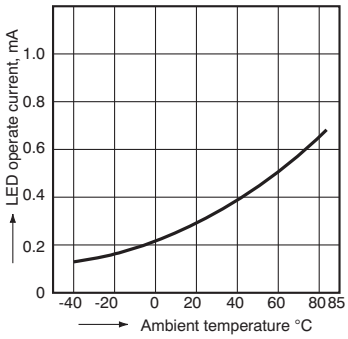
4. Turn off time vs. ambient temperature characteristics

LED current: 2 mA; Load voltage: 400 V (DC);
Continuous load current: 120 mA (DC)



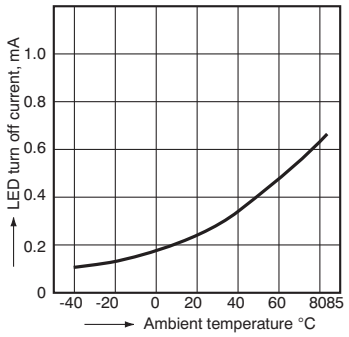
5. LED operate current vs. ambient temperature characteristics

Load voltage: 400 V (DC);
Continuous load current: 120 mA (DC)



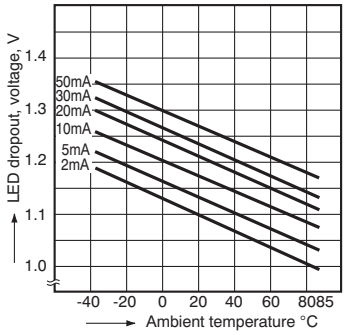
6. LED turn off current vs. ambient temperature characteristics

Load voltage: 400 V (DC);
Continuous load current: 120 mA (DC)



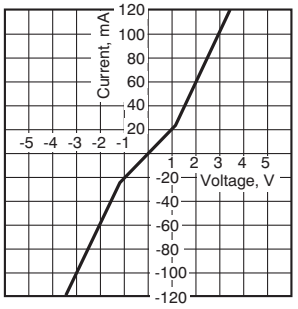
7. LED dropout voltage vs. ambient temperature characteristics

LED current: 2 to 50 mA



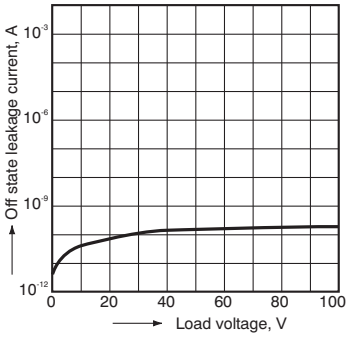
8. Current vs. voltage characteristics of output at MOS portion

Measured portion: between terminals 4 and 6;
Ambient temperature: 25°C 77°F



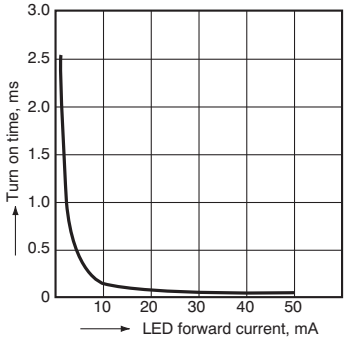
9. Off state leakage current vs. load voltage characteristics

Measured portion: between terminals 4 and 6;
Ambient temperature: 25°C 77°F



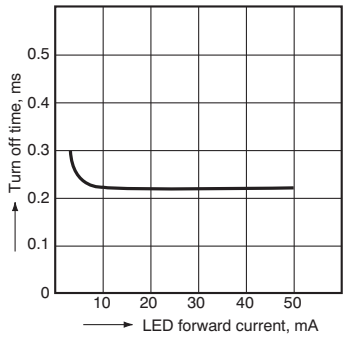
10. Turn on time vs. LED forward current characteristics

Measured portion: between terminals 4 and 6;
Load voltage: 400 V (DC); Continuous load current:
120 mA (DC); Ambient temperature: 25°C 77°F



11. Turn off time vs. LED forward current characteristics

Measured portion: between terminals 4 and 6;
Load voltage: 400 V (DC); Continuous load current:
120 mA (DC); Ambient temperature: 25°C 77°F



12. Output capacitance vs. applied voltage characteristics

Measured portion: between terminals 4 and 6;
Frequency: 1 MHz;
Ambient temperature: 25°C 77°F