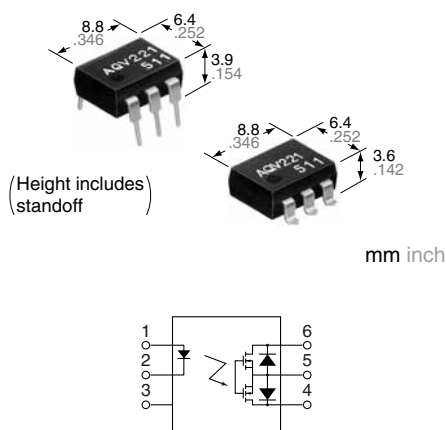


1 Form A type Radio frequent switching

PhotoMOS®
RF 1 Form A
(AQV22○)



RoHS compliant

FEATURES

1. High frequency characteristics with low capacitance between output terminals

Low output capacitance: typ. 4.8 pF
Isolation loss: 40 dB or more (at 1 MHz)
(AQV225)

2. High speed switching

Turn on time: typ. 0.1 ms
Turn off time: typ. 0.03 ms

3. Low-level off state leakage current of typ. 0.03 nA

4. Controls low-level analog signals

PhotoMOS® features extremely low closed-circuit offset voltages to enable control of small analog signals without distortion.

TYPICAL APPLICATIONS

1. Measuring instruments

Scanner, IC checker, Board tester, etc.

2. Audio visual equipment

CD, VCR

3. Security equipment

TYPES

	Output rating*		Package	Part No.				Packing quantity	
	Load voltage	Load current		Through hole terminal	Surface-mount terminal				
				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	40 V	80 mA	DIP6-pin	AQV221	AQV221A	AQV221AX	AQV221AZ	1 tube contains: 50 pcs.	1,000 pcs
	80 V	50 mA		AQV225	AQV225A	AQV225AX	AQV225AZ	1 batch contains: 500 pcs.	

*Indicate the peak AC and DC values.

Note: The surface mount terminal shape indicator "A" and the packing style indicator "X" or "Z" are not marked on the device.

RATING

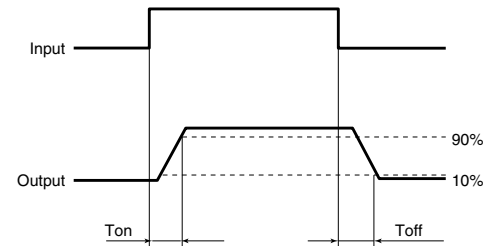
1. Absolute maximum ratings (Ambient temperature: 25°C 77°F)

Item		Symbol	Type of connection	AQV221(A)	AQV225(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		40 V	80 V	
	Continuous load current	I _L	A	0.08 A	0.05 A	A connection: Peak AC, DC B, C connection: DC
			B	0.09 A	0.06 A	
			C	0.12 A	0.075 A	
	Peak load current	I _{peak}		0.18 A	0.15 A	A connection: 100 ms (1 shot), V _L = DC
	Power dissipation	P _{out}		230 mW		
Total power dissipation		P _T		280 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 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	Type of connection	AQV221(A)	AQV225(A)	Remarks
Input	LED operate current	Typical	I _{Fon}	—	0.9 mA		I _L = Max.
		Maximum			3 mA		
	LED turn off current	Minimum	I _{Foff}	—	0.4 mA		I _L = Max.
		Typical			0.85 mA		
	LED dropout voltage	Typical	V _F	—	1.25 V (1.14 V at I _F = 5 mA)		I _F = 50 mA
Maximum		1.5 V					
Output	On resistance	Typical	R _{on}	A	22 Ω	36 Ω	I _F = 5 mA
		Maximum			35 Ω	50 Ω	I _L = Max. Within 1 s on time
		Typical	R _{on}	B	13 Ω	21 Ω	I _F = 5 mA
		Maximum			18 Ω	25 Ω	I _L = Max. Within 1 s on time
		Typical	R _{on}	C	6.5 Ω	10.5 Ω	I _F = 5 mA
		Maximum			9 Ω	12.5 Ω	I _L = Max. Within 1 s on time
	Output capacitance	Typical	C _{out}	—	5.6 pF	4.8 pF	I _F = 0 mA V _B = 0 V
		Maximum			8 pF		f = 1 MHz
	Off state leakage current	Typical	I _{Leak}	—	0.03 nA		I _F = 0 mA
Maximum		10 nA (1 nA or less)*			V _L = Max.		
Transfer characteristics	Turn on time**	Typical	T _{on}	—	0.1 ms		I _F = 5 mA
		Maximum			0.3 ms		I _L = Max.
	Turn off time**	Typical	T _{off}	—	0.03 ms		I _F = 5 mA
		Maximum			0.1 ms		I _L = Max.
	I/O capacitance	Typical	C _{iso}	—	0.8 pF		f = 1 MHz
		Maximum			1.5 pF		V _B = 0 V
	Initial I/O isolation resistance	Minimum	R _{iso}	—	1,000 MΩ		500 V DC

*Available as custom orders (1 nA or less)
**Turn on/Turn off time



RECOMMENDED OPERATING CONDITIONS

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

Item	Symbol	Recommended value	Unit
Input LED current	I _F	5	mA

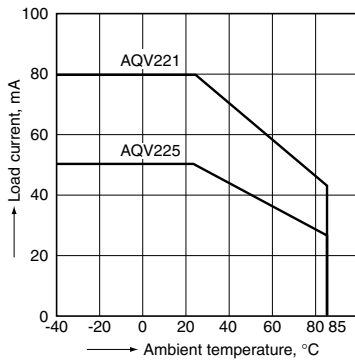
■ These products are not designed for automotive use.
If you are considering to use these products for automotive applications, please contact your local Panasonic Corporation technical representative.

REFERENCE DATA

1. Load current vs. ambient temperature characteristics

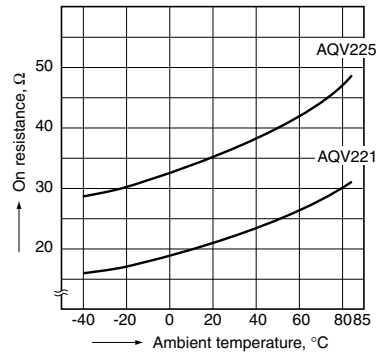
Allowable ambient temperature: -40°C to $+85^{\circ}\text{C}$
 -40°F to $+185^{\circ}\text{F}$

Type of connection: A



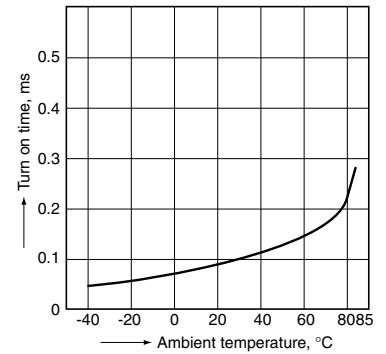
2. On resistance vs. ambient temperature characteristics

Measured portion: between terminals 4 and 6;
 LED current: 5 mA; Load voltage: Max. (DC);
 Continuous load current: Max. (DC)



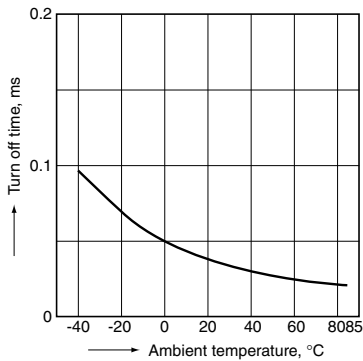
3. Turn on time vs. ambient temperature characteristics

Sample: AQV221, AQV225; LED current: 5 mA;
 Load voltage: Max. (DC);
 Continuous load current: Max. (DC)



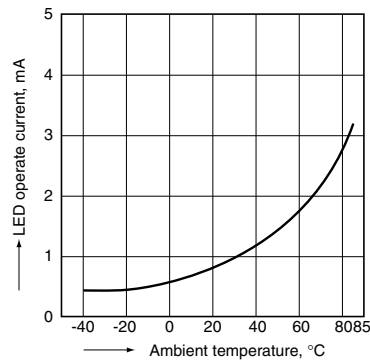
4. Turn off time vs. ambient temperature characteristics

Sample: AQV221, AQV225; LED current: 5 mA;
 Load voltage: Max. (DC);
 Continuous load current: Max. (DC)



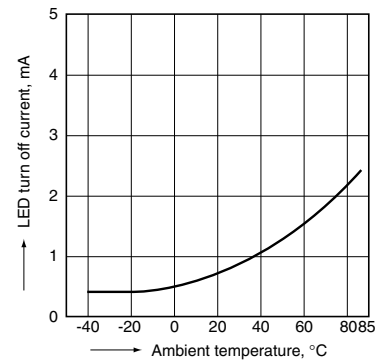
5. LED operate current vs. ambient temperature characteristics

Sample: AQV221, AQV225;
 Load voltage: Max. (DC);
 Continuous load current: Max. (DC)



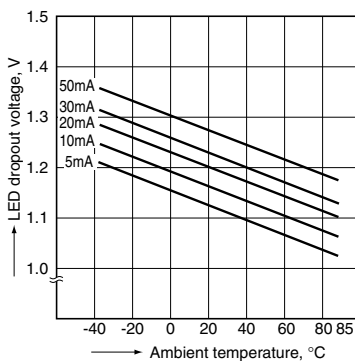
6. LED turn off current vs. ambient temperature characteristics

Sample: AQV221, AQV225;
 Load voltage: Max. (DC);
 Continuous load current: Max. (DC)



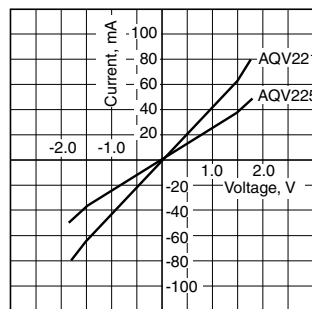
7. LED dropout voltage vs. ambient temperature characteristics

Sample: AQV221, AQV225;
 LED current: 5 to 50 mA



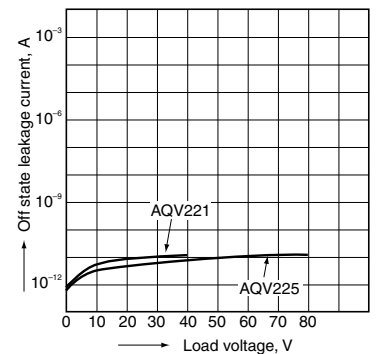
8. Current vs. voltage characteristics of output at MOS portion

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



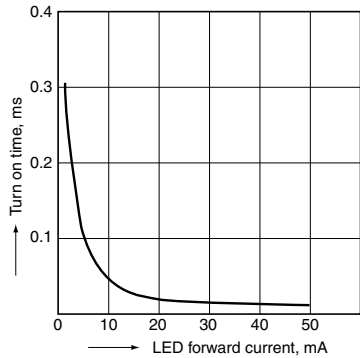
9. Off state leakage current vs. load voltage characteristics

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



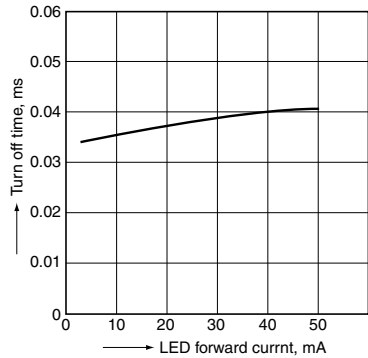
10. Turn on time vs. LED forward current characteristics

Sample: AQV221, AQV225;
Measured portion: between terminals 4 and 6;
Load voltage: Max. (DC);
Continuous load current: Max. (DC);
Ambient temperature: 25°C 77°F



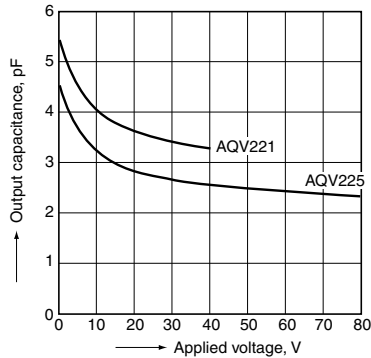
11. Turn off time vs. LED forward current characteristics

Sample: AQV221, AQV225;
Measured portion: between terminals 4 and 6;
Load voltage: Max. (DC);
Continuous load current: Max. (DC);
Ambient temperature: 25°C 77°F



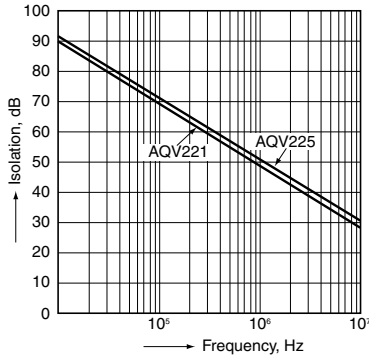
12. Output capacitance vs. applied voltage characteristics

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



13. Isolation vs. frequency characteristics (50Ω impedance)

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



14. Insertion loss vs. frequency characteristics (50Ω impedance)

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

