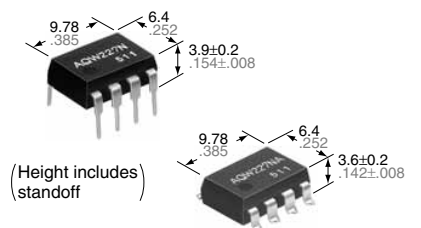
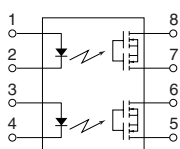


DIP8-pin type featuring
low on-resistance with
200V/400V load voltage

PhotoMOS Relays
RF 2 Form A
Low on-resistance (AQW22ON)



mm inch



Compliance with RoHS Directive

FEATURES

1. 2-channels (Form A) type with high response speed, low leakage current and low on-resistance.

2. Applicable for 2 Form A use as well as two independent 1 Form A use

3. Low capacitance between output terminals ensures high response speed:

The capacitance between output terminals is small; typ. 10 pF. This enables for a fast operation speed of typ. 0.2 ms.

4. High sensitivity and low on-resistance:

Max. 0.07 A of load current can be controlled with input current of 5 mA.

The on-resistance is less than our conventional models.

5. Low-level off state leakage current

6. Controls low-level analog signals:

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

TYPICAL APPLICATIONS

- Measuring instruments
Scanner, IC checker, Board tester, etc.

TYPES

	Output rating*		Package	Part No.				Packing quantity	
				Through hole terminal	Surface-mount terminal		Tube	Tape and reel	
	Load voltage	Load current			Tube packing style	Tape and reel packing style			
AC/DC dual use	200 V	50 mA	DIP8-pin	AQW227N	AQW227NA	AQW227NAX	AQW227NAZ	1 tube contains: 40 pcs. 1 batch contains: 400 pcs.	1,000 pcs.
	400 V	40 mA		AQW224N	AQW224NA	AQW224NAX	AQW224NAZ		

*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)

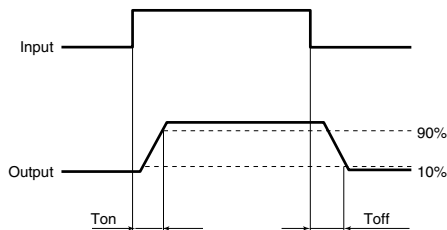
Item		Symbol	AQW227N(A)	AQW224N(A)	Remarks
Input	LED forward current	I_F	50 mA		
	LED reverse voltage	V_R	5 V		
	Peak forward current	I_{FP}	1 A		$f = 100$ Hz, Duty factor = 0.1%
	Power dissipation	P_{in}	75 mW		
Output	Load voltage (peak AC)	V_L	200 V	400 V	
	Continuous load current	I_L	0.05 A (0.07 A)	0.04 A (0.05 A)	Peak AC, DC (): in case of using only 1 channel
	Peak load current	I_{peak}	0.15 A	0.12 A	A connection: 100 ms (1 shot), $V_L = DC$
	Power dissipation	P_{out}	800 mW		
Total power dissipation		P_T	850 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		

RF 2 Form A Low on-resistance (AQW22○N)

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

Item		Symbol	AQW227N(A)	AQW224N(A)	Remarks
Input	LED operate current	Typical	0.9 mA		I _L = Max.
		Maximum	3.0 mA		
	LED turn off current	Minimum	0.4 mA		I _L = Max.
		Typical	0.8 mA		
LED dropout voltage	Typical	1.25 V (1.14 V at I _F = 5 mA)		I _F = 50 mA	
	Maximum	1.5 V			
Output	On resistance	Typical	30 Ω	70 Ω	I _F = 5 mA I _L = Max. Within 1 s on time
		Maximum	50 Ω	100 Ω	
	Output capacitance	Typical	10 pF		I _F = 0 V _B = 0 f = 1 MHz
		Maximum	15 pF		
Off state leakage current	Maximum	I _{Leak}	10 nA		I _F = 0 V _L = Max.
Transfer characteristics	Turn on time*	Typical	0.2 ms		I _F = 5 mA I _L = Max.
		Maximum	0.5 ms		
	Turn off time*	Typical	0.08 ms		I _F = 5 mA I _L = Max.
		Maximum	0.2 ms		
	I/O capacitance	Typical	0.8 pF		f = 1 MHz V _B = 0
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	5	mA

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

■ These products are not designed for automotive use.

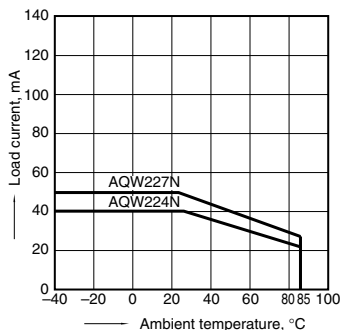
If you are considering to use these products for automotive applications, please contact your local Panasonic Electric Works technical representative.
For more information.

REFERENCE DATA

1. Load current vs. ambient temperature characteristics

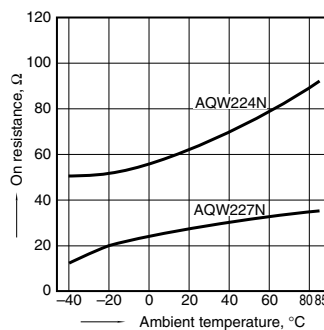
Allowable ambient temperature: -40°C to +85°C
-40°F to +185°F

When using 2 channels



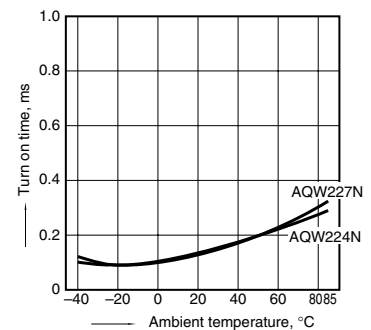
2. On resistance vs. ambient temperature characteristics

Measured portion: between terminals 5 and 6, 7 and 8; LED current: 5 mA; Load voltage: Max. (DC); Continuous load current: Max. (DC)



3. Turn on time vs. ambient temperature characteristics

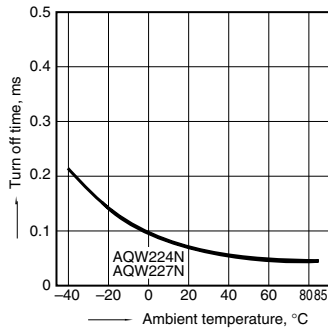
LED current: 5 mA; Load voltage: Max. (DC); Continuous load current: Max. (DC)



RF 2 Form A Low on-resistance (AQW22○N)

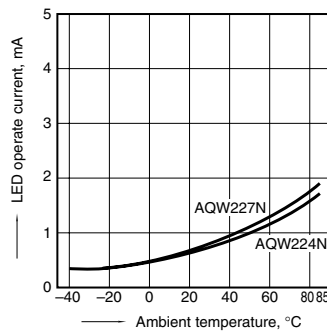
4. Turn off time vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: Max. (DC);
Continuous load current: Max. (DC)



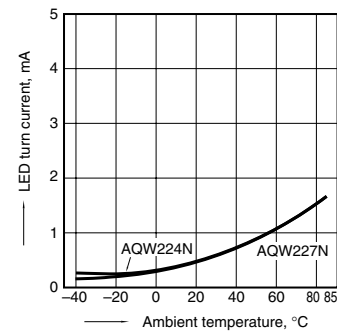
5. LED operate current vs. ambient temperature characteristics

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



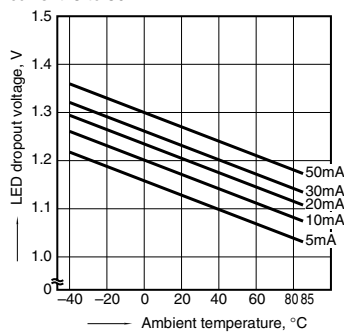
6. LED turn off current vs. ambient temperature characteristics

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



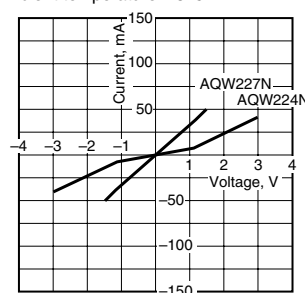
7. LED dropout voltage vs. ambient temperature characteristics

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



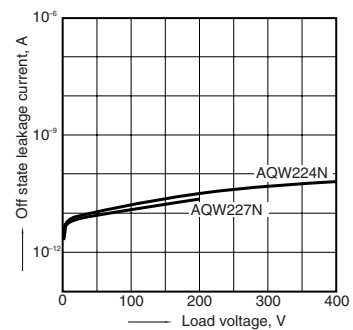
8. Voltage vs. current characteristics of output at MOS portion

Measured portion: between terminals 5 and 6,
7 and 8; Ambient temperature: 25°C 77°F



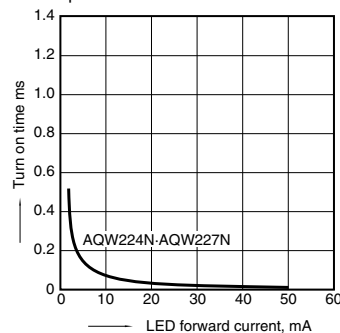
9. Off state leakage current

Measured portion: between terminals 5 and 6,
7 and 8; Ambient temperature: 25°C 77°F



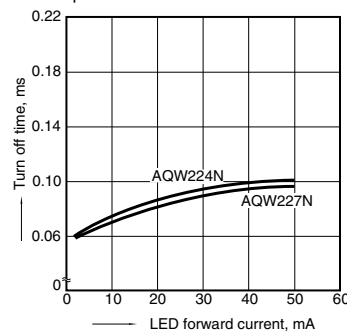
10. LED forward current vs. turn on time characteristics

Measured portion: between terminals 5 and 6,
7 and 8; Load voltage: Max. (DC);
Continuous load current: Max. (DC);
Ambient temperature: 25°C 77°F



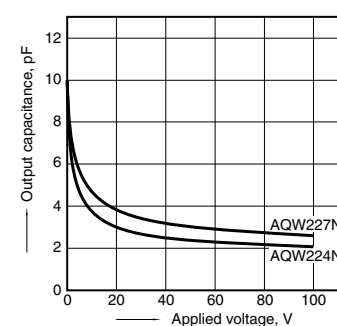
11. LED forward current vs. turn off time characteristics

Measured portion: between terminals 5 and 6,
7 and 8; Load voltage: Max. (DC);
Continuous load current: Max. (DC);
Ambient temperature: 25°C 77°F



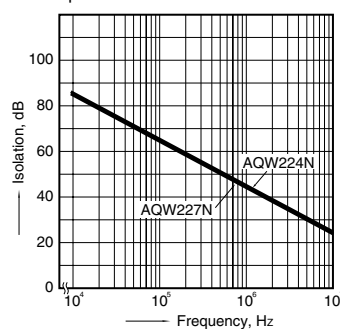
12. Applied voltage vs. output capacitance characteristics

Measured portion: between terminals 5 and 6,
7 and 8; Frequency: 1 MHz, 30 mVrms;
Ambient temperature: 25°C 77°F



13. Isolation characteristics (50 Ω impedance)

Measured portion: between terminals 5 and 6,
7 and 8; Ambient temperature: 25°C 77°F



14. Insertion loss characteristics (50 Ω impedance)

Measured portion: between terminals 5 and 6,
7 and 8; Ambient temperature: 25°C 77°F

