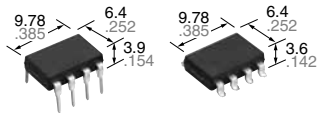




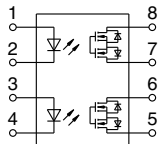
**DIP8-pin type featuring
low on-resistance
200V/400V load voltage**

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



(Height includes standoff)

mm inch



RoHS compliant

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 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.
- **Telephones**
- **Computer input machines**
- **Industrial robots**

TYPES

	Output rating*		Package	Part No.				Packing quantity	
				Through hole terminal	Surface-mount terminal		Tube		
	Load voltage	Load current			Tube packing style	Tape and reel packing style			
				Picked from the 1/2/3-pin side	Picked from the 4/5/6-pin side				
AC/DC dual use	200 V	50 mA	DIP8-pin	AQW227N	AQW227NA	AQW227NAX	AQW227NAZ	1 tube contains: 50 pcs. 1 batch contains: 500 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 device.

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	
	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 load current	I_{peak}	0.15 A	0.12 A
	Power dissipation	P_{out}	800 mW	
Total power dissipation	P_T	850 mW		
I/O isolation voltage	V_{iso}	1,500 Vrms		
Ambient temperature	Operating	T_{opr}	-40 to +85°C -40 to +185°F	
	Storage	T_{stg}	-40 to +100°C -40 to +212°F	

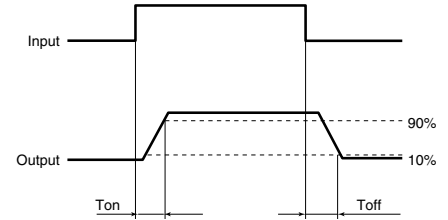
RF 2 Form A Low on-resistance (AQW220N)

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

Item		Symbol	AQW227N(A)	AQW224N(A)	Condition
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
		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

*Available as custom orders (1 nA or less)

**Turn on/Turn off time



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

Please use under recommended operating conditions to obtain expected characteristics.

Item	Symbol	Number of used channels	Min.	Max.	Unit
LED current	I _F		5	30	mA
Load voltage (Peak AC)	V _L		—	160	V
AQW227N(A)	Continuous load current	1ch	—	0.07	A
		2ch	—	0.05	A
AQW224N(A)	Load voltage (Peak AC)	1ch	—	320	V
		2ch	—	0.04	A

■ These products are not designed for automotive use.

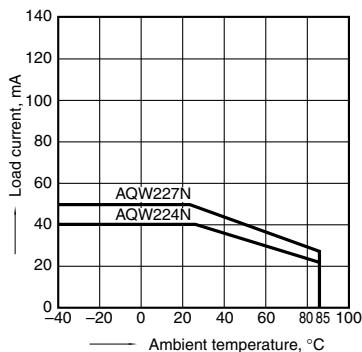
If you are considering to use these products for automotive applications, please contact your local Panasonic Corporation technical representative.

REFERENCE DATA

1. Load current vs. ambient temperature characteristics

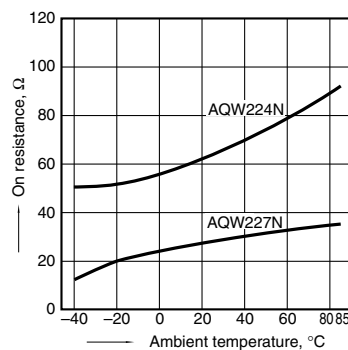
Allowable ambient temperature: -40 to +85°C
-40 to +185°F

When using 2 channels



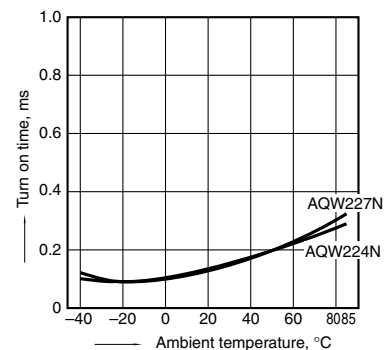
2. On resistance vs. ambient temperature characteristics

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



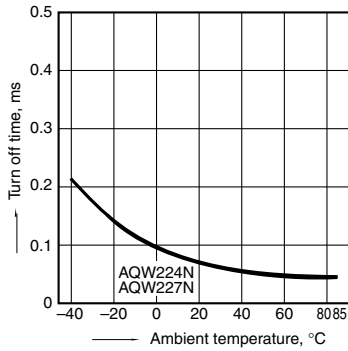
3. Turn on time vs. ambient temperature characteristics

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



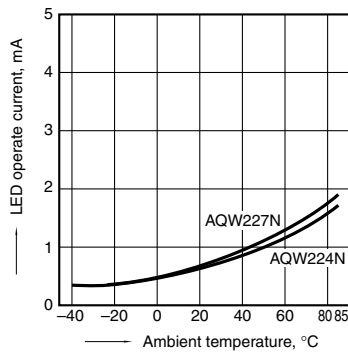
4. Turn off time vs. ambient temperature characteristics

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



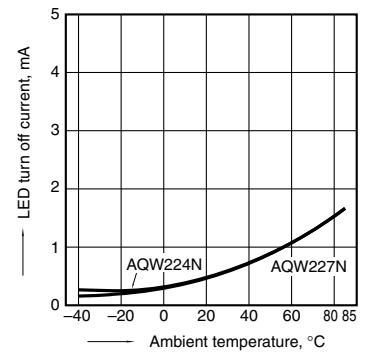
5. LED operate current vs. ambient temperature characteristics

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



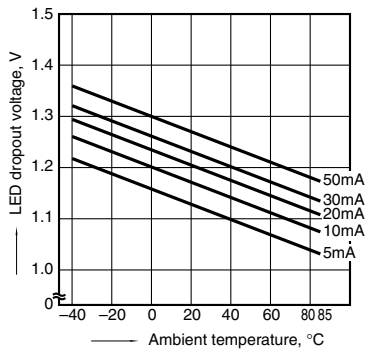
6. LED turn off current vs. ambient temperature characteristics

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



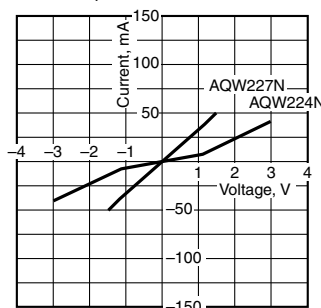
7. LED dropout voltage vs. ambient temperature characteristics

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



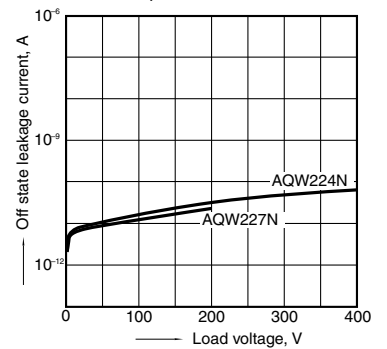
8. Current vs. voltage characteristics of output at MOS portion

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



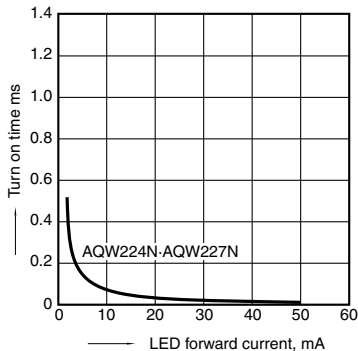
9. Off state leakage current vs. load voltage characteristics

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



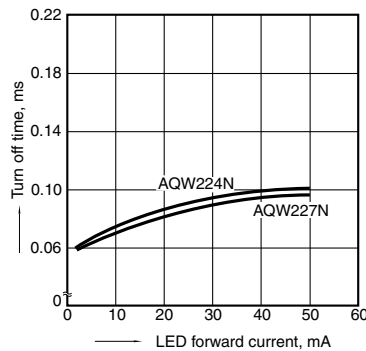
10. Turn on time vs. LED forward current characteristics

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



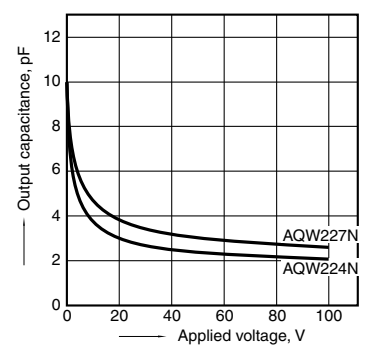
11. Turn off time vs. LED forward current characteristics

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



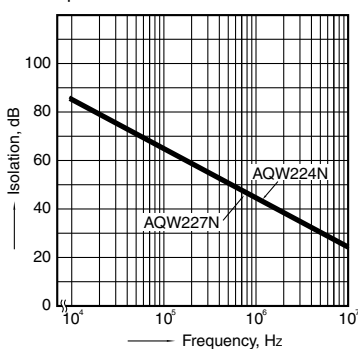
12. Output capacitance vs. applied voltage characteristics

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



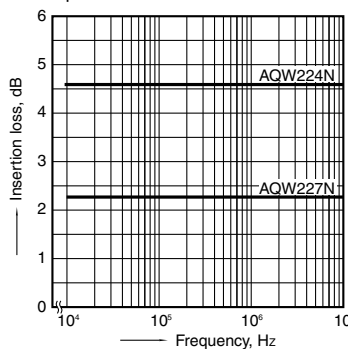
13. Isolation vs. frequency characteristics (50 Ω impedance)

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



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

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



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