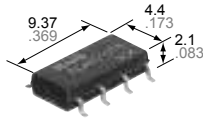


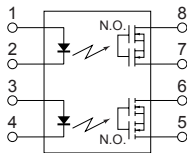
Panasonic
ideas for life

**Lower output capacitance
and on resistance.
High speed switching.
(Turn on time: 0.2ms,
Turn off time: 0.08ms).**

**RF PhotoMOS
(AQW227NS)**



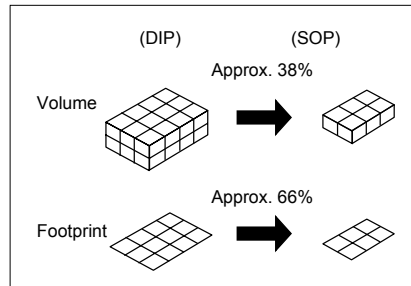
mm inch



FEATURES

1. 2-channel (Form A) in super miniature design

The device comes in a super-miniature SO package measuring (W) 4.4 × (L) 9.37 × (H) 2.1 mm (.173 × (.369 × (.083 inch —approx. 38% of the volume and 66% of the footprint size of DIP type PhotoMOS Relays.



2. Low capacitance between output terminals ensure high response speed:

The capacitance between output terminals is small, typically 10 pF. This enables a fast operation speed of 250 μs.

3. Low-level off state leakage current:

The SSR has an off state leakage current of several milliamperes, whereas the PhotoMOS relay has typ. 30 pA even with the rated load voltage of 200 V

4. Controls low-level analog signals

5. Tape and reel

The device comes standard in a tape and reel (1,000 pcs./reel) to facilitate automatic insertion machines.

TYPICAL APPLICATIONS

- Telephones
- Measuring instruments
IC tester, semiconductor testing equipment
- Computer input machine
- Industrial robots

TYPES

Type	Output rating*		Part No.	
	Load voltage	Load current	Picked from the 1/2/3/4-pin side	Picked from the 5/6/7/8-pin side
AC/DC type	200 V	40 mA	2 Form A AQW227NSX	2 Form A AQW227NSZ

* Indicate the peak AC and DC values.

Notes: (1) Tape package is the standard packing style. Also available in tube. (Part No. suf x "X" or "Z" is not needed when ordering; Tube: 50 pcs.; Case: 1,000 pcs.)

(2) For space reasons, the package type indicator "X" and "Z" are omitted from the seal.

RATING

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

	Item	Symbol	AQW227NS	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	
	Continuous load current	I_L	0.04 A (0.05 A)	Peak AC, DC (): in case of using only 1 channel)
	Peak load current	I_{peak}	0.15 A	A connection: 100 ms (1 shot), $V_L = DC$
	Power dissipation	P_{out}	600 mW	
Total power dissipation		P_T	650 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	

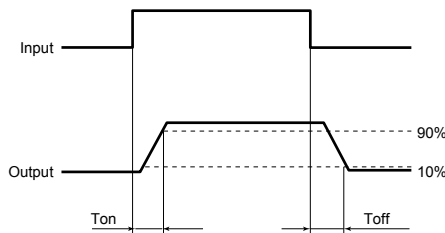
RF PhotoMOS (AQW227NS)

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

Item		Symbol	AQW227NS	Condition		
Input	LED operate current	Typical	0.7mA	$I_L = \text{Max.}$		
		Maximum	3.0mA			
	LED turn off current	Minimum	0.4mA	$I_L = \text{Max.}$		
		Typical	0.65mA			
LED dropout voltage	Typical	V_F	1.25V (1.14V at $I_F = 5\text{mA}$)	$I_F = 50\text{mA}$		
	Maximum		1.5V			
Output	On resistance	Typical	R_{on}	$I_F = 5\text{mA}$ $I_L = \text{Max.}$ Within 1 s on time		
		Maximum	50Ω			
	Output capacitance	Typical	C_{out}	10pF	$I_F = 0\text{mA}$ $V_B = 0\text{V}$ $f = 1\text{MHz}$	
		Maximum		15pF		
	Off state leakage current	Maximum	I_{Leak}	10nA	$I_F = 0\text{mA}$ $V_L = \text{Max.}$	
Transfer characteristics	Switching speed	Turn on time*	Typical	T_{on}	0.25ms	$I_F = 5\text{mA}$ $I_L = \text{Max.}$
			Maximum			
		Turn off time*	Typical	T_{off}	0.08ms	
			Maximum		0.2ms	
	I/O capacitance	Typical	C_{iso}	0.8pF	$f = 1\text{MHz}$ $V_B = 0\text{V}$	
		Maximum		1.5pF		
Initial I/O isolation resistance	Minimum	R_{iso}	1,000MΩ	500V DC		

Note: Recommendable LED forward current $I_F = 5\text{mA}$.

*Turn on/Turn off time

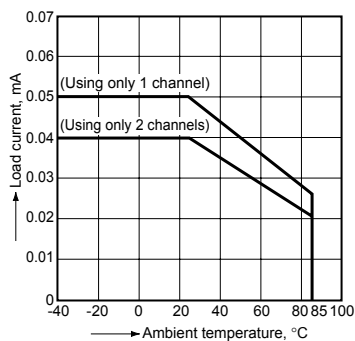


REFERENCE DATA

1. Load current vs. ambient temperature characteristics

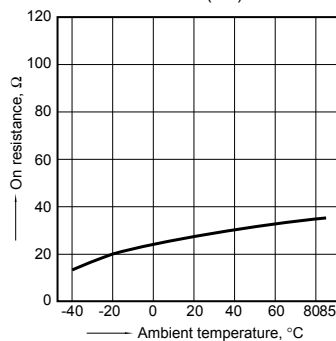
Allowable ambient temperature: -40°C to +85°C
-40°F to +185°F

Type of connection: A



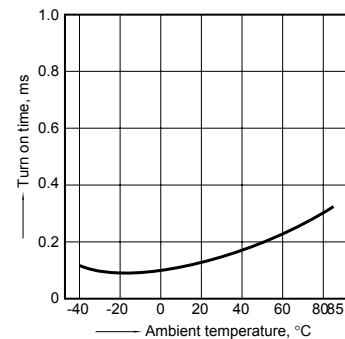
2. On resistance vs. ambient temperature characteristics

Measured portion: between terminals 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

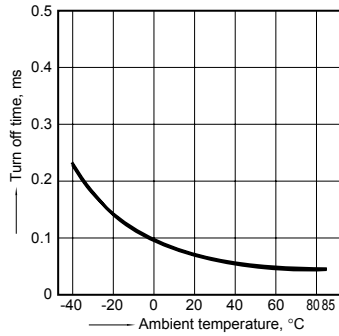
LED current: 5 mA;
Load voltage: Max. (DC);
Continuous load current: Max. (DC)



RF PhotoMOS (AQW227NS)

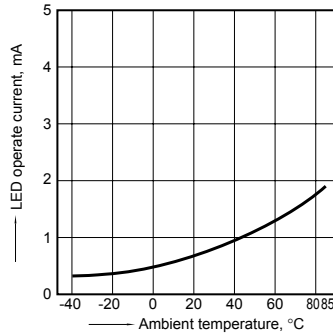
4. Turn off time vs. ambient temperature characteristics

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



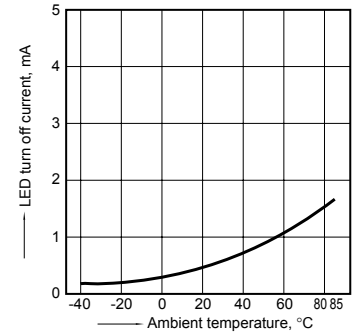
5. LED operate current vs. ambient temperature characteristics

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



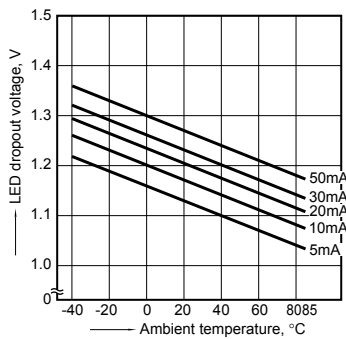
6. LED turn off current vs. ambient temperature characteristics

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



7. LED dropout voltage vs. ambient temperature characteristics

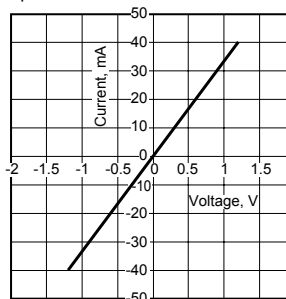
LED current: 5 to 50 mA



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

Measured portion: between terminals 5 and 6,
7 and 8;

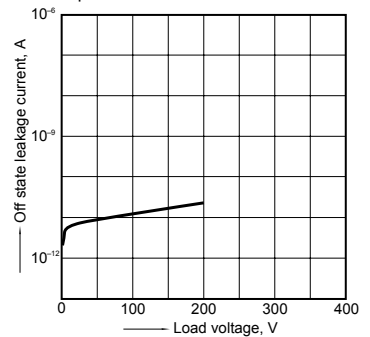
Ambient temperature: 25°C 77°F



9. Off state leakage current vs. load voltage characteristics

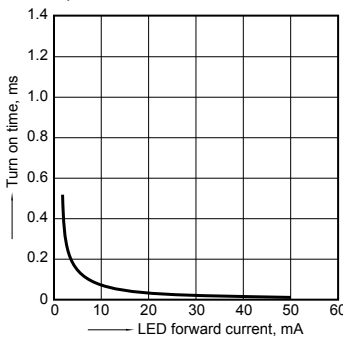
Measured portion: between terminals 5 and 6,
7 and 8;

Ambient temperature: 25°C 77°F



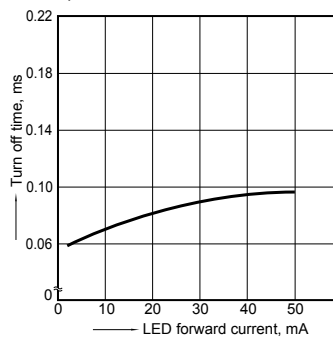
10. Turn on time vs. LED forward current characteristics

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



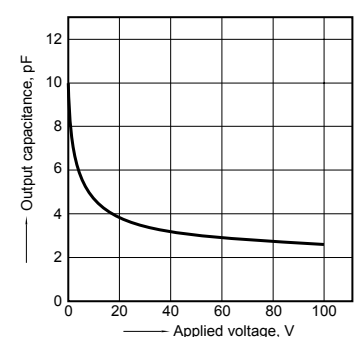
11. Turn off time vs. LED forward current characteristics

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



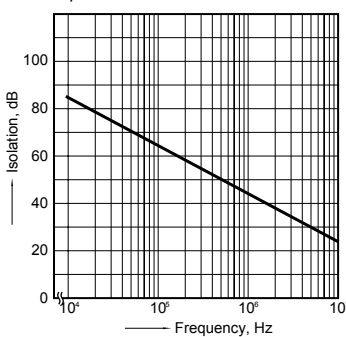
12. Output capacitance vs. applied voltage characteristics

Measured portion: between terminals 5 and 6, 7 and 8;
Frequency: 1 MHz, 30 mVrms;
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

