Panasonic
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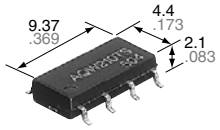
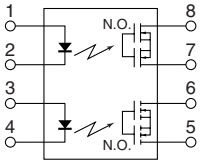
Miniature SOP8-pin type featuring low on-resistance with 200V load voltage

PhotoMOS®
RF SOP 2 Form A
Low on-resistance (AQW227NS)



mm inch



RoHS compliant

FEATURES

1. 2-channel (Form A) in SOP8-pin package miniature
(W) 4.4 × (L) 9.37 × (H) 2.1 mm (W) .173 × (L) .369 × (H) .083 inch —approx. 38% of the volume and 66% of the footprint size of DIP8-pin.
2. Low output capacitance and high response speed
The capacitance between output terminals is small; typ. 10pF.
This enables a fast operation speed of typ. 0.25ms.
3. Low-level off state leakage current
4. Controls low-level analog signals

TYPICAL APPLICATIONS

- Telephones
- Measuring instruments
- Computer input machines
- Industrial robots

TYPES

	Output rating*		Package	Part No.			Packing quantity	
	Load voltage	Load current		Tube packing style	Tape and reel packing style		Tube	Tape and reel
					Picked from the 1/2/3/4-pin side	Picked from the 5/6/7/8-pin side		
AC/DC dual use	200V	40mA	SOP8-pin	AQW227NS	AQW227NSX	AQW227NSZ	1 tube contains: 50 pcs. 1 batch contains: 1,000 pcs.	1,000 pcs.

* Indicate the peak AC and DC values.
Note: The packing style indicator "X" or "Z" is not marked on the device.

RATING

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

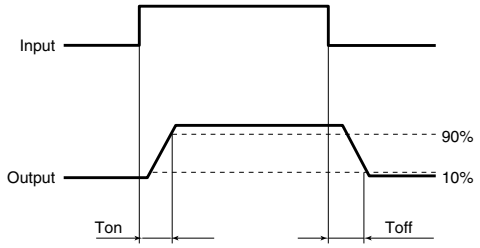
Item		Symbol	AQW227NS	Remarks
Input	LED forward current	I_F	50 mA	
	LED reverse voltage	V_R	5 V	
	Peak forward current	I_{FP}	1 A	f = 100 Hz, Duty factor = 0.1%
	Power dissipation	P_{in}	75 mW	
Output	Load voltage (peak AC)	V_L	200 V	
	Continuous load current	I_L	0.04 A (0.05 A)	Peak AC, DC ( ): in case of using only 1 channel
	Peak load current	I_{peak}	0.15 A	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 SOP 2 Form A Low on-resistance (AQW227NS)

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

Item			Symbol	AQW227NS	Condition
Input	LED operate current	Typical	I_{Fon}	0.7mA	I_L=Max.
		Maximum		3.0mA	
	LED turn off current	Minimum	I_{Foff}	0.4mA	I_L=Max.
		Typical		0.65mA	
	LED dropout voltage	Typical	V_F	1.25V (1.14V at I_F=5mA)	I_F=50mA
		Maximum		1.5V	
Output	On resistance	Typical	R_{on}	30Ω	I_F=5mA I_L=Max. Within 1 s on time
		Maximum		50Ω	
	Output capacitance	Typical	C_{out}	10pF	I_F=0mA V_B=0V f=1 MHz
		Maximum		15pF	
	Off state leakage current	Maximum	I_{Leak}	10nA	I_F=0mA V_L=Max.
Transfer characteristics	Turn on time*	Typical	T_{on}	0.25ms	I_F=5mA I_L=Max.
		Maximum		0.5ms	
	Turn off time*	Typical	T_{off}	0.08ms	I_F=5mA I_L=Max.
		Maximum		0.2ms	
	I/O capacitance	Typical	C_{iso}	0.8pF	f=1MHz V_B=0V
		Maximum		1.5pF	
	Initial I/O isolation resistance	Minimum	R_{iso}	1,000MΩ	500V DC

*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

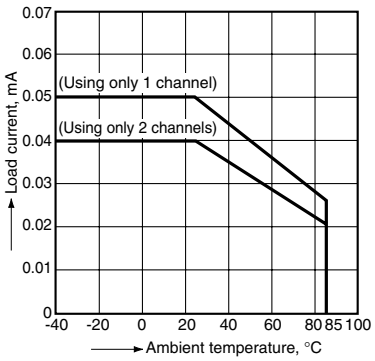
■ For Dimensions.
■ For Schematic and Wiring Diagrams.
■ For Cautions for Use.

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

REFERENCE DATA

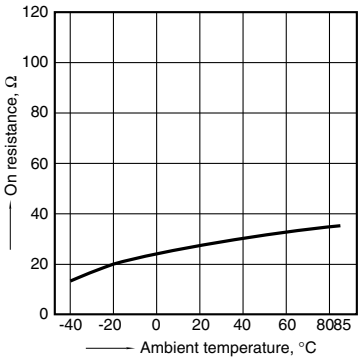
1. Load current vs. ambient temperature characteristics

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



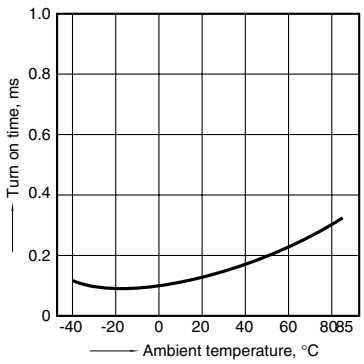
2. On resistance vs. ambient temperature characteristics

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

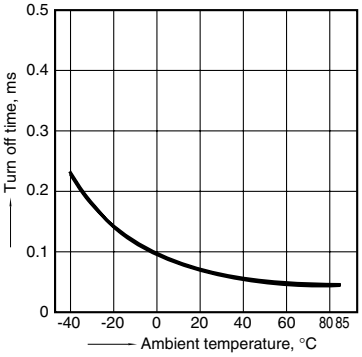


3. Turn on time vs. ambient temperature characteristics

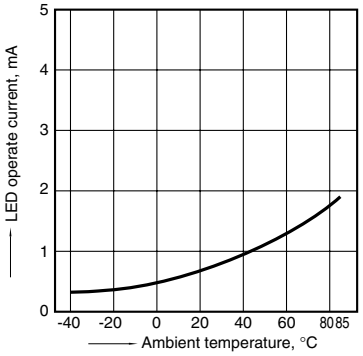
LED current: 5 mA;
Load voltage: Max. (DC);
Continuous load current: Max. (DC)



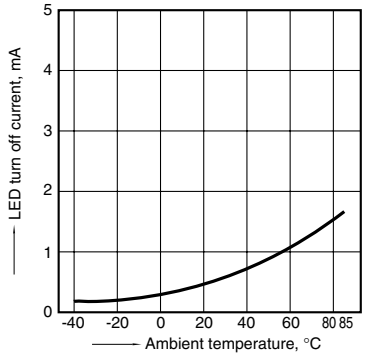
4. Turn off time vs. ambient temperature characteristics
LED current: 5 mA; Load voltage: Max. (DC);
Continuous load current: Max. (DC)



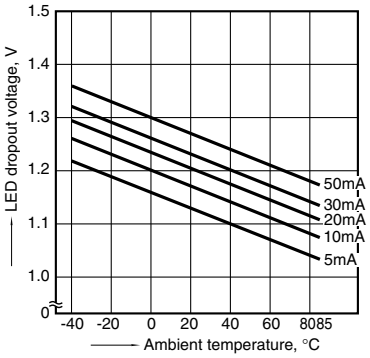
5. LED operate current vs. ambient temperature characteristics
Load voltage: Max. (DC);
Continuous load current: Max. (DC)



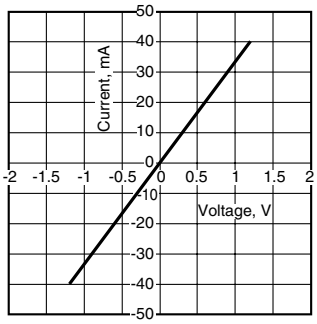
6. LED turn off current vs. ambient temperature characteristics
Load voltage: Max. (DC);
Continuous load current: Max. (DC)



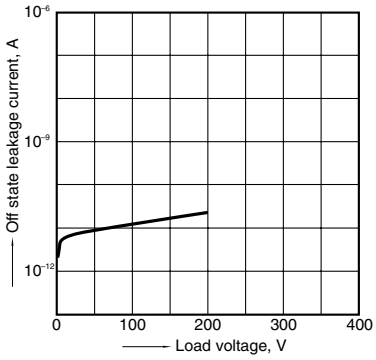
7. LED dropout voltage vs. ambient temperature characteristics
LED current: 5 to 50 mA



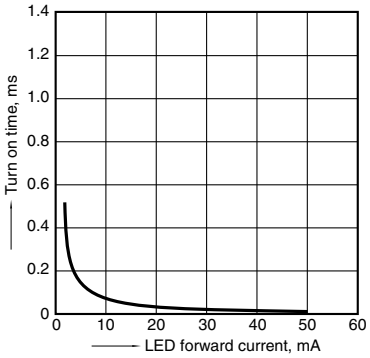
8. Current vs. voltage characteristics of output at MOS portion
Measured portion: between terminals 5 and 6, 7 and 8;
Ambient temperature: 25°C 77°F



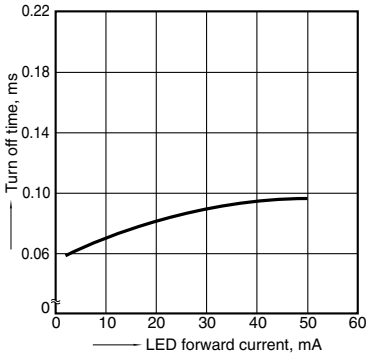
9. Off state leakage current vs. load voltage characteristics
Measured portion: between terminals 5 and 6, 7 and 8;
Ambient temperature: 25°C 77°F



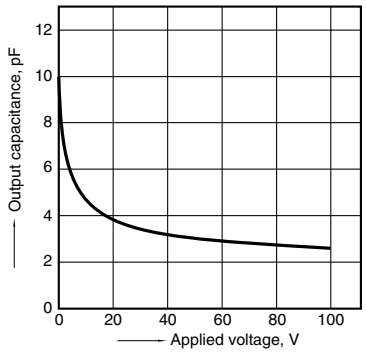
10. Turn on time vs. LED forward current characteristics
Measured portion: between terminals 5 and 6, 7 and 8;
Load voltage: Max. (DC);
Continuous load current: Max. (DC);
Ambient temperature: 25°C 77°F



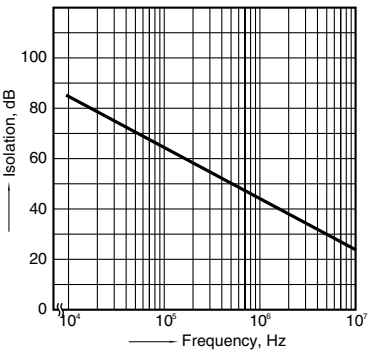
11. Turn off time vs. LED forward current characteristics
Measured portion: between terminals 5 and 6, 7 and 8;
Load voltage: Max. (DC);
Continuous load current: Max. (DC);
Ambient temperature: 25°C 77°F



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