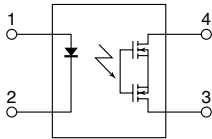


mm inch



RoHS compliant

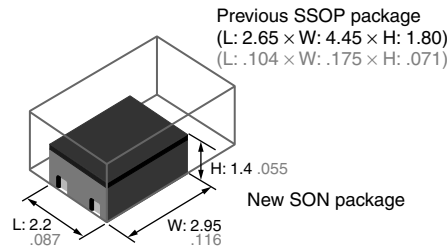
FEATURES

1. Super miniature SON* package contributes to space savings and high density mounting.

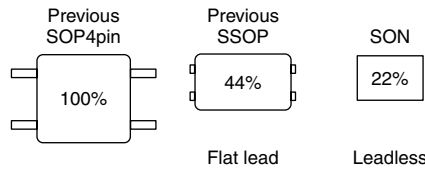
The SON type is a new PhotoMOS with approximately 43% the volume ratio of existing SSOP type. The super miniature leadless construction reduces the mounting area and enables high density mounting.

*Small Outline No-lead package

Reduced to approximately 43% volume ratio



Area comparison (including leads)



2. Both low on-resistance (R type) and low capacitance (C type) available at C×R10

- R type: On resistance 0.8Ω (typ.)
Output capacitance 14pF (typ.)
- C type: On resistance 9.5Ω (typ.)
Output capacitance 1.1pF (typ.)

TYPICAL APPLICATIONS

1. Measuring equipment
IC tester, Probe cards, board tester and other testing equipment
2. Telecommunication or broadcasting equipment
3. Medical equipment

TYPES

	Type	Output rating*1		Package	Tape and reel packing style*2		Packing quantity in tape and reel
		Load voltage	Load current		Picked from the 1 and 4-pin side	Picked from the 2 and 3-pin side	
AC/DC dual use	Low on-resistance (R type)	40 V	250 mA	SON	AQY221R2MY	AQY221R2MW	3,500 pcs.
	Low capacitance (C type)	40 V	120 mA		AQY221N2MY	AQY221N2MW	

Notes: *1 Indicate the peak AC and DC values.

*2 Only tape and reel package is available.

For space reasons, only "1R2" or "1N2" is marked on the product as the part number.

RATING

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

Item		Symbol	AQY221R2M	AQY221N2M	Remarks
Input	LED forward current	I _F	50mA		
	LED reverse voltage	V _R	5V		
	Peak forward current	I _{FP}	1A		f=100 Hz, Duty factor=0.1%
	Power dissipation	P _{in}	75mW		
Output	Load voltage (peak AC)	V _L	40V	40V	
	Continuous load current	I _L	0.25A	0.12A	Peak AC, DC
	Peak load current	I _{peak}	0.75A	—	100ms (1shot), V _L =DC
	Power dissipation	P _{out}	250mW		
Total power dissipation		P _T	300mW		
I/O isolation voltage		V _{iso}	200V AC		
Operating temperature		T _{opr}	-40°C to +85°C -40°F to +185°F		Non-condensing at low temperatures
Storage temperature		T _{stg}	-40°C to +100°C -40°F to +212°F		

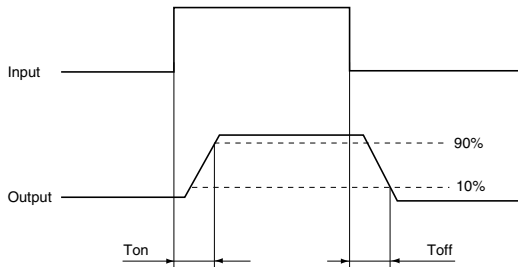
RF SON 1 Form A C×R10 (AQY221○2M)

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

Item			Symbol	R type	C type	Condition
				AQY221R2M	AQY221N2M	
Input	LED operate current	Typical	I _{Fon}	0.8 mA	3.0 mA	R type: I _L = 250 mA C type: I _L = 80 mA
		Maximum				
	LED turn off current	Minimum	I _{Foff}	0.2 mA		
Typical		0.7 mA		0.9 mA		
LED dropout voltage	Typical	V _F	1.35 V (1.14 V at I _F = 5 mA)		I _F = 50 mA	
	Maximum		1.5 V			
Output	On resistance	Typical	R _{on}	0.8Ω	9.5Ω	R type: I _F = 5 mA, I _L = 250 mA C type: I _F = 5 mA, I _L = 80 mA Within 1 s on time
		Maximum		1.25Ω	12.5Ω	
	Output capacitance	Typical	C _{out}	14 pF	1.1 pF	I _F = 0 mA V _B = 0 V f = 1 MHz
		Maximum		18 pF	1.5 pF	
Off state leakage current	Typical	I _{Leak}	0.01 nA		I _F = 0 mA V _L = Max.	
	Maximum		10 nA			
Transfer characteristics	Turn on time*	Typical	T _{on}	0.2 ms	0.02 ms	R type: I _F = 5 mA, V _L = 10 V, R _L = 40Ω C type: I _F = 5 mA, V _L = 10 V, R _L = 125Ω
		Maximum		0.5 ms	0.2 ms	
	Turn off time*	Typical	T _{off}	0.04 ms	0.02 ms	
		Maximum		0.2 ms		
	I/O capacitance	Typical	C _{iso}	0.8 pF		f = 1 MHz V _B = 0 V
		Maximum		1.5 pF		

Note: Variation possible through combinations of output capacitance and on resistance. For more information, please contact our sales office in your area.

*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.

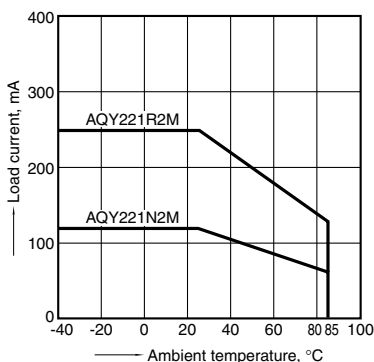
If you are considering to use these products for automotive applications, please contact your local Panasonic Corporation technical representative.

For more information,.

REFERENCE DATA

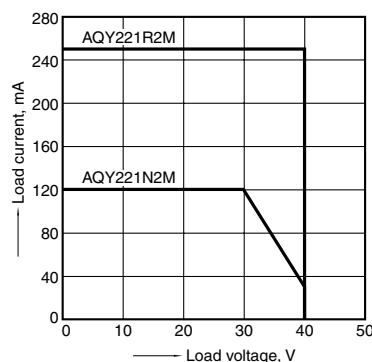
1. Load current vs. ambient temperature characteristics

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



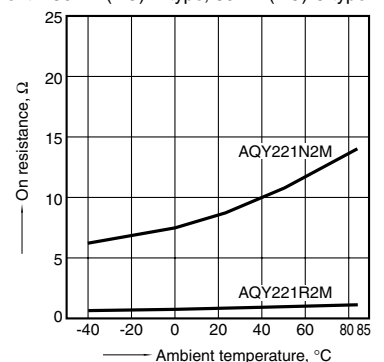
2. Load current vs. Load voltage characteristics

Ambient temperature: 25°C 77°F



3. On resistance vs. ambient temperature characteristics

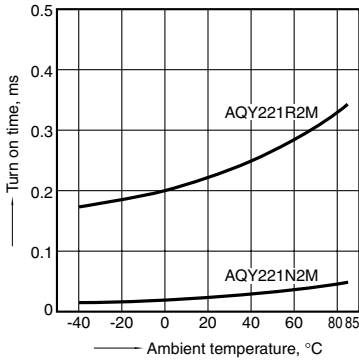
Measured portion: between terminals 3 and 4;
LED current: 5 mA; Load voltage: 10V (DC); Load current: 250mA (DC) R type, 80mA (DC) C type



RF SON 1 Form A C×R10 (AQY221○2M)

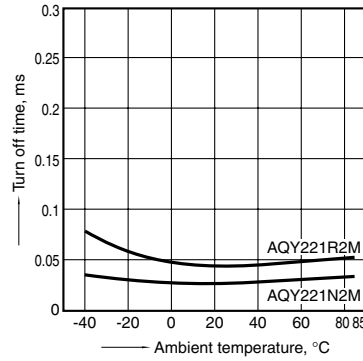
4. Turn on time vs. ambient temperature characteristics

Measured portion: between terminals 3 and 4; LED current: 5 mA; Load voltage: 10V (DC); Continuous load current: 250mA (DC) R type, 80mA (DC) C type



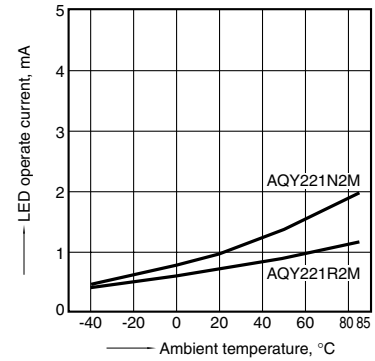
5. Turn off time vs. ambient temperature characteristics

Measured portion: between terminals 3 and 4; LED current: 5 mA; Load voltage: 10V (DC); Continuous load current: 250mA (DC) R type, 80mA (DC) C type



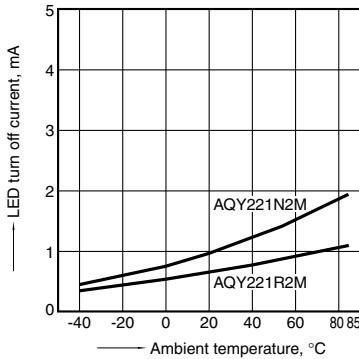
6. LED operate current vs. ambient temperature characteristics

Measured portion: between terminals 3 and 4; Load voltage: 10V (DC); Continuous load current: 250mA (DC) R type, 80mA (DC) C type



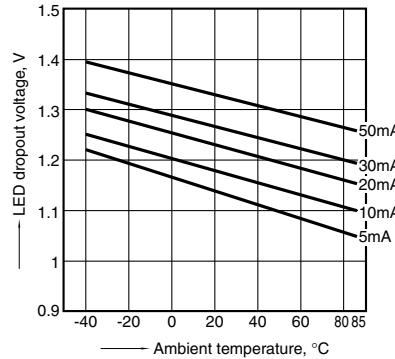
7. LED turn off current vs. ambient temperature characteristics

Measured portion: between terminals 3 and 4; Load voltage: 10V (DC); Continuous load current: 250mA (DC) R type, 80mA (DC) C type



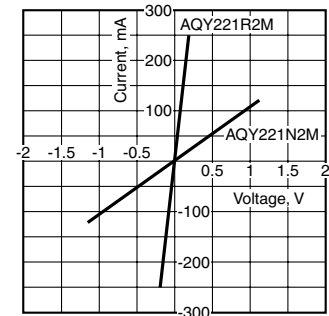
8. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



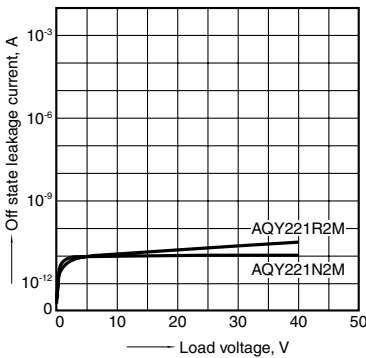
9. Current vs. voltage characteristics of output at MOS portion

Measured portion: between terminals 3 and 4
Ambient temperature: 25°C 77°F



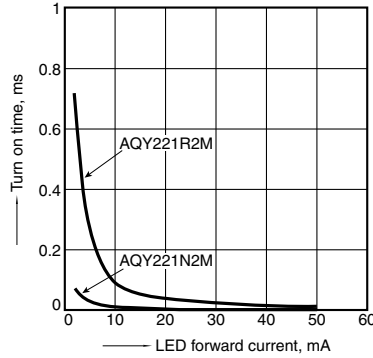
10. Off state leakage current vs. load voltage characteristics

Measured portion: between terminals 3 and 4
Ambient temperature: 25°C 77°F



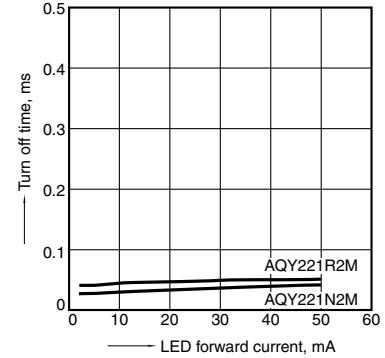
11. Turn on time vs. LED forward current characteristics

Measured portion: between terminals 3 and 4; Load voltage: 10V (DC); Continuous load current: 250mA (DC) R type, 80mA (DC) C type; Ambient temperature: 25°C 77°F



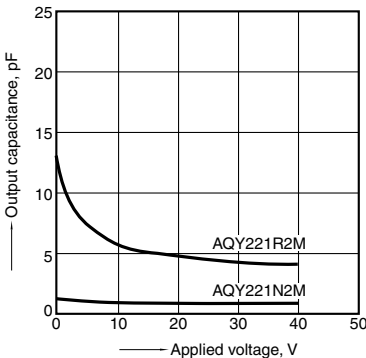
12. Turn off time vs. LED forward current characteristics

Measured portion: between terminals 3 and 4; Load voltage: 10V (DC); Continuous load current: 250mA (DC) R type, 80mA (DC) C type; Ambient temperature: 25°C 77°F



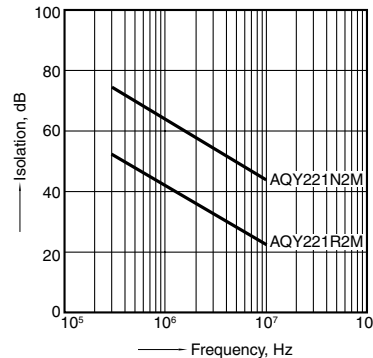
13. Output capacitance vs. applied voltage characteristics

Measured portion: between terminals 3 and 4; Frequency: 1 MHz, 30m Vrms; Ambient temperature: 25°C 77°F



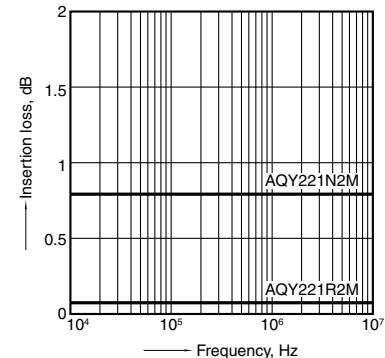
14. Isolation vs. frequency characteristics (50Ω impedance)

Measured portion: between terminals 3 and 4
Ambient temperature: 25°C 77°F



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

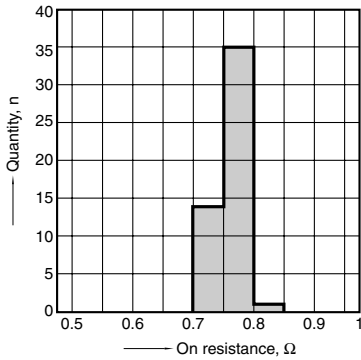
Measured portion: between terminals 3 and 4
Ambient temperature: 25°C 77°F



RF SON 1 Form A C×R10 (AQY221○2M)

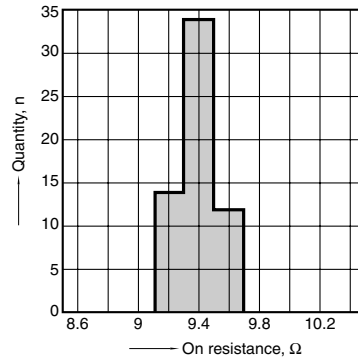
16.-(1) On resistance distribution

Sample: AQY221R2M; Measured portion: between terminals 3 and 4; Continuous load current: 250mA (DC) R type, 80mA (DC) C type, n: 50pcs.
Ambient temperature: 25°C 77°F



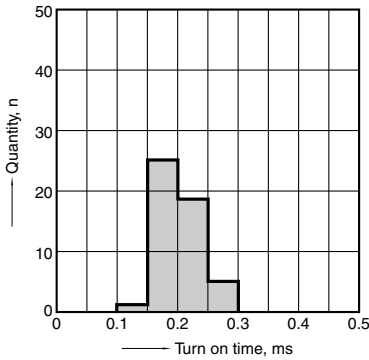
16.-(2) On resistance distribution

Sample: AQY221N2M; Measured portion: between terminals 3 and 4; Continuous load current: 250mA (DC) R type, 80mA (DC) C type, n: 50pcs.
Ambient temperature: 25°C 77°F



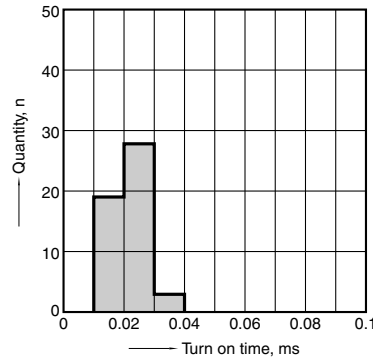
17.-(1) Turn on time distribution

Sample: AQY221R2M; Load voltage: 10V (DC)
Continuous load current: 250mA (DC) R type, 80mA (DC) C type, n: 50pcs.
Ambient temperature: 25°C 77°F



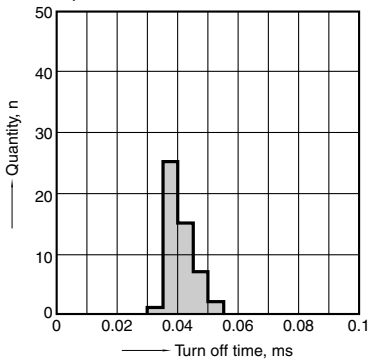
17.-(2) Turn on time distribution

Sample: AQY221N2M; Load voltage: 10V (DC)
Continuous load current: 250mA (DC) R type, 80mA (DC) C type, n: 50pcs.
Ambient temperature: 25°C 77°F



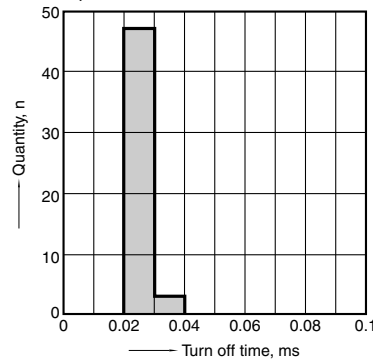
18.-(1) Turn off time distribution

Sample: AQY221R2M; Load voltage: 10V (DC)
Continuous load current: 250mA (DC) R type, 80mA (DC) C type, n: 50pcs.
Ambient temperature: 25°C 77°F



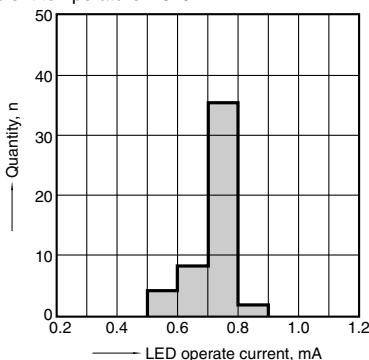
18.-(2) Turn off time distribution

Sample: AQY221N2M; Load voltage: 10V (DC)
Continuous load current: 250mA (DC) R type, 80mA (DC) C type, n: 50pcs.
Ambient temperature: 25°C 77°F



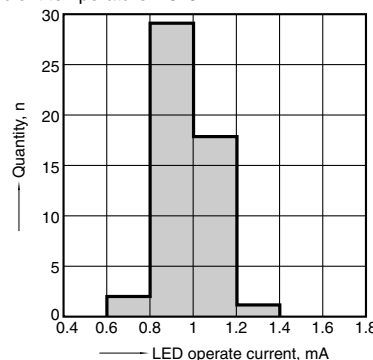
19.-(1) LED operate current distribution

Sample: AQY221R2M; Load voltage: 10V (DC)
Continuous load current: 250mA (DC) R type, 80mA (DC) C type, n: 50pcs.
Ambient temperature: 25°C 77°F



19.-(2) LED operate current distribution

Sample: AQY221N2M; Load voltage: 10V (DC)
Continuous load current: 250mA (DC) R type, 80mA (DC) C type, n: 50pcs.
Ambient temperature: 25°C 77°F



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