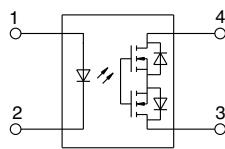
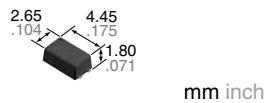


**Miniature SSOP
CxR10: 30 V/40 V load
voltage
CxR5: 25 V load voltage**

**PhotoMOS®
RF SSOP 1 Form A CxR10/CxR5
(AQY22000V)**

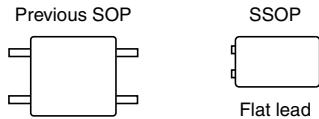


RoHS compliant

FEATURES

1. Miniature package (SSOP) using a new flat lead terminal shape

Compared to previous models (SOP 4-pin), mounting area can be reduced by approximately 53%*. This contributes to improved output signal transit characteristics.



*Comparison of area of SSOP and SOP 4-pin (including leads).

2. Both low on-resistance (R type) and low capacitance (C type) available at excellent characteristics of CxR10

		On resistance (Typical)	Output capacitance (Typical)
CxR10 R type	AQY221R6V	0.18Ω	37.5pF
	AQY221R4V	0.55Ω	24pF
	AQY221R2V	0.75Ω	12.5pF
CxR10 C type	AQY221N2V	9.5Ω	1.0pF
CxR5	AQY221N3V	5.5Ω	1.0pF

TYPICAL APPLICATIONS

1. Measuring and testing equipment

Semiconductor testing equipment, Probe cards, Datalogger, Board tester and other testing equipment

2. Telecommunication and broadcasting equipment

3. Medical equipment

4. Multi-point recorder

Data logger, Warping and Thermocouple, etc.

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	CxR10 Low on-resistance (R type)	30 V	1,000 mA	SSOP	AQY221R6VY	AQY221R6VW	3,500 pcs.
		40 V	500 mA		AQY221R4VY	AQY221R4VW	
		40 V	250 mA		AQY221R2VY	AQY221R2VW	
	Low capacitance (C type)	40 V	120 mA		AQY221N2VY	AQY221N2VW	
		25 V	150 mA		AQY221N3VY	AQY221N3VW	

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

*2. Tape and reel is the standard packing style for SSOP. Packing quantity of 1,000 pieces is possible. Please consult us.

For space reasons, the three initial letters of the part number "AQY", the package (SSOP) indication "V", and the packaging style "Y" or "W" are not marked on the device. (Ex. the label for product number AQY221R4VY is 221R4)

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

Item		Symbol	CxR10 R type			CxR10 C type	CxR5	Remarks		
			AQY221R6V	AQY221R4V	AQY221R2V					
Input	LED forward current	I _F	50mA							
	LED reverse voltage	V _R	5V							
	Peak forward current	I _{FP}	1A							
	Power dissipation	P _{in}	75mW							
Output	Load voltage (peak AC)	V _L	30V	40V	25V					
	Continuous load current	I _L	1A	0.5A	0.25A	0.12A	0.15A	Peak AC, DC		
	Peak load current	I _{peak}	1.5A	1A	0.75A	0.3A	0.4A	100ms (1shot), V _L =DC		
	Power dissipation	P _{out}	250mW							
Total power dissipation		P _T	300mW							
I/O isolation voltage		V _{iso}	1,500Vrms							
Ambient temperature	Operating	T _{opr}	-40 to +85°C -40 to +185°F							
	Storage	T _{stg}	-40 to +100°C -40 to +212°F							

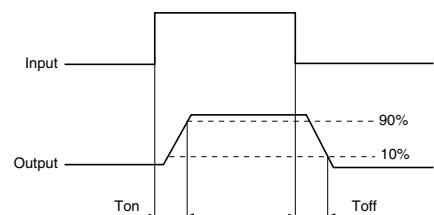
2. Electrical characteristics (Ambient temperature: 25°C 77°F)

Item			Symbol	CxR10 R type			CxR10 C type	CxR5	Condition						
				AQY221R6V	AQY221R4V	AQY221R2V									
Input	LED operate current	Typical	I _{Fon}	0.7 mA	0.9 mA			1.0 mA	AQY221R6V: I _L = 100 mA						
	Maximum				3.0 mA				AQY221R4V: I _L = 500 mA						
	LED turn off current	Minimum	I _{Foff}	0.1 mA			0.2 mA		AQY221R2V: I _L = 250 mA						
	Typical			0.6 mA	0.8 mA			0.9 mA	AQY221N2V: I _L = 80 mA						
Output	LED dropout voltage	Typical	V _F	1.35 V (1.14 V at I _F = 5 mA)					AQY221N3V: I _L = 80 mA						
	Maximum			1.5 V					I _F = 50 mA						
	On resistance	Typical	R _{on}	0.18Ω	0.55Ω	0.75Ω	9.5Ω	5.5Ω	AQY221R6V: I _F = 5 mA, I _L = 1000 mA						
	Maximum			0.35Ω	1Ω	1.25Ω	12.5Ω	7.5Ω	AQY221R4V: I _F = 5 mA, I _L = 500 mA						
Transfer characteristics	Output capacitance	Typical	C _{out}	37.5 pF	24 pF	12.5 pF	1.0 pF		AQY221R2V: I _F = 5 mA, I _L = 250 mA						
	Maximum			100 pF	30 pF	18 pF	1.5 pF		AQY221N2V: I _F = 5 mA, I _L = 80 mA						
	Off state leakage current	Typical	I _{Leak}	—	0.02 nA			0.01 nA	AQY221N3V: I _F = 5 mA, I _L = 80 mA						
	Maximum				*10 nA				Within 1 s						
	Turn on time**	Typical	T _{on}	0.2 ms	0.25 ms	0.10 ms	0.02 ms		AQY221R6V: I _F = 5 mA, V _L = 10 V, R _L = 100Ω						
	Maximum			0.5 ms	0.75 ms	0.5 ms		0.2 ms	AQY221R4V: I _F = 5 mA, V _L = 10 V, R _L = 20Ω						
	Turn off time**	Typical	T _{off}	0.07 ms	0.08 ms		0.02 ms		AQY221R2V: I _F = 5 mA, V _L = 10 V, R _L = 40Ω						
	Maximum				0.2 ms				AQY221N2V: I _F = 5 mA, V _L = 10 V, R _L = 125Ω						
	I/O capacitance	Typical	C _{iso}	0.8 pF					AQY221N3V: I _F = 5 mA, V _L = 10 V, R _L = 125Ω						
	Maximum			1.5 pF					f = 1 MHz, V _B = 0 V						
	Initial I/O isolation resistance	Minimum	R _{iso}	1,000 MΩ					500 V DC						

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

*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.

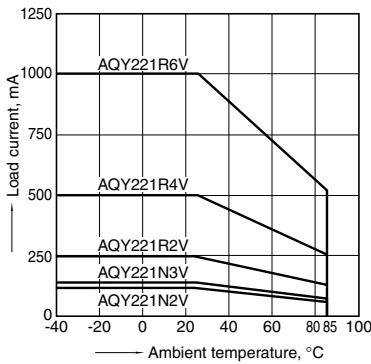
Item	Symbol	Min.	Max.	Unit
LED current	I_F	5	30	mA
AQY221R6V	Load voltage (Peak AC)	V_L	—	15 V
	Continuous load current	I_L	—	1 A
AQY221R4V	Load voltage (Peak AC)	V_L	—	15 V
	Continuous load current	I_L	—	0.5 A
AQY221R2V	Load voltage (Peak AC)	V_L	—	15 V
	Continuous load current	I_L	—	0.25 A
AQY221N2V	Load voltage (Peak AC)	V_L	—	15 V
	Continuous load current	I_L	—	0.12 A
AQY221N3V	Load voltage (Peak AC)	V_L	—	15 V
	Continuous load current	I_L	—	0.15 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.

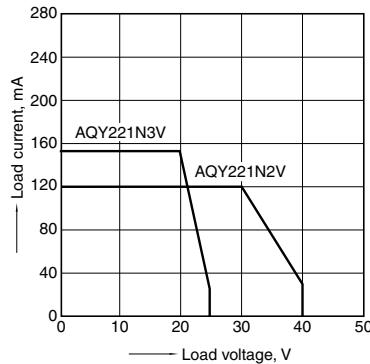
REFERENCE DATA

1. Load current vs. ambient temperature characteristics

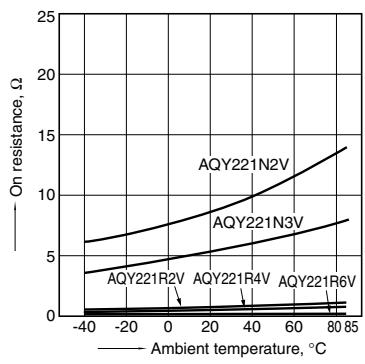
Allowable ambient temperature: -40 to +85°C
-40 to +185°F

2. Load current vs. Load voltage characteristics

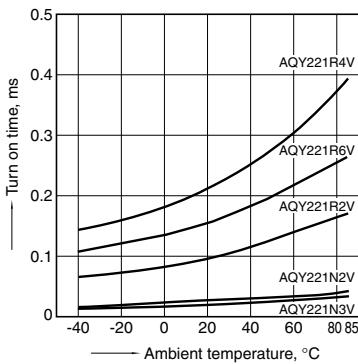
Ambient temperature: 25°C 77°F



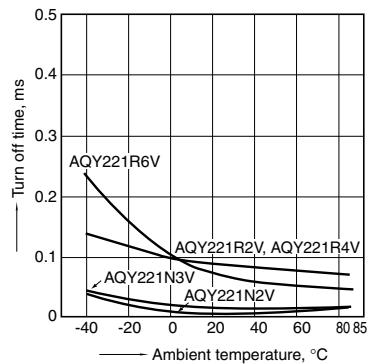
3. On resistance vs. ambient temperature characteristics

Measured portion: between terminals 3 and 4
LED current: 5 mA; Load voltage: 10V (DC)
Continuous load current: 1000mA (DC) AQY221R6V,
500mA (DC) AQY221R4V, 250mA (DC) AQY221R2V,
80mA (DC) AQY221N2V, AQY221N3V

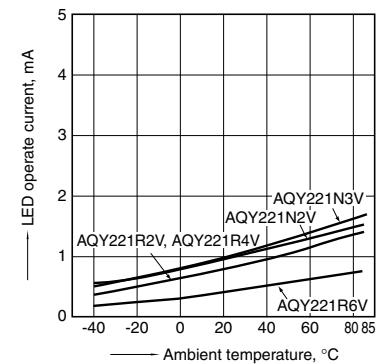
4. Turn on time vs. ambient temperature characteristics

Measured portion: between terminals 3 and 4
LED current: 5 mA; Load voltage: 10V (DC)
Continuous load current: 100mA (DC) AQY221R6V,
500mA (DC) AQY221R4V, 250mA (DC) AQY221R2V,
80mA (DC) AQY221N2V, AQY221N3V

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: 100mA (DC) AQY221R6V,
500mA (DC) AQY221R4V, 250mA (DC) AQY221R2V,
80mA (DC) AQY221N2V, AQY221N3V

6. LED operate current vs. ambient temperature characteristics

Measured portion: between terminals 3 and 4
Load voltage: 10V (DC)
Continuous load current: 100mA (DC) AQY221R6V,
500mA (DC) AQY221R4V, 250mA (DC) AQY221R2V,
80mA (DC) AQY221N2V, AQY221N3V

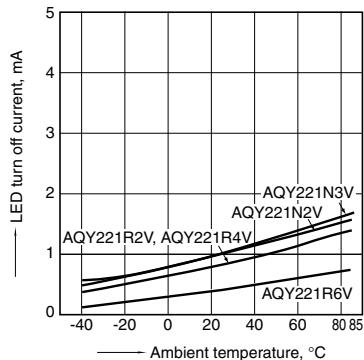
RF SSOP 1 Form A CxR10/CxR5 (AQY22000V)

7. LED turn off current vs. ambient temperature characteristics

Measured portion: between terminals 3 and 4

Load voltage: 10V (DC)

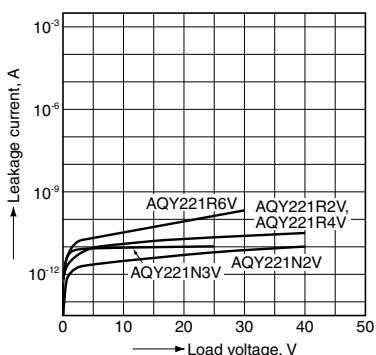
Continuous load current: 100mA (DC) AQY221R6V, 500mA (DC) AQY221R4V, 250mA (DC) AQY221R2V, 80mA (DC) AQY221N2V, AQY221N3V



10. Off state leakage current vs. load voltage characteristics

Measured portion: between terminals 3 and 4

Ambient temperature: 25°C 77°F

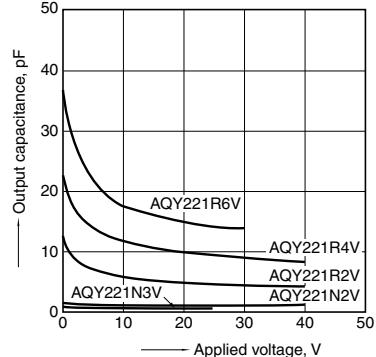


13. Output capacitance vs. applied voltage characteristics

Measured portion: between terminals 3 and 4

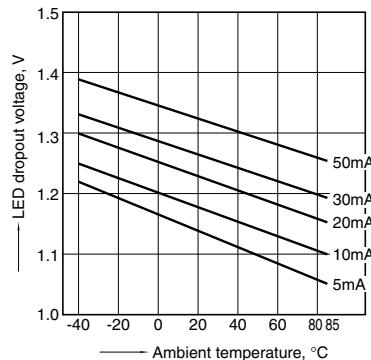
Frequency: 1 MHz, 30mVrms

Ambient temperature: 25°C 77°F



8. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



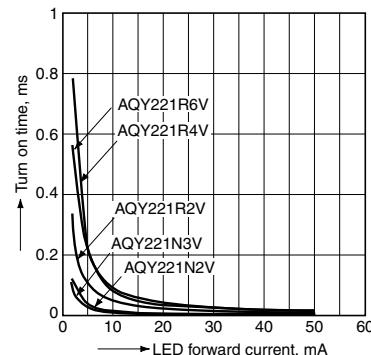
11. Turn on time vs. LED forward current characteristics

Measured portion: between terminals 3 and 4

Load voltage: 10V (DC)

Continuous load current: 100mA (DC) AQY221R6V, 500mA (DC) AQY221R4V, 250mA (DC) AQY221R2V, 80mA (DC) AQY221N2V, AQY221N3V

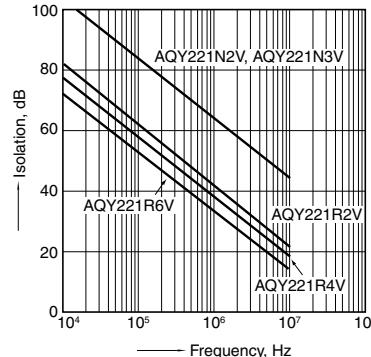
Ambient temperature: 25°C 77°F



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

Measured portion: between terminals 3 and 4

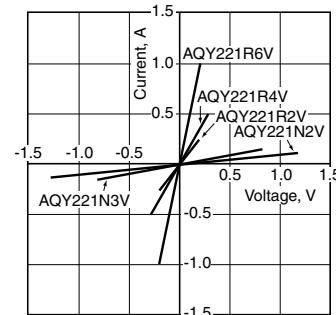
Ambient temperature: 25°C 77°F



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

Measured portion: between terminals 3 and 4

Ambient temperature: 25°C 77°F



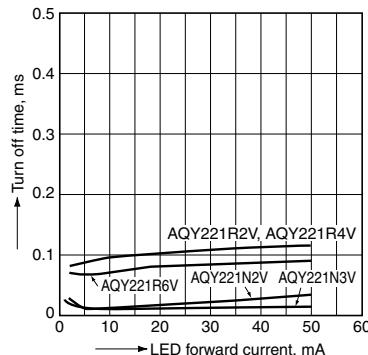
12. Turn off time vs. LED forward current characteristics

Measured portion: between terminals 3 and 4

Load voltage: 10V (DC)

Continuous load current: 100mA (DC) AQY221R6V, 500mA (DC) AQY221R4V, 250mA (DC) AQY221R2V, 80mA (DC) AQY221N2V, AQY221N3V

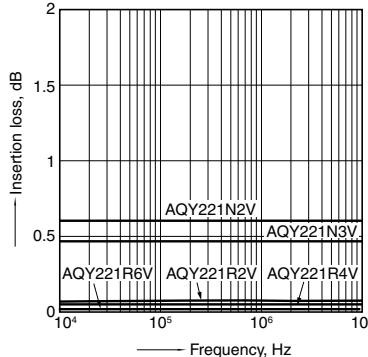
Ambient temperature: 25°C 77°F



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

Measured portion: between terminals 3 and 4

Ambient temperature: 25°C 77°F



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[AQY221R2V1Y](#) [AQY221R4V1Y](#) [AQY221R4V1W](#)