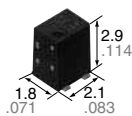
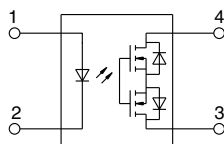


<b>4.6 mm<sup>2</sup> mounting area</b> <b>C×R10: 30 V/40 V load voltage</b> <b>C×R5: 25 V load voltage</b>	<b>PhotoMOS<sup>®</sup></b> <b>RFVSSOP 1 Form A C×R10/C×R5</b> <b>(AQY22○○○T)</b>
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mm inch

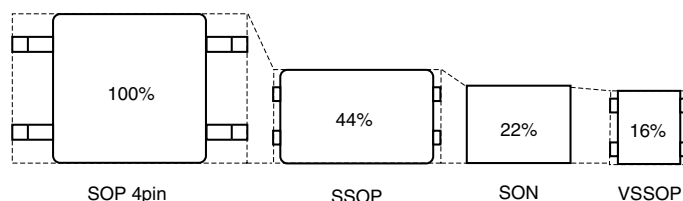


**RoHS compliant**

### FEATURES

**1. VSSOP type with further reduction in mounting area**  
 4.6 mm<sup>2</sup> mounting area achieved. Approx. 29% less than previous product (SON type).

Contributes to the miniaturization of instruments and higher density mounting.



**2. Low on resistance and low output capacitance available**

• **C×R10**

<R type>

Output capacitance: Typ. 37.5 pF, On resistance: Typ. 0.18Ω

Output capacitance: Typ. 14 pF, On resistance: Typ. 0.8Ω

<C type>

Output capacitance: Typ. 1.1 pF, On resistance: Typ. 9.5Ω

• **C×R5**

Output capacitance: Typ. 1.1 pF, On resistance: Typ. 5.5Ω

### TYPICAL APPLICATIONS

**1. Measuring and testing equipment**

IC tester, Probe card, Board tester and other testing equipment

**2. Telecommunication equipment**

\*Does not support automotive applications.

### TYPES

Type			Output rating*1		Part No. (Tape and reel packing style)*2		Packing quantity in the 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	C×R10	Low on resistance (R type)	30 V	800 mA	AQY221R6TY	AQY221R6TW	1,000 pcs.
			40 V	250 mA	AQY221R2TY	AQY221R2TW	
	Low output capacitance (C type)		40 V	120 mA	AQY221N2TY	AQY221N2TW	
	C×R5		25 V	150 mA	AQY221N3TY	AQY221N3TW	

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

\*2 Only tape and reel package is available.

For space reasons, only "1R6", "1R2", "1N2" or "1N3" is marked on the product as the part number.

## RATING

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

Item	Symbol	C×R10 R type		C×R10 C type	C×R5 type	Remarks	
		AQY221R6T	AQY221R2T	AQY221N2T	AQY221N3T		
Input side	LED forward current	I <sub>F</sub>				50 mA	
	LED reverse voltage	V <sub>R</sub>				5 V	
	Peak forward current	I <sub>FP</sub>				1 A	f = 100 Hz, Duty factor = 0.1%
	Power dissipation	P <sub>in</sub>				75 mW	
Output side	Load voltage (peak AC)	V <sub>L</sub>	30 V	40 V	40 V	25 V	
	Continuous load current	I <sub>L</sub>	0.8 A	0.25 A	0.12 A	0.15 A	Peak AC, DC
	Peak load current	I <sub>peak</sub>	1.5 A	0.75 A	—	—	100 ms (1shot), V <sub>L</sub> = DC
	Power dissipation	P <sub>out</sub>	250 mW				
Total power dissipation	P <sub>T</sub>	300 mW					
I/O isolation voltage	V <sub>iso</sub>	200 Vrms					
Ambient temperature	Operating	T <sub>opr</sub>	-40 to +85°C -40 to +185°F			(Non-icing at low temperatures)	
	Storage	T <sub>stg</sub>	-40 to +100°C -40 to +212°F				

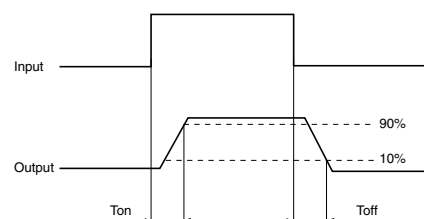
### 2. Electrical characteristics (Ambient temperature: 25°C 77°F)

Item	Symbol	C×R10 R type		C×R10 C type	C×R5 type	Condition		
		AQY221R6T	AQY221R2T	AQY221N2T	AQY221N3T			
Input	LED operate current	Typical	0.5 mA		0.7 mA		AQY221R6T: I <sub>L</sub> = 100 mA AQY221R2T: I <sub>L</sub> = 250 mA AQY221N2T: I <sub>L</sub> = 80 mA AQY221N3T: I <sub>L</sub> = 80 mA	
		Maximum	3.0 mA					
	LED turn off current	Minimum	0.1 mA		0.2 mA			
		Typical	0.4 mA		0.6 mA			
LED dropout voltage	Typical	1.14 V (1.35 V at I <sub>F</sub> = 50 mA)				I <sub>F</sub> = 5 mA		
	Maximum	1.5 V						
Output	On resistance	Typical	0.18 Ω	0.8 Ω	9.5 Ω	5.5 Ω	AQY221R6T: I <sub>F</sub> = 5 mA, I <sub>L</sub> = 800 mA AQY221R2T: I <sub>F</sub> = 5 mA, I <sub>L</sub> = 250 mA AQY221N2T: I <sub>F</sub> = 5 mA, I <sub>L</sub> = 80 mA AQY221N3T: I <sub>F</sub> = 5 mA, I <sub>L</sub> = 80 mA Within 1 s	
		Maximum	0.35 Ω	1.25 Ω	12.5 Ω	7.5 Ω		
	Output capacitance	Typical	37.5 pF	14 pF	1.1 pF			I <sub>F</sub> = 0 mA, f = 1 MHz, V <sub>B</sub> = 0 V
		Maximum	100 pF	18 pF	1.5 pF			
Off state leakage current	Typical	—	0.02 nA	0.01 nA		I <sub>F</sub> = 0 mA, V <sub>L</sub> = Max.		
	Maximum	*10 nA						
Transfer characteristics	Turn on time**	Typical	0.1 ms		0.01 ms		AQY221R6T: I <sub>F</sub> = 5 mA, V <sub>L</sub> = 10 V, R <sub>L</sub> = 100 Ω AQY221R2T: I <sub>F</sub> = 5 mA, V <sub>L</sub> = 10 V, R <sub>L</sub> = 40 Ω AQY221N2T: I <sub>F</sub> = 5 mA, V <sub>L</sub> = 10 V, R <sub>L</sub> = 125 Ω AQY221N3T: I <sub>F</sub> = 5 mA, V <sub>L</sub> = 10 V, R <sub>L</sub> = 125 Ω	
		Maximum	0.5 ms		0.2 ms			
	Turn off time**	Typical	0.06 ms		0.03 ms			
		Maximum	0.2 ms					
I/O capacitance	Typical	0.4 pF				f = 1 MHz, V <sub>B</sub> = 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.

\*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 <sub>F</sub>	5	30	mA
AQY221R6T	Load voltage (Peak AC)	—	15	V
	Continuous load current	—	0.8	A
AQY221R2T	Load voltage (Peak AC)	—	15	V
	Continuous load current	—	0.25	A
AQY221N2T	Load voltage (Peak AC)	—	15	V
	Continuous load current	—	0.12	A
AQY221N3T	Load voltage (Peak AC)	—	15	V
	Continuous load current	—	0.15	A

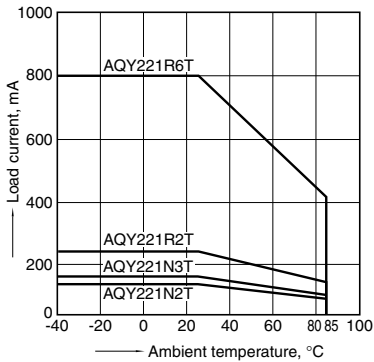
■ These products are not designed for automotive use.

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

## REFERENCE DATA

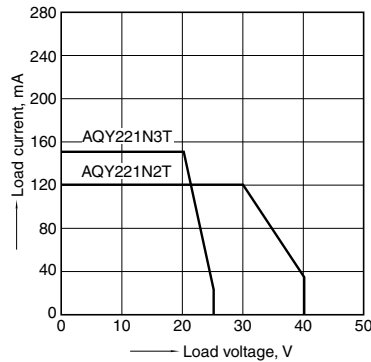
### 1. Load current vs. ambient temperature characteristics

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



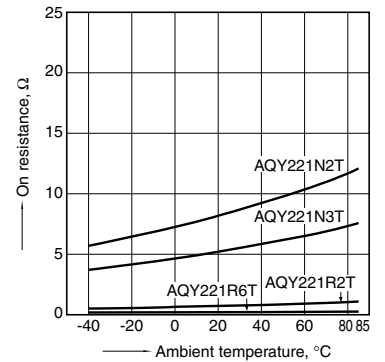
### 2. Load current vs. Load voltage characteristics

Ambient temperature: 25°C 77°F



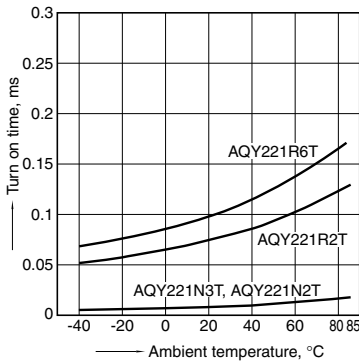
### 3. On resistance vs. ambient temperature characteristics

Measured portion: between terminals 3 and 4  
LED current: 5 mA; Load voltage: 10V (DC)  
Continuous load current: 800mA (DC) AQY221R6T, 250mA (DC) AQY221R2T, 80mA (DC) AQY221N2T, AQY221N3T



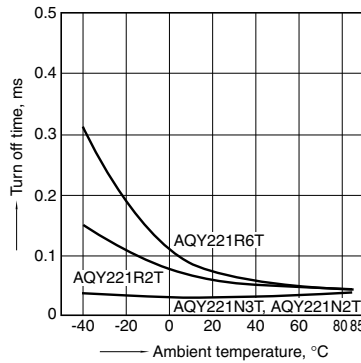
### 4. Turn on time vs. ambient temperature characteristics

Measured portion: between terminals 3 and 4  
LED current: 5 mA; Load voltage: 10V (DC)  
Continuous load current: 100mA (DC) AQY221R6T, 250mA (DC) AQY221R2T, 80mA (DC) AQY221N2T, AQY221N3T



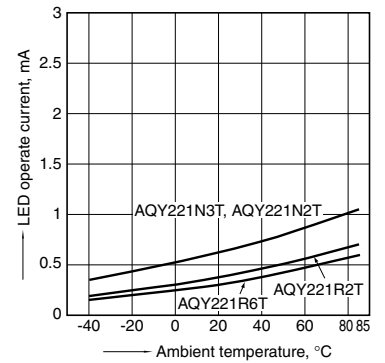
### 5. Turn off time vs. ambient temperature characteristics

Measured portion: between terminals 3 and 4  
LED current: 5 mA; Load voltage: 10V (DC)  
Continuous load current: 100mA (DC) AQY221R6T, 250mA (DC) AQY221R2T, 80mA (DC) AQY221N2T, AQY221N3T



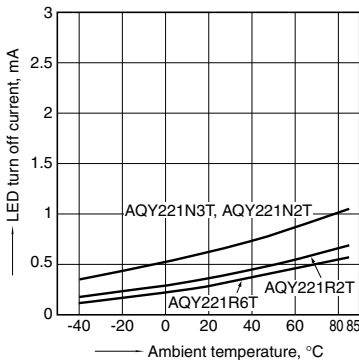
### 6. LED operate current vs. ambient temperature characteristics

Measured portion: between terminals 3 and 4  
Load voltage: 10V (DC)  
Continuous load current: 100mA (DC) AQY221R6T, 250mA (DC) AQY221R2T, 80mA (DC) AQY221N2T, AQY221N3T



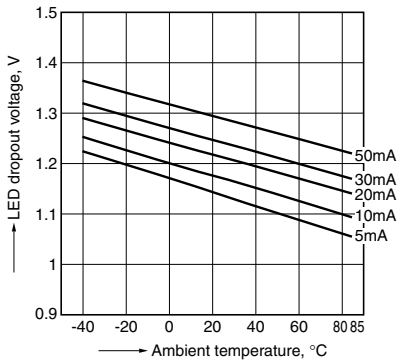
### 7. LED turn off current vs. ambient temperature characteristics

Measured portion: between terminals 3 and 4  
Load voltage: 10V (DC)  
Continuous load current: 100mA (DC) AQY221R6T, 250mA (DC) AQY221R2T, 80mA (DC) AQY221N2T, AQY221N3T



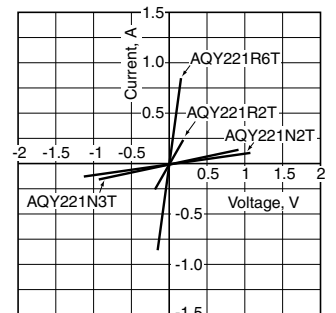
### 8. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



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

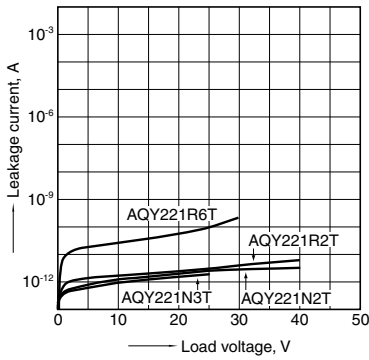
Measured portion: between terminals 3 and 4;  
Ambient temperature: 25°C 77°F



# RF VSSOP 1 Form A C×R10/C×R5 (AQY22○○○T)

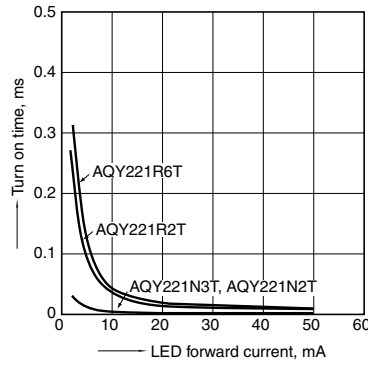
## 10. Off state leakage current vs. load voltage characteristics

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



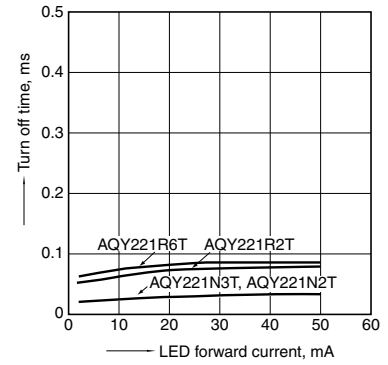
## 11. Turn on time vs. LED forward current characteristics

Measured portion: between terminals 3 and 4  
Load voltage: 10V (DC)  
Continuous load current: 100mA (DC) AQY221R6T,  
250mA (DC) AQY221R2T, 80mA (DC) AQY221N2T,  
AQY221N3T  
Ambient temperature: 25°C 77°F



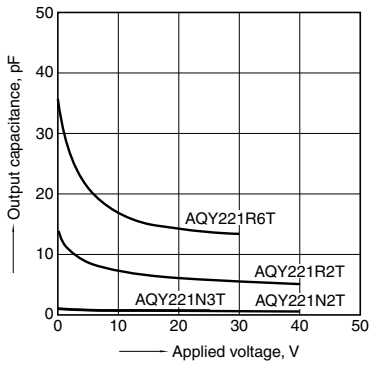
## 12. Turn off time vs. LED forward current characteristics

Measured portion: between terminals 3 and 4  
Load voltage: 10V (DC)  
Continuous load current: 100mA (DC) AQY221R6T,  
250mA (DC) AQY221R2T, 80mA (DC) AQY221N2T,  
AQY221N3T  
Ambient temperature: 25°C 77°F



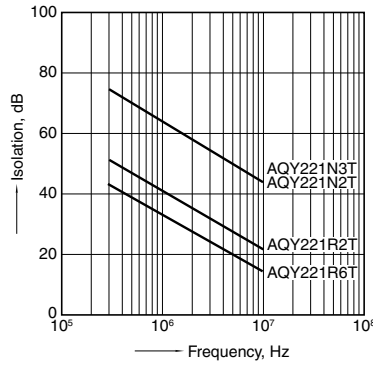
## 13. Output capacitance vs. applied voltage characteristics

Measured portion: between terminals 3 and 4;  
Frequency: 1 MHz (30mVrms);  
Ambient temperature: 25°C 77°F



## 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

