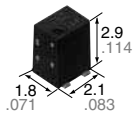
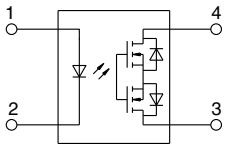
4.6 mm² mounting area
C×R10: 30 V/40 V load voltage
C×R5: 25 V load voltage

PhotoMOS®
RF VSSOP 1 Form A CxR10/CxR5
(AQY22○○○T)



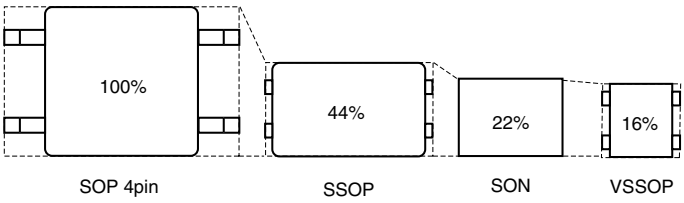
mm inch



RoHS compliant

FEATURES

1. VSSOP type with further reduction in mounting area
4.6 mm² 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_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 side	Load voltage (peak AC)	V_L	30 V	40 V	40 V	25 V	
	Continuous load current	I_L	0.8 A	0.25 A	0.12 A	0.15 A	Peak AC, DC
	Peak load current	I_{peak}	1.5 A	0.75 A	–	–	100 ms (1shot), V_L = DC
	Power dissipation	P_{out}	250 mW				
Total power dissipation		P_T	300 mW				
I/O isolation voltage		V_{iso}	200 Vrms				
Ambient temperature	Operating	T_{opr}	–40 to +85°C –40 to +185°F				(Non-icing at low temperatures)
	Storage	T_{stg}	–40 to +100°C –40 to +212°F				

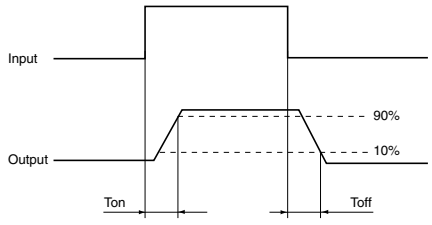
2. Electrical characteristics (Ambient temperature: 25°C 77°F)

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

*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.

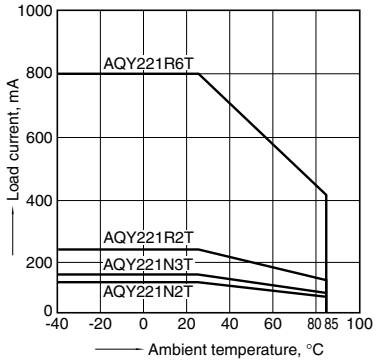
Item		Symbol	Min.	Max.	Unit
LED current		I_F	5	30	mA
AQY221R6T	Load voltage (Peak AC)	V_L	—	15	V
	Continuous load current	I_L	—	0.8	A
AQY221R2T	Load voltage (Peak AC)	V_L	—	15	V
	Continuous load current	I_L	—	0.25	A
AQY221N2T	Load voltage (Peak AC)	V_L	—	15	V
	Continuous load current	I_L	—	0.12	A
AQY221N3T	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

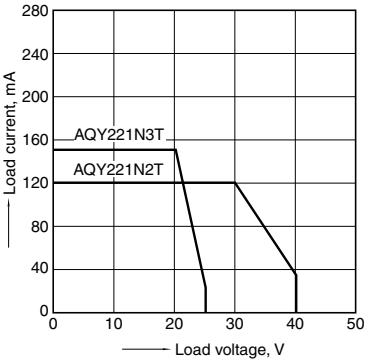
1. Load current vs. ambient temperature characteristics

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



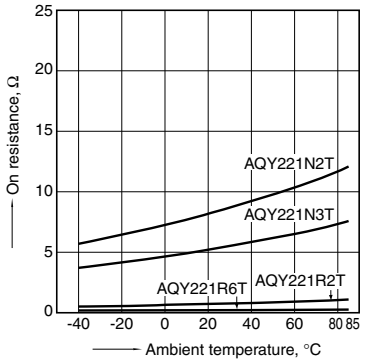
2. Load current vs. Load voltage characteristics

Ambient temperature: 25°C 77°F



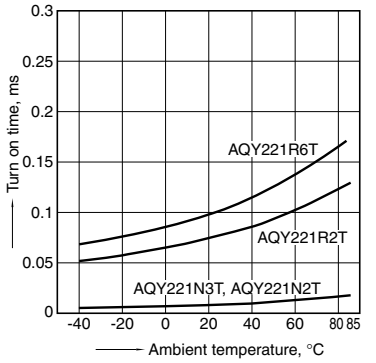
3. On resistance vs. ambient temperature characteristics

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



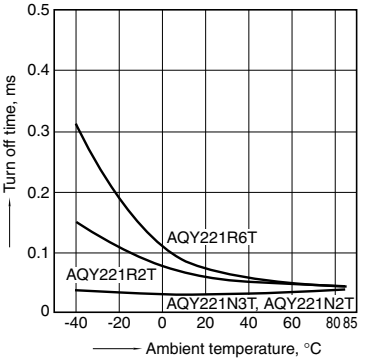
4. Turn on time vs. ambient temperature characteristics

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



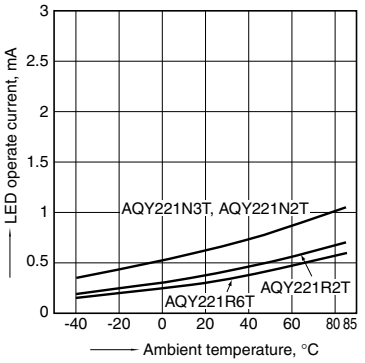
5. Turn off time vs. ambient temperature characteristics

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



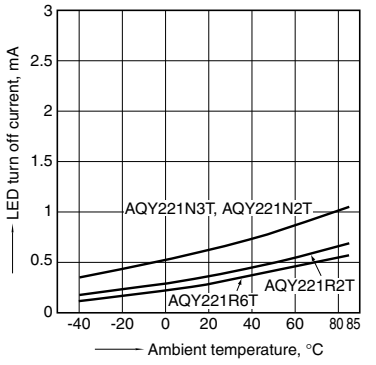
6. LED operate current vs. ambient temperature characteristics

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



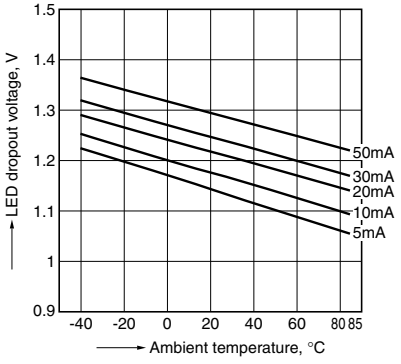
7. LED turn off current vs. ambient temperature characteristics

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



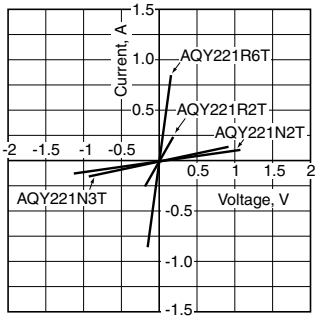
8. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



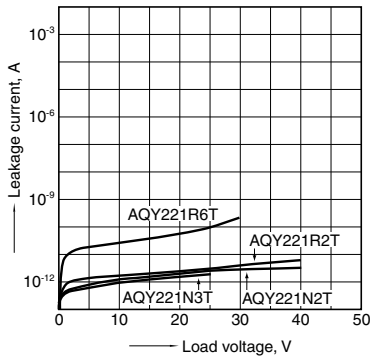
9. Current vs. voltage characteristics of output at MOS portion

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



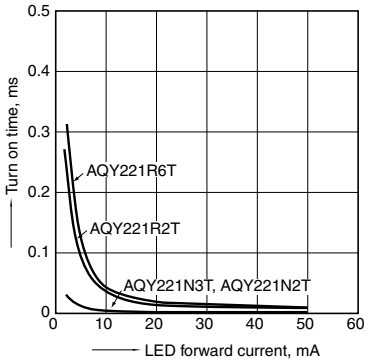
10. Off state leakage current vs. load voltage characteristics

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



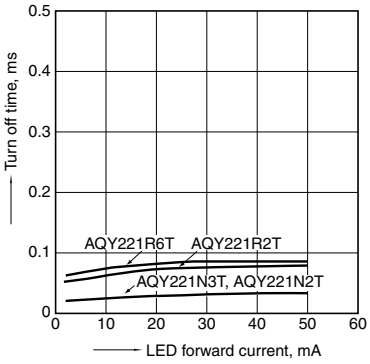
11. Turn on time vs. LED forward current characteristics

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



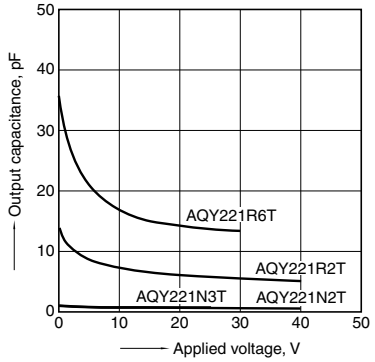
12. Turn off time vs. LED forward current characteristics

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



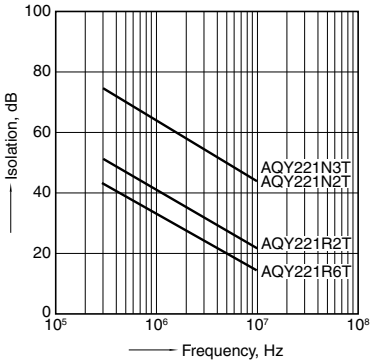
13. Output capacitance vs. applied voltage characteristics

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



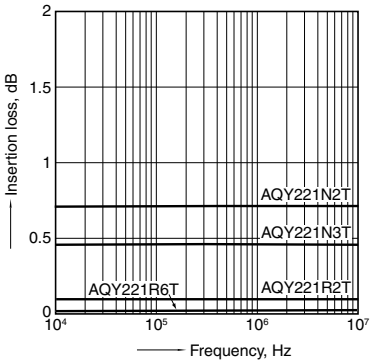
14. Isolation vs. frequency characteristics (50Ω impedance)

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



Please contact .....

Panasonic Corporation
Electromechanical Control Business Division
■ 1006, Oaza Kadoma, Kadoma-shi, Osaka 571-8506, Japan
industrial.panasonic.com/ac/e/

Panasonic®

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Panasonic:

AQY221R2TW AQY221R2TY AQY221N2TY AQY221N2TW AQY221N3TY AQY221N3TW AQY221R6TW AQY221R6T AQY221R6TY AQY221R2T AQY221N2T AQY221N3T