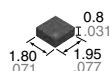


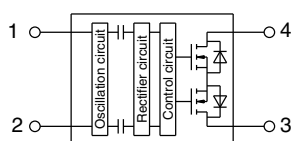
**Super miniature  
TSON package,  
Capacitor Coupled  
isolation type**

**PhotoMOS®  
CC TSON C×R  
(AQY2C○○○P)**

**New**



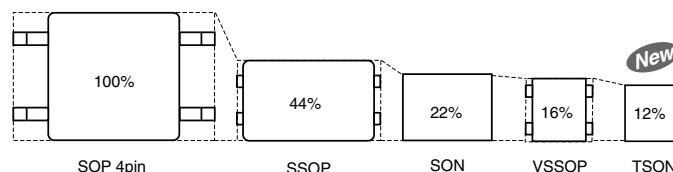
mm inch



**RoHS compliant**

## FEATURES

**1. Super miniature TSON package contributes to space savings and high density mounting.**  
**3.5 mm<sup>2</sup> mounting area achieved. Approx. 46 % less than previous product (SON type).**



- 2. Low current consumption (input current: Max. 0.2 mA)**
- 3. Guaranteed performance at high temperature (Max. 105°C 221°F)**
- 4. Voltage driving type (3 V to 5 V)**
- 5. Input current of CC type is less than half of previous products, contributing energy saving of device and increases drivability**

Comparison with previous products

|               |         | CC type<br>(AQY2C1R2P V <sub>IN</sub> = 5 V) | HS type<br>(AQY232S) | GU type<br>(AQY212S) |
|---------------|---------|----------------------------------------------|----------------------|----------------------|
| Input current | Typical | 0.09 mA                                      | 0.35 mA              | 0.9 mA               |
|               | Maximum | 0.2 mA                                       | 0.5 mA               | 3 mA                 |

## TYPICAL APPLICATIONS

- 1. Measuring equipment: IC tester, probe cards, board tester and other testing equipment**
- 2. Telecommunication equipment**
- 3. Security, voltage operating equipment application for requiring low electricity consumption.**
  - Security equipment: Security camera, intruder detection
  - Disaster-preventing equipment: Fire alarm, smoke, heat and fire detectors
  - Industrial equipment: Electric measuring equipment, Industrial measuring equipment
  - Electric meter, Gas meter and other meters.

\*Does not support automotive application.

## 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 2-pin side         | Picked from the 3 and 4-pin side |                                       |
| AC/DC dual use | 30 V            | 0.75 A       | AQY2C1R6PX                               | AQY2C1R6PZ                       | 3,500 pcs.                            |
|                | 40 V            | 0.3 A        | AQY2C1R2PX                               | AQY2C1R2PZ                       |                                       |

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

\*2. Only tape and reel package is available.

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

## RATING

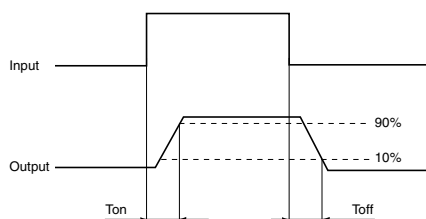
## 1. Absolute maximum ratings (Ambient temperature: 25°C 77°F)

| Item                    |                         | Symbol     | AQY2C1R6P                   | AQY2C1R2P | Remarks                         |
|-------------------------|-------------------------|------------|-----------------------------|-----------|---------------------------------|
| Input side              | Input voltage           | $V_{IN}$   | 5.5 V                       |           |                                 |
|                         | Input reverse voltage   | $V_{RIN}$  | 0.2 V                       |           |                                 |
|                         | Power dissipation       | $P_{in}$   | 1.2 mW                      |           |                                 |
| Output side             | Load voltage (peak AC)  | $V_L$      | 30 V                        | 40 V      |                                 |
|                         | Continuous load current | $I_L$      | 0.75 A                      | 0.3 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 |                         | $P_T$      | 250 mW                      |           |                                 |
| I/O isolation voltage   |                         | $V_{iso}$  | 200 Vrms                    |           |                                 |
| Ambient temperature     | Operating               | $T_{opr}$  | -40 to +105°C -40 to +221°F |           | (Non-icing at low temperatures) |
|                         | Storage                 | $T_{stg}$  | -40 to +125°C -40 to +257°F |           |                                 |

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

| Item                     |                           |      | Symbol     | AQY2C1R6P     | AQY2C1R2P    | Condition                                                                                              |
|--------------------------|---------------------------|------|------------|---------------|--------------|--------------------------------------------------------------------------------------------------------|
| Input                    | Operate voltage           | Typ. | $V_{Fon}$  | 1.7 V         | 1.8 V        | $\Delta V_{IN}/\Delta t \geq 100$ mV/ms<br>AQY2C1R6P: $I_L = 100$ mA<br>AQY2C1R2P: $I_L = \text{Max.}$ |
|                          |                           | Max. |            | 2.5 V         |              |                                                                                                        |
|                          | Turn off voltage          | Min. | $V_{Foff}$ | 0.5 V         |              | $\Delta V_{IN}/\Delta t \geq 100$ mV/ms<br>AQY2C1R6P: $I_L = 100$ mA<br>AQY2C1R2P: $I_L = \text{Max.}$ |
|                          |                           | Typ. |            | 1.5 V         | 1.4 V        |                                                                                                        |
|                          | Input current             | Typ. | $I_{IN}$   | 0.04 mA       |              | $V_{IN} = 3.3$ V                                                                                       |
|                          |                           | Max. |            | 0.1 mA        |              |                                                                                                        |
|                          |                           | Typ. |            | 0.09 mA       |              | $V_{IN} = 5$ V                                                                                         |
|                          |                           | Max. |            | 0.2 mA        |              |                                                                                                        |
| Output                   | On resistance             | Typ. | $R_{on}$   | 0.22 $\Omega$ | 0.9 $\Omega$ | $V_{IN} = 3.3$ V, $I_L = \text{Max.}$                                                                  |
|                          |                           | Max. |            | —             | —            |                                                                                                        |
|                          |                           | Typ. |            | 0.2 $\Omega$  | 0.8 $\Omega$ | $V_{IN} = 5$ V, $I_L = \text{Max.}$                                                                    |
|                          |                           | Max. |            | 0.4 $\Omega$  | 1.5 $\Omega$ |                                                                                                        |
|                          | Output capacitance        | Typ. | $C_{out}$  | 40 pF         | 14.5 pF      | $V_{IN} = 0$ V, $f = 1$ MHz, $V_B = 0$ V                                                               |
|                          |                           | Max. |            | 100 pF        | 18 pF        |                                                                                                        |
| Transfer characteristics | Off state leakage current | Max. | $I_{Leak}$ | 10 nA         |              | $V_{IN} = 0$ V, $V_L = \text{Max.}$                                                                    |
|                          | Turn on time*             | Typ. | $T_{on}$   | 0.25 ms       | 0.15 ms      | $V_{IN} = 3.3$ V, $V_L = 10$ V, $R_L = 100$ $\Omega$                                                   |
|                          |                           | Max. |            | 1 ms          |              |                                                                                                        |
|                          |                           | Typ. |            | 0.12 ms       | 0.06 ms      | $V_{IN} = 5$ V, $V_L = 10$ V, $R_L = 100$ $\Omega$                                                     |
|                          |                           | Max. |            | 0.5 ms        |              |                                                                                                        |
|                          | Turn off time*            | Typ. | $T_{off}$  | 0.06 ms       | 0.04 ms      | $V_{IN} = 3.3$ V, $V_L = 10$ V, $R_L = 100$ $\Omega$                                                   |
|                          |                           | Max. |            | 0.2 ms        |              |                                                                                                        |
|                          |                           | Typ. |            | 0.1 ms        | 0.06 ms      | $V_{IN} = 5$ V, $V_L = 10$ V, $R_L = 100$ $\Omega$                                                     |
|                          |                           | Max. |            | 0.5 ms        |              |                                                                                                        |
|                          | I/O capacitance           | Typ. | $C_{iso}$  | 1.2 pF        |              | $f = 1$ MHz, $V_B = 0$ V                                                                               |
|                          |                           | Max. |            | 3 pF          |              |                                                                                                        |

\*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.

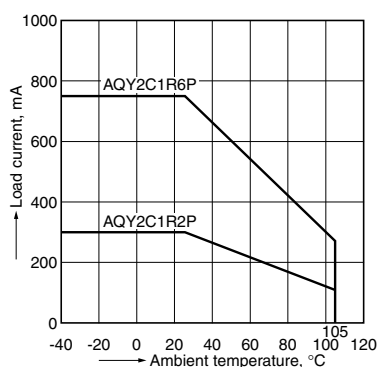
| Item          | Symbol                  | Min.  | Max. | Unit |
|---------------|-------------------------|-------|------|------|
| Input voltage | $V_{IN}$                | 3     | 5    | V    |
| AQY2C1R6P     | Load voltage (Peak AC)  | $V_L$ | 15   | V    |
|               | Continuous load current | $I_L$ | 0.75 | A    |
| AQY2C1R2P     | Load voltage (Peak AC)  | $V_L$ | 15   | V    |
|               | Continuous load current | $I_L$ | 0.3  | A    |

**■ These products are not designed for automotive use.**

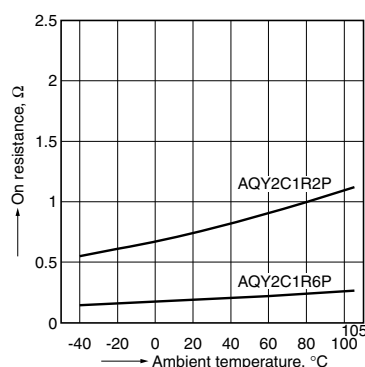
If you are considering to use these products for automotive applications, please contact your local Panasonic Corporation technical representative.

**REFERENCE DATA****1. Load current vs. ambient temperature characteristics**

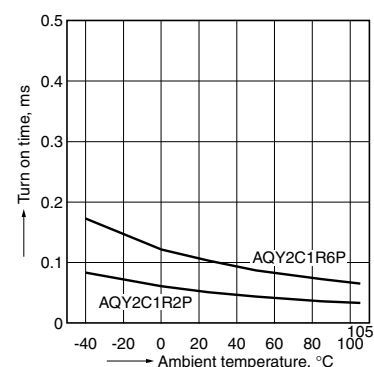
Allowable ambient temperature: -40 to +105°C  
-40 to +221°F

**2. On resistance vs. ambient temperature characteristics**

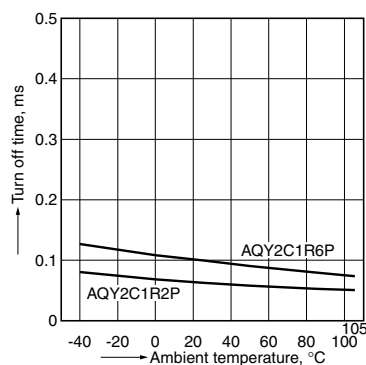
Measured portion: between terminals 3 and 4,  
Input voltage: 5V  
Load voltage: 10V (DC)  
Continuous load current: 750mA (DC) AQY2C1R6P  
300mA (DC) AQY2C1R2P

**3. Turn on time vs. ambient temperature characteristics**

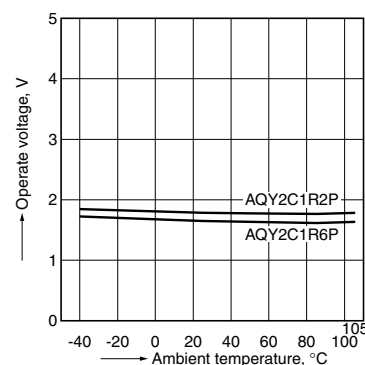
Measured portion: between terminals 3 and 4,  
Input voltage: 5V  
Load voltage: 10V (DC)  
Continuous load current: 100mA

**4. Turn off time vs. ambient temperature characteristics**

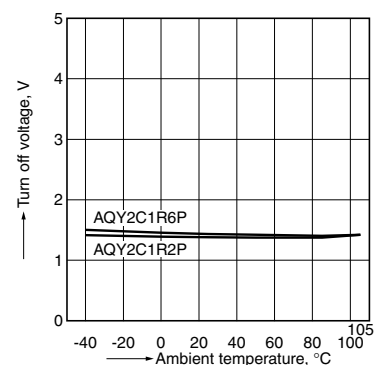
Measured portion: between terminals 3 and 4,  
Input voltage: 5V  
Load voltage: 10V (DC)  
Continuous load current: 100mA

**5. Operate voltage vs. ambient temperature characteristics**

Measured portion: between terminals 3 and 4  
Load voltage: 10V (DC)  
Continuous load current: 100mA (DC) AQY2C1R6P  
300mA (DC) AQY2C1R2P

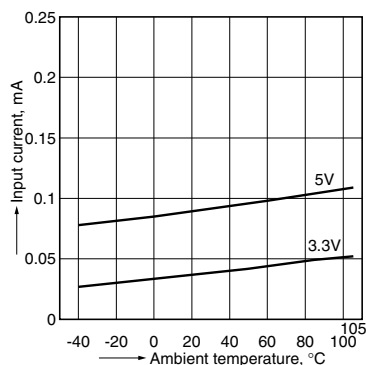
**6. Turn off voltage vs. ambient temperature characteristics**

Measured portion: between terminals 3 and 4  
Load voltage: 10V (DC)  
Continuous load current: 100mA (DC) AQY2C1R6P  
300mA (DC) AQY2C1R2P



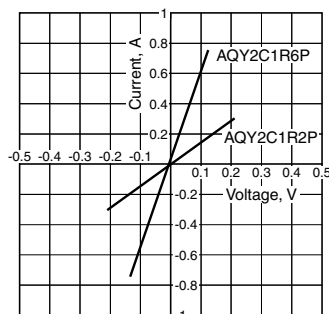
## 7. Input current vs. ambient temperature characteristics

Sample: All types  
Input voltage: 3.3V, 5V



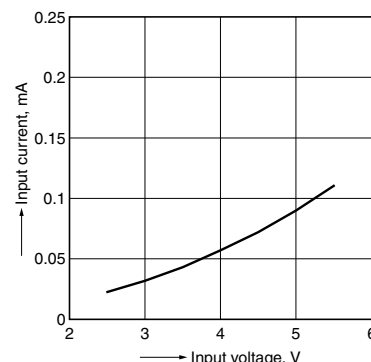
## 8. Current vs. voltage characteristics of output at MOS portion

Measured portion: between terminals 3 and 4  
Input voltage: 5V  
Ambient temperature: 25°C 77°F



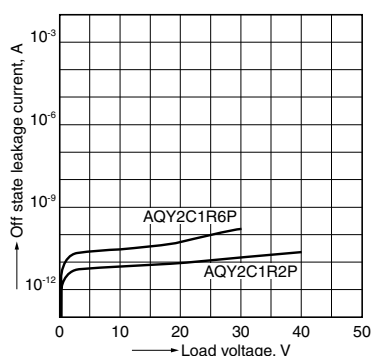
## 9. Input current vs. input voltage characteristics

Sample: All types  
Ambient temperature: 25°C 77°F  
(Recommended input voltage: 3 to 5 V)



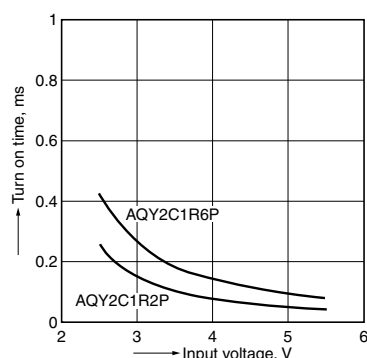
## 10. Off state leakage current vs. load voltage characteristics

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



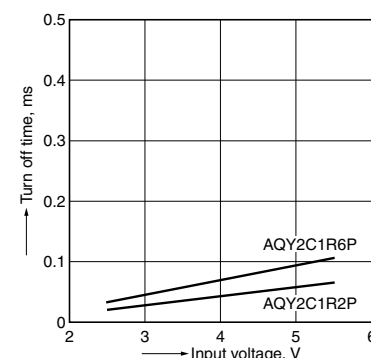
## 11. Turn on time vs. input voltage characteristics

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



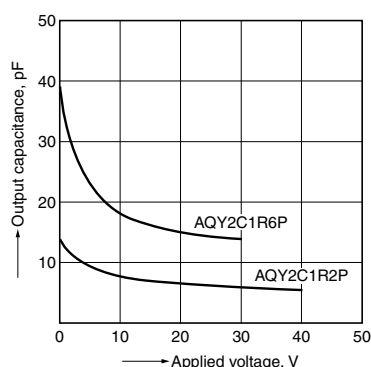
## 12. Turn off time vs. input voltage characteristics

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



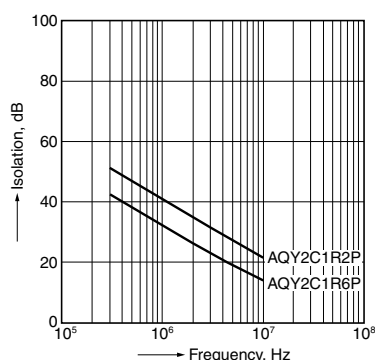
## 13. Output capacitance vs. applied voltage characteristics

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



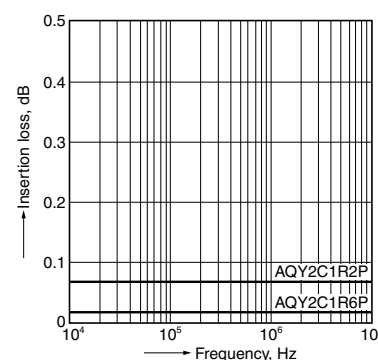
## 14. Isolation vs. frequency characteristic (50Ω impedance)

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



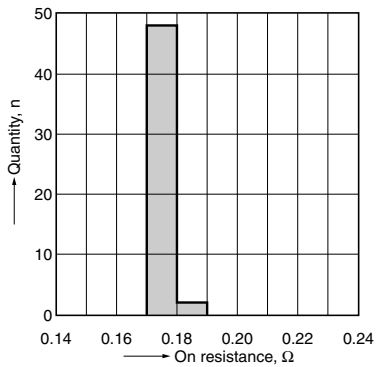
## 15. Insertion loss vs. frequency characteristic (50Ω impedance)

Measured portion: between terminals 3 and 4,  
Input voltage: 5V  
Ambient temperature: 25°C 77°F



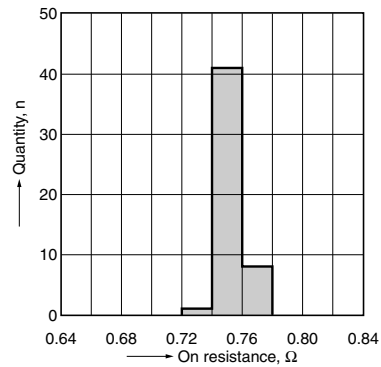
## 16.-(1) On resistance distribution

Sample: AQY2C1R6P,  
Measured portion: between terminals 3 and 4  
Input voltage: 5V,  
Continuous load current: 750mA (DC)  
n: 50 pcs., Ambient temperature: 25°C 77°F



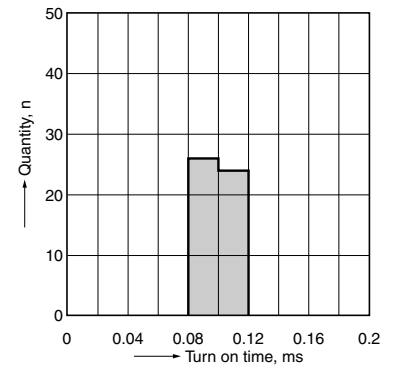
## 16.-(2) On resistance distribution

Sample: AQY2C1R2P,  
Measured portion: between terminals 3 and 4  
Input voltage: 5V,  
Continuous load current: 300mA (DC)  
n: 50 pcs., Ambient temperature: 25°C 77°F



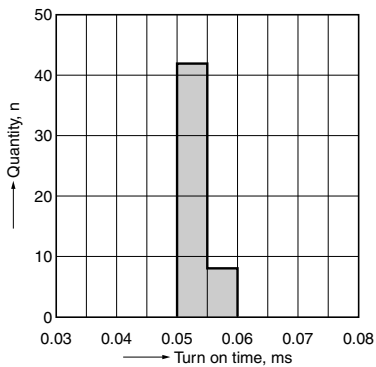
## 17.-(1) Turn on time distribution

Sample: AQY2C1R6P, Input voltage: 5V  
Load voltage: 10V (DC),  
Continuous load current: 100mA (DC)  
n: 50 pcs., Ambient temperature: 25°C 77°F



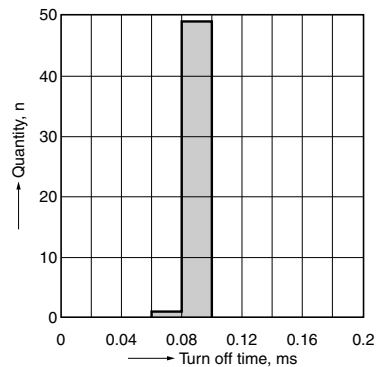
## 17.-(2) Turn on time distribution

Sample: AQY2C1R2P, Input voltage: 5V  
Load voltage: 10V (DC),  
Continuous load current: 100mA (DC)  
n: 50 pcs., Ambient temperature: 25°C 77°F



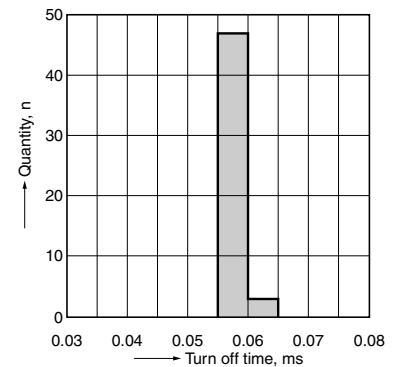
## 18.-(1) Turn off time distribution

Sample: AQY2C1R6P, Input voltage: 5V  
Load voltage: 10V (DC),  
Continuous load current: 100mA (DC)  
n: 50 pcs., Ambient temperature: 25°C 77°F



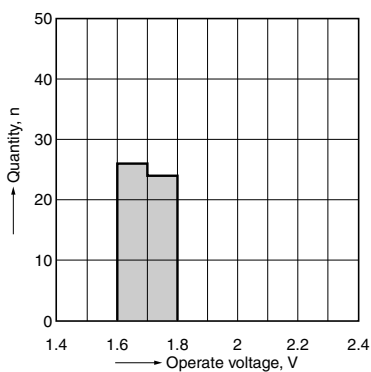
## 18.-(2) Turn off time distribution

Sample: AQY2C1R2P, Input voltage: 5V  
Load voltage: 10V (DC),  
Continuous load current: 100mA (DC)  
n: 50 pcs., Ambient temperature: 25°C 77°F



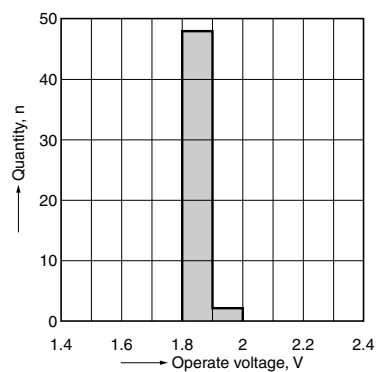
## 19.-(1) Operate voltage distribution

Sample: AQY2C1R6P, Load voltage: 10V (DC)  
Continuous load current: 100mA (DC)  
n: 50 pcs., Ambient temperature: 25°C 77°F



## 19.-(2) Operate voltage distribution

Sample: AQY2C1R2P, Load voltage: 10V (DC)  
Continuous load current: 300mA (DC)  
n: 50 pcs., Ambient temperature: 25°C 77°F



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