

**PCZ** Chip Type, Higher Capacitance  
High Temperature Range



- High reliability.
- Low ESR, High ripple current.
- Long life of 2000 hours at 150°C.
- SMD type : Lead free reflow soldering condition at 260°C peak complete correspondence.
- Compliant to the RoHS directive (2011/65/EU, (EU)2015/863).
- ESR after Endurance at -40°C.
- AEC-Q200 compliant. Please contact us for details.

**PCZ** ← High Temperature **PCH**



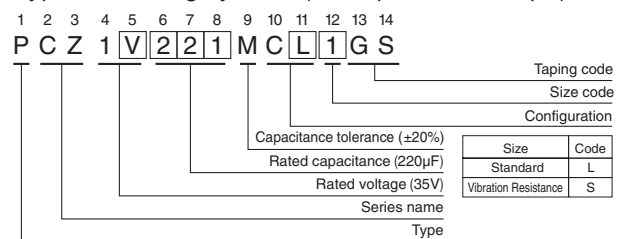
## Specifications

| Item                                              | Performance Characteristics                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                       |                                                    |
|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|----------------------------------------------------|
| Category Temperature Range                        | -55 to +150°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                       |                                                    |
| Rated Voltage Range                               | 16 to 63V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                       |                                                    |
| Rated Capacitance Range                           | 12 to 1000μF                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                       |                                                    |
| Capacitance Tolerance                             | ±20% at 120Hz, 20°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                       |                                                    |
| Tangent of loss angle (tan δ)                     | Less than or equal to the specified value at 120Hz, 20°C                                                                                                                                                                                                                                                                                                                                                                                                                                  |                       |                                                    |
| ESR (※ 1)                                         | Less than or equal to the specified value at 100kHz, 20°C                                                                                                                                                                                                                                                                                                                                                                                                                                 |                       |                                                    |
| Leakage Current (※ 2)                             | After 2 minutes' application of rated voltage, leakage current is not more than 0.03CV or 3(μA), whichever is greater. ※                                                                                                                                                                                                                                                                                                                                                                  |                       |                                                    |
| Temperature Characteristics (Max.Impedance Ratio) | Z(-55°C) / Z(+20°C) ≤ 1.25 (100kHz)                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                       |                                                    |
| Endurance                                         | The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 2000 hours at 150°C.                                                                                                                                                                                                                                                                                                                                      | Capacitance change    | Within ± 20% of initial capacitance value (※3)     |
|                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | tan δ                 | 150% or less of the initial specified value        |
|                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | ESR (※ 1)             | 200% or less of the initial specified value        |
|                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Leakage current (※ 2) | Less than or equal to the initial specified value  |
| ESR after Endurance (※ 1)                         | Less than or equal to the specified value at 100kHz, -40°C                                                                                                                                                                                                                                                                                                                                                                                                                                |                       |                                                    |
| Damp Heat (Steady State)                          | The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 2000 hours at 85°C , 85% RH.                                                                                                                                                                                                                                                                                                                              | Capacitance change    | Within ± 20% of initial capacitance value (※3)     |
|                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | tan δ                 | 150% or less of the initial specified value        |
|                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | ESR (※ 1)             | 200% or less of the initial specified value        |
|                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Leakage current (※ 2) | Less than or equal to the initial specified value  |
| Resistance to Soldering Heat                      | After soldering the capacitor under the soldering conditions prescribed here, the capacitor shall meet the specifications listed at right.<br>Pre-heating shall be done at 150 to 200°C and for 60 to 180 sec.<br>The duration for over +230°C temperature at capacitor surface shall not exceed 60 seconds.<br>In case peak temperature is 260°C or less, reflow soldering shall be two times maximum.<br>Measurement for solder temperature profile shall be made at the capacitor top. | Capacitance change    | Within ± 10% of the initial capacitance value (※3) |
|                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | tan δ                 | 130% or less than the initial specified value      |
|                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | ESR (※ 1)             | 130% or less than the initial specified value      |
|                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Leakage current (※ 2) | Less than or equal to the initial specified value  |
| Marking                                           | Navy blue print on the case top                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                       |                                                    |

- ※ 1 ESR should be measured at both of the terminal ends closest where the terminals protrude through the plastic platform.  
 ※ 2 Conditioning : If any doubt arises, measure the leakage current after the voltage treatment of applying DC rated voltage continuously to the capacitor for 120 minutes at 105°C.  
 ※ 3 Initial value : The value before test of examination of resistance to soldering.

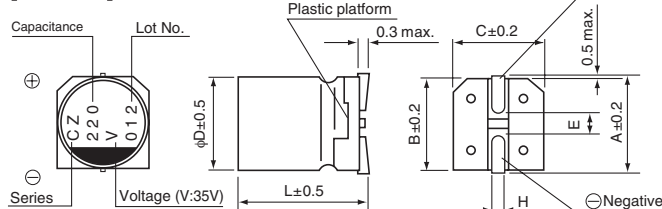
※ I : Leakage Current (μA), C : Rated Capacitance (μF), V : Rated Voltage (V)

## Type numbering system (Example : 35V 220μF)

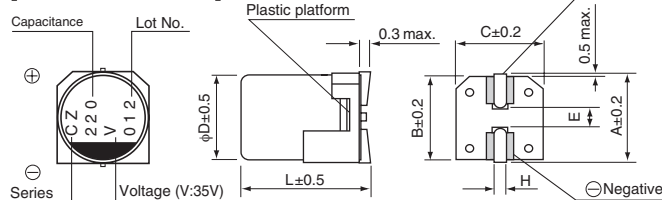


## Dimensions

### [Standard]



### [Vibration Resistance]



■ Aid electrode

● Dimension table in next page.

### Standard

| Size | φ8×7L      | φ8×10L     | φ8×12L     | φ10×8L     | φ10×10L    | φ10×12.7L  |
|------|------------|------------|------------|------------|------------|------------|
| φD   | 8.0        | 8.0        | 8.0        | 10.0       | 10.0       | 10.0       |
| L    | 6.9        | 9.9        | 11.9       | 7.9        | 9.9        | 12.6       |
| A    | 9.0        | 9.0        | 9.0        | 11.0       | 11.0       | 11.0       |
| B    | 8.3        | 8.3        | 8.3        | 10.3       | 10.3       | 10.3       |
| C    | 8.3        | 8.3        | 8.3        | 10.3       | 10.3       | 10.3       |
| E    | 3.2        | 3.2        | 3.2        | 4.6        | 4.6        | 4.6        |
| H    | 0.8 to 1.1 | 0.8 to 1.1 | 0.8 to 1.1 | 0.8 to 1.1 | 0.8 to 1.1 | 0.8 to 1.1 |

### Vibration Resistance (mm)

| Size | φ8×10.5L   | φ10×10.5L  | φ10×13.2L  |
|------|------------|------------|------------|
| φD   | 8.0        | 10.0       | 10.0       |
| L    | 10.0       | 10.0       | 12.7       |
| A    | 9.0        | 11.0       | 11.0       |
| B    | 8.3        | 10.3       | 10.3       |
| C    | 8.3        | 10.3       | 10.3       |
| E    | 3.1        | 4.6        | 4.6        |
| H    | 1.1 to 1.5 | 1.1 to 1.5 | 1.1 to 1.5 |

### Voltage

| V    | 16 | 20 | 25 | 35 | 50 | 63 |
|------|----|----|----|----|----|----|
| Code | C  | D  | E  | V  | H  | J  |

### Frequency coefficient of rated ripple current

| Frequency   | 120Hz | 1kHz | 10kHz | 100kHz or more |
|-------------|-------|------|-------|----------------|
| Coefficient | 0.05  | 0.30 | 0.70  | 1.00           |

※ φ8×10L(φ8×10.5L), φ10×10L(φ10×10.5L), φ10×12.7L(φ10×13.2L) :

The vibration structure-resistant product is also available upon request, please ask for details.

( ) : Size of the vibration structure-resistant product.

**CAT.8100L**

PCZ

## ■ Dimensions

| Rated Voltage<br>(V)<br>(code) | Surge<br>Voltage<br>(V) | Rated<br>Capacitance<br>(μF) | Case Size<br>φD×L (mm) | tan δ | Leakage Current<br>(μA)<br>( at 20°C after<br>2 minutes ) | Initial<br>ESR (mΩ)<br>(20°C/100kHz) | Low temp.<br>ESR after<br>Endurance<br>(mΩ)<br>(-40°C /100kHz) | Rated Ripple<br>(mArms)<br>(150°C /100kHz) | Part Number    |
|--------------------------------|-------------------------|------------------------------|------------------------|-------|-----------------------------------------------------------|--------------------------------------|----------------------------------------------------------------|--------------------------------------------|----------------|
| 16<br>(1C)                     | 20                      | 220                          | 8×7                    | 0.08  | 105                                                       | 30                                   | 60                                                             | 800                                        | PCZ1C221MCL1GS |
|                                |                         | 470                          | ▲8×10                  | 0.08  | 225                                                       | 17                                   | 34                                                             | 1900                                       | PCZ1C471MCL6GS |
|                                |                         | 470                          | 10×8                   | 0.08  | 225                                                       | 32                                   | 64                                                             | 1400                                       | PCZ1C471MCL1GS |
|                                |                         | 560                          | △8×12                  | 0.08  | 268                                                       | 16                                   | 32                                                             | 2000                                       | PCZ1C561MCL2GS |
|                                |                         | 680                          | 10×10                  | 0.08  | 326                                                       | 19                                   | 38                                                             | 1900                                       | PCZ1C681MCL1GS |
|                                |                         | 1000                         | 10×12.7                | 0.08  | 480                                                       | 13                                   | 26                                                             | 2200                                       | PCZ1C102MCL1GS |
| 20<br>(1D)                     | 25                      | 100                          | 8×7                    | 0.08  | 60                                                        | 39                                   | 78                                                             | 600                                        | PCZ1D101MCL1GS |
|                                |                         | 220                          | ▲8×10                  | 0.08  | 132                                                       | 20                                   | 40                                                             | 1800                                       | PCZ1D221MCL6GS |
|                                |                         | 220                          | 10×8                   | 0.08  | 132                                                       | 33                                   | 66                                                             | 1400                                       | PCZ1D221MCL1GS |
|                                |                         | 270                          | △8×12                  | 0.08  | 162                                                       | 18                                   | 36                                                             | 1900                                       | PCZ1D271MCL2GS |
|                                |                         | 330                          | 10×10                  | 0.08  | 198                                                       | 20                                   | 40                                                             | 1800                                       | PCZ1D331MCL1GS |
|                                |                         | 470                          | 10×12.7                | 0.08  | 282                                                       | 15                                   | 30                                                             | 2100                                       | PCZ1D471MCL1GS |
| 25<br>(1E)                     | 31                      | 68                           | 8×7                    | 0.08  | 51                                                        | 41                                   | 82                                                             | 600                                        | PCZ1E680MCL1GS |
|                                |                         | 150                          | ▲8×10                  | 0.08  | 112                                                       | 20                                   | 40                                                             | 1800                                       | PCZ1E151MCL6GS |
|                                |                         | 150                          | 10×8                   | 0.08  | 112                                                       | 33                                   | 66                                                             | 1400                                       | PCZ1E151MCL1GS |
|                                |                         | 180                          | △8×12                  | 0.08  | 135                                                       | 19                                   | 38                                                             | 1900                                       | PCZ1E181MCL2GS |
|                                |                         | 270                          | 10×10                  | 0.08  | 202                                                       | 20                                   | 40                                                             | 1800                                       | PCZ1E271MCL1GS |
|                                |                         | 330                          | 10×12.7                | 0.08  | 247                                                       | 15                                   | 30                                                             | 2100                                       | PCZ1E331MCL1GS |
| 35<br>(1V)                     | 43                      | 47                           | 8×7                    | 0.08  | 49                                                        | 44                                   | 88                                                             | 600                                        | PCZ1V470MCL1GS |
|                                |                         | 100                          | ▲8×10                  | 0.08  | 105                                                       | 22                                   | 44                                                             | 1700                                       | PCZ1V101MCL6GS |
|                                |                         | 100                          | 10×8                   | 0.08  | 105                                                       | 33                                   | 66                                                             | 1400                                       | PCZ1V101MCL1GS |
|                                |                         | 150                          | △8×12                  | 0.08  | 157                                                       | 21                                   | 42                                                             | 1800                                       | PCZ1V151MCL2GS |
|                                |                         | 180                          | 10×10                  | 0.08  | 189                                                       | 20                                   | 40                                                             | 1800                                       | PCZ1V181MCL1GS |
|                                |                         | 220                          | 10×12.7                | 0.08  | 231                                                       | 16                                   | 32                                                             | 2000                                       | PCZ1V221MCL1GS |
| 50<br>(1H)                     | 63                      | 22                           | 8×7                    | 0.08  | 33                                                        | 48                                   | 96                                                             | 600                                        | PCZ1H220MCL1GS |
|                                |                         | 47                           | ▲8×10                  | 0.08  | 70                                                        | 28                                   | 56                                                             | 1500                                       | PCZ1H470MCL6GS |
|                                |                         | 47                           | 10×8                   | 0.08  | 70                                                        | 35                                   | 70                                                             | 1300                                       | PCZ1H470MCL1GS |
|                                |                         | 56                           | △8×12                  | 0.08  | 84                                                        | 27                                   | 54                                                             | 1500                                       | PCZ1H560MCL2GS |
|                                |                         | 68                           | 10×10                  | 0.08  | 102                                                       | 28                                   | 56                                                             | 1500                                       | PCZ1H680MCL1GS |
|                                |                         | 100                          | 10×12.7                | 0.08  | 150                                                       | 24                                   | 48                                                             | 1600                                       | PCZ1H101MCL1GS |
| 63<br>(1J)                     | 79                      | 12                           | 8×7                    | 0.08  | 22                                                        | 52                                   | 104                                                            | 400                                        | PCZ1J120MCL1GS |
|                                |                         | 27                           | ▲8×10                  | 0.08  | 51                                                        | 38                                   | 76                                                             | 1300                                       | PCZ1J270MCL6GS |
|                                |                         | 27                           | 10×8                   | 0.08  | 51                                                        | 37                                   | 74                                                             | 1300                                       | PCZ1J270MCL1GS |
|                                |                         | 39                           | △8×12                  | 0.08  | 73                                                        | 35                                   | 70                                                             | 1300                                       | PCZ1J390MCL2GS |
|                                |                         | 47                           | 10×10                  | 0.08  | 88                                                        | 33                                   | 66                                                             | 1400                                       | PCZ1J470MCL1GS |
|                                |                         | 68                           | 10×12.7                | 0.08  | 128                                                       | 28                                   | 56                                                             | 1500                                       | PCZ1J680MCL1GS |

No marked, [1] will be put at 12th digit of type numbering system.  
 △: In this case, [2] will be put at 12th digit of type numbering system.  
 ▲: In this case, [6] will be put at 12th digit of type numbering system.

- For taping specifications, recommended land size/soldering by reflow and minimum order quantity, please refer to the Guidelines for Aluminum Electrolytic Capacitors.