

**Disk ceramic capacitor**

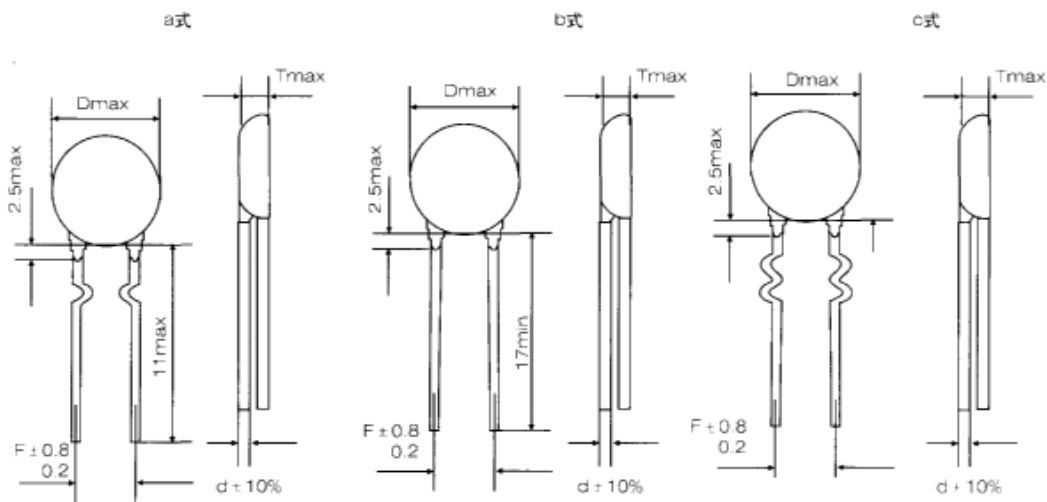
**AN017—disk ceramic**



- \*Low voltage temperature compensated
- \*High voltage temperature compensated
- \*Low voltage high dielectric constant
- \*High voltage high dielectric constant
- \*Semiconductor dielectric insulato
- \*Alternating current—Safety standard recognized—Y1X, Y2X

| Code      | Type   |
|-----------|--|
| 017A-CC1  | Low voltage temperature compensated disk ceramic capacitor   |
| 017B-CC81 | High voltage temperature compensated disk ceramic capacitor  |
| 017C-CT1  | Low voltage high dielectric constant disk ceramic capacitor  |
| 017D-CT81 | High voltage high dielectric constant disk ceramic capacitor |
| 017E-CS1  | Semiconductor dielectric insulator disk ceramic capacitor    |
| 017F-CT7  | Alternating current disk ceramic capacitor                   |

**Dimensions**



NOTE: Lead style and distance are fit of JIS and EIA standard. Other we can produce which customers require.

**CC1 TEMPERATURE COMPENSATE CAPACITOR****FEATURE:**

Low DF, stable capacitance, the linear capacitance change with temperature. Designed from all series T.C suits for oscillation and temperature compensate compensate circuit.

Operating Temperature Range:-30°C - +85°C

**Capacitance Range:**

| DMax<br>(mm)<br>Dimension | (Capacitance Range) PF |              |              |              |          | (U <sub>R</sub> )<br>Operating voltage |
|---------------------------|------------------------|--------------|--------------|--------------|----------|--|
|                           | NP0<br>(OH)            | N330<br>(SH) | N470<br>(TH) | N750<br>(UJ) | SL       |  |
| 40                        | 1-15                   | 5-20         | 4-33         | 5-68         | 1-120    | 50-500V                                |
| 4.5                       | 1-30                   | 22-33        | 20-68        | 10-100       | 30-150   |  |
| 5.0                       | 22-50                  | 36-72        | 56-100       | 70-150       | 150-220  |  |
| 60                        | 47-68                  | 56-82        | 68-120       | 82-180       | 180-250  |  |
| 70                        | 70-82                  | 68-100       | 82-150       | 100-200      | 240-330  |  |
| 8.0                       | 86-100                 | 82-120       | 100-180      | 160-220      | 360-470  |  |
| 90                        | 100-120                | 100-150      | 120-200      | 200-260      | 500-560  |  |
| 10.0                      | 120-150                | 150-200      | 220-270      | 270-330      | 600-680  |  |
| 12.0                      |                        |              |              | 330-560      | 820-1000 |  |

Test Voltage:2.5 U<sub>R</sub>

I.R: Insulation resistance Ri ≥ 10000MΩ.

DF:  $SPF \leq C \leq 30PF$ ,  $tg \delta \leq 1/(400+20C)$

tangent of loss angel

C>30PF,  $tg \leq 0.0015$

C <5 p F, Please consult your requirements to factory.

**CT1 (Low voltage High dielectric constant capacitor~ series ceramic capacitor:**

**FEATURE:**

The greater variation of T.C are available for by-passing, low DF and frequency discriminating circuit.

Operating Temperature Range, please consider EIA code

Capacitance Range:

| DMax(mm)<br>Dimension |                              | (Capacitance Range) PF |            |             |             |              |        |
|-----------------------|------------------------------|------------------------|------------|-------------|-------------|--------------|--------|
|                       |                              | Y5P                    | Y5U        | Y5V         | Z5U         | Z5V          |        |
| 5.0                   | Test                         | 100-200                | 470-1500   | 2200-4700   | 1000-5000   | 1000-5600    |        |
| 6.0                   | Voltage<br>( $U_R$<br>=50V)  | 1500-2200              | 2200-4700  | 5600-10000  | 6800-10000  | 6800-10000   |        |
| 7.0                   |                              | 2700-3300              | 3600-6800  | 8200-15000  |             | 15000-22000  |        |
| 8.0                   |                              | 3600-4700              | 6800-10000 | 20000-22000 | 15000-20000 | 22000-25000  |        |
| 9.0                   |                              | 5100-6800              | 15000      | 25000       | 22000       | 30000-100000 |        |
| 10.0                  |                              | 7500-10000             | 22000      | 33000       | 22000-47000 | 47000-200000 |        |
| 12.0                  |                              |                        |            | 33000       | 47000       | 47000-50000  | 220000 |
| 14.0                  |                              |                        |            | 47000       |             |              |        |
| 6.0                   | Test                         | 100-680                | 470-1000   | 1000-1500   | 1200-2200   | 1500-2200    |        |
| 8.0                   | Voltage<br>( $U_R$<br>=500V) | 820 - 1200             | 1500 -2000 | 2200 -3300  | 2400 -4700  | 3300-5600    |        |
| 10.0                  |                              | 1500-2200              | 2200-3000  | 4700-6800   | 5100-7500   | 6800-8200    |        |
| 12.0                  |                              | 2200-4700              | 3300-5600  | 8200-10000  | 8200-10000  | 10000-15000  |        |
| 14.0                  |                              | 3300-6800              | 6800-10000 | 15000       |             | 22000        |        |
| 16.0                  |                              | 8200-10000             |            |             |             |              |        |

operating Voltage: 50 - 500V

Test Voltage: 2.5  $U_R$

IR: Insulation resistance  $R_i \geq 4000M\Omega$

tangent of loss angel: Y5P:  $tg \delta \leq 0.025$

Y5U, Z5U:  $tg \delta \leq 0.030$       Y5V, Z5V:  $tg \delta \leq 0.035$

**CS1 (semiconductor dielectric capacitor) series ceramic capacitor****FEATURE:**

High capacitance, small volume. Used in low impedance circuit of requiring low IR.

Operating Temperature Range:-30°C ~ +85°C

**Capacitance Range:**

| (Capacitance Range) PF |                     |                     |                     |                     |                     |                     | (mm)<br>Dimension |
|------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|-------------------|
| Y5P(B)                 |                     | Y5U(E)              |                     | Y5V(F)              |                     |                     |                   |
| U <sub>R</sub> =25V    | U <sub>R</sub> =50V | U <sub>R</sub> =25V | U <sub>R</sub> =50V | U <sub>R</sub> =16V | U <sub>R</sub> =25V | U <sub>R</sub> =50V |                   |
| 103                    |                     | 103                 | 103                 | 103-473             | 103-223             | 103-223             | 4.0               |
| 153-223                | 103-153             | 223-473             | 223-333             |                     | 333-473             | 473                 | 5.0               |
| 333                    | 223                 |                     | 473                 | 104                 | 104                 |                     | 6.0               |
| 473-513                |                     | 104                 | 104                 |                     |                     | 104                 | 7.0               |
| 683                    | 333-473             |                     |                     | 224                 |                     |                     | 8.0               |
|                        | 513-683             |                     |                     |                     | 224                 |                     | 10.0              |
| 1 04                   |                     |                     |                     | 474                 |                     |                     | 11.0              |

Test Voltage: 1.5U<sub>R</sub>

I.R: Insulation resistance U<sub>R</sub> ≥ 25V, Ri ≥ 1,000MΩ.

U<sub>R</sub> < 25V, Ri ≥ 250MΩ.

tangent of loss angel: U<sub>R</sub> ≥ 25V, tg δ ≤ 0.05

U<sub>R</sub> ≥ 25V, tg δ ≤ 0.075

**CC81 (High voltage Temperature compensate capacitor) r**

**FEATURE:**

Low DF, table capacitance suits for pulse circuit, oscillation and temperature compensate circuit

Operating Temperature Range -30°C ~ +85°C

**Capacitance Range:**

| DMax<br>(mm)<br>Dimension | (Capacitance Range) PF |              |              |              |         | (U <sub>R</sub> )<br>operating<br>voltage |
|---------------------------|------------------------|--------------|--------------|--------------|---------|---|
|                           | NPO<br>(OH)            | N330<br>(SH) | N470<br>(TH) | N750<br>(UJ) | SL      |   |
| 6.0                       | 5-33                   | 10-47        | 15-56        | 22-68        | 47-68   | 1 KV                                      |
| 8.0                       | 47-56                  | 47-68        | 56-82        | 68-82        | 82-100  |   |
| 10.0                      | 68-82                  | 82-100       | 82-100       | 100-120      | 120-220 |   |
| 12.0                      | 82-100                 | 100-120      | 100-160      | 150-180      | 330-470 |   |
| 6.0                       | 5-22                   | 10-33        | 10-47        | 15-56        | 33-56   | 2KV                                       |
| 8.0                       | 33-47                  | 33-56        | 56-82        | 56-82        | 68-100  |   |
| 10.0                      | 56-68                  | 68-82        | 82-100       | 82-100       | 100-150 |   |
| 12.0                      | 68-82                  | 82-100       |              | 100-120      |         |   |

Test Voltage: 1.5U<sub>R</sub>+500V.

I.R: Insulation resistance Ri ≥1 0000MΩ.

tangent of loss angel: C>30PF: tg δ ≤0.0015

5pF≤C≤30PF: tg δ ≤1/(400+20C)

C<5pF, Please consult your requirements to factory

**CT81 (High Voltage High dielectric constant capacitor)**

**FEATURE:**

The capacitor are widely used in all sorts of electronic instrument and high voltage by-passing or coupling circuit.

**Operating Temperature Range**, please consider EIA code Capacitance Range:

| operating voltage | Capacitance(PF) |            |            |              |           | DMax(mm)<br>Dimension |
|-------------------|-----------------|------------|------------|--------------|-----------|-----------------------|
|                   | General Model   |            |            | Low DF Model |           |                       |
|                   | 2B4(Y5P)        | 2E4(Y5U)   | 2F4(Y5V)   | BN(Y5P)      | 2R4       |                       |
| 1KV               |                 |            | 1000-1500  |              |           | 6                     |
|                   | 100-560         | 470-1000   | 2200-3300  | 100-470      | 100-560   | 8                     |
|                   | 680-1000        | 1500-2200  | 4700-5600  | 560-820      | 680-1000  | 10                    |
|                   | 1200-1800       | 2700-3300  | 8200-10000 | 1000-1800    | 1200-1500 | 12                    |
|                   | 2200-3300       | 3900-4700  |            | 2200-2700    | 1800      | 14                    |
|                   | 3900-4700       | 5600-6800  |            | 3300-4700    |           | 16                    |
|                   |                 | 8200-10000 |            |              |           | 18                    |
| 2KV               | 100-330         | 330-470    | 1500-2200  | 100-330      | 100-330   | 8                     |
|                   | 470-680         | 560-1000   | 3300-4700  | 390-680      | 470-560   | 10                    |
|                   | 820-1200        | 1500-2200  | 5600-8200  | 820-1000     | 680-1000  | 12                    |
|                   | 1500-1800       | 2700-3300  | 10000      | 1200-1800    | 1200-1500 | 14                    |
|                   | 2200-3300       | 3900-4700  |            | 2200-3300    | 1800      | 16                    |
|                   | 3900-4700       | 6800-8200  |            | 3900-4700    |           | 18                    |
| 3KV               | 100-470         | 470-560    | 2200-3300  | 100-270      | 330-470   | 10                    |
|                   | 560-820         | 680-1000   | 4700-5600  | 330-680      | 100-270   | 12                    |
|                   | 1000-1600       | 1500-2200  | 8200       | 820-1500     | 560-680   | 14                    |
|                   | 1800-2200       | 3300-3900  | 10000      | 1800-2200    | 820~1000  | 16                    |
|                   | 2700-3300       | 4700       |            |              | 1500      | 18                    |

Test Voltage:  $1.5 U_R + 500V$

IR: Insulation resistance  $R_i \geq 4000M\Omega$ .

tangent of loss angel: Y5P:  $tg \delta \leq 0.020$

Y5U, Z5U:  $tg \delta \leq 0.030$

BN:  $tg \delta \leq 0.005$ ; R:  $tg \delta \leq 0.0035$

**CT81 (High Voltage High dielectric Constant capacitor)**

**FEATURE:**

The capacitor are widely used in all sorts of electronic instrument and high voltage by-passing or coupling circuit.

Operating Temperature Range, please consider EIA code.

**Capacitance Range:**

| (U <sub>R</sub> )<br>Operating voltage | Capacitance(PF) |            |            |              |           | DMax (mm)<br>Dimension |
|--|-----------------|------------|------------|--------------|-----------|------------------------|
|  | General Model   |            |            | Low DF Model |           |                        |
|  | 2B4(Y5P)        | 2E4(Y5U)   | 2F4(Y5V)   | BN(Y5P)      | 2R4       |                        |
| 1KV                                    |                 |            | 1000-1500  |              |           | 6                      |
|  | 100-560         | 470-1000   | 2200-3300  | 100-470      | 100-560   | 8                      |
|  | 680-1000        | 1500-2200  | 4700-5600  | 560-820      | 680-1000  | 10                     |
|  | 1200-1800       | 2700-3300  | 8200-10000 | 1000-1800    | 1200-1500 | 12                     |
|  | 2200-3300       | 3900-4700  |            | 2200-2700    | 1800      | 14                     |
|  | 3900-4700       | 5600-6800  |            | 3300-4700    |           | 16                     |
|  |                 | 8200-10000 |            |              |           | 18                     |
| 2KV                                    | 100-330         | 330-470    | 1500-2200  | 100-330      | 100-330   | 8                      |
|  | 470-680         | 560-1000   | 3300-4700  | 390-680      | 470-560   | 10                     |
|  | 820-1200        | 1500-2200  | 5600-8200  | 820-1000     | 680-1000  | 12                     |
|  | 1500-1800       | 2700-3300  | 10000      | 1200-1800    | 1200-1500 | 14                     |
|  | 2200-3300       | 3900-4700  |            | 2200-3300    | 1800      | 16                     |
|  | 3900-4700       | 6800-8200  |            | 3900-4700    |           | 18                     |
| 3KV                                    | 100-470         | 470-560    | 2200-3300  | 100-270      | 330-470   | 10                     |
|  | 560-820         | 680-1000   | 4700-5600  | 330-680      | 100-270   | 12                     |
|  | 1000-1600       | 1500-2200  | 8200       | 820-1500     | 560-680   | 14                     |
|  | 1800-2200       | 3300-3900  | 10000      | 1800-2200    | 820~1000  | 16                     |
|  | 2700-3300       | 4700       |            |              | 1500      | 18                     |

Test Voltage: 1.5 U<sub>R</sub> +500V

I.R: Insulation resistance Ri ≥4000MΩ.

Tangent of loss angel: Y5P: tg δ ≤0.020  
 Y5U, Z5U: tg δ ≤0.030  
 BN: tg δ ≤0.005; R: tg δ ≤0.0035

**CT7 (AC capacitor) series ceramic DISC capacitor****FEATURE:**

The capacitor are available for lines,by-passing, antenna coupling and switch surge suppressor in any other electronic equipments.

Operating Temperature Range -30°C +85°C

**Capacitance Range:**

| (U <sub>R</sub> /AC) | PF        |           |            | DMax(mm)<br>Dimension |
|----------------------|-----------|-----------|------------|-----------------------|
|                      | Y5P       | Y5U       | Y5V        |                       |
| Y2/X1<br>(250V)      | 100-180   | 470-680   | 2200-3300  | 08                    |
|                      | 220-560   | 1000-220  | 3300-4700  | 10                    |
|                      | 680-1000  | 330-5100  | 4700-6800  | 12                    |
|                      |           | 6800      | 6800-10000 | 14                    |
| Y1/X1<br>(400V)      | 220-470   | 1000-2200 | 1500-4700  | 10                    |
|                      | 680-1000  | 3300-4700 | 5100-6800  | 12                    |
|                      | 1500-1800 | 5100-6800 | 6800-8200  | 14                    |
|                      | 2200      | 8200      |            | 16                    |

Test Voltage: 10 U<sub>R</sub>

I.R: Insulation resistance Ri ≥10000MΩ.

Tangent of loss angel: Y5P: tg δ ≤0.020

Y5U: tg δ ≤0.030

Y5V: tg δ ≤0035



**CERAMIC DISC CAPACITOR SUBSTRATE AND CHIP-SILVER**

| (Model)              | (T. C)                | (Dimensions)     | (Rated voltage) | (PF) (Capacitance) | (Tolerance) |
|----------------------|-----------------------|------------------|-----------------|--------------------|-------------|
| CC1                  | NP0-10                | 4818, 4820, 4530 | 50              | 1 -10              | C, D, F, G  |
|                      | NP0-20                | 4520, 4820, 5818 | 50              | 10-20              | F, C, J     |
|                      | NP0-30                | 4520, 4820, 5818 | 50              | 20-35              | J, K        |
|                      | NP0-101               | 4820, 5820, 6820 | 50              | 36 130             | J, K, M     |
|                      | IUJ-80                | 4818, 5820, 6820 | 50              | 36-100             | J, K, M     |
|                      | SL-325                | 4818, 4820, 5820 | 50              | 100-280            | U, K, M     |
| 6820, 7820, 9520     |                       | 50               | 300-820         | J, K, M            |             |
| CT1                  | 2 B <sub>4</sub> -162 | 4530, 4820       | 50              | 220-1500           | K, M        |
|                      | 2B <sub>4</sub> -282  | 4818, 4820, 5818 | 50              | 1000-3000          | K, M        |
|                      | 2E <sub>4</sub> -602  | 4517, 4918, 5818 | 50              | 1500-6000          | K, M        |
|                      | 2F <sub>4</sub> -133  | 4818, 4820, 5818 | 50              | 6800- 10000        | M, S, Z     |
|                      | 2F <sub>4</sub> -1 53 | 4517, 4817, 4820 | 50              | 6800-10000         | M, 5, Z     |
|                      |                       | 4840-7840        | 50              | 330- 10000         | M, S, Z     |
|                      | 2 F <sub>7</sub> -203 | 4518, 4918, 5818 | 50              | 10000-20000        | M, 5, Z     |
| 2F <sub>7</sub> -253 | 4517, 4918, 5918      | 50               | 10000-22000     | M, Z               |             |
| CT81                 | 2B <sub>4</sub> (Y5P) | 050040-150215    | 0.5KV-5KV       | 100-10000          | K           |
|                      | 2E <sub>6</sub> (Z5U) | 050040-150215    | 0.5KV-5KV       | 330-22000          | M           |
|                      | 2B <sub>6</sub> (Z5V) | 050040-150215    | 0.5KV-SKy       | 1000-33000         | S, Z, P     |
|                      | BN                    | 050040-150215    | 05KV-SKy        | 100-10000          | K           |
|                      | 2R <sub>4</sub>       | 050040-150215    | 0.5KV-5KV       | 100-6800           | K           |
| CC81                 | SL                    | 050040-150180    | 0.5KV-SKy       | 10-470             | J, K        |
|                      | YL                    | 050040-150180    | 0.5KV-5KV       | 33-100             | J, K        |
| CT7                  | 2B <sub>4</sub> (Y5P) | 050136 - 140220  | 250V,400V(AC)   | 100 - 2200         | K           |
|                      | 2E <sub>4</sub> (Z5U) | 0501 35 - 140250 | 250V,400V(AC)   | 470 - 4700         | M           |
|                      | 2B <sub>4</sub> (Z5V) | 050150-140270    | 250V400V(AC)    | 1000-10000         | S, Z, P     |
|                      | BN                    | 050135 - 140210. | 250V,400V(AC)   | 100 - 3300         | K           |
|                      | 2R <sub>4</sub>       | 050135-150210    | 250V,400V(AC)   | 100-2200           | K           |

Test voltage, insulation resistance, tangent of loss angle, capacitance tolerance referring to the standard of the types of ceramic disc capacitor standard.

**HOW TO ORDER**

|     |     |   |    |   |   |     |   |   |    |    |
|-----|-----|---|----|---|---|-----|---|---|----|----|
| 001 | — F | 7 | SL | 1 | B | 331 | J | S | P  | W  |
| 1   | 2   | 3 | 4  | 5 | 6 | 7   | 8 | 9 | 10 | 11 |

**1 Capacitor Type Code**

| Type |  |
|------|--|
| CC1  | Low voltage temperature compensated disk ceramic capacitor   |
| CC81 | High voltage temperature compensated disk ceramic capacitor  |
| CT1  | Low voltage high dielectric constant disk ceramic capacitor  |
| CT81 | High voltage high dielectric constant disk ceramic capacitor |
| CS1  | Semiconductor dielectric insulator disk ceramic capacitor    |
| CT7  | Alternating current disk ceramic capacitor                   |

**2 Rated voltage**

| Letter symbol | D   | E   | F   | G    | J   | K    | L    | N   | M   | P   | Q   | X    | Y    |
|---------------|-----|-----|-----|------|-----|------|------|-----|-----|-----|-----|------|------|
| rated voltage | 16V | 25V | 50V | 100V | 60V | 250V | 500V | 1KV | 2KV | 3KV | 4KV | 250V | 400V |
|               |     |     |     |      |     |      |      |     |     |     |     | AC   | AC   |

**3 Diameter coefficient**

| Symbol       | 4   | 5   | 6   | 7   | 8   | 9   | 10   | 12   |
|--------------|-----|-----|-----|-----|-----|-----|------|------|
| Diameter(mm) | 4.0 | 5.0 | 6.0 | 7.0 | 8.0 | 9.0 | 10.0 | 12.0 |

**4 Temperature coefficient:** Please consider temperature characteristics and EIA code Lead style

| symbol | Style                       |
|--------|-----------------------------|
| 1      | Straight lend (length 23mm) |
| 2      | Straight lend (length 17mm) |
| 3      | Cutting lend (short lend)   |
| 4      | Tape straight lend          |
| 5      | Tape small inside kink      |
| 6      | Tape large inside kink      |
| 7      | Double inside kinks         |
| 8      | Double outside kinks        |
| 9      | Outside kink                |

**6 Lead Distance**

| Symbol | Lead spacing(mm) |
|--------|------------------|
| A      | 25+0.8/-0.2      |
| B      | 5.0+0.8/-0.2     |
| D      | 7.5+0.8/-0.2     |
| E      | 10.0+0.8/-0.2    |

**7 Standard capacitance**

|     |       |   |
|-----|-------|---|
| IR0 | 1PF   | Note: The unit of standard capacitance if consisting of 3 digits. 1St two digits stand for effective value of the Standard capacitance, third |
| 4R7 | 4.7PF |   |

|     |         |   |
|-----|---------|---|
| 100 | 10PF    | digit indicates the number of zeros; R indicates decimal. |
| 560 | 56PF    |   |
| 821 | 820PF   |   |
| 102 | 1 000PF |   |
| --- | ----    |   |

**8 Capacitance tolerance**, Please consider EIA code

**9 Packing style**

| Symbol | Packing Style |
|--------|---------------|
| T      | Tape          |
| S      | bulk          |

**10 Enclosure style**

| Code | Enclosure style |
|------|-----------------|
| F    | Epoxy resin     |
| p    | Phenol resin    |

**11 W --- Lead-Free**

**TEMPERATURE CHARACTERISTICS**

|             |                | EIA Code         | JIS. GB Code           |
|-------------|----------------|------------------|------------------------|
| 0±60        | NP0            | C0H              | CH                     |
| -33±60      | N33            | S <sub>1</sub> H | HH                     |
| -75±60      | N75            | U <sub>1</sub> H | LH                     |
| -150±60     | N150           | P <sub>2</sub> H | PH                     |
| -220±60     | N220           | R <sub>2</sub> H | RH                     |
| -330±60     | N330           | S <sub>2</sub> H | SH                     |
| -470±60     | N470           | T <sub>2</sub> H | TH                     |
| -750±120    | N750           | U <sub>2</sub> J | UJ or U <sub>2</sub> J |
| +140~ —1000 | P140~N1000(SL) | S <sub>2</sub> L | SL or S <sub>2</sub> L |

**CERAMIC DISC CAPACITOR**

**EIA CODE**

| The First Letter | The Second Letter | The Third Letter | Capacitance tolerance |           |
|------------------|-------------------|------------------|-----------------------|-----------|
| X:-55℃           | 4:+65℃            | E:±4.7%          | C                     | ±0.25pF   |
| Y:-25℃           | 5:+85℃            | F:±7.5%          | D                     | ±0.5pF    |
| Z:+10℃           | 6:+105℃           | P:±10%           | J                     | ±5%       |
|                  | 7:+125℃           | R:±15%           | K                     | ±10%      |
|                  | 8:+150℃           | S:±22%           | M                     | ±20%      |
|                  |                   | T:+20% -33%      | S                     | +50% -20% |
|                  |                   | U:+22% -56%      | Z                     | +80% -20% |
|                  |                   | V:+22% -82%      | P                     | +100/0    |