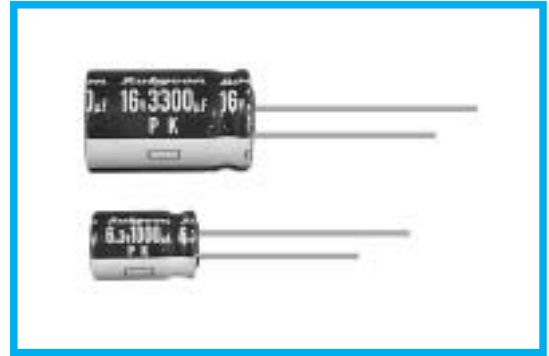


**PK SERIES**
**85°C Miniaturized**
**◆FEATURES**

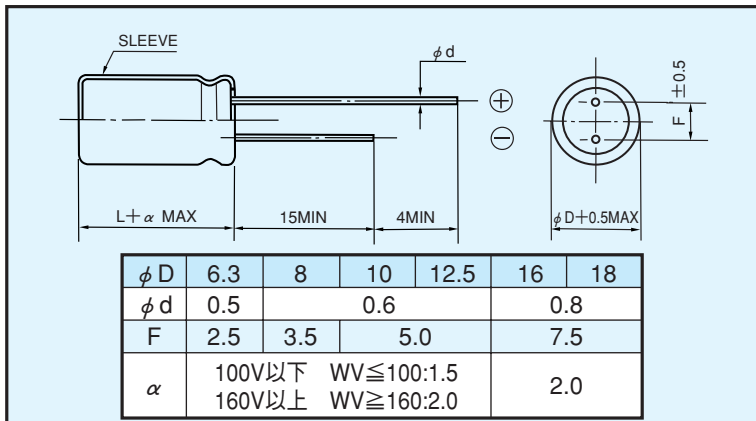
- Load life : 85°C 2000 hours.
- RoHS compliance.


**◆SPECIFICATIONS**

| Items   | Characteristics   |  |  |      |      |      |      |      |      |      |      |      |      |      |                   |     |    |    |    |    |    |    |     |     |     |     |     |     |     |                  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                  |    |    |   |   |   |   |   |   |   |   |   |   |    |   |         |
|---|---|--|--|------|------|------|------|------|------|------|------|------|------|------|-------------------|-----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------------------|----|----|---|---|---|---|---|---|---|---|---|---|----|---|---------|
| Category Temperature Range  | -40~+85°C   | -25~+85°C  |  |      |      |      |      |      |      |      |      |      |      |      |                   |     |    |    |    |    |    |    |     |     |     |     |     |     |     |                  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                  |    |    |   |   |   |   |   |   |   |   |   |   |    |   |         |
| Rated Voltage Range   | 6.3~400V.DC   | 450V.DC  |  |      |      |      |      |      |      |      |      |      |      |      |                   |     |    |    |    |    |    |    |     |     |     |     |     |     |     |                  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                  |    |    |   |   |   |   |   |   |   |   |   |   |    |   |         |
| Capacitance Tolerance   | ±20%(20°C, 120Hz)   |  |  |      |      |      |      |      |      |      |      |      |      |      |                   |     |    |    |    |    |    |    |     |     |     |     |     |     |     |                  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                  |    |    |   |   |   |   |   |   |   |   |   |   |    |   |         |
| Leakage Current(MAX)  | 6.3~100V.DC   | 160~450V.DC  |  |      |      |      |      |      |      |      |      |      |      |      |                   |     |    |    |    |    |    |    |     |     |     |     |     |     |     |                  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                  |    |    |   |   |   |   |   |   |   |   |   |   |    |   |         |
|   | I=0.01CV or 3 μA whichever is greater.<br>(After 2 minutes application of rated voltage)  | CV ≤ 1000  | CV > 1000  |      |      |      |      |      |      |      |      |      |      |      |                   |     |    |    |    |    |    |    |     |     |     |     |     |     |     |                  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                  |    |    |   |   |   |   |   |   |   |   |   |   |    |   |         |
|   |   | I=0.1CV+40 μA (1 minute)<br>I=0.03CV+15 μA (5 minutes) | I=0.04CV+100 μA (1 minute)<br>I=0.02CV+25 μA (5 minutes) |      |      |      |      |      |      |      |      |      |      |      |                   |     |    |    |    |    |    |    |     |     |     |     |     |     |     |                  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                  |    |    |   |   |   |   |   |   |   |   |   |   |    |   |         |
|   | I=Leakage Current( μA)  | C=Rated Capacitance( μF)      V=Rated Voltage(V)       |  |      |      |      |      |      |      |      |      |      |      |      |                   |     |    |    |    |    |    |    |     |     |     |     |     |     |     |                  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                  |    |    |   |   |   |   |   |   |   |   |   |   |    |   |         |
| Dissipation Factor(MAX)<br>(tan δ)  | <table border="1"> <thead> <tr> <th>Rated Voltage (V)</th> <th>6.3</th><th>10</th><th>16</th><th>25</th><th>35</th><th>50</th><th>63</th><th>100</th><th>160</th><th>200</th><th>250</th><th>350</th><th>400</th><th>450</th> </tr> </thead> <tbody> <tr> <td>tan δ</td> <td>0.28</td><td>0.24</td><td>0.20</td><td>0.16</td><td>0.14</td><td>0.12</td><td>0.10</td><td>0.10</td><td>0.20</td><td>0.20</td><td>0.20</td><td>0.25</td><td>0.25</td><td>0.25</td> </tr> </tbody> </table>   |  |  |      |      |      |      |      |      |      |      |      |      |      | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 | tan δ            | 0.28 | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | 0.10 | 0.20 | 0.20 | 0.20 | 0.25 | 0.25 | 0.25 | (20°C, 120Hz)    |    |    |   |   |   |   |   |   |   |   |   |   |    |   |         |
|   | Rated Voltage (V)   | 6.3  | 10   | 16   | 25   | 35   | 50   | 63   | 100  | 160  | 200  | 250  | 350  | 400  | 450               |     |    |    |    |    |    |    |     |     |     |     |     |     |     |                  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                  |    |    |   |   |   |   |   |   |   |   |   |   |    |   |         |
| tan δ   | 0.28  | 0.24   | 0.20   | 0.16 | 0.14 | 0.12 | 0.10 | 0.10 | 0.20 | 0.20 | 0.20 | 0.25 | 0.25 | 0.25 |                   |     |    |    |    |    |    |    |     |     |     |     |     |     |     |                  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                  |    |    |   |   |   |   |   |   |   |   |   |   |    |   |         |
| When rated capacitance is over 1000 μF, tan δ shall be added 0.02 to the listed value with increase of every 1000 μF. |   |  |  |      |      |      |      |      |      |      |      |      |      |      |                   |     |    |    |    |    |    |    |     |     |     |     |     |     |     |                  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                  |    |    |   |   |   |   |   |   |   |   |   |   |    |   |         |
| Endurance   | After applying rated voltage with rated ripple current for 2000hrs at 85°C, the capacitors shall meet the following requirements.   |  |  |      |      |      |      |      |      |      |      |      |      |      |                   |     |    |    |    |    |    |    |     |     |     |     |     |     |     |                  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                  |    |    |   |   |   |   |   |   |   |   |   |   |    |   |         |
|   | Capacitance Change  | Within ±25% of the initial value.                      |  |      |      |      |      |      |      |      |      |      |      |      |                   |     |    |    |    |    |    |    |     |     |     |     |     |     |     |                  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                  |    |    |   |   |   |   |   |   |   |   |   |   |    |   |         |
|   | Dissipation Factor  | Not more than 200% of the specified value.             |  |      |      |      |      |      |      |      |      |      |      |      |                   |     |    |    |    |    |    |    |     |     |     |     |     |     |     |                  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                  |    |    |   |   |   |   |   |   |   |   |   |   |    |   |         |
|   | Leakage Current   | Not more than the specified value.                     |  |      |      |      |      |      |      |      |      |      |      |      |                   |     |    |    |    |    |    |    |     |     |     |     |     |     |     |                  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                  |    |    |   |   |   |   |   |   |   |   |   |   |    |   |         |
| Low Temperature Stability<br>Impedance Ratio(MAX)   | <table border="1"> <thead> <tr> <th>Rated Voltage (V)</th> <th>6.3</th><th>10</th><th>16</th><th>25</th><th>35</th><th>50</th><th>63</th><th>100</th><th>160</th><th>200</th><th>250</th><th>350</th><th>400</th><th>450</th> </tr> </thead> <tbody> <tr> <td>Z(-25°C)/Z(20°C)</td> <td>5</td><td>4</td><td>3</td><td>2</td><td>2</td><td>2</td><td>2</td><td>2</td><td>3</td><td>3</td><td>4</td><td>5</td><td>5</td><td>7</td> </tr> <tr> <td>Z(-40°C)/Z(20°C)</td> <td>12</td><td>10</td><td>8</td><td>5</td><td>4</td><td>3</td><td>3</td><td>3</td><td>4</td><td>4</td><td>8</td><td>8</td><td>10</td><td>-</td> </tr> </tbody> </table> |  |  |      |      |      |      |      |      |      |      |      |      |      | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 | Z(-25°C)/Z(20°C) | 5    | 4    | 3    | 2    | 2    | 2    | 2    | 2    | 3    | 3    | 4    | 5    | 5    | 7    | Z(-40°C)/Z(20°C) | 12 | 10 | 8 | 5 | 4 | 3 | 3 | 3 | 4 | 4 | 8 | 8 | 10 | - | (120Hz) |
|   | Rated Voltage (V)   | 6.3  | 10   | 16   | 25   | 35   | 50   | 63   | 100  | 160  | 200  | 250  | 350  | 400  | 450               |     |    |    |    |    |    |    |     |     |     |     |     |     |     |                  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                  |    |    |   |   |   |   |   |   |   |   |   |   |    |   |         |
|   | Z(-25°C)/Z(20°C)  | 5  | 4  | 3    | 2    | 2    | 2    | 2    | 2    | 3    | 3    | 4    | 5    | 5    | 7                 |     |    |    |    |    |    |    |     |     |     |     |     |     |     |                  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                  |    |    |   |   |   |   |   |   |   |   |   |   |    |   |         |
| Z(-40°C)/Z(20°C)  | 12  | 10   | 8  | 5    | 4    | 3    | 3    | 3    | 4    | 4    | 8    | 8    | 10   | -    |                   |     |    |    |    |    |    |    |     |     |     |     |     |     |     |                  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                  |    |    |   |   |   |   |   |   |   |   |   |   |    |   |         |
|   |   |  |  |      |      |      |      |      |      |      |      |      |      |      |                   |     |    |    |    |    |    |    |     |     |     |     |     |     |     |                  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                  |    |    |   |   |   |   |   |   |   |   |   |   |    |   |         |

**◆DIMENSIONS**

(mm)


**◆MULTIPLIER FOR RIPPLE CURRENT**

Frequency coefficient

| Frequency (Hz) |               | 60(50) | 120  | 500  | 1k   | 10k ≤ |
|----------------|---------------|--------|------|------|------|-------|
| Coefficient    | 0.47~1 μF     | 0.50   | 1.00 | 1.20 | 1.30 | 1.50  |
|                | 2.2~4.7 μF    | 0.65   | 1.00 | 1.20 | 1.30 | 1.50  |
|                | 10~47 μF      | 0.80   | 1.00 | 1.20 | 1.30 | 1.50  |
|                | 100~1000 μF   | 0.80   | 1.00 | 1.10 | 1.15 | 1.20  |
|                | 2200~33000 μF | 0.80   | 1.00 | 1.05 | 1.10 | 1.15  |

**◆PART NUMBER**

|               |        |                   |                       |        |              |           |
|---------------|--------|-------------------|-----------------------|--------|--------------|-----------|
| □□□           | PK     | □□□□□             | □                     | □□□    | □□           | D×L       |
| Rated Voltage | Series | Rated Capacitance | Capacitance Tolerance | Option | Lead Forming | Case Size |

**◆STANDARD SIZE, RATED RIPPLE CURRENT**

 Size  $\phi$  D×L(mm), Ripple Current (mA r.m.s./85°C, 120Hz)

| WV(V.DC)<br>Cap(μF) | 6.3<br>(0J) |        | 10<br>(1A) |        | 16<br>(1C) |        | 25<br>(1E) |        | 35<br>(1V) |        | 50<br>(1H) |        | 63<br>(1J) |        |
|---------------------|-------------|--------|------------|--------|------------|--------|------------|--------|------------|--------|------------|--------|------------|--------|
|                     | Size        | Ripple | Size       | Ripple | Size       | Ripple | Size       | Ripple | Size       | Ripple | Size       | Ripple | Size       | Ripple |
| 100                 |             |        |            |        |            |        |            |        |            |        | 8×11.5     | 270    | 8×11.5     | 290    |
| 220                 |             |        |            |        |            |        |            |        | 8×11.5     | 370    | 10×12.5    | 435    | 10×16      | 490    |
| 330                 |             |        |            |        | 6.3×11     | 360    | 8×11.5     | 410    | 10×12.5    | 500    | 10×16      | 590    | 10×20      | 710    |
| 470                 |             |        |            |        | 8×11.5     | 460    | 8×11.5     | 550    | 10×12.5    | 680    | 10×20      | 760    | 12.5×20    | 900    |
| 680                 | 6.3×11      | 460    | 8×11.5     | 580    | 8×11.5     | 620    | 10×12.5    | 780    | 10×16      | 910    | 12.5×20    | 1000   | 12.5×25    | 1200   |
| 1000                | 8×11.5      | 590    | 8×11.5     | 660    | 10×12.5    | 720    | 10×16      | 870    | 10×20      | 1180   | 12.5×25    | 1350   | 16×25      | 1350   |
| 2200                | 10×16       | 920    | 10×16      | 1090   | 10×20      | 1320   | 12.5×20    | 1500   | 16×25      | 1810   | 16×31.5    | 1980   | 18×31.5    | 1800   |
| 3300                | 10×20       | 1200   | 10×20      | 1440   | 12.5×20    | 1600   | 16×25      | 2000   | 16×25      | 1990   | 18×31.5    | 2100   | 18×40      | 2600   |
| 4700                | 12.5×20     | 1550   | 12.5×20    | 1680   | 12.5×25    | 2050   | 16×25      | 2120   | 16×35.5    | 2500   | 18×40      | 2800   |            |        |
| 6800                | 12.5×25     | 1920   | 12.5×25    | 2150   | 16×25      | 2250   | 16×31.5    | 2440   | 18×35.5    | 2740   |            |        |            |        |
| 10000               | 16×25       | 2370   | 16×25      | 2270   | 16×31.5    | 2660   | 18×35.5    | 2900   |            |        |            |        |            |        |
| 15000               | 16×31.5     | 2550   | 16×35.5    | 2880   | 18×35.5    | 2950   |            |        |            |        |            |        |            |        |
| 22000               | 16×35.5     | 2900   | 18×35.5    | 3100   |            |        |            |        |            |        |            |        |            |        |
| 33000               | 18×40       | 3400   |            |        |            |        |            |        |            |        |            |        |            |        |

| WV(V.DC)<br>Cap(μF) | 100<br>(2A) |        | 160<br>(2C) |        | 200<br>(2D) |        | 250<br>(2E) |        | 350<br>(2V) |        | 400<br>(2G) |        | 450<br>(2W) |        |
|---------------------|-------------|--------|-------------|--------|-------------|--------|-------------|--------|-------------|--------|-------------|--------|-------------|--------|
|                     | Size        | Ripple | Size        | Ripple | Size        | Ripple | Size        | Ripple | Size        | Ripple | Size        | Ripple | Size        | Ripple |
| 0.47                |             |        |             |        |             |        |             |        |             |        |             |        | 6.3×11      | 8      |
| 1                   |             |        |             |        |             |        |             |        |             |        |             |        | 6.3×11      | 16     |
| 2.2                 |             |        |             |        |             |        |             |        | 6.3×11      | 30     | 8×11.5      | 31     | 8×11.5      | 29     |
| 3.3                 |             |        |             |        |             |        | 6.3×11      | 45     | 8×11.5      | 45     | 8×11.5      | 48     | 8×11.5      | 33     |
| 4.7                 |             |        |             |        | 6.3×11      | 51     | 6.3×11      | 54     | 8×11.5      | 55     | 10×12.5     | 56     | 10×12.5     | 46     |
| 10                  |             |        | 8×11.5      | 80     | 8×11.5      | 85     | 10×12.5     | 90     | 10×16       | 90     | 10×16       | 90     | 10×20       | 84     |
| 22                  |             |        | 10×12.5     | 130    | 10×16       | 150    | 10×16       | 150    | 12.5×20     | 185    | 12.5×20     | 200    | 12.5×25     | 140    |
| 33                  | 8×11.5      | 185    | 10×16       | 180    | 10×20       | 205    | 10×20       | 205    | 12.5×25     | 240    | 12.5×25     | 240    | 16×25       | 180    |
| 47                  | 8×11.5      | 220    | 10×20       | 230    | 10×20       | 220    | 12.5×20     | 260    | 16×25       | 300    | 16×25       | 250    | 16×31.5     | 220    |
| 100                 | 10×16       | 380    | 12.5×25     | 430    | 12.5×25     | 320    | 16×25       | 450    | 18×31.5     | 520    | 18×35.5     | 420    | 18×40       | 280    |
| 220                 | 12.5×20     | 610    | 16×31.5     | 645    | 16×31.5     | 540    | 18×35.5     | 680    |             |        |             |        |             |        |
| 330                 | 12.5×25     | 760    | 16×35.5     | 700    | 18×35.5     | 800    |             |        |             |        |             |        |             |        |
| 470                 | 16×25       | 1000   | 18×40       | 1200   |             |        |             |        |             |        |             |        |             |        |
| 680                 | 16×31.5     | 1100   |             |        |             |        |             |        |             |        |             |        |             |        |
| 1000                | 18×31.5     | 1200   |             |        |             |        |             |        |             |        |             |        |             |        |

Please use YK series about Low capacitance.