

## KF Series Low Impedance

### Features

- ◆ Used in communication equipments, switching power supply, industrial measuring instruments, etc.
- ◆ Load life 2000~5000 Hrs at 105°C
- ◆ Safety vent construction design.
- ◆ For detail specifications, please refer to Engineering Bulletin No. E126
- ◆ RoHS Compliant



### Specifications

| Item  | Performance Characteristics  |   |     |            |           |      |     |      |        |      |                 |    |    |    |    |    |   |   |   |  |                      |     |     |     |     |     |     |     |  |                      |     |     |     |     |     |     |                 |   |   |   |   |   |   |                 |   |   |   |   |   |
|---|--|---|-----|------------|-----------|------|-----|------|--------|------|-----------------|----|----|----|----|----|---|---|---|--|----------------------|-----|-----|-----|-----|-----|-----|-----|--|----------------------|-----|-----|-----|-----|-----|-----|-----------------|---|---|---|---|---|---|-----------------|---|---|---|---|---|
| Operating Temperature Range   | -40 to +105°C  | -25 to +105°C   |     |            |           |      |     |      |        |      |                 |    |    |    |    |    |   |   |   |  |                      |     |     |     |     |     |     |     |  |                      |     |     |     |     |     |     |                 |   |   |   |   |   |   |                 |   |   |   |   |   |
| Rated Voltage Range   | 6.3 to 100 VDC   | 160 to 450 VDC  |     |            |           |      |     |      |        |      |                 |    |    |    |    |    |   |   |   |  |                      |     |     |     |     |     |     |     |  |                      |     |     |     |     |     |     |                 |   |   |   |   |   |   |                 |   |   |   |   |   |
| Capacitance Range   | 0.47 to 15000 µF   | 0.47 to 470 µF  |     |            |           |      |     |      |        |      |                 |    |    |    |    |    |   |   |   |  |                      |     |     |     |     |     |     |     |  |                      |     |     |     |     |     |     |                 |   |   |   |   |   |   |                 |   |   |   |   |   |
| Capacitance Tolerance   | ±20%(120Hz,+20°C)  |   |     |            |           |      |     |      |        |      |                 |    |    |    |    |    |   |   |   |  |                      |     |     |     |     |     |     |     |  |                      |     |     |     |     |     |     |                 |   |   |   |   |   |   |                 |   |   |   |   |   |
| Leakage Current (+20°C,max.)  | I ≤ 0.01 CV or 3 (µA)<br>After 2 minutes whichever is greater measured with rated working voltage applied.   | I ≤ 0.03 CV (µA)<br>After 2 minutes with rate working voltage applied.  |     |            |           |      |     |      |        |      |                 |    |    |    |    |    |   |   |   |  |                      |     |     |     |     |     |     |     |  |                      |     |     |     |     |     |     |                 |   |   |   |   |   |   |                 |   |   |   |   |   |
| Dissipation Factor (tan δ , at 20°C , 120Hz)  | <table border="1"> <tr> <td>Working Voltage(VDC)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> </tr> <tr> <td>D.F. (%)max.</td> <td>18</td> <td>16</td> <td>14</td> <td>12</td> <td>10</td> <td>9</td> <td>8</td> <td>8</td> </tr> </table>   | Working Voltage(VDC)  | 6.3 | 10         | 16        | 25   | 35  | 50   | 63     | 100  | D.F. (%)max.    | 18 | 16 | 14 | 12 | 10 | 9 | 8 | 8 | <table border="1"> <tr> <td>Working Voltage(VDC)</td> <td>160</td> <td>200</td> <td>250</td> <td>350</td> <td>400</td> <td>420</td> <td>450</td> </tr> <tr> <td>D.F. (%)max.</td> <td>12</td> <td>12</td> <td>12</td> <td>15</td> <td>15</td> <td>17</td> <td>17</td> </tr> </table> | Working Voltage(VDC) | 160 | 200 | 250 | 350 | 400 | 420 | 450 | D.F. (%)max.   | 12                   | 12  | 12  | 15  | 15  | 17  | 17  |                 |   |   |   |   |   |   |                 |   |   |   |   |   |
|   | Working Voltage(VDC)   | 6.3   | 10  | 16         | 25        | 35   | 50  | 63   | 100    |      |                 |    |    |    |    |    |   |   |   |  |                      |     |     |     |     |     |     |     |  |                      |     |     |     |     |     |     |                 |   |   |   |   |   |   |                 |   |   |   |   |   |
| D.F. (%)max.  | 18   | 16  | 14  | 12         | 10        | 9    | 8   | 8    |        |      |                 |    |    |    |    |    |   |   |   |  |                      |     |     |     |     |     |     |     |  |                      |     |     |     |     |     |     |                 |   |   |   |   |   |   |                 |   |   |   |   |   |
| Working Voltage(VDC)  | 160  | 200   | 250 | 350        | 400       | 420  | 450 |      |        |      |                 |    |    |    |    |    |   |   |   |  |                      |     |     |     |     |     |     |     |  |                      |     |     |     |     |     |     |                 |   |   |   |   |   |   |                 |   |   |   |   |   |
| D.F. (%)max.  | 12   | 12  | 12  | 15         | 15        | 17   | 17  |      |        |      |                 |    |    |    |    |    |   |   |   |  |                      |     |     |     |     |     |     |     |  |                      |     |     |     |     |     |     |                 |   |   |   |   |   |   |                 |   |   |   |   |   |
| For capacitance > 1000 µF, add 2% per another 1000uF.   |  |   |     |            |           |      |     |      |        |      |                 |    |    |    |    |    |   |   |   |  |                      |     |     |     |     |     |     |     |  |                      |     |     |     |     |     |     |                 |   |   |   |   |   |   |                 |   |   |   |   |   |
| Low Temperature Characteristics (at 120Hz)  | Impedance ratio max  |   |     |            |           |      |     |      |        |      |                 |    |    |    |    |    |   |   |   |  |                      |     |     |     |     |     |     |     |  |                      |     |     |     |     |     |     |                 |   |   |   |   |   |   |                 |   |   |   |   |   |
|   | <table border="1"> <tr> <td>Working Voltage(VDC)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> </tr> <tr> <td>Z-25°C / Z+20°C</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z-40°C / Z+20°C</td> <td>8</td> <td>6</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> </tr> </table> | Working Voltage(VDC)  | 6.3 | 10         | 16        | 25   | 35  | 50   | 63     | 100  | Z-25°C / Z+20°C | 4  | 3  | 3  | 3  | 3  | 3 | 2 | 2 | Z-40°C / Z+20°C  | 8                    | 6   | 4   | 3   | 3   | 3   | 3   | 3   | <table border="1"> <tr> <td>Working Voltage(VDC)</td> <td>160</td> <td>200</td> <td>250</td> <td>350</td> <td>400</td> <td>450</td> </tr> <tr> <td>Z-25°C / Z+20°C</td> <td>2</td> <td>2</td> <td>3</td> <td>5</td> <td>5</td> <td>6</td> </tr> <tr> <td>Z-40°C / Z+20°C</td> <td>3</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>-</td> </tr> </table> | Working Voltage(VDC) | 160 | 200 | 250 | 350 | 400 | 450 | Z-25°C / Z+20°C | 2 | 2 | 3 | 5 | 5 | 6 | Z-40°C / Z+20°C | 3 | 6 | 6 | 6 | 6 |
| Working Voltage(VDC)  | 6.3  | 10  | 16  | 25         | 35        | 50   | 63  | 100  |        |      |                 |    |    |    |    |    |   |   |   |  |                      |     |     |     |     |     |     |     |  |                      |     |     |     |     |     |     |                 |   |   |   |   |   |   |                 |   |   |   |   |   |
| Z-25°C / Z+20°C   | 4  | 3   | 3   | 3          | 3         | 3    | 2   | 2    |        |      |                 |    |    |    |    |    |   |   |   |  |                      |     |     |     |     |     |     |     |  |                      |     |     |     |     |     |     |                 |   |   |   |   |   |   |                 |   |   |   |   |   |
| Z-40°C / Z+20°C   | 8  | 6   | 4   | 3          | 3         | 3    | 3   | 3    |        |      |                 |    |    |    |    |    |   |   |   |  |                      |     |     |     |     |     |     |     |  |                      |     |     |     |     |     |     |                 |   |   |   |   |   |   |                 |   |   |   |   |   |
| Working Voltage(VDC)  | 160  | 200   | 250 | 350        | 400       | 450  |     |      |        |      |                 |    |    |    |    |    |   |   |   |  |                      |     |     |     |     |     |     |     |  |                      |     |     |     |     |     |     |                 |   |   |   |   |   |   |                 |   |   |   |   |   |
| Z-25°C / Z+20°C   | 2  | 2   | 3   | 5          | 5         | 6    |     |      |        |      |                 |    |    |    |    |    |   |   |   |  |                      |     |     |     |     |     |     |     |  |                      |     |     |     |     |     |     |                 |   |   |   |   |   |   |                 |   |   |   |   |   |
| Z-40°C / Z+20°C   | 3  | 6   | 6   | 6          | 6         | -    |     |      |        |      |                 |    |    |    |    |    |   |   |   |  |                      |     |     |     |     |     |     |     |  |                      |     |     |     |     |     |     |                 |   |   |   |   |   |   |                 |   |   |   |   |   |
| For capacitance > 1000 µF, add 0.5 per another 1000uF for -25°C / +20°C<br>add 1 per another 1000uF for -40°C / +20°C |  |   |     |            |           |      |     |      |        |      |                 |    |    |    |    |    |   |   |   |  |                      |     |     |     |     |     |     |     |  |                      |     |     |     |     |     |     |                 |   |   |   |   |   |   |                 |   |   |   |   |   |
| Load Life   | Test conditions<br>Duration time : as right<br>Ambient temperature : +105°C<br>Applied voltage : Rated DC working voltage<br>After test requirement at +20°C<br>Capacitance change : ≤ ±20% of the initial measured value<br>Dissipation factor : ≤ 200% of the initial specified value<br>Leakage current : ≤ The initial specified value   | <table border="1"> <thead> <tr> <th>D φ</th> <th>Life hours</th> </tr> </thead> <tbody> <tr> <td>5 - 6.3 φ</td> <td>2000</td> </tr> <tr> <td>8 φ</td> <td>3000</td> </tr> <tr> <td>≥ 10 φ</td> <td>5000</td> </tr> </tbody> </table> (160-450V : 2000hrs) | D φ | Life hours | 5 - 6.3 φ | 2000 | 8 φ | 3000 | ≥ 10 φ | 5000 |                 |    |    |    |    |    |   |   |   |  |                      |     |     |     |     |     |     |     |  |                      |     |     |     |     |     |     |                 |   |   |   |   |   |   |                 |   |   |   |   |   |
| D φ   | Life hours   |   |     |            |           |      |     |      |        |      |                 |    |    |    |    |    |   |   |   |  |                      |     |     |     |     |     |     |     |  |                      |     |     |     |     |     |     |                 |   |   |   |   |   |   |                 |   |   |   |   |   |
| 5 - 6.3 φ   | 2000   |   |     |            |           |      |     |      |        |      |                 |    |    |    |    |    |   |   |   |  |                      |     |     |     |     |     |     |     |  |                      |     |     |     |     |     |     |                 |   |   |   |   |   |   |                 |   |   |   |   |   |
| 8 φ   | 3000   |   |     |            |           |      |     |      |        |      |                 |    |    |    |    |    |   |   |   |  |                      |     |     |     |     |     |     |     |  |                      |     |     |     |     |     |     |                 |   |   |   |   |   |   |                 |   |   |   |   |   |
| ≥ 10 φ  | 5000   |   |     |            |           |      |     |      |        |      |                 |    |    |    |    |    |   |   |   |  |                      |     |     |     |     |     |     |     |  |                      |     |     |     |     |     |     |                 |   |   |   |   |   |   |                 |   |   |   |   |   |
| Shelf Life  | Test conditions<br>Duration time : 1000Hrs<br>Ambient temperature : +105°C<br>Applied voltage : None<br>After test requirement at +20°C: Same limits as Load life.<br>Pre-treatment for measurements shall be conducted after application of DC working voltage for 30 minutes.  |   |     |            |           |      |     |      |        |      |                 |    |    |    |    |    |   |   |   |  |                      |     |     |     |     |     |     |     |  |                      |     |     |     |     |     |     |                 |   |   |   |   |   |   |                 |   |   |   |   |   |

### Multiplier for Ripple Current vs. Frequency

| CAP (µF) \ Frequency(Hz) | 50(60) | 120  | 400  | 1K   | 10K  | 50K-100K |
|--------------------------|--------|------|------|------|------|----------|
| CAP ≤ 10                 | 0.47   | 0.59 | 0.76 | 0.85 | 0.97 | 1        |
| 10 < CAP ≤ 100           | 0.52   | 0.62 | 0.80 | 0.89 | 0.97 | 1        |
| 100 < CAP ≤ 1000         | 0.58   | 0.72 | 0.84 | 0.90 | 0.98 | 1        |
| 1000 < CAP               | 0.63   | 0.78 | 0.87 | 0.91 | 0.98 | 1        |

### Diagram of Dimensions:(unit:mm)



| D φ | 5      | 6.3      | 8             | 10            | 13  | 16  | 18  | 22 |
|-----|--------|----------|---------------|---------------|-----|-----|-----|----|
| F   | 2.0    | 2.5      | 3.5           | 5.0           | 5.0 | 7.5 | 7.5 | 10 |
| d φ | 0.5    |          | L < 20<br>0.5 | L ≥ 20<br>0.6 | 0.6 |     | 0.8 |    |
| α   | D < 18 | D = 18   |               | D > 18        |     |     |     |    |
|     | 1.5    | L < 35.5 | L ≥ 35.5      | 1.5           | 2.0 | 2.0 |     |    |

## Case Size

| WV(SV)<br>Cap(μF) | 6.3<br>(8) |        |           | 10<br>(13) |        |           | 16<br>(20) |        |           |
|-------------------|------------|--------|-----------|------------|--------|-----------|------------|--------|-----------|
|                   | Size       | Ripple | Impedance | Size       | Ripple | Impedance | Size       | Ripple | Impedance |
| 10                |            |        |           |            |        |           | 5x11       | 74     | 4.7       |
| 22                |            |        |           | 5x11       | 98     | 2.7       | 5x11       | 100    | 2.6       |
| 33                |            |        |           | 5x11       | 100    | 2.6       | 5x11       | 114    | 2         |
| 47                |            |        |           | 5x11       | 150    | 1.34      | 5x11       | 155    | 1.1       |
| 56                |            |        |           | 5x11       | 160    | 1.23      | 5x11       | 180    | 0.82      |
| 68                |            |        |           | 5x11       | 170    | 1.05      | 5x11       | 195    | 0.69      |
| 100               | 5x11       | 170    | 1.00      | 5x11       | 210    | 0.8       | 6.3x11     | 265    | 0.5       |
| 120               | 5x11       | 175    | 0.92      | 6.3x11     | 250    | 0.75      | 6.3x11     | 270    | 0.47      |
| 150               | 6.3x11     | 220    | 0.81      | 6.3x11     | 290    | 0.61      | 6.3x11     | 290    | 0.41      |
|                   | 5x11       | 185    | 0.90      |            |        |           |            |        |           |
| 180               | 6.3x11     | 240    | 0.76      | 6.3x11     | 320    | 0.46      | 8x11.5     | 370    | 0.34      |
|                   |            |        |           |            |        |           | 6.3x11     | 315    | 0.38      |
| 220               | 6.3x11     | 310    | 0.65      | 6.3x11     | 340    | 0.35      | 8x11.5     | 480    | 0.25      |
| 270               | 6.3x11     | 340    | 0.54      | 8x11.5     | 400    | 0.3       | 8x11.5     | 520    | 0.21      |
| 330               | 8x11.5     | 390    | 0.42      | 8x11.5     | 460    | 0.27      | 8x11.5     | 590    | 0.156     |
| 470               | 8x11.5     | 450    | 0.25      | 8x11.5     | 580    | 0.25      | 10x12.5    | 750    | 0.124     |
| 560               | 8x11.5     | 490    | 0.23      | 10x12.5    | 635    | 0.16      | 10x12.5    | 785    | 0.105     |
|                   |            |        |           | 8x11.5     | 550    | 0.17      |            |        |           |
| 680               | 8x11.5     | 550    | 0.21      | 10x12.5    | 765    | 0.11      | 10x16      | 1100   | 0.092     |
| 820               | 8x16       | 620    | 0.20      | 10x16      | 890    | 0.1       | 10x16      | 1180   | 0.078     |
| 1000              | 10x12.5    | 770    | 0.17      | 10x16      | 1040   | 0.076     | 10x20      | 1350   | 0.065     |
|                   | 8x16       | 750    | 0.15      |            |        |           |            |        |           |
| 1200              | 10x16      | 860    | 0.16      | 10x16      | 1200   | 0.067     | 10x25      | 1500   | 0.061     |
| 1500              | 10x16      | 1100   | 0.14      | 10x20      | 1400   | 0.062     | 10x30      | 1600   | 0.056     |
|                   |            |        |           |            |        |           | 13x20      | 1380   | 0.06      |
| 1800              | 10x20      | 1250   | 0.11      | 10x25      | 1550   | 0.058     | 13x20      | 1800   | 0.047     |
|                   |            |        |           |            |        |           | 10x25      | 1730   | 0.05      |
| 2200              | 10x20      | 1380   | 0.090     | 13x20      | 1750   | 0.041     | 13x25      | 2000   | 0.038     |
|                   | 10x25      | 1470   | 0.095     | 10x25      | 1650   | 0.52      | 13x20      | 1880   | 0.04      |
| 2700              | 10x25      | 1490   | 0.075     | 13x20      | 1900   | 0.035     | 13x25      | 2450   | 0.033     |
|                   | 13x20      | 1550   | 0.075     |            |        |           |            |        |           |
| 3300              | 13x20      | 1650   | 0.036     | 13x25      | 2000   | 0.031     | 16x25      | 2790   | 0.030     |
|                   |            |        |           |            |        |           | 13x30      | 2640   | 0.030     |
| 4700              | 13x30      | 2100   | 0.036     | 16x25      | 2100   | 0.030     | 16x31.5    | 2880   | 0.026     |
|                   | 13x25      | 1900   | 0.040     |            |        |           |            |        |           |
| 5600              | 13x30      | 2160   | 0.034     | 16x25      | 2290   | 0.028     | 16x35.5    | 2990   | 0.025     |
| 6800              | 16x25      | 2350   | 0.032     | 16x31.5    | 2650   | 0.026     | 18x35.5    | 3200   | 0.024     |
| 8200              | 16x31.5    | 2550   | 0.027     | 16x35.5    | 2770   | 0.026     | 18x35.5    | 3320   | 0.024     |
| 10000             | 16x35.5    | 2700   | 0.024     | 18x35.5    | 2850   | 0.024     | 18x41      | 3550   | 0.024     |
| 15000             | 18x35.5    | 2950   | 0.023     |            |        |           |            |        |           |

φ DxL(mm)

Ripple Current ( mA, rms ) at 105°C 100KHz  
Max Impedance (Ω) at 20°C 100KHz

φ DxL(mm)

| WV(SV)<br>Cap(μF) | 25<br>(32) |        |           | 35<br>(44) |        |           | 50<br>(63) |        |           |
|-------------------|------------|--------|-----------|------------|--------|-----------|------------|--------|-----------|
|                   | Size       | Ripple | Impedance | Size       | Ripple | Impedance | Size       | Ripple | Impedance |
| 0.47              |            |        |           |            |        |           | 5x11       | 25     | 5.4       |
| 1                 |            |        |           |            |        |           | 5x11       | 40     | 4         |
| 2.2               |            |        |           |            |        |           | 5x11       | 55     | 2.8       |
| 3.3               |            |        |           |            |        |           | 5x11       | 60     | 2.2       |
| 4.7               | 5x11       | 68     | 3.95      | 5x11       | 85     | 3.65      | 5x11       | 90     | 2         |
| 5.6               | 5x11       | 75     | 3.25      | 5x11       | 92     | 3.09      | 5x11       | 105    | 1.93      |
| 6.8               | 5x11       | 80     | 2.98      | 5x11       | 97     | 2.82      | 5x11       | 110    | 1.89      |
| 10                | 5x11       | 85     | 2.56      | 5x11       | 105    | 2.37      | 5x11       | 120    | 1.82      |
| 22                | 5x11       | 125    | 1.95      | 5x11       | 150    | 1.5       | 6.3x11     | 150    | 1.25      |
| 33                | 5x11       | 155    | 1.42      | 5x11       | 180    | 1.21      | 6.3x11     | 250    | 0.8       |
| 47                | 5x11       | 190    | 1.10      | 6.3x11     | 280    | 0.8       | 6.3x11     | 290    | 0.65      |
|                   | 6.3x11     | 220    | 1.00      |            |        |           |            |        |           |
| 56                | 6.3x11     | 250    | 0.79      | 6.3x11     | 310    | 0.64      | 8x11.5     | 310    | 0.49      |
| 68                | 6.3x11     | 280    | 0.65      | 8x11.5     | 350    | 0.52      | 8x11.5     | 375    | 0.33      |
| 100               | 6.3x11     | 370    | 0.35      | 8x11.5     | 450    | 0.25      | 10x12.5    | 480    | 0.17      |
| 120               | 6.3x11     | 380    | 0.33      | 8x11.5     | 510    | 0.22      | 10x12.5    | 530    | 0.156     |
| 150               | 8x11.5     | 410    | 0.31      | 8x11.5     | 540    | 0.191     | 10x12.5    | 590    | 0.132     |
| 180               | 8x11.5     | 455    | 0.25      | 10x12.5    | 650    | 0.172     | 10x16      | 860    | 0.114     |
| 220               | 8x11.5     | 550    | 0.15      | 10x12.5    | 750    | 0.114     | 10x16      | 930    | 0.096     |
| 270               | 10x12.5    | 720    | 0.125     | 10x16      | 910    | 0.095     | 10x20      | 1060   | 0.078     |
| 330               | 10x12.5    | 820    | 0.114     | 10x16      | 1050   | 0.079     | 10x25      | 1150   | 0.065     |
| 470               | 10x16      | 1200   | 0.076     | 10x20      | 1200   | 0.065     | 13x20      | 1590   | 0.055     |
| 560               | 10x16      | 1250   | 0.072     | 10x25      | 1500   | 0.061     | 13x20      | 1740   | 0.05      |
| 680               | 10x20      | 1320   | 0.065     | 13x20      | 1570   | 0.056     | 13x25      | 1930   | 0.044     |
|                   | 10x20      | 1400   | 0.052     | 13x20      | 1700   | 0.048     | 13x30      | 2100   | 0.039     |
| 820               | 10x25      | 1530   | 0.052     |            |        |           |            |        |           |
|                   | 13x20      | 1650   | 0.045     | 13x25      | 1900   | 0.042     | 16x25      | 2300   | 0.036     |
| 1200              | 13x25      | 1980   | 0.041     | 13x30      | 2130   | 0.039     | 16x31.5    | 2650   | 0.036     |
| 1500              | 13x25      | 2210   | 0.038     | 16x25      | 2270   | 0.036     | 16x35.5    | 2750   | 0.034     |
| 1800              | 16x25      | 2510   | 0.036     | 16x31.5    | 2700   | 0.035     | 16x35.5    | 2850   | 0.034     |
| 2200              | 16x25      | 2650   | 0.035     | 16x31.5    | 2780   | 0.034     | 18x35.5    | 3040   | 0.032     |
| 2700              | 16x25      | 2820   | 0.031     | 16x35.5    | 2850   | 0.029     | 18x41      | 3070   | 0.027     |
| 3300              | 16x31.5    | 3240   | 0.026     | 18x35.5    | 3100   | 0.026     | 18x41      | 3100   | 0.025     |
| 4700              | 16x35.5    | 3650   | 0.024     | 18x41      | 3500   | 0.024     |            |        |           |
| 5600              | 18x35.5    | 3720   | 0.024     |            |        |           |            |        |           |
| 6800              | 18x41      | 3850   | 0.024     |            |        |           |            |        |           |

Ripple Current ( mA, rms ) at 105°C 100KHz  
Max Impedance (Ω) at 20°C 100KHz

φ DxL(mm)

| WV(SV)<br>Cap(μF) | 63<br>(79) |        |           | 100<br>(125) |        |           | 160<br>(200) |        |           |
|-------------------|------------|--------|-----------|--------------|--------|-----------|--------------|--------|-----------|
|                   | Size       | Ripple | Impedance | Size         | Ripple | Impedance | Size         | Ripple | Impedance |
| 0.47              | 5x11       | 25     | 5.4       | 5x11         | 20     | 5.9       | 5x11         | 36     | 9.44      |
| 1                 | 5x11       | 33     | 4         | 5x11         | 30     | 4.4       | 6.3x11       | 45     | 7.85      |
| 2.2               | 5x11       | 45     | 2.8       | 5x11         | 42     | 3.3       | 6.3x11       | 55     | 5.21      |
| 3.3               | 5x11       | 58     | 2.2       | 5x11         | 55     | 2.8       | 8x11.5       | 70     | 4.31      |
| 4.7               | 5x11       | 65     | 2         | 5x11         | 72     | 2.6       | 8x11.5       | 80     | 4.16      |
| 5.6               | 5x11       | 95     | 1.9       | 5x11         | 100    | 2.33      | 10x12.5      | 91     | 3.61      |
| 6.8               | 5x11       | 100    | 1.82      | 6.3x11       | 115    | 1.95      | 10x16        | 100    | 3.12      |
| 10                | 5x11       | 110    | 1.75      | 6.3x11       | 130    | 1.77      | 10x16        | 140    | 2.69      |
| 22                | 6.3x11     | 180    | 0.80      | 8x11.5       | 220    | 0.85      | 10x16        | 205    | 1.3       |
| 33                | 8x11.5     | 270    | 0.61      | 10x12.5      | 320    | 0.69      | 10x20        | 260    | 1.1       |
| 47                | 8x11.5     | 300    | 0.56      | 10x12.5      | 370    | 0.58      | 13x20        | 320    | 0.91      |
| 56                | 8x11.5     | 330    | 0.38      | 10x12.5      | 400    | 0.43      | 13x20        | 340    | 0.67      |
|                   |            |        |           | 10x16        | 440    | 0.42      | 13x25        | 370    | 0.66      |
| 68                | 10x12.5    | 480    | 0.21      | 10x16        | 470    | 0.35      | 13x25        | 450    | 0.56      |
| 100               | 10x16      | 610    | 0.14      | 10x25        | 560    | 0.3       | 16x25        | 540    | 0.47      |
| 120               | 10x16      | 620    | 0.13      | 10x25        | 660    | 0.22      | 16x25        | 560    | 0.35      |
| 150               | 10x16      | 700    | 0.11      | 13x20        | 780    | 0.174     | 16x31.5      | 710    | 0.26      |
| 180               | 10x20      | 800    | 0.10      | 13x20        | 820    | 0.142     | 16x35.5      | 760    | 0.22      |
| 220               | 10x20      | 920    | 0.080     | 13x25        | 950    | 0.13      | 16x35.5      | 820    | 0.19      |
| 270               | 13x20      | 1150   | 0.065     | 13x30        | 1120   | 0.11      | 18x35.5      | 990    | 0.18      |
| 330               | 13x20      | 1250   | 0.055     | 16x25        | 1440   | 0.1       | 18x41        | 1180   | 0.16      |
| 470               | 13x25      | 1620   | 0.053     | 16x31.5      | 1650   | 0.09      |              |        |           |
| 560               | 13x25      | 1680   | 0.049     | 16x35.5      | 1720   | 0.085     |              |        |           |
| 680               | 13x30      | 1950   | 0.043     | 18x35.5      | 1790   | 0.08      |              |        |           |
| 820               | 16x25      | 2150   | 0.038     | 18x35.5      | 1840   | 0.071     |              |        |           |
| 1000              | 16x31.5    | 2350   | 0.034     | 18x41        | 1930   | 0.066     |              |        |           |
| 1200              | 16x35.5    | 2550   | 0.032     |              |        |           |              |        |           |
| 1500              | 18x35.5    | 2710   | 0.031     |              |        |           |              |        |           |
| 1800              | 18x41      | 3000   | 0.027     |              |        |           |              |        |           |

Ripple Current ( mA, rms ) at 105°C 100KHz  
Max Impedance (Ω) at 20°C 100KHz

φ DxL(mm)

| WV(SV)<br>Cap(μF) | 200<br>(250) |        |           | 250<br>(300) |        |           | 350<br>(400) |        |           |
|-------------------|--------------|--------|-----------|--------------|--------|-----------|--------------|--------|-----------|
|                   | Size         | Ripple | Impedance | Size         | Ripple | Impedance | Size         | Ripple | Impedance |
| 0.47              | 5x11         | 36     | 9.38      | 5x11         | 40     | 8.85      | 6.3x11       | 40     | 8.82      |
| 1                 | 6.3x11       | 45     | 7.76      | 6.3x11       | 50     | 6.54      | 6.3x11.5     | 50     | 7.90      |
|                   |              |        |           |              |        |           | 8x11.5       | 58     | 6.35      |
| 2.2               | 6.3x11       | 55     | 5.18      | 8x11.5       | 72     | 4.12      | 8x11.5       | 75     | 5.3       |
|                   |              |        |           |              |        |           | 10x12.5      | 86     | 4.02      |
| 3.3               | 8x11.5       | 71     | 4.25      | 8x11.5       | 75     | 3.85      | 10x12.5      | 90     | 3.80      |
|                   |              |        |           |              |        |           | 10x16        | 100    | 3.52      |
| 4.7               | 8x11.5       | 78     | 5.00      | 8x11.5       | 85     | 3.50      | 10x16        | 118    | 3.13      |
|                   | 10x12.5      | 85     | 4.12      | 10x12.5      | 100    | 2.95      | 10x20        | 130    | 2.77      |
| 5.6               | 8x11.5       | 90     | 4.50      | 8x11.5       | 95     | 2.93      | 10x16        | 120    | 2.76      |
|                   | 10x12.5      | 95     | 3.55      | 10x12.5      | 105    | 2.72      | 10x20        | 132    | 2.58      |
| 6.8               | 8x16         | 115    | 3.25      | 8x16         | 124    | 2.50      | 10x16        | 148    | 2.43      |
|                   | 10x16        | 140    | 2.71      | 10x12.5      | 126    | 2.20      | 10x25        | 180    | 1.65      |
| 10                |              |        |           | 10x16        | 140    | 1.86      |              |        |           |
|                   | 10x16        | 150    | 2.02      | 8x16         | 141    | 1.80      | 10x16        | 165    | 1.64      |
|                   |              |        |           | 10x12.5      | 144    | 1.75      | 10x25        | 200    | 1.35      |
| 22                |              |        |           | 10x16        | 160    | 1.4       |              |        |           |
|                   | 10x16        | 186    | 1.80      |              |        |           |              |        |           |
|                   | 10x20        | 205    | 1.40      | 10x20        | 210    | 1.3       | 13x20        | 220    | 1.22      |
| 33                | 10x20        | 280    | 1.00      | 10x25        | 248    | 1.25      | 13x20        | 263    | 1.02      |
|                   | 13x20        | 330    | 0.80      | 13x20        | 310    | 0.9       | 13x25        | 290    | 0.86      |
| 47                | 13x20        | 360    | 0.65      | 13x20        | 375    | 0.60      | 16x25        | 389    | 0.76      |
|                   | 13x25        | 400    | 0.62      | 13x25        | 405    | 0.45      | 16x31.5      | 430    | 0.62      |
| 56                | 13x20        | 430    | 0.45      | 13x25        | 420    | 0.42      | 16x35.5      | 460    | 0.60      |
|                   |              |        |           |              |        |           |              |        |           |
| 68                | 13x25        | 480    | 0.42      |              |        |           |              |        |           |
|                   | 16x25        | 540    | 0.35      | 16x25        | 490    | 0.38      | 16x31.5      | 475    | 0.57      |
| 100               | 16x25        | 780    | 0.30      | 16x31.5      | 675    | 0.27      | 16x35.5      | 481    | 0.56      |
|                   | 16x31.5      | 820    | 0.28      |              |        |           | 18x31.5      | 487    | 0.56      |
|                   |              |        |           |              |        |           | 18x35.5      | 513    | 0.55      |
| 120               | 16x25        | 740    | 0.28      | 16x31.5      | 692    | 0.26      | 18x35.5      | 525    | 0.54      |
|                   | 16x31.5      | 830    | 0.26      | 16x35.5      | 730    | 0.25      | 18x41        | 560    | 0.52      |
| 150               | 16x31.5      | 840    | 0.25      | 16x35.5      | 750    | 0.24      | 18x41        | 590    | 0.50      |
|                   | 16x35.5      | 860    | 0.23      | 18x31.5      | 750    | 0.23      |              |        |           |
| 180               | 18x31.5      | 920    | 0.20      | 18x35.5      | 830    | 0.21      |              |        |           |
| 220               | 18x35.5      | 1050   | 0.19      | 18x31.5      | 850    | 0.20      |              |        |           |
|                   | 18x41        | 1090   | 0.16      | 18x41        | 910    | 0.19      |              |        |           |

| WV(SV)<br>Cap(μF) | 400<br>(450) |        |           | 420<br>(470) |        |           | 450<br>(500) |        |           |
|-------------------|--------------|--------|-----------|--------------|--------|-----------|--------------|--------|-----------|
|                   | Size         | Ripple | Impedance | Size         | Ripple | Impedance | Size         | Ripple | Impedance |
| 0.47              | 6.3x11       | 26     | 33.00     | 6.3x11       | 28     | 34.00     | 8x11.5       | 30     | 34.00     |
| 1                 | 8x11.5       | 36     | 16.50     | 8x11.5       | 38     | 17.00     | 8x11.5       | 45     | 17.35     |
| 2.2               | 10x12.5      | 76     | 13.00     | 10x12.5      | 58     | 12.10     | 10x16        | 65     | 10.25     |
|                   | 8x11.5       | 65     | 13.00     |              |        |           |              |        |           |
| 3.3               | 8x11.5       | 86     | 12.00     | 10x12.5      | 87     | 11.00     | 10x16        | 89     | 10.00     |
| 4.7               | 10x12.5      | 105    | 10.00     | 10x16        | 102    | 8.50      | 10x20        | 105    | 5.00      |
| 5.6               | 8x16         | 105    | 8.00      | 10x16        | 109    | 6.80      | 10x20        | 110    | 4.75      |
|                   | 10x12.5      | 120    | 9.00      |              |        |           |              |        | 4.60      |
| 6.8               | 10x16        | 160    | 7.50      | 10x16        | 160    | 6.00      | 10x20        | 135    | 4.05      |
| 10                | 10x20        | 235    | 3.60      | 10x20        | 180    | 3.70      | 10x25        | 180    | 3.75      |
| 22                | 13x20        | 295    | 2.65      | 13x25        | 330    | 2.70      | 13x25        | 320    | 2.80      |
| 33                | 13x25        | 440    | 1.60      | 16x25        | 480    | 1.80      | 16x25        | 460    | 2.20      |
| 47                | 16x25        | 580    | 1.40      | 16x31.5      | 620    | 1.10      | 16x35.5      | 650    | 1.05      |
| 56                | 16x31.5      | 650    | 0.85      | 16x35.5      | 670    | 0.90      | 18x31.5      | 730    | 0.95      |
| 68                | 16x31.5      | 800    | 0.80      | 18x31.5      | 750    | 0.80      | 18x35.5      | 760    | 0.75      |
| 100               | 18x35.5      | 900    | 0.61      | 18x35.5      | 820    | 0.70      | 18x41        | 880    | 0.74      |

Ripple Current ( mA, rms ) at 105°C 100KHz

Max Impedance (Ω) at 20°C 100KHz

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