

**RN** Non-polar Series

- Features: 85°C, 1000hrs, Non-polarized/Polarity reversing
- Recommended Applications:  
Small crossover network, Reversed polarity circuit, Coupling
- Corresponding product to RoHS



■ Specifications

| Item  | Characteristics   |   |      |     |      |      |      |      |      |      |      |      |      |      |
|---|---|---|------|-----|------|------|------|------|------|------|------|------|------|------|
| Operating Temperature Range   | -40 ~ +85°C   |   |      |     |      |      |      |      |      |      |      |      |      |      |
| Rated Voltage Range   | 4 ~ 250VDC  |   |      |     |      |      |      |      |      |      |      |      |      |      |
| Rated Capacitance Range   | 0.1 ~ 6800 μF   |   |      |     |      |      |      |      |      |      |      |      |      |      |
| Capacitance Tolerance   | ± 20 % at 120Hz , 20°C  |   |      |     |      |      |      |      |      |      |      |      |      |      |
| Leakage Current (MAX) (20°C)  | I ≤ 0.03CV + 4 μA ; L=7mm, I ≤ 0.05CV or 10 μA whichever is greater (After rated voltage applied for 2 minutes )<br>I = Leakage Current ( μA ) C= Nominal Capacitance ( μF ) V= Rated Voltage (V) |   |      |     |      |      |      |      |      |      |      |      |      |      |
| Dissipation Factor (MAX) (tan δ) (120Hz , 20°C)   | WV  | 4   | 6.3  | 10  | 16   | 25   | 35   | 50   | 63   | 80   | 100  | 160  | 200  | 250  |
|   | tan δ   | 0.35                                      | 0.24 | 0.2 | 0.17 | 0.15 | 0.15 | 0.15 | 0.10 | 0.10 | 0.10 | 0.20 | 0.20 | 0.20 |
| When nominal capacitance is over 1000 μF<br>tan δ shall be added 0.02 to the listed value with increase of every 1000 μF. |   |   |      |     |      |      |      |      |      |      |      |      |      |      |
| Low Temperature Stability Impedance Ratio (MAX)   | WV  | 4   | 6.3  | 10  | 16   | 25   | 35   | 50   | 63   | 80   | 100  | 160  | 200  | 250  |
|   | Z(120Hz)  |   |      |     |      |      |      |      |      |      |      |      |      |      |
|   | Z(-25°C) / Z(+20°C)   | 6   | 4    | 3   | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 6    | 6    | 6    |
|   | Z(-40°C) / Z(+20°C)   | 12  | 8    | 6   | 4    | 4    | 3    | 3    | 3    | 3    | 3    | 12   | 12   | 12   |
| Endurance   | After applying rated voltage for 1000 hours at 85°C ,the capacitors shall meet the following requirements.<br>(The polarity shall be reversed every 250 hours)                                    |   |      |     |      |      |      |      |      |      |      |      |      |      |
|   | Capacitance Change  | Within ± 20 % of initial value            |      |     |      |      |      |      |      |      |      |      |      |      |
|   | Dissipation Factor  | Not more than 200% of the specified value |      |     |      |      |      |      |      |      |      |      |      |      |
|   | Leakage Current   | Not more than the specified value         |      |     |      |      |      |      |      |      |      |      |      |      |
| Shelf Life  | After placed at 85°C without voltage applied for 500 hours,<br>the capacitors shall meet the same requirements as load life.  |   |      |     |      |      |      |      |      |      |      |      |      |      |

■ Diagram of Dimensions

|    |      |                 |                 |                |     |     |     |     |
|----|------|-----------------|-----------------|----------------|-----|-----|-----|-----|
| φD | 4    | 5               | 6.3             | 8              | 10  | 13  | 16  | 18  |
| P  | 1.5  | 2.0             | 2.5             | 3.5            | 5.0 | 5.0 | 7.5 | 7.5 |
| φd | 0.45 | ( 0.45 )<br>0.5 | ( 0.45 )<br>0.5 | 0.6            | 0.6 | 0.6 | 0.8 | 0.8 |
| a  | 1.0  | ( 1.0 )<br>1.5  | ( 1.0 )<br>1.5  | ( 1.0 )<br>1.5 | 1.0 | 2.0 | 2.0 | 2.0 |

( ) : L = 7

■ Multiplier for Ripple Current

Frequency coefficient

| WV(VDC) \ Freq.(Hz) | 50  | 120 | 1K  | 10K |
|---------------------|-----|-----|-----|-----|
| 4 ~ 16              | 0.8 | 1.0 | 1.1 | 1.2 |
| 25 ~ 35             | 0.8 | 1.0 | 1.5 | 1.7 |
| 50 ~ 100            | 0.8 | 1.0 | 1.6 | 1.9 |
| 160 ~ 250           | 0.8 | 1.0 | 1.5 | 1.6 |



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■ Dimensions, Rated Ripple Current

| Capacitance (μF) | Rated (Surge) Voltage |        |         |        |         |        |         |        |         |        |         |        |         |        |         |        |    |
|------------------|-----------------------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----|
|                  | 4 (5)                 |        | 6.3 (8) |        | 10 (13) |        | 16 (20) |        | 25 (32) |        | 35 (44) |        | 50 (63) |        | 63 (79) |        |    |
|                  | Size                  | Ripple | Size    | Ripple | Size    | Ripple | Size    | Ripple | Size    | Ripple | Size    | Ripple | Size    | Ripple | Size    | Ripple |    |
| 0.10             |                       |        |         |        |         |        |         |        |         |        |         |        |         | 4x7    | 1       | 4x7    | 1  |
| 0.22             |                       |        |         |        |         |        |         |        |         |        |         |        |         | 4x7    | 2       | 4x7    | 2  |
| 0.33             |                       |        |         |        |         |        |         |        |         |        |         |        |         | 4x7    | 3       | 4x7    | 3  |
| 0.47             |                       |        |         |        |         |        |         |        |         |        |         |        |         | 4x7    | 5       | 4x7    | 5  |
|                  |                       |        |         |        |         |        |         |        |         |        |         |        |         | 5x11   | 5       |        |    |
| 1.0              |                       |        |         |        |         |        |         |        |         |        |         |        |         | 4x7    | 10      | 4x7    | 15 |
|                  |                       |        |         |        |         |        |         |        |         |        |         |        |         | 5x11   | 10      | 5x11   | 10 |
| 2.2              |                       |        |         |        |         |        |         |        |         |        |         | 4x7    | 15      | 4x7    | 20      | 5x7    | 25 |
|                  |                       |        |         |        |         |        |         |        |         |        |         |        |         | 5x11   | 20      | 5x11   | 20 |
| 3.3              |                       |        |         |        |         |        |         |        |         | 4x7    | 15      | 5x7    | 20      | 5x7    | 25      | 6.3x7  | 30 |
|                  |                       |        |         |        |         |        |         |        |         |        |         |        |         | 5x11   | 30      | 5x11   | 30 |
| 4.7              |                       |        |         |        |         |        |         |        |         |        |         | 5x7    | 25      | 6.3x7  | 30      | 6.3x7  | 35 |
|                  |                       |        |         |        |         |        | 4x7     | 20     | 5x7     | 20     | 5x11    | 30     | 5x11    | 30     | 6.3x11  | 35     |    |
| 10               |                       |        |         |        |         |        | 5x7     | 30     | 5x11    | 40     | 5x11    | 40     |         |        |         |        |    |
|                  |                       |        |         |        | 4x7     | 25     | 5x11    | 40     | 6.3x7   | 35     | 6.3x7   | 40     | 6.3x11  | 45     | 6.3x11  | 55     |    |
| 22               |                       |        |         |        | 5x7     | 40     | 5x11    | 55     | 6.3x7   | 50     |         |        |         |        |         |        |    |
|                  |                       |        | 5x7     | 35     | 5x11    | 50     | 6.3x7   | 45     | 6.3x11  | 65     | 6.3x11  | 70     | 8x11    | 80     | 8x11    | 90     |    |
| 33               | 5x7                   | 35     | 5x7     | 40     | 5x11    | 65     | 5x11    | 70     | 6.3x7   | 65     |         |        |         |        |         |        |    |
|                  |                       |        | 5x11    | 60     | 6.3x7   | 50     | 6.3x7   | 60     | 6.3x11  | 80     | 8x11    | 100    | 8x11    | 105    | 10x12.5 | 135    |    |
| 47               |                       |        | 5x11    | 70     | 5x11    | 75     | 6.3x7   | 70     |         |        |         |        |         |        |         |        |    |
|                  | 5x7                   | 40     | 6.3x7   | 50     | 6.3x7   | 60     | 6.3x11  | 95     | 6.3x11  | 95     | 8x11    | 120    | 8x15    | 140    | 10x16   | 180    |    |
| 100              | 6.3x7                 | 60     | 6.3x11  | 115    | 6.3x11  | 125    | 8x11    | 160    | 8x11    | 160    | 10x16   | 230    | 10x20   | 265    | 13x20   | 320    |    |
| 220              |                       |        | 8x11    | 205    | 8x11    | 215    | 10x12.5 | 275    | 10x16   | 305    | 13x20   | 410    | 13x25   | 480    | 16x25   | 575    |    |
| 330              |                       |        | 8x11    | 265    | 10x16   | 345    | 10x16   | 375    | 13x20   | 450    | 13x20   | 505    | 16x25   | 650    | 16x32   | 750    |    |
| 470              |                       |        | 10x12.5 | 370    | 10x16   | 410    | 10x20   | 485    | 13x20   | 540    | 13x25   | 655    | 16x32   | 835    | 18x36   | 965    |    |
| 1000             |                       |        | 10x20   | 650    | 13x20   | 720    | 13x25   | 855    | 16x25   | 950    | 16x32   | 1140   |         |        |         |        |    |
| 2200             |                       |        | 13x25   | 1160   | 16x25   | 1280   | 16x32   | 1510   | 18x36   | 1620   |         |        |         |        |         |        |    |
| 3300             |                       |        | 16x25   | 1570   | 16x32   | 1690   | 18x36   | 1980   |         |        |         |        |         |        |         |        |    |
| 4700             |                       |        | 16x32   | 2020   | 18x36   | 2160   |         |        |         |        |         |        |         |        |         |        |    |
| 6800             |                       |        | 18x36   | 2600   |         |        |         |        |         |        |         |        |         |        |         |        |    |

| Capacitance (μF) | Rated (Surge) Voltage |        |           |        |           |        |           |        |           |        |
|------------------|-----------------------|--------|-----------|--------|-----------|--------|-----------|--------|-----------|--------|
|                  | 80 (100)              |        | 100 (125) |        | 160 (200) |        | 200 (250) |        | 250 (300) |        |
|                  | Size                  | Ripple | Size      | Ripple | Size      | Ripple | Size      | Ripple | Size      | Ripple |
| 0.47             |                       |        | 5x11      | 5      | 6.3x11    | 5      |           |        |           |        |
| 1                |                       |        | 5x11      | 10     | 6.3x11    | 15     | 6.3x11    | 15     | 8x11      | 15     |
| 2.2              | 5x11                  | 30     | 6.3x11    | 25     | 8x11      | 20     | 8x11      | 20     | 10x12.5   | 25     |
| 3.3              | 6.3x11                | 35     | 6.3x11    | 35     | 10x12.5   | 30     | 10x12.5   | 30     | 10x12.5   | 30     |
| 4.7              | 6.3x11                | 40     | 6.3x11    | 40     | 10x12.5   | 35     | 10x16     | 40     | 10x16     | 40     |
| 10               | 8x11                  | 65     | 8x11      | 70     | 10x16     | 55     | 13x20     | 70     | 13x20     | 70     |
| 22               | 10x16                 | 105    | 10x16     | 135    | 13x25     | 105    | 13x25     | 120    | 16x25     | 135    |
| 33               | 10x16                 | 160    | 13x20     | 220    | 16x25     | 165    | 16x25     | 165    | 16x32     | 180    |
| 47               | 10x20                 | 215    | 13x20     | 240    | 16x26     | 200    | 16x32     | 220    | 16x36     | 230    |
| 100              | 13x25                 | 385    | 16x25     | 425    | 18x36     | 360    |           |        |           |        |
| 220              | 16x32                 | 690    | 18x36     | 720    |           |        |           |        |           |        |
| 330              | 18x36                 | 860    |           |        |           |        |           |        |           |        |

☆ Size: D φ x L (mm) ☆ Ripple Current : mArms/85°C, 120Hz