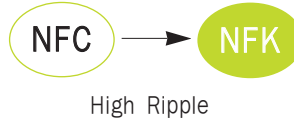


NFK Series

• 105°C 5,000Hrs assured.

- Non-solvent proof.
- High Ripple, Long Life.
- For SMPS, IP-Board, Adaptor.
- RoHS compliant.
- Halogen-free capacitors are also available.



SPECIFICATIONS

| Item | Characteristics | | | | | | | | | | | | | |
|--|---|---------------------------|---------------------------------|----------------|-----------------|------------|-------------------|-----------------|--------|------------------|-------------------|---|---|---|
| Rated Voltage Range | 160 ~ 400 V _{DC} | 420 ~ 500 V _{DC} | | | | | | | | | | | | |
| Operating Temperature Range | -40 ~ +105°C | -25 ~ +105°C | | | | | | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | | | | | | | | |
| Leakage Current | <table border="1"> <thead> <tr> <th>C · V \ Time</th> <th>After 1 minute</th> <th>After 5 minutes</th> </tr> </thead> <tbody> <tr> <td>≤ 1000</td> <td>I = 0.1CV + 40</td> <td>I = 0.03CV + 15</td> </tr> <tr> <td>> 1000</td> <td>I = 0.04CV + 100</td> <td>I = 0.02CV + 25</td> </tr> </tbody> </table> <p>Where, I: Max. Leakage current(μA) C: Nominal capacitance (μF) V: Rated voltage (V_{DC})(at 20°C)</p> | | C · V \ Time | After 1 minute | After 5 minutes | ≤ 1000 | I = 0.1CV + 40 | I = 0.03CV + 15 | > 1000 | I = 0.04CV + 100 | I = 0.02CV + 25 | | | |
| C · V \ Time | After 1 minute | After 5 minutes | | | | | | | | | | | | |
| ≤ 1000 | I = 0.1CV + 40 | I = 0.03CV + 15 | | | | | | | | | | | | |
| > 1000 | I = 0.04CV + 100 | I = 0.02CV + 25 | | | | | | | | | | | | |
| Dissipation Factor(Tanδ) | <table border="1"> <thead> <tr> <th>Rated Voltage(V_{DC})</th> <th>160~250</th> <th>350~500</th> </tr> </thead> <tbody> <tr> <td>Tanδ(Max.)</td> <td>0.20</td> <td>0.24</td> </tr> </tbody> </table> <p>(at 20°C, 120Hz)</p> | | Rated Voltage(V _{DC}) | 160~250 | 350~500 | Tanδ(Max.) | 0.20 | 0.24 | | | | | | |
| Rated Voltage(V _{DC}) | 160~250 | 350~500 | | | | | | | | | | | | |
| Tanδ(Max.) | 0.20 | 0.24 | | | | | | | | | | | | |
| Temperature Characteristics (Max. Impedance ratio) | <table border="1"> <thead> <tr> <th>Rated Voltage(V_{DC})</th> <th>160~250</th> <th>350~400</th> <th>420~500</th> </tr> </thead> <tbody> <tr> <td>Z(-25°C)/Z(+20°C)</td> <td>3</td> <td>5</td> <td>6</td> </tr> <tr> <td>Z(-40°C)/Z(+20°C)</td> <td>6</td> <td>6</td> <td>—</td> </tr> </tbody> </table> <p>(at 120Hz)</p> | | Rated Voltage(V _{DC}) | 160~250 | 350~400 | 420~500 | Z(-25°C)/Z(+20°C) | 3 | 5 | 6 | Z(-40°C)/Z(+20°C) | 6 | 6 | — |
| Rated Voltage(V _{DC}) | 160~250 | 350~400 | 420~500 | | | | | | | | | | | |
| Z(-25°C)/Z(+20°C) | 3 | 5 | 6 | | | | | | | | | | | |
| Z(-40°C)/Z(+20°C) | 6 | 6 | — | | | | | | | | | | | |
| Load Life | <p>The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 5,000 hours at 105°C.</p> <p>Capacitance change ≯ ±20% of the initial value Tanδ ≯ 200% of the initial specified value Leakage current ≯ The initial specified value</p> | | | | | | | | | | | | | |
| Shelf Life | <p>The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. The rated voltage shall be applied to the capacitors for a minimum of 30 minutes, at least 24 hours and not more than 48 hours before the measurements.</p> <p>Capacitance change ≯ ±20% of the initial value Tanδ ≯ 200% of the initial specified value Leakage current ≯ 500% of the initial specified value</p> | | | | | | | | | | | | | |
| Others | Satisfied characteristics KS C IEC 60384-4 | | | | | | | | | | | | | |

DIMENSIONS OF NFK Series

Unit(mm)

Marking : DARK BROWN SLEEVE, SILVER INK

| | 8 | 10 | 12.5 | 16 | 18 | 20 | 22 | 25.4 |
|-----|---------------|-----|--------------|-----|-----|-----|------|------|
| øD | 8 | 10 | 12.5 | 16 | 18 | 20 | 22 | 25.4 |
| ød | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 | 0.8 | 1.0 | 1.0 |
| F | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 | 7.5 | 10.0 | 10.0 |
| øD' | øD + 0.5 max. | | | | | | | |
| L' | L + 1.5 max. | | L + 2.0 max. | | | | | |

※ ø10 x 12L, L' ≤ L + 1.5

RATINGS OF NFK Series

| V _{dc} | Capacitance (μF) | ∅D×L(mm) | Rated Ripple Current (mA _{rms} /105°C, 120Hz) |
|-----------------|------------------|-----------|--|
| 160 | 27 | 10 × 12 | 240 |
| | | 10 × 12.5 | 240 |
| | 33 | 10 × 20 | 250 |
| | 47 | 12.5 × 20 | 340 |
| | 68 | 12.5 × 20 | 400 |
| | | 12.5 × 25 | 436 |
| | 100 | 12.5 × 30 | 550 |
| | 150 | 16 × 25 | 736 |
| | 220 | 16 × 31.5 | 912 |
| | 330 | 18 × 31.5 | 1200 |
| | | 22 × 25 | 1190 |
| | 390 | 22 × 30 | 1370 |
| | 470 | 25.4 × 30 | 1610 |
| | 560 | 22 × 35 | 1740 |
| | | 22 × 40 | 1820 |
| | 680 | 22 × 45 | 2090 |
| | | 25.4 × 35 | 2050 |
| | 820 | 22 × 50 | 2390 |
| 25.4 × 40 | | 2350 | |
| 1000 | 25.4 × 50 | 2810 | |
| 200 | 22 | 10 × 12 | 162 |
| | | 10 × 12.5 | 162 |
| | 25 | 8 × 20 | 160 |
| | 33 | 10 × 20 | 250 |
| | 47 | 12.5 × 20 | 340 |
| | 68 | 12.5 × 25 | 436 |
| | 100 | 12.5 × 30 | 550 |
| | 150 | 16 × 25 | 736 |
| | 220 | 18 × 31.5 | 985 |
| | | 22 × 25 | 990 |
| | 330 | 22 × 30 | 1290 |
| | | 22 × 35 | 1480 |
| | 390 | 25.4 × 30 | 1510 |
| | | 22 × 40 | 1710 |
| | 470 | 25.4 × 35 | 1740 |
| | | 22 × 45 | 1940 |
| | 560 | 22 × 50 | 2020 |
| | | 25.4 × 40 | 1990 |
| | 820 | 25.4 × 50 | 2610 |

RATED RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Freq.(Hz) | 120 | 1K | 10K | 50K | 100K |
|-----------|------|------|------|------|------|
| Factor | 1.00 | 1.25 | 1.50 | 1.75 | 2.00 |

| V _{dc} | Capacitance (μF) | ∅D×L(mm) | Rated Ripple Current (mA _{rms} /105°C, 120Hz) |
|-----------------|------------------|-----------|--|
| 250 | 6.8 | 10 × 12 | 86 |
| | | 10 × 12.5 | 86 |
| | 10 | 8 × 15 | 95 |
| | | 10 × 12.5 | 105 |
| | 15 | 10 × 12 | 128 |
| | | 10 × 12.5 | 128 |
| | 22 | 10 × 16 | 165 |
| | 33 | 12.5 × 20 | 250 |
| | 47 | 12.5 × 20 | 320 |
| | | 12.5 × 25 | 375 |
| | 68 | 10 × 40 | 465 |
| | | 12.5 × 30 | 463 |
| | 82 | 12.5 × 35 | 515 |
| | 100 | 10 × 50 | 585 |
| | | 16 × 25 | 591 |
| | 150 | 18 × 25 | 721 |
| | | 12.5 × 50 | 860 |
| | 180 | 18 × 31.5 | 813 |
| | | 22 × 25 | 820 |
| | 220 | 18 × 31.5 | 925 |
| 22 × 30 | | 960 | |
| 270 | 22 × 35 | 1130 | |
| | 25.4 × 30 | 1140 | |
| 330 | 22 × 40 | 1300 | |
| | 25.4 × 35 | 1330 | |
| 390 | 22 × 45 | 1480 | |
| | 25.4 × 40 | 1510 | |
| 470 | 22 × 50 | 1690 | |
| 560 | 25.4 × 50 | 1960 | |
| 350 | 10 | 8 × 20 | 120 |
| | | 10 × 16 | 125 |
| | | 10 × 20 | 130 |
| | 22 | 12.5 × 20 | 225 |
| | | 12.5 × 20 | 249 |
| | 33 | 12.5 × 25 | 260 |
| | | 12.5 × 30 | 380 |
| | 47 | 12.5 × 40 | 516 |
| | | 16 × 25 | 510 |
| | 82 | 18 × 25 | 620 |
| | 100 | 18 × 31.5 | 743 |
| | | 22 × 25 | 720 |
| | 120 | 22 × 30 | 840 |
| | 150 | 18 × 35.5 | 942 |
| | | 25.4 × 30 | 1010 |
| | 180 | 18 × 40 | 1048 |
| | | 22 × 35 | 1090 |
| | 200 | 22 × 40 | 1200 |
| | | 25.4 × 35 | 1230 |
| | 220 | 22 × 45 | 1320 |
| 22 × 50 | | 1510 | |
| 270 | 25.4 × 40 | 1490 | |
| | 25.4 × 50 | 1780 | |

RATINGS OF NFK Series

| V _{dc} | Capacitance (μF) | ∅ D×L(mm) | Rated Ripple Current (mA _{rms} /105°C, 120Hz) |
|-----------------|------------------|-----------|--|
| 400 | 6.8 | 8 × 15 | 90 |
| | 8.2 | 8 × 20 | 105 |
| | | 10 × 12 | 98 |
| | | 10 × 12.5 | 98 |
| | | 10 × 16 | 125 |
| | 15 | 10 × 20 | 150 |
| | | 12.5 × 16 | 140 |
| | 22 | 10 × 25 | 200 |
| | 27 | 12.5 × 20 | 250 |
| | 33 | 12.5 × 25 | 295 |
| | | 16 × 20 | 305 |
| | 47 | 10 × 45 | 352 |
| | | 12.5 × 35 | 375 |
| | | 16 × 25 | 436 |
| | 68 | 12.5 × 40 | 475 |
| | | 18 × 25 | 472 |
| | 82 | 18 × 31.5 | 700 |
| | | 22 × 25 | 590 |
| | 100 | 18 × 35.5 | 795 |
| | 120 | 18 × 40 | 912 |
| | | 22 × 30 | 760 |
| | 150 | 18 × 40 | 1020 |
| | | 22 × 35 | 900 |
| | | 25.4 × 30 | 920 |
| | 180 | 20 × 40 | 1080 |
| | | 22 × 40 | 1040 |
| | | 25.4 × 35 | 1060 |
| | 200 | 22 × 45 | 1140 |
| 220 | 22 × 45 | 1200 | |
| | 22 × 50 | 1240 | |
| | 25.4 × 40 | 1220 | |
| 270 | 25.4 × 50 | 1470 | |
| 330 | 25.4 × 50 | 1520 | |
| 420 | 22 | 10 × 20 | 135 |
| | 27 | 12.5 × 20 | 215 |
| | 33 | 16 × 20 | 340 |
| | 47 | 16 × 25 | 368 |
| | | 18 × 20 | 375 |
| | 68 | 18 × 25 | 500 |
| | 82 | 18 × 31.5 | 660 |
| | | 22 × 25 | 580 |
| | 100 | 18 × 35.5 | 750 |
| | | 22 × 30 | 690 |
| | 120 | 18 × 40 | 830 |
| | | 22 × 35 | 800 |
| | 150 | 25.4 × 30 | 810 |
| | | 18 × 45 | 950 |
| | | 22 × 40 | 940 |
| | 180 | 25.4 × 35 | 980 |
| 22 × 45 | | 1080 | |
| 200 | 25.4 × 40 | 1150 | |
| 220 | 22 × 50 | 1230 | |
| 270 | 25.4 × 50 | 1450 | |

| V _{dc} | Capacitance (μF) | ∅ D×L(mm) | Rated Ripple Current (mA _{rms} /105°C, 120Hz) |
|-----------------|------------------|-----------|--|
| 450 | 4.7 | 8 × 20 | 79 |
| | 6.8 | 10 × 16 | 100 |
| | 8.2 | 10 × 16 | 122 |
| | 10 | 10 × 20 | 135 |
| | 15 | 10 × 25 | 185 |
| | 22 | 10 × 33 | 215 |
| | 27 | 12.5 × 25 | 260 |
| | 33 | 12.5 × 30 | 335 |
| | | 16 × 20 | 340 |
| | 39 | 10 × 45 | 353 |
| | 47 | 10 × 50 | 400 |
| | | 12.5 × 40 | 405 |
| | | 16 × 25 | 368 |
| | 68 | 18 × 25 | 500 |
| | | 22 × 25 | 530 |
| | 82 | 12.5 × 50 | 670 |
| | | 18 × 31.5 | 650 |
| | 100 | 12.5 × 60 | 750 |
| | | 16 × 45 | 750 |
| | | 18 × 35.5 | 750 |
| | | 22 × 30 | 680 |
| | 120 | 16 × 50 | 800 |
| | | 18 × 40 | 800 |
| | | 22 × 35 | 790 |
| | | 25.4 × 30 | 800 |
| | 150 | 18 × 45 | 920 |
| | | 20 × 40 | 930 |
| | | 22 × 40 | 950 |
| | | 25.4 × 35 | 980 |
| | 180 | 22 × 45 | 1070 |
| | | 22 × 50 | 1100 |
| | | 25.4 × 40 | 1080 |
| 200 | 22 × 50 | 1150 | |
| 220 | 25.4 × 50 | 1290 | |
| 500 | 22 | 12.5 × 30 | 220 |
| | 27 | 10 × 50 | 305 |
| | 33 | 12.5 × 45 | 365 |
| | 39 | 12.5 × 50 | 425 |
| | 47 | 18 × 31.5 | 468 |
| | 56 | 22 × 25 | 470 |
| | 60 | 12.5 × 60 | 515 |
| | 68 | 16 × 45 | 585 |
| | | 18 × 35.5 | 585 |
| | | 22 × 30 | 550 |
| | 82 | 16 × 50 | 653 |
| | | 18 × 35.5 | 640 |
| | | 18 × 40 | 653 |
| | | 25.4 × 30 | 640 |
| | 100 | 18 × 45 | 750 |
| | | 20 × 40 | 800 |
| | | 22 × 35 | 700 |
| | | 22 × 40 | 730 |
| 120 | 18 × 50 | 850 | |
| | 22 × 45 | 900 | |
| | 25.4 × 35 | 820 | |
| | 25.4 × 40 | 860 | |
| 150 | 22 × 50 | 980 | |
| 180 | 25.4 × 50 | 1140 | |

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