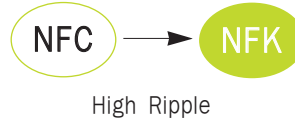


NFK Series

• 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

| | øD | 8 | 10 | 12.5 | 16 | 18 | 20 | 22 |
|-----|---------------|-----|--------------|------|-----|-----|-----|------|
| ød | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| F | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 | 7.5 | 7.5 | 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} | | 160 | | 200 | |
|-----------------|-------|-----------|---|-----------|---|
| μF | Items | ∅ D×L(mm) | Rated Ripple Current (mArms/105°C,120Hz) | ∅ D×L(mm) | Rated Ripple Current (mArms/105°C,120Hz) |
| | 22 | | | | |
| | | | | 10×12.5 | 162 |
| 25 | | | | 8×20 | 160 |
| 27 | | 10×12 | 240 | | |
| | | 10×12.5 | 240 | | |
| 33 | | 10×20 | 250 | 10×20 | 250 |
| 47 | | 12.5×20 | 340 | 12.5×20 | 340 |
| 68 | | 12.5×20 | 400 | | |
| | | 12.5×25 | 436 | 12.5×25 | 436 |
| 100 | | 12.5×30 | 550 | 12.5×30 | 550 |
| 150 | | 16×25 | 736 | 16×25 | 736 |
| 220 | | 16×31.5 | 912 | 18×31.5 | 985 |
| 330 | | 18×31.5 | 1,200 | | |

| V _{DC} | | 250 | | 350 | |
|-----------------|-------|-----------|---|-----------|---|
| μF | Items | ∅ D×L(mm) | Rated Ripple Current (mArms/105°C,120Hz) | ∅ D×L(mm) | Rated Ripple Current (mArms/105°C,120Hz) |
| | 6.8 | | | | |
| | | 10×12.5 | 86 | | |
| | | 8×15 | 95 | 8×20 | 120 |
| 10 | | 10×12.5 | 105 | 10×16 | 125 |
| | | | | 10×20 | 125 |
| | | | | 10×20 | 130 |
| 15 | | 10×12 | 128 | | |
| | | 10×12.5 | 128 | | |
| 22 | | 10×16 | 165 | 12.5×20 | 225 |
| 33 | | 12.5×20 | 250 | 12.5×20 | 249 |
| | | | | 12.5×25 | 260 |
| | | | | 12.5×30 | 380 |
| 47 | | 12.5×20 | 320 | | |
| | | 12.5×25 | 375 | 12.5×30 | 380 |
| 68 | | 10×40 | 465 | 12.5×40 | 516 |
| | | 12.5×30 | 463 | 16×25 | 510 |
| 82 | | 12.5×35 | 515 | 18×25 | 620 |
| 100 | | 10×50 | 585 | | |
| | | 16×25 | 591 | 18×31.5 | 743 |
| 150 | | 18×25 | 721 | 18×35.5 | 942 |
| 180 | | 12.5×50 | 860 | | |
| | | 18×31.5 | 813 | 18×40 | 1,048 |
| 220 | | 18×31.5 | 925 | | |

| V _{DC} | | 400 | | 420 | |
|-----------------|-------|-----------|---|-----------|---|
| μF | Items | ∅ D×L(mm) | Rated Ripple Current (mArms/105°C,120Hz) | ∅ D×L(mm) | Rated Ripple Current (mArms/105°C,120Hz) |
| | 4.7 | | | | |
| 6.8 | | 8×15 | 90 | | |
| | | 8×20 | 105 | | |
| 8.2 | | 10×12 | 98 | | |
| | | 10×12.5 | 98 | | |
| | | 10×16 | 125 | | |
| 15 | | 10×20 | 150 | | |
| | | 12.5×16 | 140 | | |
| 22 | | 10×25 | 200 | 10×20 | 135 |
| 27 | | 12.5×20 | 250 | 12.5×20 | 215 |
| 33 | | 12.5×25 | 295 | | |
| | | 16×20 | 305 | 16×20 | 340 |
| 47 | | 10×45 | 352 | 16×25 | 368 |
| | | 12.5×35 | 375 | | |
| | | 16×25 | 436 | 18×20 | 375 |
| 68 | | 12.5×40 | 475 | | |
| | | 18×25 | 472 | 18×25 | 500 |
| 82 | | 18×31.5 | 700 | 18×31.5 | 660 |
| 100 | | 18×35.5 | 795 | 18×35.5 | 750 |
| 120 | | 18×40 | 912 | 18×40 | 830 |
| 150 | | 18×40 | 1,020 | 18×45 | 950 |
| 180 | | 20×40 | 1,080 | | |
| 220 | | 22×45 | 1,200 | | |

RATINGS OF NFK Series

| V _{dc} | 450 | | 500 | |
|-----------------|-----------|---|-----------|---|
| Items μF | ∅ D×L(mm) | Rated Ripple Current (mArms/105°C,120Hz) | ∅ D×L(mm) | Rated Ripple Current (mArms/105°C,120Hz) |
| 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 | 12.5×30 | 220 |
| 27 | 12.5×25 | 260 | 10×50 | 305 |
| 33 | 12.5×30 | 335 | 12.5×45 | 365 |
| | 16×20 | 340 | | |
| 39 | 10×45 | 353 | 12.5×50 | 425 |
| 47 | 10×50 | 400 | 18×31.5 | 468 |
| | 12.5×40 | 405 | | |
| | 16×25 | 368 | | |
| 60 | | | 12.5×60 | 515 |
| 68 | 18×25 | 500 | 16×45 | 585 |
| | | | 18×35.5 | 585 |
| 82 | 12.5×50 | 670 | 16×50 | 653 |
| | | | 18×35.5 | 640 |
| | | | 18×40 | 653 |
| 100 | 12.5×60 | 750 | 18×45 | 750 |
| | 16×45 | 750 | 20×40 | 800 |
| | 18×35.5 | 750 | | |
| 120 | 16×50 | 800 | 18×50 | 850 |
| | 18×40 | 800 | 22×45 | 900 |
| 150 | 18×45 | 920 | 22×50 | 980 |
| | 20×40 | 930 | | |
| 180 | 22×50 | 1,100 | | |

RATED RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

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

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