

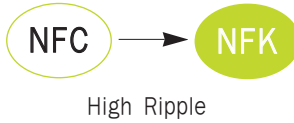
MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS



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	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

NFK Series



MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

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	

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
	180	12.5 × 50	860
		18 × 31.5	813
	220	22 × 25	820
		18 × 31.5	925
270	22 × 30	960	
	22 × 35	1130	
330	25.4 × 30	1140	
	22 × 40	1300	
390	25.4 × 35	1330	
	22 × 45	1480	
470	25.4 × 40	1510	
	22 × 50	1690	
560	25.4 × 50	1960	
350	10	8 × 20	120
		10 × 16	125
	22	10 × 20	130
		12.5 × 20	225
	33	12.5 × 20	249
		12.5 × 25	260
	47	12.5 × 30	380
		12.5 × 40	516
	68	16 × 25	510
		18 × 25	620
	82	18 × 25	620
		18 × 31.5	743
	100	22 × 25	720
		22 × 30	840
	120	18 × 35.5	942
		25.4 × 30	1010
	150	18 × 40	1048
		22 × 35	1090
180	22 × 40	1200	
	25.4 × 35	1230	
200	22 × 45	1320	
	22 × 50	1510	
220	25.4 × 40	1490	
	25.4 × 50	1780	

RATED RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

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

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS



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	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
200	25.4 × 35	1060	
	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
		25.4 × 30	810
	150	18 × 45	950
		22 × 40	940
		25.4 × 35	980
180	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 × 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	

NFK Series

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