



## MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

### NFA Series

• 105°C 7,000~10,000Hrs assured.

- Non-solvent proof.
- High Ripple, Long Life.
- For ballasts stabilizer.
- RoHS compliant.
- Halogen-free capacitors are also available.



### SPECIFICATIONS

Item	Characteristics													
Rated Voltage Range	160~400 V <sub>DC</sub>	420~500 V <sub>DC</sub>												
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>&gt; 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<sub>DC</sub>) (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												
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Dissipation Factor(Tanδ)	<table border="1"> <thead> <tr> <th>Rated Voltage(V<sub>DC</sub>)</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 <sub>DC</sub> )	160~250	350~500	Tanδ(Max.)	0.20	0.24						
Rated Voltage(V <sub>DC</sub> )	160~250	350~500												
Tanδ(Max.)	0.20	0.24												
Temperature Characteristics (Max. Impedance ratio)	<table border="1"> <thead> <tr> <th>Rated Voltage(V<sub>DC</sub>)</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 <sub>DC</sub> )	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 <sub>DC</sub> )	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 10,000 hours at 105°C. (where, 7,000 hours for ø8, 8,000 hours for ø10)</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 NFA 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.			

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### RATINGS OF NFA Series

V <sub>dc</sub>	Capacitance (μF)	∅D×L(mm)	Rated Ripple Current (mA <sub>rms</sub> /105°C, 120Hz)
160	22	10 × 20	192
	33	10 × 20	236
	47	12.5 × 20	312
	68	12.5 × 25	409
	100	16 × 25	548
	150	16 × 31.5	724
	220	16 × 31.5	876
	330	16 × 35.5	1110
		22 × 25	1130
	390	22 × 30	1310
	470	25.4 × 30	1540
	560	22 × 35	1650
		22 × 40	1730
	680	22 × 45	1990
		25.4 × 35	1950
	820	22 × 50	2270
25.4 × 40		2240	
1000	25.4 × 50	2670	
200	22	10 × 20	192
	33	10 × 20	236
		12.5 × 20	262
	47	12.5 × 20	312
	68	10 × 33	409
		12.5 × 25	409
	100	16 × 25	548
	150	12.5 × 35	600
		16 × 31.5	701
	220	12.5 × 45	700
		16 × 31.5	800
		18 × 31.5	906
		22 × 25	730
	330	16 × 45	1100
		22 × 30	1090
	390	22 × 35	1250
		25.4 × 30	1270
	470	22 × 40	1440
		25.4 × 35	1470
	560	22 × 45	1640
		22 × 50	1710
		25.4 × 40	1680
	820	25.4 × 50	2200

V <sub>dc</sub>	Capacitance (μF)	∅D×L(mm)	Rated Ripple Current (mA <sub>rms</sub> /105°C, 120Hz)
250	10	10 × 20	130
	22	12.5 × 20	214
	33	12.5 × 25	285
	47	12.5 × 25	340
	56	10 × 33	350
	68	16 × 25	452
	100	16 × 31.5	591
	150	18 × 25	700
	180	22 × 25	770
	220	18 × 31.5	850
		22 × 30	910
	270	22 × 35	1060
		25.4 × 30	1080
	330	20 × 40	1196
		22 × 40	1230
		25.4 × 35	1260
390	22 × 45	1400	
	25.4 × 40	1430	
470	22 × 50	1600	
560	25.4 × 50	1860	
350	10	10 × 20	126
	22	12.5 × 20	207
	33	16 × 20	284
	47	16 × 25	364
	68	16 × 31.5	472
	100	18 × 31.5	591
		22 × 25	530
	120	22 × 30	620
	150	18 × 40	760
		25.4 × 30	740
	180	22 × 35	800
	200	22 × 40	880
		25.4 × 35	900
	220	22 × 45	970
	270	22 × 50	1110
		25.4 × 40	1090
330	25.4 × 50	1310	

### RATED RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

Freq.(Hz)	120	1K	10K	50K	100K
Factor	1.00	1.25	1.50	1.60	1.75

NFA Series



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### RATINGS OF NFA Series

V <sub>dc</sub>	Capacitance (μF)	∅D×L(mm)	Rated Ripple Current (mA <sub>rms</sub> /105°C, 120Hz)
400	2.2	8 × 11.5	27
	3.3	8 × 11.5	33
	4.7	8 × 11.5	39
	6.8	8 × 15	63
	8.2	8 × 20	75
	10	10 × 20	126
	15	10 × 20	154
	22	12.5 × 25	225
	33	16 × 20	284
	47	16 × 25	364
	68	16 × 31.5	472
	82	18 × 31.5	536
		22 × 25	490
	100	18 × 35.5	611
	120	18 × 40	680
		22 × 30	630
	150	18 × 40	760
		22 × 35	750
		25.4 × 30	800
	180	20 × 40	855
22 × 40		860	
25.4 × 35		880	
200	22 × 45	940	
220	22 × 45	996	
	22 × 50	1030	
	25.4 × 40	1010	
270	25.4 × 50	1220	
330	25.4 × 50	1260	
420	2.2	8 × 11.5	25
	3.3	8 × 11.5	31
	4.7	8 × 11.5	37
	6.8	8 × 20	76
	8.2	10 × 16	87
	10	10 × 20	116
	15	10 × 25	155
	22	12.5 × 20	191
	33	16 × 20	262
	47	16 × 25	335
	68	18 × 25	435
	82	16 × 31.5	507
		22 × 25	490
	100	18 × 31.5	580
		22 × 30	580
	120	18 × 40	659
		22 × 35	670
		25.4 × 30	680
	150	18 × 45	757
		22 × 40	790
25.4 × 35		800	
180	22 × 45	900	
200	25.4 × 40	970	
220	22 × 50	1030	
270	25.4 × 50	1200	

V <sub>dc</sub>	Capacitance (μF)	∅D×L(mm)	Rated Ripple Current (mA <sub>rms</sub> /105°C, 120Hz)
450	2.2	8 × 15	44
	3.3	10 × 16	63
	4.7	10 × 16	74
	6.8	10 × 20	96
	8.2	10 × 20	106
	10	10 × 20	108
		12.5 × 20	114
	22	16 × 25	241
	33	12.5 × 30	315
		16 × 31.5	319
	47	18 × 25	368
	56	16 × 31.5	410
	68	18 × 25	435
		18 × 31.5	473
		22 × 25	440
	82	18 × 35.5	537
	100	18 × 40	602
		22 × 30	570
		18 × 40	659
	120	22 × 35	660
25.4 × 30		670	
20 × 40		757	
150	22 × 40	780	
	25.4 × 35	790	
	22 × 45	892	
180	25.4 × 40	910	
	22 × 50	970	
220	25.4 × 50	1090	
500	3.3	10 × 12.5	52
	4.7	10 × 12.5	62
	6.8	10 × 16	83
	8.2	10 × 20	98
	10	12.5 × 20	120
	22	16 × 25	228
	33	18 × 20	230
		18 × 25	260
	47	18 × 31.5	393
	56	18 × 31.5	393
		22 × 25	390
	68	16 × 45	625
		18 × 35.5	550
		22 × 30	460
	82	25.4 × 30	540
	100	22 × 35	590
		22 × 40	620
		22 × 45	710
	120	25.4 × 35	690
		25.4 × 40	720
22 × 50		827	
150	22 × 50	827	
180	25.4 × 50	960	

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