

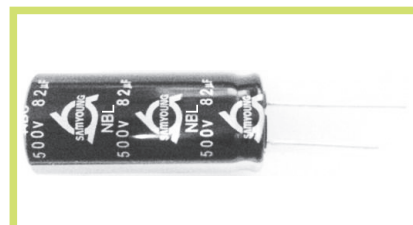


MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

NBL Series

• 105°C 12,000~20,000Hrs assured.

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



SPECIFICATIONS

Item	Characteristics									
Rated Voltage Range	160~500 V _{DC}									
Operating Temperature Range	-40~+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 = 0.01CV + 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 = 0.01CV + 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 = 0.01CV + 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			
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Temperature Characteristics (Max. Impedance ratio)	<table border="1"> <thead> <tr> <th>Rated Voltage(V_{DC})</th> <th>160~500</th> </tr> </thead> <tbody> <tr> <td>Z(-25°C)/Z(20°C)</td> <td>3</td> </tr> <tr> <td>Z(-40°C)/Z(20°C)</td> <td>6</td> </tr> </tbody> </table> <p>(at 120Hz)</p>	Rated Voltage(V _{DC})	160~500	Z(-25°C)/Z(20°C)	3	Z(-40°C)/Z(20°C)	6			
Rated Voltage(V _{DC})	160~500									
Z(-25°C)/Z(20°C)	3									
Z(-40°C)/Z(20°C)	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 20,000 hours at 105°C. (where 12,000 hours for ø10, 15,000 hours for ø12.5)</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 NBL Series

Unit(mm)

Marking : DARK BLUE SLEEVE, SILVER INK						
øD	10	12.5	16	18	20	22
ød	0.6	0.6	0.8	0.8	0.8	0.8
F	5.0	5.0	7.5	7.5	7.5	10.0
øD'	øD + 0.5 max.					
L'	L + 2.0 max.					

* ø10 x 12L, L' ≤ L+1.5

RATINGS OF NBL Series

Vdc	160		200		250		350	
Items μF	∅ D×L(mm)	Rated Ripple Current (mArms/105°C, 120Hz)	∅ D×L(mm)	Rated Ripple Current (mArms/105°C, 120Hz)	∅ D×L(mm)	Rated Ripple Current (mArms/105°C, 120Hz)	∅ D×L(mm)	Rated Ripple Current (mArms/105°C, 120Hz)
6.8					10×12	119	10×12	105
					10×12.5	119	10×12.5	105
10					10×12	160	10×16	149
					10×12.5	160		
15			10×12	150	10×16	220	10×20	197
			10×12.5	150				
22	10×12	221	10×16	243	10×20	240	12.5×20	297
	10×12.5	221						
	10×16	243						
27	10×16	264	10×20	280	10×20	270	12.5×20	314
33	10×16	270	10×20	308	12.5×20	323	12.5×25	325
39	10×20	320	10×25	350	12.5×20	354	12.5×25	352
47	10×20	369	10×33	450	12.5×25	460	12.5×30	451
			12.5×20	440				
68	10×33	480	12.5×25	594	12.5×30	610	16×31.5	623
82	10×33	520	12.5×30	640	12.5×35	680	18×25	688
	12.5×25	525	16×20	616				
100	12.5×25	575	12.5×35	740	16×25	717	18×31.5	817
			16×25	717				
120	10×50	700	12.5×40	850	16×31.5	804	18×35.5	924
	12.5×30	670	16×25	785				
150	16×25	825	16×31.5	813	16×35.5	902	18×40	1,083
180	16×25	891	16×35.5	951	18×31.5	1,012	18×45	1,230
220	16×31.5	968	18×31.5	1,100	18×35.5	1,121		
	18×25	968						
270	16×35.5	1,100	18×40	1,290				
330	18×31.5	1,231	18×45	1,390				
470	18×45	1,626						

Vdc	400		420		450		500	
Items μF	∅ D×L(mm)	Rated Ripple Current (mArms/105°C, 120Hz)	∅ D×L(mm)	Rated Ripple Current (mArms/105°C, 120Hz)	∅ D×L(mm)	Rated Ripple Current (mArms/105°C, 120Hz)	∅ D×L(mm)	Rated Ripple Current (mArms/105°C, 120Hz)
3.3							10×12	63
							10×12.5	63
4.7					10×12	76	10×16	83
					10×12.5	76		
6.8					10×16	110	10×20	119
8.2	10×16	140	10×16	113	10×20	122	10×20	141
10	10×16	145	10×20	135	10×20	135	12.5×20	165
22	12.5×20	297	12.5×25	250	12.5×25	250	12.5×35	260
27	12.5×25	330	12.5×25	265	12.5×30	280	12.5×40	329
33	12.5×30	355	12.5×30	340	12.5×35	360	12.5×45	370
			16×20	345	16×25	361	16×31.5	380
39	12.5×35	400	12.5×35	380	12.5×40	400	12.5×50	420
			16×25	400	16×31.5	423	16×35.5	434
47	12.5×40	485	12.5×40	450	12.5×50	470	18×31.5	468
	16×25	480	16×25	450	16×31.5	478		
68	12.5×50	575	18×31.5	580	18×31.5	580	18×40	630
	16×35.5	627						
82	16×40	770	16×40	620	18×35.5	650	18×45	685
100	18×35.5	875	18×35.5	770	18×40	794	22×40	800
120	18×40	1,003	18×45	900	18×50	940	22×50	960
150	18×50	1,192						

RATED RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

Cap.(μF)	Freq.(Hz)	120	1k	10k	50k	100k
3.3~82		1.00	1.75	2.25	2.35	2.50
100~470		1.00	1.67	2.05	2.15	2.25

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