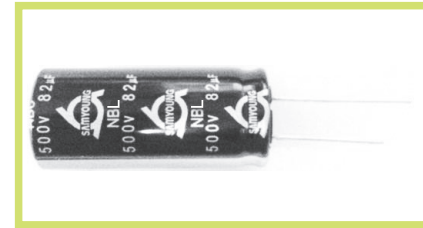


NBL Series

• 105°C 15,000~20,000Hrs 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.
- AEC-Q200 compliant : Please contact us for more details, test data, information.



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><tr><td> C · V Time </td><td>After 1 minute</td><td>After 5 minutes</td></tr><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></table> Where, I:Max. Leakage current(μA) C:Nominal capacitance(μF) V:Rated voltage(V_{DC}) (at 20°C)	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><tr><td>Rated Voltage(V_{DC})</td><td>160~250</td><td>350~500</td></tr><tr><td>Tanδ(Max.)</td><td>0.20</td><td>0.24</td></tr></table> (at 20°C, 120Hz)	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><tr><td>Rated Voltage(V_{DC})</td><td>160~500</td></tr><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></table> (at 120Hz)	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	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 15,000 hours for ø10, ø12.5) Capacitance change ≤ ±20% of the initial value Tanδ ≤ 200% of the initial specified value Leakage current ≤ The initial specified value											
Shelf Life	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. Capacitance change ≤ ±20% of the initial value Tanδ ≤ 200% of the initial specified value Leakage current ≤ 500% of the initial specified value											
Others	Satisfied characteristics KS C IEC 60384-4											

DIMENSIONS OF NBL Series

Unit(mm)

Technical drawing of a capacitor component. The side view shows a cylindrical body with a 'Safety vent' on the left and a 'Sleeve' on the right. Dimensions include: overall diameter $\varnothing D'$, length L' , sleeve length 15min. , and terminal length 4min. . The terminal diameter is $\varnothing d \pm 0.05$. Three end views are shown with diameters $\leq \varnothing 10$, $\geq \varnothing 12.5$, and $\varnothing 20$. The distance from the center to the terminal is $F \pm 0.5$.

Marking : DARK BLUE SLEEVE, SILVER INK

$\varnothing D$	10	12.5	16	18	20	22
$\varnothing d$	0.6	0.6	0.8	0.8	0.8	1.0
F	5.0	5.0	7.5	7.5	7.5	10.0
$\varnothing D'$	$\varnothing D + 0.5 \text{ max.}$					
L'	$L + 2.0 \text{ max.}$					

※ $\varnothing 10 \times 12L$, $L' \leq L + 1.5$



MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

RATINGS OF NBL Series

Vdc	160		200		250		350	
μF Items	$\varnothing D \times L (mm)$	Rated Ripple Current (mAmps/105°C, 120Hz)	$\varnothing D \times L (mm)$	Rated Ripple Current (mAmps/105°C, 120Hz)	$\varnothing D \times L (mm)$	Rated Ripple Current (mAmps/105°C, 120Hz)	$\varnothing D \times L (mm)$	Rated Ripple Current (mAmps/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
			12.5 × 30	640				
82	10 × 33	520	16 × 20	616	12.5 × 35	680	18 × 25	688
	12.5 × 25	525						
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	
μF Items	$\varnothing D \times L (mm)$	Rated Ripple Current (mAmps/105°C, 120Hz)	$\varnothing D \times L (mm)$	Rated Ripple Current (mAmps/105°C, 120Hz)	$\varnothing D \times L (mm)$	Rated Ripple Current (mAmps/105°C, 120Hz)	$\varnothing D \times L (mm)$	Rated Ripple Current (mAmps/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