

NBR Series

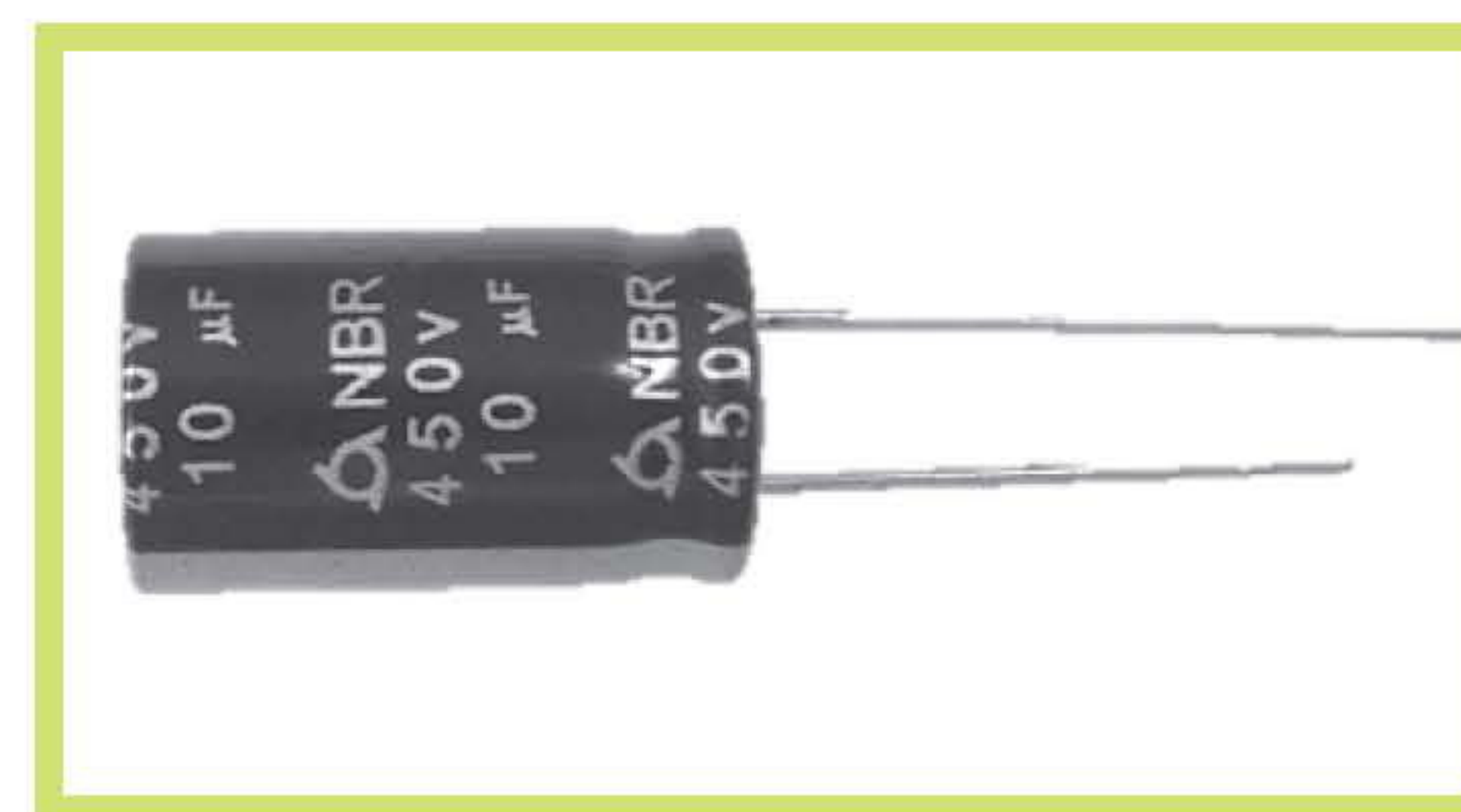
• 105°C 3,000~5,000Hrs assured.

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

NBA

NBR

High Ripple



SPECIFICATIONS

Item	Characteristics											
Rated Voltage Range	160~500 V _{dc}		550 V _{dc}									
Operating Temperature Range	-40~ + 105℃		-25~ + 105℃									
Capacitance Tolerance	±20%(M) (at 20℃, 120Hz)											
Leakage Current	<table><tr><th> C · V Time </th><th>After 1 minute</th><th>After 5 minutes</th></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 · 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>350~550</td></tr><tr><td>Tanδ(Max.)</td><td>0.20</td><td>0.24</td></tr></table> (at 20℃, 120Hz)			Rated Voltage(V _{dc})	160~250	350~550	Tanδ(Max.)	0.20	0.24			
Rated Voltage(V _{dc})	160~250	350~550										
Tanδ(Max.)	0.20	0.24										
Temperature Characteristics (Max. Impedance ratio)	<table><tr><td>Rated Voltage(V_{dc})</td><td>160~500</td><td>550</td></tr><tr><td>Z(- 25℃)/Z(+ 20℃)</td><td>3</td><td>6</td></tr><tr><td>Z(- 40℃)/Z(+ 20℃)</td><td>6</td><td>-</td></tr></table> (at 120Hz)			Rated Voltage(V _{dc})	160~500	550	Z(- 25℃)/Z(+ 20℃)	3	6	Z(- 40℃)/Z(+ 20℃)	6	-
Rated Voltage(V _{dc})	160~500	550										
Z(- 25℃)/Z(+ 20℃)	3	6										
Z(- 40℃)/Z(+ 20℃)	6	-										
Load Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ 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℃. (where 3,000hour for ø6.3) 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℃ after exposing them for 1,000 hours at 105℃ 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 NBR Series

Unit(mm)

Marking : DARK BLUE SLEEVE, SILVER INK

øD	6.3	8	10	12.5	16	18	20	22
ød	0.5	0.6	0.6	0.6	0.8	0.8	0.8	1.0
F	2.5	3.5	5.0	5.0	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

※ ø16 x 60L, L' ≤ L + 3.0



RATINGS OF NBR Series

V _{DC}	160		200		250		350	
Items μF	ø D×L(mm)	Rated Ripple Current (mArms/105°C, 120Hz)	ø D×L(mm)	Rated Ripple Current (mArms/105°C, 120Hz)	ø D×L(mm)	Rated Ripple Current (mArms/105°C, 120Hz)	ø D×L(mm)	Rated Ripple Current (mArms/105°C, 120Hz)
4.7					8×15	88		
6.8			8×15	113	8×20	117	8×15	111
					10×12	149		
					10×12.5	131		
10	8×15	133			10×12	176	10×12	160
							10×12.5	160
15	8×15	163	8×20	154	10×12.5	176	10×16	168
			8×15	163	10×12	191	10×20	217
					10×12.5	191		
22	10×12	260	10×12	243	10×16	253	12.5×20	327
	10×12.5	260	10×12.5	243				
	10×16	316	10×16	267				
27	10×12	300	10×16	291	10×20	297	12.5×20	345
	10×12.5	300						
	10×16	343						
33	10×16	345	10×20	339	12.5×20	356	12.5×20	351
39	10×16	350	10×20	369	12.5×20	390	12.5×25	387
47	10×20	405	10×20	405	12.5×20	484	12.5×30	496
			12.5×20	484				
68	10×20	484	12.5×20	541	12.5×25	653	16×25	666
			12.5×25	653				
82	10×25	545	12.5×25	678	12.5×30	726	18×25	756
	12.5×20	545	16×20	678				
100	12.5×20	617	12.5×30	770	16×25	789	18×31.5	899
			16×25	789				
120	10×33	702	12.5×35	897	16×25	864	18×35.5	1016
	12.5×25	702	16×25	864				
150	16×25	908	16×25	920	18×25	992	18×35.5	1140
180	16×25	980	16×31.5	1029	18×31.5	1113	18×40	1272
220	16×31.5	1065	18×31.5	1210	18×31.5	1210		
	18×25	1065						
270	16×35.5	1210	18×35.5	1392				
330	16×40	1382	18×40	1513				
	18×31.5	1354						
470	18×40	1695						

V _{DC}	400		420		450		500	
Items μF	ø D×L(mm)	Rated Ripple Current (mArms/105°C, 120Hz)	ø D×L(mm)	Rated Ripple Current (mArms/105°C, 120Hz)	ø D×L(mm)	Rated Ripple Current (mArms/105°C, 120Hz)	ø D×L(mm)	Rated Ripple Current (mArms/105°C, 120Hz)
1.5	6.3×15	35	6.3×15	26	6.3×15	26		
2.2					8×15	36		
3.3							10×12	69
							10×12.5	69
4.7					10×12	84	10×12	83
					10×12.5	84	10×12.5	83
5.6							10×12.5	75
6.8	8×15	103	8×20	116	8×20	116	10×16	121
	8×20	131						
8.2	10×12	145	10×16	124	10×16	124	10×20	155
	10×12.5	145						
10	10×16	160	10×20	149	10×20	149	12.5×20	182
22	12.5×20	327	12.5×20	248	12.5×25	275	12.5×30	286
27	12.5×20	345	12.5×20	279	12.5×25	292	12.5×40	362
33	12.5×25	378	12.5×30	374	12.5×30	374	12.5×45	407
			16×20	380	16×20	380	16×25	385
39	12.5×25	387	12.5×35	418	12.5×35	418	12.5×50	462
	12.5×30	416	16×25	440	16×25	440	16×31.5	454
47	12.5×35	508	12.5×40	495	12.5×40	495	16×35.5	508
	16×25	528	16×25	495	16×25	495	18×31.5	515
68	12.5×40	605	18×25	572	18×25	616	16×45	693
	18×25	690	18×31.5	638	18×31.5	649	18×35.5	660
82	18×31.5	847	18×25	660	16×40	715	16×50	754
			18×31.5	715	18×31.5	715	18×40	737
100	18×31.5	899	16×45	847	16×45	847	18×45	880
	18×35.5	962	18×35.5	847	18×35.5	847	20×40	880
120	18×35.5	1,016	16×50	935	16×50	935	22×35	880
	18×40	1,104	18×40	935	18×40	935	18×50	1012
150	18×40	1,234	18×45	1,100				
180	18×45	1,307	20×40	1,100				
	20×40	1,307						

V _{DC}	500	
Items μF	ø D×L(mm)	Rated Ripple Current (mArms/105°C, 100kHz)
4.7	10×12	250
5.6	10×12.5	300



MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

RATINGS OF NBR Series

V _{DC}	550	
Items μF	∅ D × L (mm)	Rated Ripple Current (mA _{rms} /105°C, 120Hz)
3.3	10x12	46
	10x12.5	46
4.7	10x16	60
6.8	10x20	78
8.2	10x20	85
10	10x25	102
	12.5x20	104
22	12.5x30	178
27	12.5x35	207
	16x25	207
33	12.5x40	241
	16x31.5	241
	18x25	241
39	12.5x50	281
	16x35.5	281
47	16x40	312
	18x31.5	312
68	16x50	408
	18x40	408
82	16x60	486
	18x50	486

RATED RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

Cap. (μF) \ Freq. (Hz)	120	1k	10k	50k	100k
1.5 ~ 82	1.00	1.75	2.25	2.35	2.50
100 ~ 470	1.00	1.67	2.05	2.15	2.25