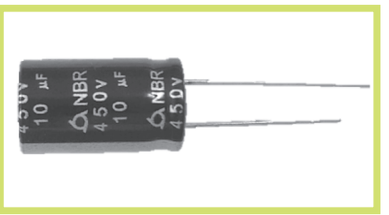
NBR Series

• 105℃ 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

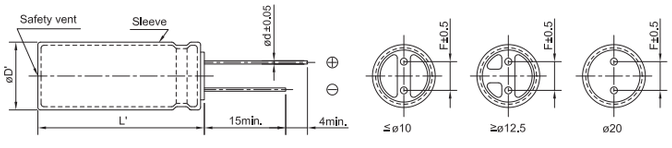


SPECIFICATIONS

Item	Characteristics
Rated Voltage Range	160~500 V_{DC}
Operating Temperature Range	-40~+105℃
Capacitance Tolerance	±20%(M) (at 20℃, 120Hz)
Leakage Current	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 Where, I:Max. Leakage current(μA) C:Nominal capacitance(μF) V:Rated voltage(V_{DC}) (at 20℃)
Dissipation Factor (Tanδ)	Rated Voltage(V_{DC}): 160~250 / 350~500 Tanδ(Max.): 0.20 / 0.24 (at 20℃, 120Hz)
Temperature Characteristics (Max. Impedance ratio)	Rated Voltage(V_{DC}): 160~500 Z(-25℃)/Z(+20℃): 3 Z(-40℃)/Z(+20℃): 6 (at 120Hz)
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 volrage 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 then 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
ød	0.5	0.6	0.6	0.6	0.8	0.8	0.8
F	2.5	3.5	0.5	5.0	7.5	7.5	7.5
øD′	øD+0.5 max.						
L′	L+1.5max.	L+2.0 max.					

※ ø10 x 12L, L′≦ L+1.5

RATINGS OF NBR Series

Vdc	160		200		250		350	
Items / μF	ø D×L(mm)	Rated Ripple Current (mArms/105℃, 120Hz)	ø D×L(mm)	Rated Ripple Current (mArms/105℃, 120Hz)	ø D×L(mm)	Rated Ripple Current (mArms/105℃, 120Hz)	ø D×L(mm)	Rated Ripple Current (mArms/105℃, 120Hz)
4.7			8×11.5	85	8×15	88	8×11.5	102
6.8	8×11.5	99	8×15	113	8×20	117	8×15	111
					10×12	149		
					10×12.5	131		
10	8×15	133	8×11.5	124	10×12	176	10×12	192
							10×12.5	192
			8×20	154	10×12.5	176	10×16	198
15	8×15	163	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						

Vdc	400		420		450		500	
Items / μF	ø D×L(mm)	Rated Ripple Current (mArms/105℃, 120Hz)	ø D×L(mm)	Rated Ripple Current (mArms/105℃, 120Hz)	ø D×L(mm)	Rated Ripple Current (mArms/105℃, 120Hz)	ø D×L(mm)	Rated Ripple Current (mArms/105℃, 120Hz)
1	6.3×11	24	6.3×11	19	6.3×11	19		
1.5	6.3×15	35	6.3×15	26	6.3×15	26		
	8×11.5	37	8×11.5	29	8×11.5	29		
2.2	8×11.5	45	8×11.5	33	8×15	36		
3.3	8×11.5	55	8×11.5	41	8×11.5	41	10×12	69
							10×12.5	69
4.7	8×11.5	66	8×11.5	18	10×12	84	10×12	83
					10×12.5	84	10×12.5	83
6.8	8×15	103	8×20	116	8×20	116	10×16	121
8.2	8×20	131	10×16	124	10×16	124	10×20	155
	10×12	145						
	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	619	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
							22×35	880
120	18×35.5	1,016	16×50	935	16×50	935	18×50	1012
	18×40	1,104	18×40	935	18×40	935		
150	18×40	1,234	18×45	1,100				
			20×40	1,100				
180	18×45	1,307						
	20×40	1,307						

RATED RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

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