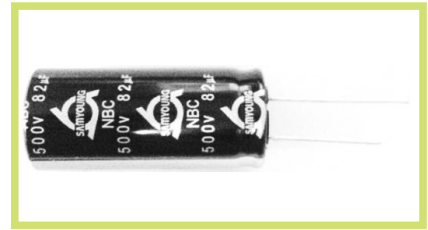
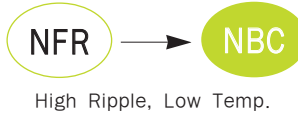


## NBC Series

• 105°C 5,000~12,000Hrs 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 <sub>DC</sub>												
Operating Temperature Range	-40~+105°C												
Capacitance Tolerance	±20%(M) (at 20°C, 120Hz)												
Leakage Current	<table border="1"> <thead> <tr> <th>C · V</th> <th>Time</th> <th>After 1 minute</th> <th>After 5 minutes</th> </tr> </thead> <tbody> <tr> <td>≤ 1000</td> <td></td> <td>I = 0.1CV + 40</td> <td>I = 0.03CV + 15</td> </tr> <tr> <td>&gt; 1000</td> <td></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										
> 1000		I = 0.04CV + 100	I = 0.02CV + 25										
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>160~500</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 <sub>DC</sub> )	160~500	Z(-25°C)/Z(20°C)	3	Z(-40°C)/Z(20°C)	6						
Rated Voltage(V <sub>DC</sub> )	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 12,000 hours at 105°C. (where 5,000 hours for ø6.3, 8,000 hours for ø8, 10,000 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 NBC Series

Unit(mm)

Marking : DARK BLUE SLEEVE, SILVER INK

	6.3	8	10	12.5	16	18	20	22	25.4
øD	6.3	8	10	12.5	16	18	20	22	25.4
ød	0.5	0.6	0.6	0.6	0.8	0.8	0.8	1.0	1.0
F	2.5	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.					

※ ø10 x 12L, L' ≤ L + 1.5

## RATINGS OF NBC Series

V <sub>dc</sub>	Capacitance (μF)	∅ D × L (mm)	Rated Ripple Current (mA <sub>rms</sub> /105°C, 120Hz)
160	6.8	8 × 11.5	90
	8.2	5 × 15	85
	10	6.3 × 15	106
		8 × 15	121
	15	8 × 15	148
		10 × 12	221
		10 × 12.5	221
	22	10 × 16	243
		10 × 12	240
		10 × 12.5	240
	27	10 × 16	264
		10 × 16	270
		10 × 16	292
	47	10 × 20	369
		10 × 20	400
	68	10 × 25	455
		12.5 × 20	495
	100	12.5 × 20	561
		10 × 33	638
	120	12.5 × 25	638
		16 × 25	825
	180	16 × 25	891
		16 × 31.5	968
	220	18 × 25	968
		16 × 35.5	1100
	330	16 × 40	1256
		18 × 31.5	1231
		22 × 25	1200
22 × 30		1380	
470	18 × 40	1541	
	25.4 × 30	1630	
560	22 × 35	1750	
	22 × 40	1830	
680	22 × 45	2110	
	25.4 × 35	2060	
820	22 × 50	2400	
	25.4 × 40	2370	
1000	25.4 × 50	2830	
200	4.7	8 × 11.5	77
	8.2	6.3 × 15	101
	10	8 × 11.5	113
		8 × 20	140
	15	8 × 15	148
		10 × 12	221
	22	10 × 12.5	221
		10 × 16	243
	27	10 × 16	264
		10 × 20	308
	39	10 × 20	336
		10 × 20	369
	47	12.5 × 20	440
		12.5 × 20	492
	68	12.5 × 25	594
		12.5 × 25	616
	82	16 × 20	616
		12.5 × 30	700
	100	16 × 25	717
		12.5 × 35	815
	120	16 × 25	785
		16 × 25	836
	180	16 × 31.5	935
		18 × 31.5	1100
	220	22 × 25	1100
		18 × 35.5	1265
	270	22 × 30	1070
		18 × 40	1375
	390	22 × 35	1360
		25.4 × 30	1380
	470	22 × 40	1570
		25.4 × 35	1600
560	22 × 45	1780	
	22 × 50	1850	
	25.4 × 40	1830	
820	25.4 × 50	2390	

V <sub>dc</sub>	Capacitance (μF)	∅ D × L (mm)	Rated Ripple Current (mA <sub>rms</sub> /105°C, 120Hz)	
250	4.7	8 × 15	80	
		8 × 20	106	
	6.8	10 × 12	119	
		10 × 12.5	119	
		10 × 12	160	
	10	10 × 12.5	160	
		10 × 12	174	
	15	10 × 12.5	174	
		10 × 16	230	
	27	10 × 20	270	
		12.5 × 20	323	
	39	12.5 × 20	354	
		12.5 × 20	440	
	68	12.5 × 25	594	
		12.5 × 30	660	
	100	16 × 25	717	
		16 × 25	785	
	150	18 × 25	902	
		18 × 31.5	1012	
	220	22 × 25	900	
		18 × 31.5	1100	
	270	22 × 30	1060	
		22 × 35	1240	
	330	25.4 × 30	1260	
		22 × 40	1440	
	390	25.4 × 35	1460	
		22 × 45	1620	
	470	25.4 × 40	1660	
		22 × 50	1860	
	560	25.4 × 50	2160	
	350	4.7	8 × 11.5	93
		6.8	8 × 15	101
10 × 12			153	
10		10 × 12.5	153	
		10 × 16	158	
15		10 × 20	197	
		12.5 × 20	297	
27		12.5 × 20	314	
		12.5 × 20	319	
47		12.5 × 25	352	
		12.5 × 30	451	
68		16 × 25	605	
		18 × 25	688	
100		18 × 31.5	817	
		22 × 25	800	
120		18 × 35.5	924	
		22 × 30	930	
150		18 × 35.5	1036	
		25.4 × 30	1110	
180		18 × 40	1155	
		22 × 35	1200	
200		22 × 40	1330	
	25.4 × 35	1350		
220	22 × 45	1450		
	22 × 50	1670		
270	25.4 × 40	1650		
	25.4 × 50	1970		

### 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 ~ 1000	1.00	1.67	2.05	2.15	2.25

RATINGS OF NBC Series

Vdc	Capacitance (μF)	∅D×L(mm)	Rated Ripple Current (mArms/105°C, 120Hz)
400	1	6.3 × 11	22
	1.5	6.3 × 15	32
		8 × 11.5	34
	2.2	8 × 11.5	41
	3.3	8 × 11.5	50
	4.7	8 × 11.5	60
	6.8	8 × 15	94
	8.2	8 × 20	119
		10 × 12	132
		10 × 12.5	132
	10	10 × 16	145
	22	12.5 × 20	297
	27	12.5 × 20	314
	33	12.5 × 25	343
	39	12.5 × 25	352
		12.5 × 30	378
	47	12.5 × 35	462
		16 × 25	480
	68	12.5 × 40	550
		18 × 25	627
		18 × 25	770
	82	18 × 31.5	770
		22 × 25	710
		18 × 31.5	817
	100	18 × 35.5	875
		18 × 35.5	924
	120	18 × 40	1003
		22 × 30	910
		18 × 40	1122
	150	22 × 35	1100
		25.4 × 30	1150
		18 × 45	1188
	180	20 × 40	1188
22 × 40		1230	
25.4 × 35		1250	
200	22 × 45	1360	
220	22 × 50	1480	
	25.4 × 40	1460	
270	25.4 × 50	1750	
330	25.4 × 50	1810	
420	1	6.3 × 11	17
	1.5	6.3 × 15	24
		8 × 11.5	26
	2.2	8 × 11.5	30
	3.3	8 × 11.5	37
	4.7	8 × 11.5	44
	6.8	8 × 20	105
	8.2	10 × 16	113
	10	10 × 20	135
	22	12.5 × 20	225
	27	12.5 × 20	254
	33	12.5 × 30	340
		16 × 20	345
	39	12.5 × 35	380
		16 × 25	400
	47	12.5 × 40	450
		16 × 25	450
	68	18 × 25	520
		18 × 31.5	580
	82	18 × 25	600
		18 × 31.5	650
		22 × 25	630
	100	16 × 45	770
		18 × 35.5	770
		22 × 30	740
	120	16 × 50	850
		18 × 40	850
		22 × 35	860
		25.4 × 30	870
	150	18 × 45	1000
		20 × 40	1000
		22 × 40	1000
		25.4 × 35	1020
180	22 × 45	1150	
200	25.4 × 40	1240	
220	22 × 50	1320	
270	25.4 × 50	1560	

Vdc	Capacitance (μF)	∅D×L(mm)	Rated Ripple Current (mArms/105°C, 120Hz)
450	1	6.3 × 11	17
	1.5	6.3 × 15	24
		8 × 11.5	26
	2.2	8 × 15	33
	3.3	8 × 11.5	37
	4.7	10 × 12	76
		10 × 12.5	76
	6.8	8 × 20	105
	8.2	10 × 16	113
	10	10 × 20	135
	22	12.5 × 25	250
	27	12.5 × 25	265
	33	12.5 × 30	340
		16 × 20	345
	39	12.5 × 35	380
		16 × 25	400
	47	12.5 × 40	450
		16 × 25	450
	56	16 × 31.5	520
	68	18 × 25	560
		18 × 31.5	590
		22 × 25	560
	82	16 × 40	650
		18 × 31.5	650
	100	22 × 30	660
		16 × 45	770
		18 × 35.5	770
	120	25.4 × 30	780
		16 × 50	850
		18 × 40	850
		22 × 35	850
		22 × 40	880
	150	25.4 × 35	900
22 × 45		1030	
25.4 × 40		1050	
180	22 × 50	1170	
220	25.4 × 50	1380	
500	3.3	10 × 12	63
	4.7	10 × 12.5	63
		10 × 12	75
	6.8	10 × 12.5	75
	6.8	10 × 16	110
	8.2	10 × 20	141
	10	12.5 × 20	165
	22	12.5 × 30	260
	27	12.5 × 40	329
	33	12.5 × 45	370
		16 × 25	350
	39	12.5 × 50	420
		16 × 31.5	413
	47	16 × 35.5	462
		18 × 31.5	468
	56	22 × 25	510
	68	16 × 45	630
		18 × 35.5	600
22 × 30		600	
82	16 × 50	685	
	18 × 40	670	
	25.4 × 30	700	
	18 × 45	800	
100	20 × 40	800	
	22 × 35	800	
	22 × 40	800	
	18 × 50	920	
120	22 × 45	920	
	25.4 × 35	900	
	25.4 × 40	940	
150	22 × 50	980	
180	25.4 × 50	1250	