

NBC Series

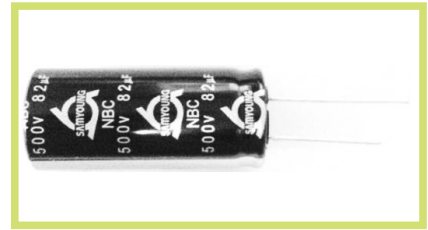
• 105°C 5,000~12,000Hrs assured.

- 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.

NFR

NBC

High Ripple, Low Temp.



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})	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	(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										
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>	Rated Voltage(V _{DC})	160~250	350~500	Tanδ(Max.)	0.20	0.24	(at 20°C, 120Hz)				
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>	Rated Voltage(V _{DC})	160~500	Z(- 25°C)/Z(20°C)	3	Z(- 40°C)/Z(20°C)	6	(at 120Hz)				
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 12,000 hours at 105°C. (where 5,000 hours for ø6.3, 8,000 hours for ø8, 10,000 hours for ø10) 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 NBC Series

Unit(mm)

Technical drawing of the NBC Series capacitor. The side view shows a cylindrical component with a safety vent and a sleeve. Dimensions include $\phi D'$, L' , 15min. , and 4min. . The end views show the internal structure with dimensions $F \pm 0.5$, $\leq \phi 10$, $\geq \phi 12.5$, and $\phi 20$.

Marking : DARK BLUE SLEEVE, SILVER INK

ϕD	6.3	8	10	12.5	16	18	20	22	25.4
ϕd	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
$\phi D'$	$\phi D + 0.5 \text{ max.}$								
L'	$L + 1.5 \text{ max.}$		$L + 2.0 \text{ max.}$						

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

RATINGS OF NBC Series

V _{dc}	Capacitance (μF)	ø D×L(㎜)	Rated Ripple Current (mA _{rms} /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
	82	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
	390	22 × 25	1200
		22 × 30	1380
	470	18 × 40	1541
		25.4 × 30	1630
200	560	22 × 35	1750
	680	22 × 40	1830
		22 × 45	2110
	820	25.4 × 35	2060
		22 × 50	2400
	1000	25.4 × 40	2370
		25.4 × 50	2830
	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
	150	16 × 25	836
		16 × 31.5	935
	180	18 × 31.5	1100
		22 × 25	1100
	270	18 × 35.5	1265
		22 × 30	1070
	330	18 × 40	1375
		22 × 35	1360
	390	25.4 × 30	1380
		22 × 40	1570
	470	25.4 × 35	1600
		22 × 45	1780
	560	22 × 50	1850
		25.4 × 40	1830
	820	25.4 × 50	2390

V _{dc}	Capacitance (μF)	ø D×L(㎜)	Rated Ripple Current (mA _{rms} /105°C, 120Hz)
250	4.7	8 × 15	80
	6.8	8 × 20	106
		10 × 12	119
		10 × 12.5	119
	10	10 × 12	160
		10 × 12.5	160
		10 × 12	174
	15	10 × 12.5	174
		10 × 16	230
	22	10 × 20	270
	33	12.5 × 20	323
	39	12.5 × 20	354
	47	12.5 × 20	440
	68	12.5 × 25	594
	82	12.5 × 30	660
	100	16 × 25	717
	120	16 × 25	785
	150	18 × 25	902
	180	18 × 31.5	1012
		22 × 25	900
	220	18 × 31.5	1100
		22 × 30	1060
	270	22 × 35	1240
		25.4 × 30	1260
	330	22 × 40	1440
		25.4 × 35	1460
	390	22 × 45	1620
		25.4 × 40	1660
	470	22 × 50	1860
	560	25.4 × 50	2160
350	4.7	8 × 11.5	93
	6.8	8 × 15	101
	10	10 × 12	153
		10 × 12.5	153
		10 × 16	158
	15	10 × 20	197
	22	12.5 × 20	297
	27	12.5 × 20	314
	33	12.5 × 20	319
	39	12.5 × 25	352
	47	12.5 × 30	451
	68	16 × 25	605
	82	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
	330	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)	øD×L(mm)	Rated Ripple Current (mA _{rms} /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
	82	18 × 25	770
		18 × 31.5	770
		22 × 25	710
	100	18 × 31.5	817
		18 × 35.5	875
	120	18 × 35.5	924
		18 × 40	1003
		22 × 30	910
	150	18 × 40	1122
		22 × 35	1100
		25.4 × 30	1150
	180	18 × 45	1188
		20 × 40	1188
		22 × 40	1230
	200	25.4 × 35	1250
		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)	øD×L(mm)	Rated Ripple Current (mA _{rms} /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
		22 × 30	660
	100	16 × 45	770
		18 × 35.5	770
		25.4 × 30	780
	120	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 × 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
	100	18 × 45	800
		20 × 40	800
		22 × 35	800
		22 × 40	800
	120	18 × 50	920
		22 × 45	920
		25.4 × 35	900
	150	25.4 × 40	940
		22 × 50	980
	180	25.4 × 50	1250