

NFL Series

• 105°C 8,000~12,000Hrs assured.

- Non-solvent proof.
- High Ripple, Long Life.
- For ballasts stabilizer and other long life required applications.
- RoHS compliant.
- Halogen-free capacitors are also available.



SPECIFICATIONS

Item	Characteristics	
Rated Voltage Range	160~400 V _{DC}	450~500 V _{DC}
Operating Temperature Range	-40 ~ +105°C	-25 ~ +105°C
Capacitance Tolerance	±20%(M) (at 20°C, 120Hz)	
Leakage Current	$C \cdot V$ \ Time	After 1 minute
	≤ 1000	I = 0.1CV + 40
	> 1000	I = 0.04CV + 100
		After 5 minutes
		I = 0.03CV + 15
		I = 0.02CV + 25
	Where, I:Max. Leakage current(μA) C:Nominal capacitance(μF) V:Rated voltage(V _{DC}) (at 20°C)	
Dissipation Factor(Tanδ)	Rated Voltage(V _{DC})	160~250
	Tanδ(Max.)	0.20
		350~500
		0.24
	(at 20°C, 120Hz)	
Temperature Characteristics (Max. Impedance ratio)	Rated Voltage(V _{DC})	160~250
	Z(-25°C)/Z(20°C)	3
	Z(-40°C)/Z(20°C)	6
		350~400
		5
		6
		450~500
		-
	(at 120Hz)	
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, 8,000 hours for ø8, 10,000 hours for ø10, ø8x50L) 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 NFL Series

Unit(mm)

SHIMADZU

Technical drawing of a capacitor assembly. The side view shows a cylindrical body with a safety vent and a sleeve. Dimensions include $\phi D'$, L' , 15min. , 4min. , and $\phi D \pm 0.05$. Three cross-sectional views are shown with diameters $\phi 10$, $\phi 12.5$, and $\phi 20$, and a thickness dimension $F \pm 0.5$.

Marking : DARK BROWN SLEEVE, SILVER INK

ϕD	8	10	12.5	16	18	20
ϕd	0.6	0.6	0.6	0.8	0.8	0.8
F	3.5	5.0	5.0	7.5	7.5	7.5
$\phi D'$	$\phi D + 0.5 \text{ max.}$					
L'	$L + 2.0 \text{ max.}$					

※ $\phi 8 \times 15 \sim 20L$, $L' \leq L + 1.5$

RATINGS OF NFL Series

V _{DC}	160		200	
Items μF	ø D × L (mm)	Rated Ripple Current (mA _{rms} /105°C, 120Hz)	ø D × L (mm)	Rated Ripple Current (mA _{rms} /105°C, 120Hz)
27			10 × 16	200
39	10 × 16	237	10 × 20	256
47	10 × 20	280	12.5 × 20	312
56	10 × 25	335	12.5 × 25	371
68	12.5 × 20	375	12.5 × 25	409
100	10 × 45	562	10 × 50	591
	12.5 × 25	496	16 × 25	550
150	16 × 31.5	724	12.5 × 50	786
			16 × 25	671
220	12.5 × 50	952	18 × 31.5	905
	16 × 31.5	876		
270	16 × 35.5	992	18 × 35.5	1,036
330	16 × 40	1,132	18 × 40	1,164
	18 × 31.5	1,109		
390	18 × 35.5	1,246		
470	18 × 40	1,389		

V _{DC}	250		350	
Items μF	ø D × L (mm)	Rated Ripple Current (mA _{rms} /105°C, 120Hz)	ø D × L (mm)	Rated Ripple Current (mA _{rms} /105°C, 120Hz)
10	10 × 16	120	10 × 16	110
22	10 × 20	192	12.5 × 20	213
33	10 × 25	257	8 × 50	245
			12.5 × 25	285
39	10 × 30	290	10 × 40	340
47	8 × 50	250	10 × 50	405
	12.5 × 20	312	16 × 25	375
68	10 × 40	450	16 × 31.5	503
	12.5 × 30	441	18 × 25	488
82	10 × 50	536	12.5 × 45	571
100	10 × 50	585	18 × 31.5	610
	16 × 25	548		
150	18 × 25	748		
180	12.5 × 50	800		
220	18 × 31.5	905		

V _{DC}	400		450	
Items μF	ø D × L (mm)	Rated Ripple Current (mA _{rms} /105°C, 120Hz)	ø D × L (mm)	Rated Ripple Current (mA _{rms} /105°C, 120Hz)
4.7	8 × 15	42	10 × 16	70
6.8	8 × 20	59	10 × 20	90
10	10 × 20	110	12.5 × 20	120
22	12.5 × 20	208	8 × 50	230
			16 × 25	228
27	8 × 50	154		
33	16 × 20	261	16 × 31.5	270
39	10 × 45	340	10 × 50	305
47	16 × 25	335	18 × 31.5	360
68	12.5 × 45	482	12.5 × 50	473
	16 × 31.5	460	18 × 35.5	500
82	12.5 × 50	527	18 × 35.5	549
	18 × 31.5	520		
100	18 × 35.5	630	12.5 × 60	626
			18 × 35.5	660
			18 × 40	670
120	18 × 40	700	20 × 40	720



RATINGS OF NFL Series

V _{DC}	500	
Items μF	∅ D × L (mm)	Rated Ripple Current (mA _{rms} /105°C, 120Hz)
10	12.5 × 20	150
22	16 × 25	228
27	10 × 50	253
33	16 × 31.5	270
	18 × 25	260
39	12.5 × 50	358
47	18 × 31.5	360
60	12.5 × 60	467
68	18 × 35.5	500
82	18 × 40	606
100	20 × 40	657

RATED RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

Freq.(Hz)	120	1k	10k	50k	100k
Factor	1.00	1.25	1.50	1.60	1.75