



# ND&ND-H Series

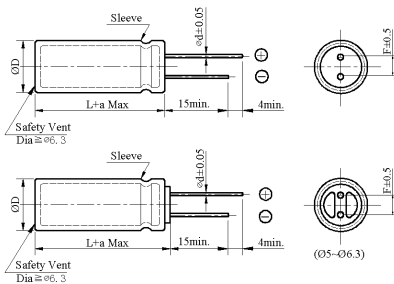
- Standard non-polarized type
- Suitable for conditions where polarity reverses or where polarity is not constant
- ND series 85°C 2,000Hrs, ND-H series 105°C 1,000Hrs



◆ SPECIFICATIONS

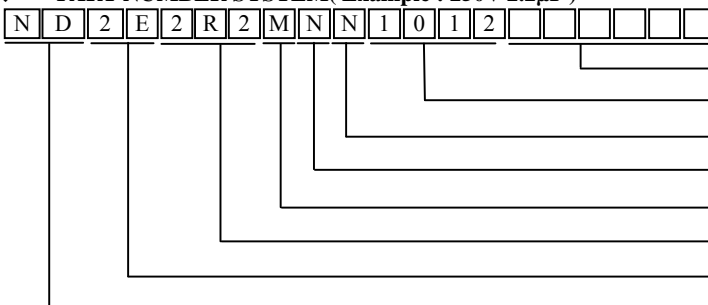
Item	Performance Characteristics									
	ND		ND-H							
Series	ND		ND-H							
Category Temperature Range	-40 ~ +85°C	-25 ~ +85°C	-40 ~ +105°C	-25 ~ +105°C						
Working Voltage Range	6.3 ~ 100 Vdc	160 ~ 250 Vdc	6.3 ~ 100 Vdc	160 ~ 250 Vdc						
Capacitance Range	0.47 ~ 2,200 μF	0.47 ~ 100 μF	0.47 ~ 2,200 μF	0.47 ~ 100 μF						
Capacitance Tolerance	±20% (at 25°C and 120Hz)									
Dissipation Factor (tanδ) (at 25°C, 120Hz)	Rated Voltage (V)	6.3	10	16	25	35	50	63	100	160 ~ 250
	tanδ(Max)	0.26	0.24	0.22	0.20	0.16	0.14	0.12	0.10	0.20
The above values should be increased by 0.02 for every additional 1000μF										
Leakage Current	I=0.03CV or 3μA whichever is greater I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) Impress the rated voltage for 2 minutes									
Low Temperature Characteristics Impedance Ratio(MAX)	Rated voltage (V)	6.3	10	16	25	35	50	63	100	160 ~ 250
	Z(-40°C)/Z(+20°C)	10	8	6	4	3	3	3	3	—
	Z(-25°C)/Z(+20°C)	—	—	—	—	—	—	—	—	3
(at 120Hz)										
Endurance	The following requirements shall be satisfied when the capacitor are restored to 25°C after the rated voltage applied for 2,000 hours at 85°C (ND), or 1,000 hours at 105°C (ND-H). During this test rated DC voltage shall be reversed on the capacitor for every 250 hours.									
	Capacitance change	≒ ±20% of the initial value								
	Dissipation factor(tanδ)	≒ 200% of the specified value								
Shelf Life	The following requirements shall be satisfied when the capacitor are restored to 25°C after the rated voltage applied for 1,000 hours at 85°C (ND), or 500 hours at 105°C (ND-H) without voltage applied.									
	Capacitance change	≒ ±25% of the initial value								
	Dissipation factor(tanδ)	≒ 200% of the specified value								
Others	Leakage current ≒ 200% of the specified value									
	Conforms to JIS-C-5101-4 (1998), characteristic W									

◆ DIMENSIONS (mm)



ΦD	5	6.3	8	10	12.5 L<35	12.5 L≥35	16	18
ΦD	ΦD + 0.5 Max							ΦD + 0.5 Max
Φd	0.5	0.5	0.6	0.6	0.6	0.8	0.8	0.8
F	2.0	2.5	3.5	5.0	5.0		7.5	7.5
a	L + 1.5 Max				≒ 35 L+1.5Max ≒ 40 L+2.0 Max		L + 1.5 Max	

◆ PART NUMBER SYSTEM (Example : 250V 2.2μF)





# ND Series

◆ Case size & Permissible rated ripple current: (mA rms) at 85°C / 120Hz

uF \ Vdc	6.3		10		16		25	
	ΦD×L	RC	ΦD×L	RC	ΦD×L	RC	ΦD×L	RC
0.47								
1.0								
2.2								
3.3								
4.7								
10					5×11	40	5×11	40
22			5×11	46	5×11	46	5×11	50
33	5×11	64	5×11	64	5×11	70	5×11	77
47	5×11	76	5×11	76	5×11	80	6.3×11	95
100	6.3×11	125	6.3×11	125	6.3×11	130	8×11.5	160
220	6.3×11	160	8×11.5	215	8×11.5	220	10×12.5	295
330	8×11.5	240	8×11.5	240	10×12.5	325	10×16	380
470	8×11.5	250	10×12.5	345	10×16	415	10×20	510
1000	10×16	425	10×20	550	12.5×20	695	12.5×25	710
2200	12.5×20	580	12.5×20	645	16×25	730	16×31.5	845

uF \ Vdc	35		50		63		100	
	ΦD×L	RC	ΦD×L	RC	ΦD×L	RC	ΦD×L	RC
0.47			5×11	7			5×11	14
1.0			5×11	17			5×11	21
2.2			5×11	25			6.3×11	34
3.3			5×11	27	5×11	28	6.3×11	39
4.7	5×11	34	5×11	34	6.3×11	34	6.3×11	47
10	5×11	40	5×11	40	6.3×11	57	8×11.5	71
22	6.3×11	65	6.3×11	72	8×11.5	82	10×12.5	96
33	6.3×11	90	8×11.5	98	8×11.5	100	10×16	125
47	8×11.5	120	8×11.5	130	10×16	180	12.5×20	240
100	10×12.5	220	10×16	235	10×20	250	12.5×25	285
220	10×20	390	12.5×20	460	12.5×25	490	16×31.5	505
330	12.5×20	505	12.5×25	590	16×25	600		
470	12.5×25	655	16×25	668	16×35.5	720		
1000	16×25	880	16×35.5	975				

uF \ Vdc	160		200		250	
	ΦD×L	RC	ΦD×L	RC	ΦD×L	RC
0.47	5×11	7	6.3×11	8	6.3×11	9
1.0	5×11	10	6.3×11	11	6.3×11	13
2.2	6.3×11	16	8×11.5	20	10×12.5	23
3.3	8×11.5	23	10×12.5	29	10×12.5	29
4.7	10×12.5	35	10×16	38	10×16	40
10	10×16	55	12.5×20	70	12.5×20	70
22	12.5×20	105	12.5×25	120	16×25	135
33	12.5×25	110	16×25	165	16×31.5	180
47	16×25	200	16×31.5	220	16×35.5	230
100	18×31.5	275				

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

Cap(uF)	Frequency (Hz)				
	50/60	120	1K	10K	100K
0.47 ~ 47	0.75	1.00	1.57	1.75	2.00
100 ~ 470	0.80	1.00	1.34	1.40	1.50
1000 ~ 2200	0.85	1.00	1.13	1.13	1.13