

# HN CD138

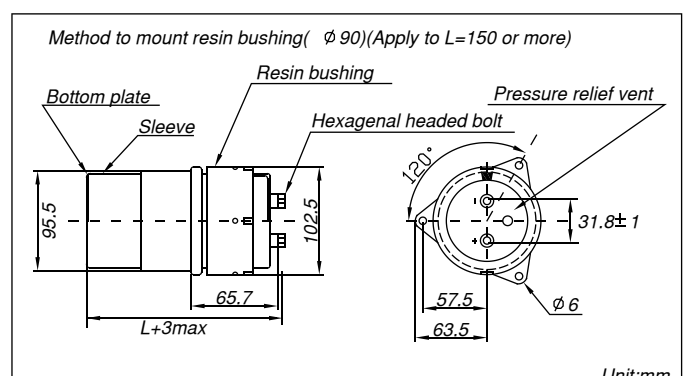
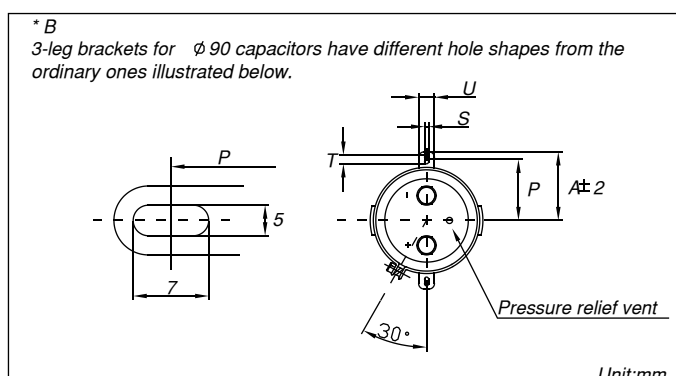
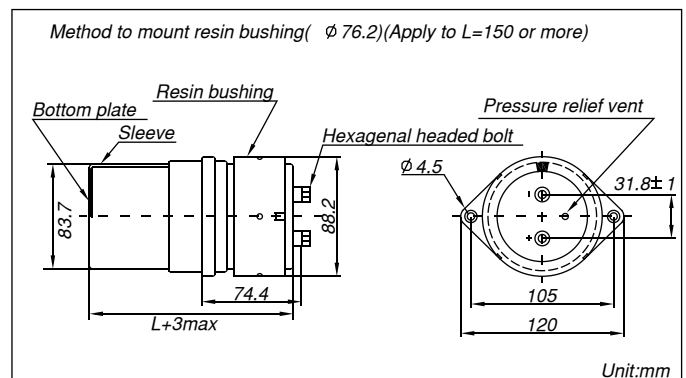
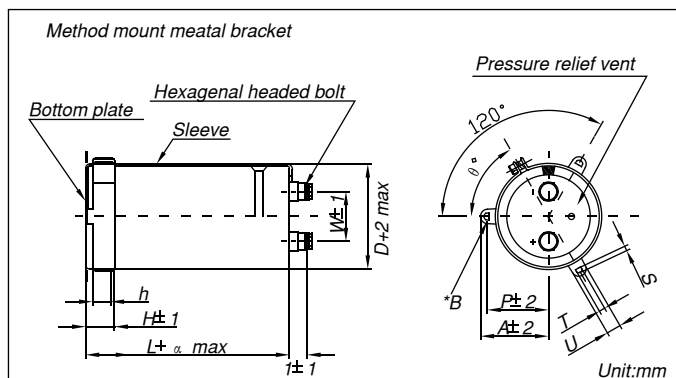


- ⊙ Load life of 5000 hours application of ripple current at 105°C.
- ⊙ High ripple products.
- ⊙ Adapted to the ROHS directive (2002/95/EC).

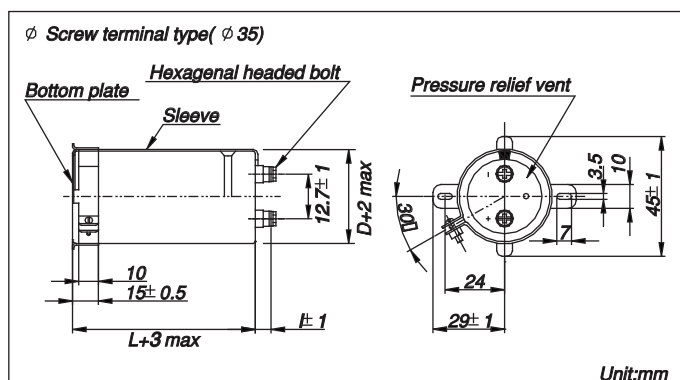
## Specifications

Item	Performance Characteristics		
Operating temperature range	-40°C ~ +105°C	-25°C ~ +105°C	
Rated voltage range	10~100V	350 ~ 500V	
Nominal capacitance range	330 ~ 390000µ F		
Capacitance tolerance	±20% (120Hz, +20°C)		
Leakage current	I=0.02 CV (µA) 5mA (at 20°C, after 5 minutes, Whichever is smaller)		
Temperature characteristics (Impedance ratio at 120Hz)	U <sub>R</sub> (V)	10~100	160~500
	Z-25°C/Z+20°C	-	8
	Z-40°C/Z+20°C	12	-
Load life	After applying rated voltage with specified ripple current for 5000 hours at +105°C and then resumed 16 hours: Capacitance change : ±20% Initial measured value Leakage current : ≤ Initial specified value Dissipation factor : ≤ 2 times Initial specified value		
Shelf life	After storage for 1000 hours at +105°C, U <sub>R</sub> to be applied for 30 minutes and then resumed 16 hours Capacitance change : ±20% Initial measured value Leakage current : ≤ Initial specified value Dissipation factor : ≤ 2 times Initial specified value		

## Specifications



## Specifications



Dimension terminal pitch(w)and(i)and Nominal dia.of bolt

$\Phi D$	W	I	$\alpha$	Nominal dia. Of bolt
51	22.0	6	3	M5
63.5	28.6	6	3	M5
76	31.8	6	3	M5
90	31.8	6	3	M5

## Dimension of mounting bracket

Voltage(Code)		3-Leg				2-Leg			
Symbol	$\phi D$	51	63.5	76.2	90	51	63.5	76.2	90
P		32.5	38.1	44.5	50.8	33.2	40.5	46.5	53
A		38.5	43	49.2	58.5	40	46.5	53	59
T		7.5	8.0	7.0	8.0	6.0	7.0	6.0	6.0
S		5.0	5.0	5.0	5.0	4.5	4.5	4.5	4.5
U		12	14	14	18	14	14	14	14
$\theta^\circ$		60	60	60	60	30	30	30	30
H		20	25	30	35	25	35	35	35
h		15	20	24	25	15	20	20	20

## Frequency Coefficient

Freq.(Hz)	50	120	360	1K	10K	50K
10~50V	0.95	1	1.03	1.05	1.09	1.12
63~80V	0.9	1	1.06	1.1	1.18	1.22
100~250V	0.8	1	1.12	1.22	1.3	1.33
350~500V	0.8	1	1.2	1.5	1.6	1.7

## Dimensions

Voltage (Code)		10V (1A)			16V (1C)			25V (1E)		
SV		13			20			32		
Cap.( $\mu F$ )	Code	Case Size	Tan $\delta$	Ripple Current	Case Size	Tan $\delta$	Ripple Current	Case Size	Tan $\delta$	Ripple Current
12000	123							35x80	0.35	3.3
15000	153				35x50	0.45	2.9	35x80	0.35	3.7
18000	183				35x80	0.45	3.5	35x80	0.35	4.0
22000	223				35x80	0.45	3.9	35x80	0.35	4.5
27000	273	35x80	0.45	4.3	35x80	0.45	4.3	35x100	0.40	5.0
33000	333	35x80	0.45	4.7	35x100	0.50	4.8	35x120	0.40	5.9
39000	393	35x80	0.45	5.3	35x100	0.50	5.3	51x80	0.40	6.5
47000	473	35x100	0.45	6.1	35x120	0.50	6.2	51x100	0.40	7.9
56000	563	35x100	0.50	6.2	51x80	0.60	6.3	51x120	0.40	8.8
68000	683	35x120	0.60	6.8	51x100	0.60	7.6	51x120	0.50	9.1
82000	823	51x80	0.60	7.8	51x120	0.70	8.3	63.5x100	0.50	10.6
100000	104	51x100	0.70	8.5	51x120	0.70	9.2	63.5x120	0.60	11.4
120000	124	51x100	0.70	9.5	63.5x100	0.80	9.9	76.2x100	0.60	12.8
150000	154	63.5x100	0.80	11.0	76.2x100	0.80	12.3	76.2x120	0.75	13.7
180000	184	63.5x100	0.80	12.1	76.2x120	0.80	14.5	76.2x140	0.76	16.1
220000	224	76.2x100	1.00	13.2	76.2x140	1.00	15.2	90x140	1.00	16.6
270000	274	76.2x120	1.20	14.4	90x140	1.20	16.8			
330000	334	76.2x140	1.20	17.0						
390000	394	90x140	1.40	18.6						

Maximum Allowable Ripple Current (A rms) at 105°C 120Hz.

Tan  $\delta$  at 20°C 120Hz

## ■ Dimensions

Voltage (Code)		35V (1V)			50V (1H)			63V (1J)		
SV		44			63			79		
Cap. (μF)	Code	Case Size	Tan δ	Ripple Current	Case Size	Tan δ	Ripple Current	Case Size	Tan δ	Ripple Current
2700	272							35x50	0.19	1.9
3300	332							35x50	0.15	2.1
3900	392				35x50	0.20	2.0	35x80	0.20	2.7
4700	472				35x50	0.25	2.2	35x80	0.20	2.9
5600	562				35x80	0.25	2.8	35x80	0.20	3.2
6800	682				35x80	0.25	3.0	35x80	0.20	3.5
8200	822	35x80	0.30	3.0	35X80	0.25	3.3	35X100	0.25	4.2
10000	103	35x80	0.30	3.3	35X80	0.25	3.7	35x120	0.25	4.3
12000	123	35x80	0.30	3.6	35x100	0.25	4.4	51x80	0.25	4.8
15000	153	35x80	0.30	4.1	35x120	0.30	4.7	51X100	0.25	5.9
18000	183	35x100	0.30	4.8	51x80	0.35	4.8	51x120	0.30	6.3
22000	223	35x120	0.35	5.2	51x100	0.35	5.9	51x120	0.30	6.7
27000	273	51x80	0.40	5.9	51x120	0.35	7.0	63.5x120	0.30	8.8
33000	333	51X100	0.40	6.6	63.5x100	0.40	7.6	76.2x120	0.35	10.0
39000	393	51x120	0.40	7.8	63.5x120	0.40	8.9	76.2x140	0.35	12.5
47000	473	51x120	0.45	8.0	63.5x120	0.40	9.8	90x140	0.40	13.8
56000	563	63.5x100	0.45	9.2	76.2x120	0.40	11.9			
68000	683	63.5x120	0.45	11.0	76.2x140	0.45	13.1			
82000	823	76.2x120	0.50	12.7	90x140	0.50	14.8			
100000	104	76.2x140	0.60	13.5						
120000	124	90x140	0.60	16.1						

## ■ Dimensions

Voltage (Code)		80V (1K)			100V (2A)			160V (2C)		
SV		100			125			200		
Cap. (μF)	Code	Case Size	Tan δ	Ripple Current	Case Size	Tan δ	Ripple Current	Case Size	Tan δ	Ripple Current
680	681							35x50	0.15	1.1
820	821							35x80	0.15	1.2
1000	102							35x80	0.15	1.3
1200	122				35x50	0.15	1.4	35x80	0.15	1.5
1500	152				35x80	0.15	1.6	35x80	0.15	1.7
1800	182				35x80	0.15	1.8	35X100	0.15	2.0
2200	222	35x50	0.15	1.9	35x80	0.15	2.0	35x120	0.15	2.3
2700	272	35x80	0.15	2.2	35x80	0.15	2.4	35x120	0.15	2.7
3300	332	35x80	0.15	2.5	35x100	0.15	2.8	51x100	0.15	3.3
3900	392	38x80	0.15	2.9	35x120	0.15	3.1	51x120	0.15	3.8
4700	472	35x100	0.15	3.1	51x80	0.15	3.6	51x120	0.15	4.2
5600	562	35x100	0.15	3.6	51X100	0.15	4.3	51x120	0.15	4.7
6800	682	35x120	0.20	4.1	51x120	0.15	5.0	63.5x120	0.15	5.7
8200	822	51x80	0.20	4.8	51x120	0.15	5.5	76.2x100	0.20	6.4
10000	103	51x100	0.20	5.6	63.5x100	0.15	6.4	76.2x120	0.20	6.8
12000	123	51x100	0.20	6.1	63.5x120	0.20	6.6	76.2x140	0.20	7.8
15000	153	51x120	0.20	7.4	76.2x100	0.20	7.5	90x140	0.20	9.5
18000	183	63.5x120	0.25	8.0	76.2x120	0.25	8.0			
22000	223	76.2x100	0.25	9.1	76.2x140	0.25	9.4			
27000	273	76.2x120	0.30	9.7	90x140	0.30	10.4			
33000	333	76.2x140	0.30	11.5						
39000	393	90x140	0.30	12.5						

## DIMENSIONS

Voltage (Code)		200V (2D)			250V (2E)			350V (2V)		
SV		250			300			400		
Cap.( $\mu$ F)	Code	Case Size	Tan $\delta$	Ripple Current	Case Size	Tan $\delta$	Ripple Current	Case Size	Tan $\delta$	Ripple Current
330	331				35x50	0.15	0.7			
390	391				35x80	0.15	0.8			
470	471	35x50	0.15	0.9	35x80	0.15	0.9			
560	561	35x80	0.15	1.0	35x80	0.15	1.0			
680	681	35x80	0.15	1.1	35x100	0.15	1.2			
820	821	35x80	0.15	1.3	35x100	0.15	1.4	51x81	0.25	3.3
1000	102	35x80	0.15	1.5	35x120	0.15	1.6			
1200	122	35x100	0.15	1.7	51x80	0.15	1.8			
1500	152	35x120	0.15	1.9	51x100	0.15	2.2	51x90	0.25	5.2
1800	182	35x120	0.15	2.2	51x120	0.15	2.6			
2200	222	51x80	0.15	2.7	51x120	0.15	2.8	51x110	0.25	7.0
2700	272	51x100	0.15	3.2	63.5x100	0.15	3.3	51x130	0.25	8.4
3300	332	51x120	0.15	3.5	63.5x120	0.15	4.0	63.5x90	0.25	8.1
3900	392	63.5x100	0.15	4.0	76.2x100	0.15	4.4	51x150	0.25	9.9
4700	472	63.5x120	0.15	4.7	76.2x120	0.15	5.2	63.5x130	0.25	11.5
5600	562	76.2x100	0.15	5.3	76.2x140	0.15	6.1	76.2x90	0.25	10.8
6800	682	76.2x120	0.15	6.3	90x140	0.15	7.4	63.5x150	0.25	14.7
8200	822	76.2x140	0.20	6.4				76.2x130	0.25	16.8
10000	103	90x140	0.20	7.7				76.2x150	0.25	19.6
15000	153							76.2x190	0.25	23.0
22000	223							90x190	0.25	30.6
								90x270	0.25	43.5

## DIMENSIONS

Voltage (Code)		400V (2G)			450V (2W)			500V (2H)		
SV		450			500			550		
Cap.( $\mu$ F)	Code	Case Size	Tan $\delta$	Ripple Current	Case Size	Tan $\delta$	Ripple Current	Case Size	Tan $\delta$	Ripple Current
470	471							51x80	0.20	2.4
560	561				51x80	0.25	2.6			
680	681	51x80	0.25	3.0						
820	821							51x90	0.20	3.6
1000	102				51x90	0.25	4.0	51x110	0.20	4.4
1200	122	51x90	0.25	4.7	51x110	0.25	4.8	51x130	0.20	5.2
1500	152							63.5x90	0.20	5.0
1800	182	51x110	0.25	6.3	51x130	0.25	6.4	51x150	0.20	6.3
					63.5x90	0.25	6.2	63.5x110	0.20	6.8
2200	222	51x130	0.25	7.5	51x150	0.25	7.6			
		63.5x90	0.25	7.3	63.5x100	0.25	7.5			
2700	272	51x150	0.25	8.9	63.5x130	0.25	8.9	63.5x150	0.20	9.6
		63.5x110	0.25	8.8	76.2x90	0.25	8.4	76.2x110	0.20	9.2
3300	332	63.5x130	0.25	10.5	63.5x150	0.25	10.6			
		76.2x90	0.25	9.9	76.2x110	0.25	10.2			
3900	392				76.2x130	0.25	11.9	76.2x150	0.20	12.7
								90x130	0.20	11.9
4700	472	63.5x150	0.25	13.4	76.2x150	0.25	14.0			
		76.2x130	0.25	13.9						
5600	562				90x130	0.25	14.2			
6800	682	76.2x150	0.25	17.9	76.2x190	0.25	17.3	90x190	0.20	18.8
		90x130	0.25	17.2	90x150	0.25	16.7			
8200	822	76.2x190	0.25	20.8						
		90x150	0.25	20.1						
10000	103				90x190	0.25	22.8	90x270	0.20	26.8
12000	123	90x190	0.25	27.4						
15000	153				90x270	0.25	32.8			
22000	223	90x270	0.25	39.4						

Maximum Allowable Ripple Current (A rms) at 105°C 120Hz.

Tan  $\delta$  at 20°C 120Hz