



## FEATURES

- Small case size, high rated voltage, capacitance and ripple current, stable and reliable performance, forming complete sets of unclear electric station.
- Suitable for use in electronic and industrial equipments such as computer, programming control exchanger for power supplies filtering and energy storing.

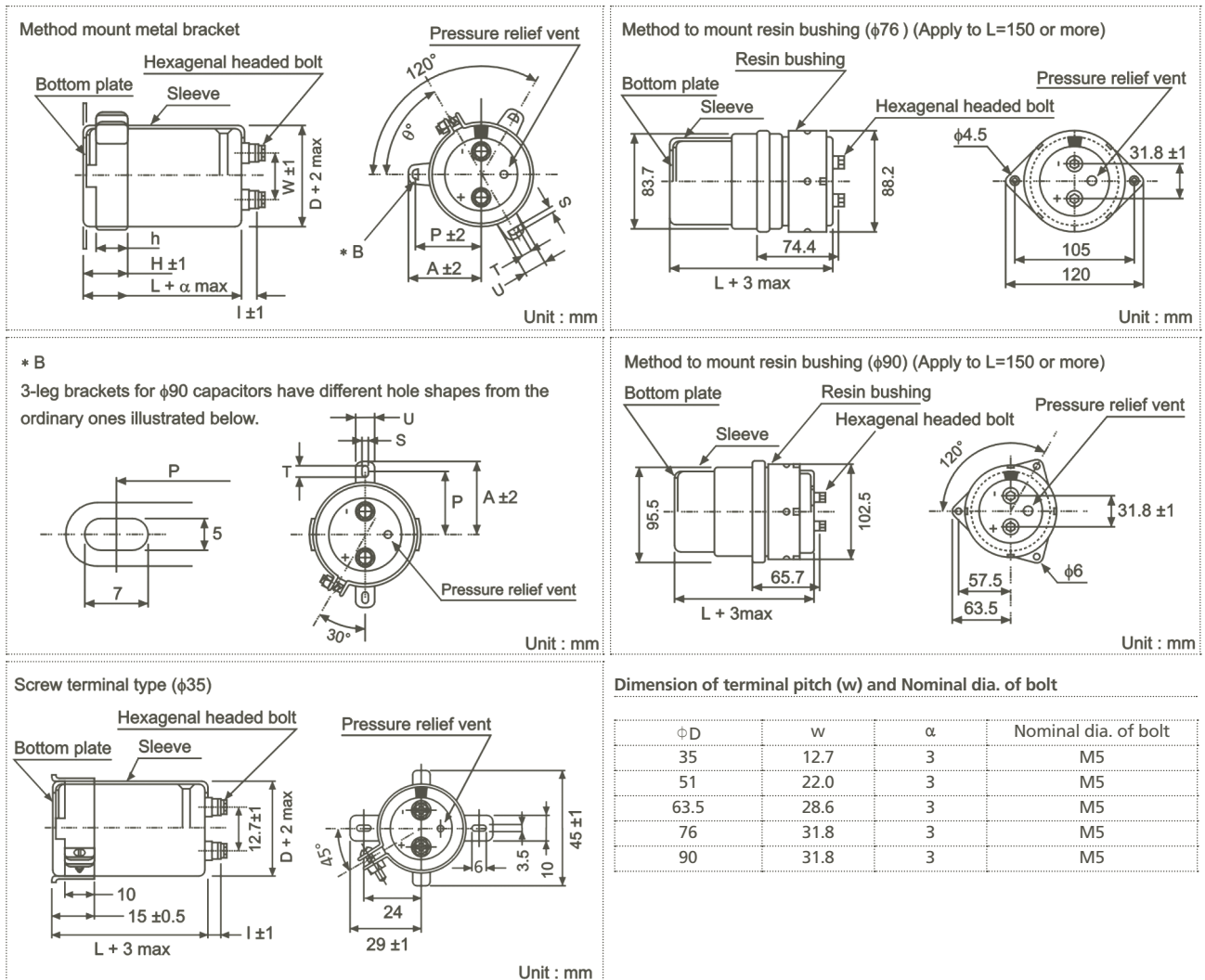
## SPECIFICATIONS

Item	Performance Characteristics	
Operating Temperature Range	-40 to +85°C	-25 to +85°C
Rated Working Voltage Range	10 to 100V	160 to 630V
Nominal Capacitance Range	100 to 680000µF	
Capacitance Tolerance	±20% at 120Hz, +20°C	
Leakage Current	I ≤ 0.02CV (µA) or 5 (mA) whichever is smaller measured after 5 minutes application of rated working voltage at +20°C	
tan δ (120Hz, +20°C)	The values shown in the STANDARD RATINGS tables	
Low Temperature Characteristics	Impedance ratio max. at 120Hz	
	Working Voltage (V)	10~100      160~630
	Z-25°C / Z+20°C	—              8
	Z-40°C / Z+20°C	15             —
High Temperature Loading	Test time : 2,000 hours Test temperature : +85°C Test conditions : Rated DC working voltage with rated ripple current	Post test requirements at +20°C Leakage current : ≤ Initial specified value Cap. change : within ±20% of the initial measured value tan δ : ≤ 200% of the initial specified value
	Shelf Life	At +85°C no voltage applied after 1,000 hours and then being stabilized at +20°C the capacitors shall meet the following limits Leakage current : ≤ Initial specified value Cap. change : within ±20% of the initial measured value tan δ : ≤ 175% of the initial specified value
Industrial Standard	JIS C - 5101-4 (IEC 60384-4)	

## PART NUMBER SYSTEM (EXAMPLE : 160V 6800µF)

1	2 3	4 5 6	7	8 9	10	11 12	13 14
E	WR	688	M	2C	S	1L	OO
<p>Type (Terminal Code)</p> <p>Case Length (100mm)</p> <p>Diameter (51mm)</p> <p>Voltage (160V)</p> <p>Tolerance (±20%)</p> <p>Capacitance (6800µF)</p> <p>Series</p> <p>E-CAP</p>							

## CASE SIZE TABLE



## Dimensions of mounting bracket

Voltage (Code)		3 - Leg				2 - Leg				
Symbol	$\phi D$	51	63.5	76	90	35	51	63.5	76	90
P		32.5	38.1	44.5	50.8	24	33.2	40.5	46.5	53
A		38.5	43	49.2	58.5	29	40	46.5	53	59
T		7.5	8.0	7.0	8.0	6.0	6.0	7.0	6.0	6.0
S		5.0	5.0	5.0	5.0	3.5	4.5	4.5	4.5	4.5
U		12	14	14	18	10	14	14	14	14
$\theta^\circ$		60	60	60	60	30	30	30	30	30
H		20	25	30	35	15	25	35	35	35
h		15	20	24	25	10	15	20	20	20

## RIPPLE CURRENT MULTIPLIER

### Frequency Coefficient

Coefficient	Freq. (Hz)				
	50	120	300	1k	10k~
Rated Voltage					
<160V	0.80	1.00	1.08	1.15	1.15
$\geq 160V$	0.80	1.00	1.08	1.15	1.20

**STANDARD RATINGS**

Voltage (Code)		10V (1A)			16V (1C)			25V (1E)		
5V		13			20			32		
Cap. (μF)	Code	Case Size	tan δ	Ripple Current	Case Size	tan δ	Ripple Current	Case Size	tan δ	Ripple Current
18000	189							35 x 50	0.35	4.0
27000	279				35 x 50	0.45	4.2			
39000	399	35 x 50	0.60	4.7				35 x 80	0.40	6.2
47000	479							35 x 100	0.40	7.4
56000	569				35 x 80	0.60	6.5	35 x 120	0.45	8.3
82000	829	35 x 80	0.60	7.0	35 x 100	0.70	8.0	51 x 80	0.50	9.7
100000	10T	35 x 100	0.70	8.0	35 x 120	0.70	9.6	51 x 100	0.60	10.8
120000	12T	35 x 120	0.70	9.4	51 x 80	0.80	9.6	51 x 120	0.60	12.0
150000	15T	51 x 80	0.90	9.8	51 x 100	0.90	11.2			
180000	18T							63.5 x 100	0.75	14.7
220000	22T	51 x 100	1.00	10.3	51 x 120	1.00	14.2	63.5 x 100	0.80	15.0
270000	27T	51 x 120	1.20	12.8	63.5 x 100	1.20	15.3	76 x 100	0.90	18.3
330000	33T				63.5 x 120	1.30	17.1	76 x 120	1.00	20.7
390000	39T	63.5 x 100	1.50	15.3	76 x 100	1.60	18.0	76 x 140	1.20	22.1
470000	47T	63.5 x 120	2.00	16.0	76 x 100	1.80	19.3			
560000	56T	76 x 120	2.50	17.3	76 x 140	2.00	20.7	90 x 140	1.50	25.8
680000	68T	76 x 120	3.00	18.7						

Maximum Allowable Ripple Current (Arms) at 85°C 120Hz  
tan δ at 20°C 120Hz

Case Size φD x L (mm)

Voltage (Code)		35V (1V)			50V (1H)			63V (1J)		
5V		44			63			79		
Cap. (μF)	Code	Case Size	tan δ	Ripple Current	Case Size	tan δ	Ripple Current	Case Size	tan δ	Ripple Current
5600	568							35 x 50	0.20	3.0
10000	109				35 x 50	0.25	3.9	35 x 80	0.25	4.0
15000	159	35 x 50	0.30	3.9				35 x 100	0.25	5.3
18000	189				35 x 80	0.25	5.2	35 x 120	0.25	6.2
22000	229				35 x 100	0.30	5.7	51 x 80	0.30	6.5
27000	279				35 x 120	0.35	6.6			
33000	339	35 x 80	0.40	6.0				51 x 100	0.35	8.1
39000	399	35 x 100	0.40	6.7	51 x 80	0.40	7.4	51 x 120	0.35	9.5
47000	479	35 x 120	0.45	8.0				63.5 x 100	0.40	10.2
56000	569				51 x 100	0.40	9.8			
68000	689	51 x 80	0.50	8.5	51 x 120	0.45	11.1	63.5 x 120	0.45	12.7
82000	829	51 x 100	0.55	10.3	63.5 x 100	0.50	12.2			
100000	10T							76 x 120	0.45	16.7
120000	12T	51 x 120	0.60	12.8	63.5 x 120	0.50	15.0	76 x 140	0.50	19.0
150000	15T	63.5 x 100	0.70	13.2	76 x 120	0.60	18.1	90 x 140	0.55	22.0
180000	18T	63.5 x 120	0.70	15.3	76 x 140	0.70	19.5			
220000	22T	76 x 100	0.75	17.8						
270000	27T	76 x 120	0.80	18.4	90 x 140	0.80	23.2			
330000	33T	76 x 140	0.90	22.0						
470000	47T	90 x 140	1.00	28.0						

Maximum Allowable Ripple Current (Arms) at 85°C 120Hz  
tan δ at 20°C 120Hz

Case Size φD x L (mm)

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## STANDARD RATINGS

Voltage (Code)		80V (1K)			100V (2A)			160V (2C)		
5V		100			125			200		
Cap. (μF)	Code	Case Size	tan δ	Ripple Current	Case Size	tan δ	Ripple Current	Case Size	tan δ	Ripple Current
1200	128							35 x 50	0.15	2.0
2200	228				35 x 50	0.10	2.1	35 x 80	0.15	3.4
2700	278							35 x 100	0.15	3.7
3300	338	35 x 50	0.15	2.5				35 x 120	0.15	4.5
4700	478				35 x 80	0.15	3.4	51 x 80	0.20	5.6
6800	688	35 x 80	0.20	3.7	35 x 100	0.15	4.2	51 x 100	0.20	7.5
8200	828				35 x 120	0.15	5.0	51 x 120	0.20	8.1
10000	109	35 x 100	0.20	4.9	51 x 80	0.20	5.2	63.5 x 100	0.20	9.8
12000	129	35 x 120	0.20	5.4				63.5 x 120	0.20	10.8
15000	159	51 x 80	0.25	6.0				76 x 100	0.20	12.7
18000	189				51 x 120	0.20	8.1	76 x 120	0.20	14.0
22000	229	51 x 100	0.30	7.1	63.5 x 100	0.25	8.6	76 x 140	0.20	16.6
27000	279	51 x 120	0.30	8.6	63.5 x 120	0.25	10.3			
33000	339	63.5 x 100	0.35	9.3	76 x 100	0.25	11.1	90 x 140	0.25	18.9
39000	399				76 x 120	0.25	12.4			
47000	479	63.5 x 120	0.35	12.0	76 x 140	0.25	14.3			
68000	689	76 x 120	0.35	15.4	90 x 140	0.30	18.0			
82000	829	76 x 140	0.35	18.1						
100000	10T	90 x 140	0.40	21.0						

Maximum Allowable Ripple Current (Arms) at 85°C 120Hz  
tan δ at 20°C 120Hz

Case Size ΦD x L (mm)

Voltage (Code)		200V (2D)			250V (2E)			350V (2V)		
5V		250			300			400		
Cap. (μF)	Code	Case Size	tan δ	Ripple Current	Case Size	tan δ	Ripple Current	Case Size	tan δ	Ripple Current
390	397							35 x 50	0.25	1.9
560	567				35 x 50	0.15	1.3			
680	687							35 x 80	0.25	2.9
820	827	35 x 50	0.15	1.6						
1000	108							35 x 100	0.25	3.8
1200	128				35 x 80	0.15	2.3	35 x 120	0.25	4.2
1500	158				35 x 100	0.15	3.0	51 x 80	0.25	4.5
1800	188	35 x 80	0.15	2.8	35 x 120	0.15	3.3			
2200	228	35 x 100	0.15	3.6	51 x 80	0.15	3.7	51 x 90	0.25	5.8
2700	278	35 x 120	0.15	4.0						
3300	338	51 x 80	0.15	4.5	51 x 100	0.15	5.1	51 x 130	0.25	8.3
3900	398				51 x 120	0.15	5.9	63.5 x 90	0.25	8.0
4700	478	51 x 100	0.15	6.5	63.5 x 100	0.20	6.9	63.5 x 110	0.25	9.2
5600	568	51 x 120	0.15	7.6				63.5 x 130	0.25	10.9
6800	688				63.5 x 120	0.20	8.7	76 x 90	0.25	10.3
8200	828	63.5 x 100	0.20	9.5				76 x 115	0.25	11.7
10000	109	63.5 x 120	0.20	11.0	76 x 120	0.20	11.1	76 x 130	0.25	14.0
12000	129	76 x 100	0.20	11.5	76 x 140	0.20	13.0	76 x 155	0.25	15.6
15000	159	76 x 120	0.20	12.8	90 x 140	0.20	14.9			
18000	189	76 x 140	0.20	15.0						
22000	229	90 x 140	0.25	15.6						

Maximum Allowable Ripple Current (Arms) at 85°C 120Hz  
tan δ at 20°C 120Hz

Case Size ΦD x L (mm)

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**STANDARD RATINGS**

Voltage (Code)		400V (2G)			450V (2W)			500V (2H)		
SV		450			500			550		
Cap. (μF)	Code	Case Size	tan δ	Ripple Current	Case Size	tan δ	Ripple Current	Case Size	tan δ	Ripple Current
470	477							51 x 80	0.25	1.8
680	687							51 x 105	0.25	2.5
820	827							51 x 105	0.25	2.8
1000	108	51 x 80	0.25	3.4	51 x 80	0.25	3.5	51 x 115	0.25	3.2
1200	128	51 x 80	0.25	3.8	51 x 100	0.25	4.5			
1500	158	51 x 105	0.25	4.5	51 x 105	0.25	5.0	51 x 115	0.25	4.0
								63.5 x 95	0.25	4.0
1800	188	51 x 105	0.25	5.2	51 x 115	0.25	5.6	63.5 x 115	0.25	4.8
		63.5 x 95	0.25	6.4	51 x 130	0.25	6.5	63.5 x 130	0.25	5.7
		51 x 140	0.25	6.5	63.5 x 95	0.25	6.5			
2700	278	51 x 130	0.25	7.1	63.5 x 115	0.25	7.8	76 x 115	0.25	6.5
					63.5 x 130	0.25	9.1			
3300	338	63.5 x 115	0.25	8.5	76 x 115	0.25	9.0			
					63.5 x 160	0.25	9.5			
3900	398	63.5 x 130	0.25	9.7	76 x 115	0.25	9.7	76 x 130	0.25	8.4
		63.5 x 160	0.25	10.5	76 x 130	0.25	11.2			
4700	478	76 x 115	0.25	10.7	90 x 120	0.25	11.5			
		63.5 x 190	0.25	12.0	76 x 155	0.25	13.3			
5600	568	76 x 130	0.25	12.2						
					76 x 170	0.25	15.0			
6800	688	76 x 155	0.25	14.6	90 x 155	0.25	15.3			
		76 x 170	0.25	15.0						
8200	828	90 x 155	0.25	16.8	90 x 155	0.25	17.0			
10000	109	90 x 155	0.25	18.5	90 x 170	0.25	18.5			
12000	129	90 x 170	0.25	20.5	90 x 230	0.25	23.5			
15000	159	90 x 230	0.25	26.5						

Maximum Allowable Ripple Current (Arms) at 85°C 120Hz  
tan δ at 20°C 120Hz

Case Size ΦD x L (mm)

Voltage (Code)		550V (25)			600V (26)			630V (2J)		
SV		600			650			680		
Cap. (μF)	Code	Case Size	tan δ	Ripple Current	Case Size	tan δ	Ripple Current	Case Size	tan δ	Ripple Current
100	107	35 x 50	0.25	0.6						
180	187	35 x 80	0.25	1.0						
270	277	35 x 100	0.25	1.3						
330	337	35 x 120	0.25	1.6						
390	397	51 x 80	0.25	1.7						
		51 x 100	0.25	2.1						
560	567	63.5 x 120	0.25	2.5						
		51 x 130	0.25	2.7						
		63.5 x 130	0.25	3.0						
820	827	51 x 130	0.25	3.1						
		63.5 x 100	0.25	3.5						
1000	108				63.5 x 120	0.30	5.3	63.5 x 130	0.30	5.9
1200	128	76 x 100	0.25	4.2	76 x 100	0.30	6.0	76 x 110	0.30	6.7
1500	158	76 x 100	0.25	4.6	76 x 120	0.30	7.3	76 x 130	0.30	8.1
1800	188	76 x 100	0.25	5.2	76 x 140	0.30	8.6	76 x 150	0.30	9.6
2200	228	76 x 110	0.25	5.9	90 x 120	0.30	9.6	90 x 130	0.30	10.7
2700	278				90 x 140	0.30	11.3	90 x 150	0.30	12.6
3300	338	76 x 140	0.25	8.0	90 x 160	0.30	13.2	90 x 170	0.30	14.7
3900	398				90 x 180	0.30	15.6	90 x 190	0.30	17.3

Maximum Allowable Ripple Current (Arms) at 85°C 120Hz  
tan δ at 20°C 120Hz

Case Size ΦD x L (mm)

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