

FEATURES

- Load life of 5,000 hours application of ripple current at +105°C.
- High reliability products.



SPECIFICATIONS

Item	Performance Characteristics	
Operating Temperature Range	-40 to +105°C	-25 to +105°C
Rated Working Voltage Range	10 to 100V	160 to 500V
Nominal Capacitance Range	330 to 390000µF	
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)	10~100 160~500
	Z-25°C / Z+20°C	- 8
	Z-40°C / Z+20°C	15 -
High Temperature Loading	Test time : 5,000 hours	Post test requirements at +20°C
	Test temperature : +105°C	Leakage current : ≤ Initial specified value
	Test conditions : Rated DC working voltage with rated ripple current	Cap. change : within ±20% of the initial measured value
		tan δ : ≤ 200% of the initial specified value
Shelf Life	At +105°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 : ≤ 200% of the initial specified value	
Industrial Standard	JIS C - 5101-4 (IEC 60384-4)	

RIPPLE CURRENT MULTIPLIER

Frequency Coefficient

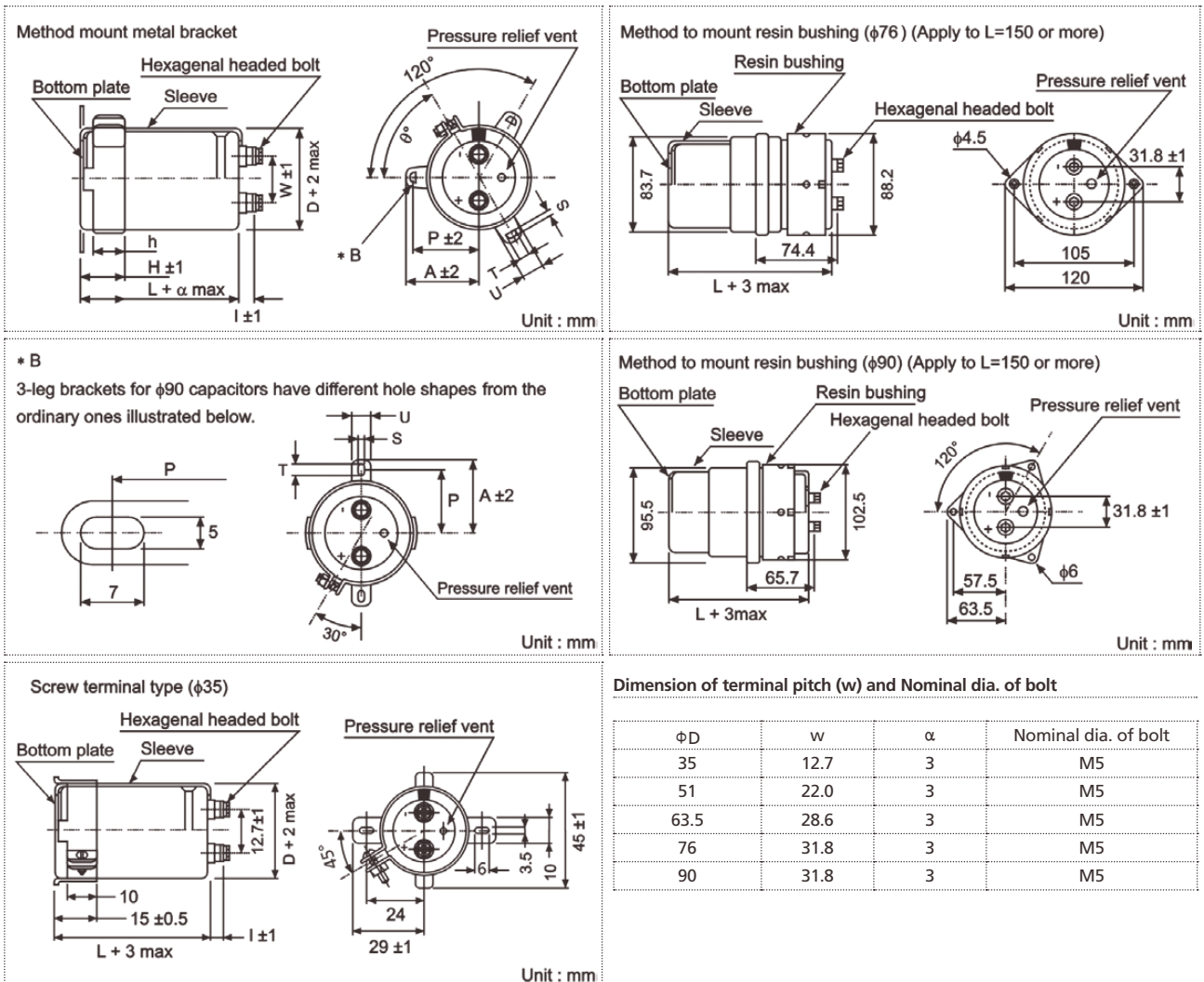
Coefficient	Freq. (Hz)				
Rated Voltage	50	120	300	1k	10k~
<160V	0.80	1.00	1.08	1.15	1.15
≥160V	0.80	1.00	1.08	1.15	1.20

PART NUMBER SYSTEM (EXAMPLE : 350V 6800µF)

1	2 3	4 5 6	7	8 9	10	11 12	13 14
E	WF	688	M	2V	U	1P	OO

Type (Terminal Code)
 Case Length (130mm)
 Diameter (76.2mm)
 Voltage (350V)
 Tolerance (±20%)
 Capacitance (6800µF)
 Series
 E-CAP

CASE SIZE TABLE



Dimensions of mounting bracket

Voltage (Code)		3 - Leg				2 - Leg				
Symbol	φD	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
θ°		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

STANDARD RATINGS

Voltage (Code)		10V (1A)			16V (1C)			25V (1E)		
SV		13			20			32		
Cap. (µF)	Code	Case Size	tan δ	Ripple Current	Case Size	tan δ	Ripple Current	Case Size	tan δ	Ripple Current
12000	129							35 x 80	0.35	3.3
15000	159				35 x 50	0.45	2.9	35 x 80	0.35	3.7
18000	189				35 x 80	0.45	3.5	35 x 80	0.35	4.0
22000	229				35 x 80	0.45	3.9	35 x 80	0.35	4.5
27000	279	35 x 80	0.45	4.3	35 x 80	0.45	4.3	35 x 100	0.40	5.0
33000	339	35 x 80	0.45	4.7	35 x 100	0.50	4.8	35 x 120	0.40	5.9
39000	399	35 x 80	0.45	5.3	35 x 100	0.50	5.3	51 x 80	0.40	6.5
47000	479	35 x 100	0.45	6.1	35 x 120	0.50	6.2	51 x 100	0.40	7.9
56000	569	35 x 100	0.50	6.2	51 x 80	0.60	6.3	51 x 120	0.40	8.8
68000	689	35 x 120	0.60	6.8	51 x 100	0.60	7.6	51 x 120	0.50	9.1
82000	829	51 x 80	0.60	7.8	51 x 120	0.70	8.3	63.5 x 100	0.50	10.6
100000	10T	51 x 100	0.70	8.5	51 x 120	0.70	9.2	63.5 x 120	0.60	11.4
120000	12T	51 x 100	0.70	9.5	63.5 x 100	0.80	9.9	76 x 100	0.60	12.8
150000	15T	63.5 x 100	0.80	11.0	76 x 100	0.80	12.3	76 x 120	0.75	13.7
180000	18T	63.5 x 100	0.80	12.1	76 x 120	0.80	14.5	76 x 140	0.76	16.1
220000	22T	76 x 100	1.00	13.2	76 x 140	1.00	15.2	90 x 140	1.00	16.6
270000	27T	76 x 120	1.20	14.4	90 x 140	1.20	16.8			
330000	33T	76 x 140	1.20	17.0						
390000	39T	90 x 140	1.40	18.6						

Maximum Allowable Ripple Current (Arms) at 105°C 120Hz
tan δ at 20°C 120Hz

Case Size ΦD x L (mm)

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	278							35 x 50	0.19	1.9
3300	338							35 x 50	0.15	2.1
3900	398				35 x 50	0.20	2.0	35 x 80	0.20	2.7
4700	478				35 x 50	0.25	2.2	35 x 80	0.20	2.9
5600	568				35 x 80	0.25	2.8	35 x 80	0.20	3.2
6800	688				35 x 80	0.25	3.0	35 x 80	0.20	3.5
8200	828	35 x 80	0.30	3.0	35 x 80	0.25	3.3	35 x 100	0.25	4.2
10000	109	35 x 80	0.30	3.3	35 x 80	0.25	3.7	35 x 120	0.25	4.3
12000	129	35 x 80	0.30	3.6	35 x 100	0.25	4.4	51 x 80	0.25	4.8
15000	159	35 x 80	0.30	4.1	35 x 120	0.30	4.7	51 x 100	0.25	5.9
18000	189	35 x 100	0.30	4.8	51 x 80	0.35	4.8	51 x 120	0.30	6.3
22000	229	35 x 120	0.35	5.2	51 x 100	0.35	5.9	51 x 120	0.30	6.7
27000	279	51 x 80	0.40	5.9	51 x 120	0.35	7.0	63.5 x 120	0.30	8.8
33000	339	51 x 100	0.40	6.6	63.5 x 100	0.40	7.6	76 x 120	0.35	10.0
39000	399	51 x 120	0.40	7.8	63.5 x 120	0.40	8.9	76 x 140	0.35	12.5
47000	479	51 x 120	0.45	8.0	63.5 x 120	0.40	9.8	90 x 140	0.40	13.8
56000	569	63.5 x 100	0.45	9.2	76 x 120	0.40	11.9			
68000	689	63.5 x 120	0.45	11.0	76 x 140	0.45	13.1			
82000	829	76 x 120	0.50	12.7	90 x 140	0.50	14.8			
100000	10T	76 x 140	0.60	13.5						
120000	12T	90 x 140	0.60	16.1						

Maximum Allowable Ripple Current (Arms) at 105°C 120Hz
tan δ at 20°C 120Hz

Case Size ΦD x L (mm)

Specifications are subject to change without notice. Should a safety or technical concern arise regarding the product, please be sure to contact our sales offices or agents immediately.

STANDARD RATINGS

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	687							35 x 50	0.15	1.1
820	827							35 x 80	0.15	1.2
1000	108							35 x 80	0.15	1.3
1200	128				35 x 50	0.15	1.4	35 x 80	0.15	1.5
1500	158				35 x 80	0.15	1.6	35 x 80	0.15	1.7
1800	188				35 x 80	0.15	1.8	35 x 100	0.15	2.0
2200	228	35 x 50	0.15	1.9	35 x 80	0.15	2.0	35 x 120	0.15	2.3
2700	278	35 x 80	0.15	2.2	35 x 80	0.15	2.4	35 x 120	0.15	2.7
3300	338	35 x 80	0.15	2.5	35 x 100	0.15	2.8	51 x 100	0.15	3.3
3900	398	35 x 80	0.15	2.9	35 x 120	0.15	3.1	51 x 120	0.15	3.8
4700	478	35 x 100	0.15	3.1	51 x 80	0.15	3.6	51 x 120	0.15	4.2
5600	568	35 x 100	0.15	3.6	51 x 100	0.15	4.3	51 x 120	0.15	4.7
6800	688	35 x 120	0.20	4.1	51 x 120	0.15	5.0	63.5 x 120	0.15	5.7
8200	828	51 x 80	0.20	4.8	51 x 120	0.15	5.5	76 x 100	0.20	6.4
10000	109	51 x 100	0.20	5.6	63.5 x 100	0.15	6.4	76 x 120	0.20	6.6
12000	129	51 x 100	0.20	6.1	63.5 x 120	0.20	6.6	76 x 140	0.20	7.8
15000	159	51 x 120	0.20	7.4	76 x 100	0.20	7.5	90 x 140	0.20	9.5
18000	189	63.5 x 120	0.25	8.0	76 x 120	0.25	8.0			
22000	229	76 x 100	0.25	9.1	76 x 140	0.25	9.4			
27000	279	76 x 120	0.30	9.7	90 x 140	0.30	10.4			
33000	339	76 x 140	0.30	11.5						
39000	399	90 x 140	0.30	12.5						

Maximum Allowable Ripple Current (Arms) at 105°C 120Hz
tan δ at 20°C 120Hz

Case Size ΦD x L (mm)

Voltage (Code)		200V (2G)			250V (2W)			350V (2H)		
SV		250			300			400		
Cap. (μF)	Code	Case Size	tan δ	Ripple Current	Case Size	tan δ	Ripple Current	Case Size	tan δ	Ripple Current
330	337				35 x 50	0.15	0.7			
390	397				35 x 80	0.15	0.8			
470	477	35 x 50	0.15	0.9	35 x 80	0.15	0.9			
560	567	35 x 80	0.15	1.0	35 x 80	0.15	1.0			
680	687	35 x 80	0.15	1.1	35 x 100	0.15	1.2			
820	827	35 x 80	0.15	1.3	35 x 100	0.15	1.4	51 x 80	0.25	3.3
1000	108	35 x 80	0.15	1.5	35 x 120	0.15	1.6			
1200	128	35 x 100	0.15	1.7	51 x 80	0.15	1.8			
1500	158	35 x 120	0.15	1.9	51 x 90	0.15	2.1	51 x 90	0.25	5.2
1800	188	35 x 120	0.15	2.2	51 x 100	0.15	2.4			
2200	228	51 x 80	0.15	2.7	51 x 110	0.15	2.7	51 x 110	0.25	7.0
								51 x 130	0.25	8.4
2700	278	51 x 100	0.15	3.2	63.5 x 90	0.15	3.2	63.5 x 90	0.25	8.1
3300	338	51 x 120	0.15	3.5	63.5 x 120	0.15	4.0	51 x 150	0.25	9.9
3900	398	63.5 x 100	0.15	4.0	76 x 90	0.15	4.2	63.5 x 130	0.25	11.5
								76 x 90	0.25	10.8
4700	478	63.5 x 120	0.15	4.7	76 x 120	0.15	5.2			
5600	568	76 x 100	0.15	5.3	76 x 140	0.15	6.1	63.5 x 150	0.25	14.7
6800	688	76 x 120	0.15	6.3	76 x 140	0.15	6.7	76 x 140	0.25	17.4
8200	828	76 x 140	0.20	6.4				76 x 150	0.25	19.6
10000	109	90 x 140	0.20	7.7				76 x 190	0.25	23.0
15000	159							90 x 190	0.25	30.6
22000	229							90 x 260	0.25	42.7

Maximum Allowable Ripple Current (Arms) at 105°C 120Hz
tan δ at 20°C 120Hz

Case Size ΦD x L (mm)

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STANDARD RATINGS

Voltage (Code)		400 (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	2.4
560	567				51 x 80	0.25	2.6			
680	687	51 x 80	0.25	3.0						
820	827							51 x 90	0.25	3.6
1000	108				51 x 90	0.25	4.0	51 x 110	0.25	4.4
1200	128	51 x 90	0.25	4.7	51 x 110	0.25	4.8	51 x 130	0.25	5.2
1500	158							63.5 x 90	0.25	5.0
1800	188	51 x 110	0.25	6.3	51 x 130	0.25	6.4	51 x 150	0.25	6.3
					63.5 x 90	0.25	6.2	63.5 x 110	0.25	6.8
2200	228	51 x 130	0.25	7.5	51 x 150	0.25	7.6			
		63.5 x 90	0.25	7.3	63.5 x 110	0.25	7.5			
2700	278	51 x 150	0.25	8.9	63.5 x 130	0.25	8.9	63.5 x 150	0.25	9.6
		63.5 x 110	0.25	8.8	76 x 110	0.25	9.1	76 x 110	0.25	9.2
3300	338	63.5 x 130	0.25	10.5	63.5 x 150	0.25	10.6			
		76 x 90	0.25	9.9	76 x 110	0.25	10.6			
3900	398				76 x 130	0.25	11.9	76 x 150	0.25	12.7
								90 x 130	0.25	11.9
4700	478	63.5 x 150	0.25	13.4	76 x 140	0.25	13.6			
		76 x 130	0.25	13.9						
5600	568				76 x 150	0.25	13.8			
6800	688	76 x 150	0.25	17.9	76 x 190	0.25	17.3	90 x 190	0.25	18.8
		90 x 130	0.25	17.2	90 x 150	0.25	16.7			
8200	828	76 x 190	0.25	20.8						
		90 x 150	0.25	20.1						
10000	109				90 x 200	0.25	23.3	90 x 260	0.25	26.3
12000	129	90 x 190	0.25	27.4						
15000	159				90 x 250	0.25	31.7			

Maximum Allowable Ripple Current (Arms) at 105°C 120Hz
tan δ at 20°C 120Hz

Case Size ΦD x L (mm)