

RH Series 105°C

Features

Extremely Long useful life

Applications

- ◆ Frequency converters
- ◆ Professional power supplies
- ◆ Traction

Features

- ◆ Outstanding reliability
- ◆ Wide temperature range
- ◆ Extra long useful life
- ◆ Version with low-inductance design available
- ◆ All-welded construction ensures reliable electrical contact
- ◆ Self-extinguishing electrolyte
- ◆ RoHS-compatible

Construction

- ◆ Charge-discharge proof, polar
- ◆ Aluminum case with insulating sleeve
- ◆ Poles with screw terminal connections
- ◆ Mounting with ring clips, clamps or threaded stud

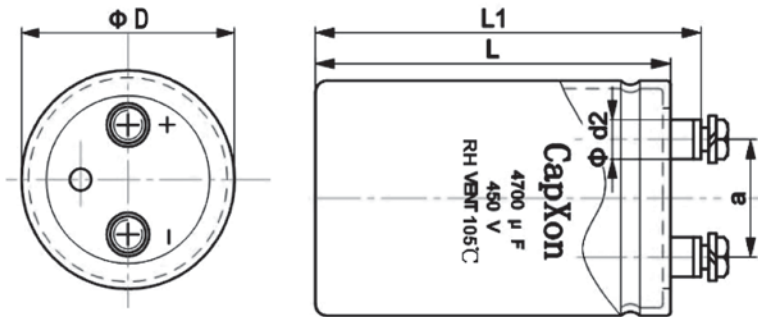


Specifications

Item	Performance Characteristics					
Rated voltage V_R	160... 450 V DC					
Surge voltage V_S	1.15 VR (for VR ≤ 315 V) or 1.10 VR (for VR > 315 V)					
Rated capacitance C_R	220 ...47000 µF					
Capacitance tolerance	±20%					
tan δ (at 20°C , 120Hz)	Less than the value under table(%)					
	ΦD	35	51	63.5	76.2	89
	WV	15	15	20	20	20
		20	20	25	25	25
Leakage Current I_{leak} (20 °C, 5 min)	$I_{leak} \leq 0.3\mu A * (C*V)^{0.7} + 4\mu A$					
Self-inductance ESL	d = 51 mm: approx. 17 nH					
	d ≥ 63.5 mm: approx. 20 nH					
	Capacitors with low-inductance design:					
	d ≥ 63.5 mm: approx. 15 nH					
Useful life 105 °C; V_R, I_{AC^*R}	> 8000 h	Requirements: Δ C/C ≤ ±40% of initial value ESR ≤ 4 times initial specified limit Ileak ≤ initial specified limit				
Voltage Endurance test 105 °C; V_R	2000 h	Post test requirements: Δ C/C ≤ ±20% of initial value ESR ≤ 2 times initial specified limit Ileak ≤ initial specified limit				
Vibration Resistance test	To IEC 60068-2-6, test Fc:					
	Displacement amplitude 0.75 mm, frequency range 10 ... 55 Hz, acceleration max. 10 g, duration 3X2 h. Capacitor mounted by its body which is rigidly clamped to the work surface.					
Low Temperature Characteristics	Max. impedance ratio at 120 Hz					
	V_R	≤ 400 V	≥ 450 V			
	$Z_{-25°C} / Z_{20°C}$	4	4			
	$Z_{-40°C} / Z_{20°C}$	10	10			
Sectional specification	IEC 60384-4 and JIS-C-5101					

Dimensional drawings

Ring clip/clamp mounting:



M5: Min. reach of screw = 8mm
M6: Min. reach of screw = 12mm

Dimensions

Terminal	Dimensions(mm) with insulating sleeve				
	$D \pm 2$	$L \pm 3$	$L_1 \pm 3$	$d_2 \text{max.}$	$a \pm 0.5$
M5	35	50~120	56.5~126.5	10.3	12.7
M5	51	80~140	86.5~146.5	10.3	22
M5	63.5	80~140	86.5~146.5	10.3	28.6
M5	76.2/89	100~240	106.4~246.5	10.3	31.8
M6	76.2/89	100~240	106.4~246.5	17.5	31.8

Packing

Diameter D(mm)	Length L(mm)	Packing (pcs.)
35	$\leq 70\text{mm}$	120
	$> 70\text{mm}$	60
42	$\leq 70\text{mm}$	120
	$> 70\text{mm}$	60
51	$\leq 70\text{mm}$	70
	$> 70\text{mm}$	35
63.5	all	24
76.2	all	15
89	all	12

Accessories

The following items are included in the delivery package, but are not fastened to the capacitors.

	Thread	Maximum torque
For terminal	M5	2 Nm
	M6	2.5 Nm

Case Size

φ DxL(mm)

WV(V) Cap(μF)	160		200		250	
	Size	Ripple	Size	Ripple	Size	Ripple
470					35×60	1.2
680			35×50	1.4	35×80	1.7
1000	35×60	1.9	35×60	2.0	35×100	2.5
1500	35×80	2.5	35×80	2.5	51×80	2.9
2200	35×100	3.3	35×120	3.6	51×100	4.0
			51×80	3.6		
3300	35×120	4.5	51×80	4.6	51×140	5.3
	51×80	4.5	51×100	4.8	63.5×100	5.0
4700	51×100	5.5	51×140	6.4	63.5×120	6.6
			63.5×100	6.2		
6800	51×140	7.8	63.5×120	7.7	76.2×120	8.3
	63.5×100	7.5				
10000	63.5×120	8.8	76.2×120	10.0	76.2×160	11.0
					89×140	11.5
15000	76.2×120	10.8	76.2×140	11.5	89×170	14.5
			76.2×160	12.2		
22000	76.2×140	13.8	76.2×160	15.5	89×220	17.0
	89×130	14.5	89×140	16.5		
33000	89×140	15.5				
47000	89×220	19.2				

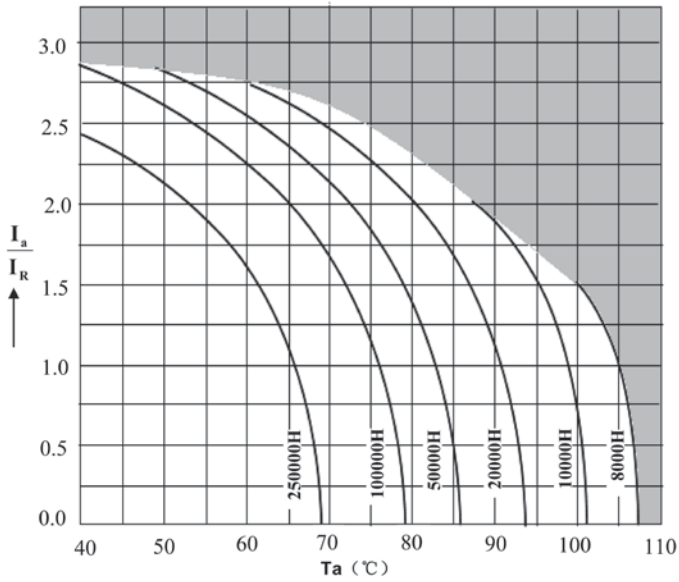
Ripple Current(A,rms) at 105°C 120Hz

WV(V) Cap(μF)	350		400		450	
	Size	Ripple	Size	Ripple	Size	Ripple
220			35×50	1.4	35×50	1.4
330	35×60	1.6	35×60	1.7	35×60	1.7
470	35×80	2.3	35×80	3.3	35×80	3.5
680	35×100	3.3	35×120	3.9	35×120	4.2
			51×80	4.1	51×80	5.5
1000	35×120	4.4	51×80	4.7	51×80	4.8
	51×80	4.6			51×105	5.5
1500	51×80	5.7	51×105	6.4	51×120	7.1
	51×100	6.8	51×120	7.0		
2200	51×105	7.7	51×130	9.1	63.5×100	8.4
	51×120	8.3	63.5×100	8.3	63.5×120	9.2
	51×140	8.8				
2700	63.5×80	8.7	63.5×105	10.0	63.5×130	11.3
3300	63.5×100	10.0	63.5×130	11.5	63.5×145	13.2
	63.5×120	10.8	76.2×105	11.7	76.2×120	12.7
			76.2×120	12.2		
3900	63.5×120	11.5	76.2×120	13.0	76.2×145	15.0
4700	63.5×145	12.6	76.2×120	14.5	76.2×120	15.0
	76.2×105	12.6	76.2×130	15.0	76.2×160	17.0
	76.2×120	13.0				
5600	76.2×130	14.8	76.2×145	17.0	76.2×160	17.8
					89×145	20.0
6800	76.2×140	16.5	76.2×160	19.3	76.2×160	20.0
			89×145	20.0	76.2×220	22.0
					89×170	23.0
8200	76.2×160	20.0	89×160	22.0	89×180	24.0
	89×145	21.5				
10000	76.2×160	21.5	89×160	24.0	89×200	27.0
	76.2×190	23.0				
	89×140	23.0				
12000	76.2×220	27.5	89×180	28.0		
	89×170	28.5				
15000	89×190	30.0	89×200	31.0		
18000	89×220	34.0				

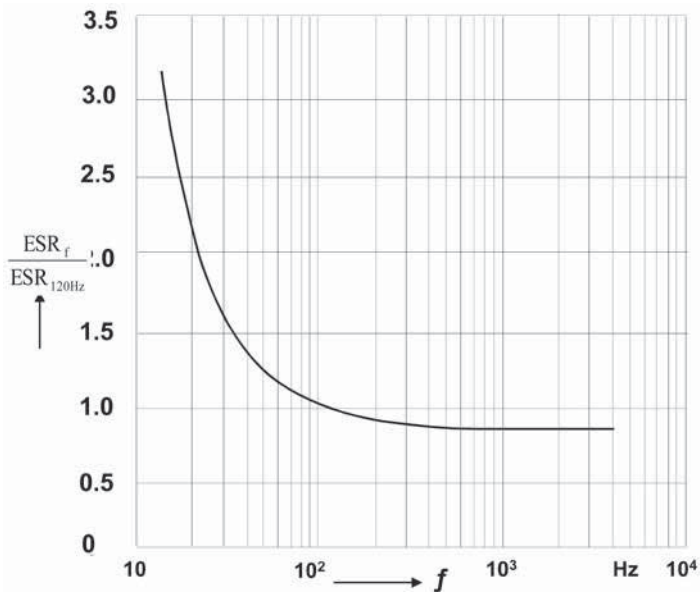
Ripple Current(A,rms) at 105°C 120Hz

Useful life

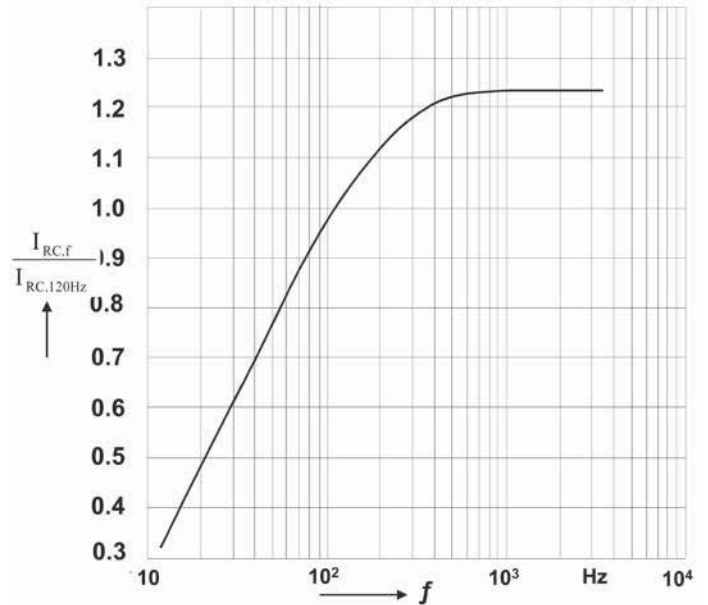
depending on ambient temperature T_a versus under ripple current operating conditions



Frequency characteristics of ESR Typical behavior



Frequency factor of permissible ripple current I_{RC} versus frequency f



Impedance Z versus frequency f

