HF series

High Ripple Low Impedance
- **Lower impedance at high frequency range.**
- **Smaller case size and higher ripple current.**

SPECIFICATIONS

Item	Performance Characteristics
Operating Temperature Range	−40~+105℃
Voltage Range	6.3~100V
Capacitance Range	10~6800 μF
Capacitance Tolerance	±20% at 120Hz, 20℃
Tan δ	For capacitance of more than 1000 μF, add 0.02 for every increase of 1000 μF Measurement frequency: 120Hz, Temperature: 20℃

Rated voltage (V)	6.3	10	16	25	35	50	63	100
Tan δ (MAX.)	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08

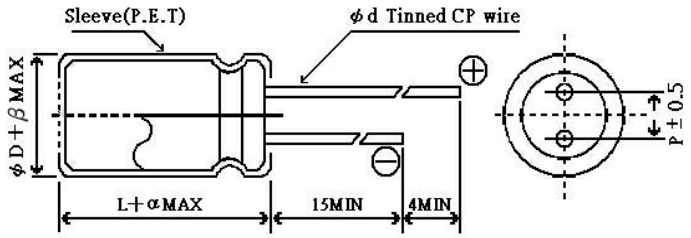
Leakage Current	Rated voltage (V)	6.3~100
	Leakage Current	After 2 minutes' application of rated voltage, leakage current is not more than 0.01CV or 3 (μA), whichever is greater.

Stability at Low Temperature	Rated Voltage (V)	6.3	10	16	25	35	50	63	100
	Impedance Ratio Z-25℃/Z+20℃	2	2	2	2	2	2	2	2
	ZT/Z 20 (MAX.) Z-40℃/Z+20℃	3	3	3	3	3	3	3	3

at 120 Hz

Load Life	After an application of D.C. bias voltage plus the rated ripple current for 5000 hours' (φD≦6.3：2000 hours, φD=8：3000 hours, φD=10：4000 hours) at 105℃ the peak voltage shall not exceed the rated D.C. voltage, the capacitors meet the characteristic requirement listed below.	Capacitance Change	Within ±25% of initial value
		Tan δ	Not exceeding 200% of initial specified value
		Leakage Current	Not exceeding Initial specified value
Shelf Life	After storing capacitors under no load at 105℃ for 1000 hours. they will meet the specified value for endurance characteristics listed above.		

RADIAL LEAD TYPE



α	L<20：1.5
	L≥20：2.0

φD	5	6.3	8	10	12.5	16
P	2.0	2.5	3.5	5.0	5.0	7.5
φd	0.5	0.5	0.6	0.6	*0.6	0.8
β	0.5	0.5	0.5	0.5	0.5	0.5

Allowable Ripple Current VS. Ambient Temperature

Ambient temp. (℃)	~+70	+85	+105
Coefficient	1.78	1.4	1.0

Frequency Coefficient of Allowable Ripple Current

V	Frequency / Cap. (μF)	50Hz	120Hz	1KHz	10KHz	100KHz
6.3 ~ 50	10~33	0.45	0.55	0.75	0.90	1.00
	39~330	0.60	0.70	0.85	0.95	1.00
	390~1000	0.65	0.75	0.90	0.98	1.00
	1200~6800	0.75	0.80	0.95	1.00	1.00

STANDARED RATINGS

D×L (mm)

W.V.		6.3V(0J)				10V(1A)			
S.V.		8				13			
Item		Cass size φD×L (mm)	Impedance (ΩMAX.)		Allowable Ripple (mA. rms) 105℃/100KHz	Cass size φD×L (mm)	Impedance (ΩMAX.)		Allowable Ripple (mA. rms) 105℃/100KHz
Cap(μF)	Code		20℃/100KHz	−10℃/100KHz			20℃/100KHz	−10℃/100KHz	
27	270					4×7	0.89	2.70	130
39	390	4×7	0.85	2.60	130				
100	101					5×11	0.30	1.00	250
150	151	5×11	0.30	1.00	250				
220	221					6.3×11	0.13	0.41	405
330	331	6.3×11	0.13	0.41	405				
470	471					8×11.5	0.072	0.22	760
560	561	8×11.5	0.072	0.22	760				
680	681					10×12.5	0.053	0.16	1030
820	821	8×15	0.056	0.17	995				
1000	102	10×12.5	0.053	0.16	1030	8×20	0.041	0.13	1250
						10×16	0.038	0.12	1430
1200	122	8×20	0.041	0.13	1250	10×20	0.023	0.069	1820
		10×16	0.038	0.12	1430				
1500	152	10×20	0.023	0.069	1820				
2200	222	10×25	0.022	0.066	2150	12.5×20	0.021	0.053	2360
3300	332	12.5×20	0.021	0.053	2360	12.5×25	0.018	0.045	2770
3900	392	12.5×25	0.018	0.045	2770	12.5×31.5	0.016	0.041	3290
						16×20	0.018	0.045	3140
4700	472	12.5×31.5	0.016	0.041	3290	12.5×31.5	0.016	0.041	3290
5600	562	16×20	0.018	0.045	3140	16×25	0.016	0.043	3460
		16×25	0.016	0.043	3460				
6800	682	16×25	0.016	0.043	3460				

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■ STANDARED RATINGS

D×L (mm)

W.V. / S.V. / Item / Cap(μF) / Code	16V(1C) / 20			25V(1E) / 32		
	Cass size φD×L (mm)	Impedance (ΩMAX.) 20℃/100KHz	Impedance (ΩMAX.) −10℃/100KHz	Allowable Ripple (mA. rms) 105℃/100KHz	Cass size φD×L (mm)	Impedance (ΩMAX.) 20℃/100KHz	Impedance (ΩMAX.) −10℃/100KHz	Allowable Ripple (mA. rms) 105℃/100KHz
15 / 150					4×7	0.94	2.90	130
18 / 180	4×7	0.92	2.80	130				
47 / 470					5×11	0.30	1.00	250
56 / 560	5×11	0.30	1.00	250	6.3×11	0.13	0.41	405
100 / 101					6.3×11	0.13	0.41	405
120 / 121	6.3×11	0.13	0.41	405				
220 / 221					8×11.5	0.072	0.22	760
330 / 331	8×11.5	0.072	0.22	760	10×12.5	0.053	0.16	1030
470 / 471	10×12.5	0.053	0.16	1030	8×20	0.041	0.13	1250
					10×16	0.038	0.12	1430
680 / 681	8×20	0.041	0.13	1250	10×20	0.023	0.069	1820
	10×16	0.038	0.12	1430				
1000 / 102	10×20	0.023	0.069	1820	12.5×20	0.021	0.053	2360
1500 / 152	12.5×20	0.021	0.053	2360	12.5×25	0.018	0.045	2770
1800 / 182					12.5×31.5	0.016	0.041	3290
					16×20	0.018	0.045	3140
2200 / 222	12.5×25	0.018	0.045	2770	12.5×31.5	0.016	0.041	3290
2700 / 272	12.5×31.5	0.016	0.041	3290	16×25	0.016	0.043	3460
	16×20	0.018	0.045	3140				
3300 / 332	16×25	0.016	0.043	3400				
3900 / 392	16×25	0.016	0.043	3460				

■ STANDARED RATINGS

D×L (mm)

W.V. / S.V. / Item / Cap(μF) / Code	35V(1V) / 44			50V(1H) / 63		
	Cass size φD×L (mm)	Impedance (ΩMAX.) 20℃/100KHz	Impedance (ΩMAX.) −10℃/100KHz	Allowable Ripple (mA. rms) 105℃/100KHz	Cass size φD×L (mm)	Impedance (ΩMAX.) 20℃/100KHz	Impedance (ΩMAX.) −10℃/100KHz	Allowable Ripple (mA. rms) 105℃/100KHz
10 / 100	4×7	0.96	2.90	130				
22 / 220					5×11	0.34	1.18	238
33 / 330	5×11	0.30	1.00	250				
56 / 560	6.3×11	0.13	0.41	405	6.3×11	0.14	0.50	385
100 / 101					8×11.5	0.074	0.22	724
150 / 151	8×11.5	0.072	0.22	760	10×12.5	0.061	0.18	979
180 / 181					8×20	0.046	0.14	1190
220 / 221	10×12.5	0.053	0.16	1030	10×16	0.042	0.12	1370
270 / 271	8×20	0.041	0.13	1250	10×20	0.030	0.090	1580
330 / 331	10×16	0.038	0.12	1430				
470 / 471	10×20	0.023	0.069	1820	12.5×20	0.027	0.068	2050
560 / 561					12.5×25	0.023	0.059	2410
680 / 681	12.5×20	0.021	0.053	2360	12.5×31.5	0.021	0.052	2860
820 / 821					16×20	0.023	0.059	2730
1000 / 102	12.5×25	0.018	0.045	2770	16×25	0.021	0.056	3010
1200 / 122	12.5×31.5	0.016	0.041	3290				
	16×20	0.018	0.045	3140				
1500 / 152	16×25	0.015	0.039	3400				
1800 / 182	16×25	0.016	0.043	3460				

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■ STANDARD RATINGS

W.V.		63(1J)				100(2A)			
S.V.		79				125			
Item		Case size φD×L (mm)	Impedance(ΩMAX.)		Allowable Ripple (mA. rms) 105℃/100KHz	Case size φD×L (mm)	Impedance(ΩMAX.)		Allowable Ripple (mA. rms) 105℃/100KHz
Cap(μF)	Code		20℃/100KHz	−10℃/100KHz			20℃/100KHz	−10℃/100KHz	
6.8	6R8					5×11	1.4	5.6	125
10	100								
12	120								
15	180	5×11	0.88	3.50	165	6.3×11	0.57	2.3	265
22	220								
33	330	6.3×11	0.35	1.40	265				
47	470					10×12.5	0.17	0.66	480
68	680					10×16	0.11	0.47	600
82	820	8×15	0.16	0.54	665	10×20	0.084	0.34	800
		10×12.5	0.11	0.44	690				
100	101					12.5×15	0.11	0.34	750
120	121	8×20	0.12	0.48	820	10×25	0.069	0.28	900
		10×16	0.076	0.31	950				
150	151					12.5×20	0.062	0.18	1100
180	181	10×20	0.056	0.23	1150				
		12.5×15	0.072	0.29	1150				
220	221	10×25	0.046	0.19	1350	12.5×25	0.047	0.14	1250
						16×20	0.048	0.15	1350
270	271	12.5×20	0.041	0.13	1500	12.5×30	0.042	0.13	1500
330	331					12.5×35	0.036	0.11	1650
						16×25	0.038	0.12	1700
						18×20	0.045	0.14	1500
390	391	12.5×25	0.031	0.093	1900	12.5×40	0.032	0.095	1800
470	471	12.5×30	0.028	0.084	2300	16×31.5	0.032	0.095	1850
		16×20	0.032	0.096	2000	18×25	0.036	0.11	1750
560	561	12.5×25	0.024	0.072	2500	16×35.5	0.029	0.086	2000
						18×31.5	0.030	0.090	1900
680	681	12.5×40	0.021	0.063	2800	18×35.5	0.027	0.081	2200
		16×25	0.025	0.075	2600				
		18×20	0.030	0.090	2500				
820	821	16×31.5	0.021	0.063	2850	18×40	0.026	0.077	2700
		18×25	0.024	0.072	2800				
1000	102	16×35.5	0.019	0.057	2900				
1200	122	16×40	0.018	0.054	3400				
		18×31.5	0.020	0.060	3300				
1500	152	18×35.5	0.018	0.054	3400				
1800	182	18×40	0.017	0.051	3500				