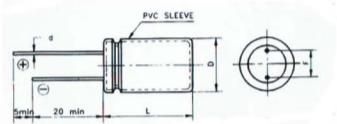


Features

- Low E.S.R. and high ripple current at high frequency range.
- Load life of 2,000 hours(1,000 hours for case dia.8mm or less) at 105°C.
- Wide operating temperature range, from -40°C to +105°C.
- Suitable for switching power supplies.
- Case size larger than 5mm diameter has safety vents.

Characteristics

Item	Characteristics							
Operating temperature range	-40~+105°C							
Rated voltage range	6.3~63V							
Capacitance range	1~15,000 μF							
Capacitance tolerance (at 20°C, 120Hz)	±20%(M)							
Leakage current(I) (at 20°C)	After 2 minute application of rated voltage. I ≤ 0.01CV or 3 μA, whichever is greater. Where C: Nominal capacitance in μF, V: Rated voltage in V.							
Dissipation factor(Tan δ) (at 20°C, 120Hz)	W.V.(V)	6.3	10	16	25	35	50	63
	Tan δ (max.)	0.22	0.19	0.16	0.14	0.12	0.10	0.08
	For capacitance of more than 1,000 μF, add 0.02 for every increase of 1,000 μF.							
Low temperature characteristics (at 120Hz)	W.V.(v)	6.3~10			16~63			
	impedance ratio ZT/Z+20°C (max)	Z-25°C/Z+20°C	2		1.5			
		Z-40°C/Z+20°C	4		3			
Load life	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage with max. ripple current has been applied for 2,000 hours(1,000 hours for case dia.8 or less) at 105°C							
	Capacitance change	≤20% of the initial value						
	tan δ	≤200% of the initial specified value						
	I	≤The initial specified value						
Shelf life	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them at 105°C for 500 hours without voltage applied							
	Capacitance change	≤20% of the initial value						
	tan δ	≤150% of the initial specified value						
	I	≤200% of the initial specified value						
Others	Satisfies characteristic W of JIS C5141							

Dimensions


D ±0.5	±1.0				±2.0						
	5	6.3	8	10	13	16	18				
L	11	11	12	15	16	20	25	25	30	35	35
	F ±0.5		2.0	2.5	3.5	5.0		7.5			
d ±0.05	0.5		0.6		0.8						

Ripple Current Multipliers
Frequency multiplying factor

W.V.(v)	Cap.(μF)	Freq(Hz)					
		50	120	1K	10K	100K	
6.3~35	10~100	0.41	0.52	0.66	0.82	1.00	
	150~1,000	0.42	0.55	0.68	0.83	1.00	
	1,500~15,000	0.43	0.57	0.71	0.87	1.00	
50~63	1~10	0.26	0.36	0.61	0.87	1.00	
	15~150	0.49	0.62	0.87	0.97	1.00	
	220~2,200	0.49	0.71	0.88	0.98	1.00	

Temperature multiplying factor

Temperature (°C)	55	65	85	105
Factor	2.44	2.23	1.73	1.00

Case Size DxL(mm), E.S.R.(mΩ/at 20°C, 100KHz) And Maximum Ripple Current(A rms/at 105°C, 100KHz)

W.V.(v)	Cap.(μF)	6.3			10			16			25		
		Size	E.S.R.	Ripple	Size	E.S.R.	Ripple	Size	E.S.R.	Ripple	Size	E.S.R.	Ripple
22											5×11	470	0.21
33								5×11	450	0.21	5×11	450	0.21
47								5×11	450	0.21	5×11	450	0.21
68					5×11	430	0.22	5×11	430	0.22	6.3×11	300	0.30
100	5×11	430	0.22	5×11	430	0.22	6.3×11	300	0.30	6.3×11	300	0.30	
150	5×11	430	0.22	6.3×11	300	0.30	6.3×11	200	0.37	8×12	130	0.55	
220	6.3×11	300	0.30	6.3×11	200	0.37	8×12	130	0.55	8×12	72	0.75	
330	6.3×11	200	0.37	8×12	130	0.55	8×12	72	0.75	8×15	56	0.91	
470	8×12	130	0.55	8×12	72	0.75	8×15	56	0.91	10×16	38	1.31	
680	8×12	72	0.75	8×15	56	0.91	10×16	41	1.26	10×20	23	1.81	
1,000	8×12	72	0.75	10×16	56	1.08	10×16	38	1.31	10×25	22	1.99	
1,500	10×16	38	1.31	10×16	38	1.31	10×20	23	1.81	13×25	18	2.62	
2,200	10×20	23	1.81	10×20	23	1.81	10×25	22	1.99	16×25	18	3.02	
3,300	10×25	21	2.04	13×20	21	2.26	13×25	18	2.62	16×30	17	3.29	
4,700	13×25	18	2.62	16×25	18	3.02	16×25	18	3.02	18×35	15	3.99	
6,800	16×25	18	3.02	16×25	17	3.11	16×30	16	3.39				
10,000	16×30	16	3.39	16×25	15	3.69	18×35	15	3.99				
15,000	18×35	15	3.99										

W.V.(v)	Cap.(μF)	35			50			63		
		Size	E.S.R.	Ripple	Size	E.S.R.	Ripple	Size	E.S.R.	Ripple
1					5×11	5,000	0.03			
2.2					5×11	4,000	0.07			
3.3					5×11	3,500	0.08			
4.7					5×11	3,000	0.08			
6.8					5×11	2,500	0.09			
10	5×11	1,000	0.14	5×11	1,000	0.14	5×11	1,000	0.14	
15	5×11	800	0.16	5×11	800	0.16	5×11	800	0.16	
22	5×11	700	0.17	5×11	650	0.18	6.3×11	650	0.20	
33	5×11	600	0.18	6.3×11	480	0.24	6.3×11	480	0.24	
47	6.3×11	300	0.30	6.3×11	300	0.30	8×12	300	0.37	
68	6.3×11	240	0.34	8×12	170	0.49	8×12	160	0.50	
100	8×12	100	0.63	8×12	140	0.53	8×15	130	0.59	
150	8×12	85	0.69	10×16	90	0.85	10×16	90	0.85	
220	8×15	56	0.91	10×16	85	0.87	10×20	72	1.02	
330	10×16	38	1.31	10×25	72	1.10	13×20	48	1.49	
470	10×20	23	1.81	13×20	48	1.49	13×25	36	1.85	
680	10×25	21	2.04	13×25	36	1.85	16×25	30	2.34	
1,000	13×25	20	2.48	16×25	30	2.34	16×30	26	2.66	
1,500	16×25	19	2.94	16×35	26	2.80	18×35	25	3.09	
2,200	16×30	18	3.20	18×35	24	3.15				
3,300	18×30	18	3.64							

Note: 8×15 can also be 10×12 as per customer's request.