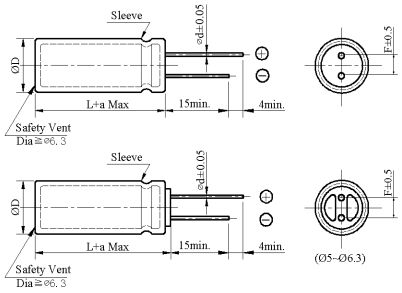
ED Series

- **Suitable for use in high ripple current capability.**
- **Miniaturized, Low E.S.R and low impedance**

◆ SPECIFICATIONS

Item	Performance Characteristics
Category Temperature Range	-40 ~ +105℃
Working Voltage Range	6.3 ~ 100Vdc
Capacitance Range	10 ~10,000 μF
Capacitance Tolerance	±20% (at 25℃ and 120Hz)
Dissipation Factor (tanδ) (at 25℃, 120Hz)	Rated Voltage (V): 6.3 / 10 / 16 / 25 / 35 / 50 / 63 / 100 tanδ(Max): 0.22 / 0.19 / 0.16 / 0.14 / 0.12 / 0.10 / 0.09 / 0.08 The above values should be increased by 0.02 for every additional 1000μF
Leakage Current	I=0.01CV or 3μA whichever is greater I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) Impress the rated voltage for2 minutes.
Low Temperature Characteristics Impedance Ratio(MAX)	Rated voltage (V): 6.3 / 10 / 16 / 25 / 35 / 50 / 63 / 100 Z(-40℃)/Z(+20℃): 8 / 6 / 6 / 5 / 4 / 3 / 3 / 3 (at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 2,000~5,000 hours at 105°C Capacitance change: ≦ ±25% of the initial value Dissipation factor(tanδ): ≦ 200% of the specified value Leakage current: ≦ specified value Size / Life time (hours): D×L ~ 8×12: 2,000; 8×16 ~ 10Φ: 3,000; 12.5Φ ~ 18Φ: 5,000
Shelf Life	The following requirements shall be satisfied when the capacitor are restored to 25℃ after exposing them for 500 hours at 105℃ without voltage applied. Capacitance change: ≦ ±25% of the initial value Dissipation factor(tanδ): ≦ 200% of the specified value Leakage current: ≦ 200% of the specified value
Others	Conforms to JIS-C-5101-4 (1998), characteristic W.

◆ DIMENSIONS (mm)



ΦD	5	6.3	8	10	12.5 L< 35	12.5 L≥ 35	16	18
ΦD	ΦD + 0.5 Max							
Φd	0.5	0.5	0.6	0.6	0.6	0.8	0.8	0.8
F	2.0	2.5	3.5	5.0	5.0		7.5	7.5
a	L + 1.5 Max				≦ 35 L+1.5Max ≧ 40 L+2.0 Max		L + 1.5 Max	

◆ PART NUMBERING SYSTEM(Example : 25V 4700μF)

E	D	1	E	4	7	2	M	N	N	1	6	4	0						

- Special Request
- Size code(1640 : 16×40)
- Lead length code
- Lead forming Type code
- Capacitance tolerance code(M:±20%)
- Capacitance code (4700μF)
- Voltage code (25V)
- Series code (ED)

ED Series

◆ **Case size & Permissible rated ripple current:**

Nominal capacitance (uF)	6.3V				10V			
	Case Size DΦ×L (mm)	Impedance (Ωmax/100kHz) 20℃	Impedance (Ωmax/100kHz) -10℃	Max. Rated ripple current @105℃ 100kHz (mA rms)	Case Size DΦ×L (mm)	Impedance (Ωmax/100kHz) 20℃	Impedance (Ωmax/100kHz) -10℃	Max. Rated ripple current @105℃ 100kHz (mA rms)
100	5×11	0.650	3.600	155	5×11	0.580	2.300	210
220	6.3×11	0.400	1.600	255	6.3×11	0.220	0.870	340
330	6.3×11	0.220	0.870	340	8×11.5	0.210	0.850	410
470	8×11.5	0.180	0.800	400	8×11.5	0.130	0.520	640
560	8×11.5	0.170	0.750	460	8×15	0.120	0.480	675
680	8×11.5	0.130	0.520	640	8×15	0.087	0.350	840
820	8×15	0.095	0.480	730	8×20	0.085	0.330	875
1000	8×15	0.087	0.350	840	10×16	0.060	0.240	1210
1200	8×20	0.069	0.270	1050	10×20	0.046	0.180	1400
1500	10×20	0.046	0.180	1400	10×20	0.045	0.180	1440
2200	10×20	0.045	0.180	1440	12.5×20	0.035	0.120	1750
2700	10×25	0.042	0.170	1700	12.5×20	0.034	0.110	1945
3300	12.5×20	0.035	0.120	1900	12.5×25	0.027	0.089	2230
3900	12.5×25	0.027	0.089	2230	12.5×30	0.024	0.078	2650
4700	12.5×30	0.024	0.078	2650	12.5×35	0.020	0.065	2880
5600	12.5×35	0.020	0.065	2880	12.5×35	0.019	0.060	2930
6800	12.5×35	0.019	0.060	2930	16×31.5	0.017	0.050	3450
8200	16×31.5	0.017	0.050	3450	16×35.5	0.015	0.044	3610
10000	16×35.5	0.015	0.044	3610	16×40	0.013	0.038	4080

Nominal capacitance (uF)	16V				25V			
	Case Size DΦ×L (mm)	Impedance (Ωmax/100kHz) 20℃	Impedance (Ωmax/100kHz) -10℃	Max. Rated ripple current @105℃ 100kHz (mA rms)	Case Size DΦ×L (mm)	Impedance (Ωmax/100kHz) 20℃	Impedance (Ωmax/100kHz) -10℃	Max. Rated ripple current @105℃ 100kHz (mA rms)
47	5×11	0.800	2.800	120	5×11	0.580	2.300	210
68	6.3×11	0.560	2.200	220	6.3×11	0.360	1.800	230
100	6.3×11	0.520	1.500	255	6.3×11	0.220	0.870	340
150	8×11.5	0.210	0.860	350	8×11.5	0.200	0.690	405
220	8×11.5	0.200	0.790	405	8×11.5	0.130	0.520	640
330	8×11.5	0.130	0.520	640	8×15	0.087	0.350	840
470	8×15	0.087	0.350	840	10×16	0.060	0.240	1210
560	8×20	0.085	0.340	865	10×20	0.058	0.230	1220
680	8×20	0.069	0.270	1050	10×20	0.046	0.180	1400
820	10×20	0.058	0.230	1220	10×20	0.042	0.170	1450
1000	10×20	0.046	0.180	1400	12.5×20	0.035	0.120	1730
1200	10×25	0.042	0.170	1650	12.5×25	0.034	0.110	1936
1500	12.5×20	0.035	0.120	1900	12.5×25	0.027	0.089	2230
2200	12.5×25	0.027	0.089	2230	12.5×35	0.020	0.065	2880
2700	12.5×30	0.024	0.078	2650	12.5×35	0.019	0.060	2930
3300	12.5×35	0.020	0.065	2880	16×31.5	0.017	0.050	3450
3900	12.5×40	0.017	0.056	3350	16×35.5	0.015	0.044	3610
4700	16×31.5	0.017	0.050	3450	16×40	0.013	0.038	4080
5600	16×35.5	0.015	0.044	3610				
6800	16×40	0.013	0.038	4080				

ED Series

◆ **Case size & Permissible rated ripple current:**

Nominal capacitance (uF)	35V				50V			
	Case Size DΦ×L (mm)	Impedance (Ωmax/100kHz)		Max. Rated ripple current @105℃ 100kHz (mA rms)	Case Size DΦ×L (mm)	Impedance (Ωmax/100kHz)		Max. Rated ripple current @105℃ 100kHz (mA rms)
		20℃	-10℃			20℃	-10℃	
10	5×11	1.500	3.800	100	5×11	1.450	3.500	105
22	5×11	0.750	3.200	160	5×11	0.700	2.800	180
33	5×11	0.580	2.300	210	6.3×11	0.480	1.700	215
47	6.3×11	0.490	1.800	250	6.3×11	0.400	1.600	220
68	8×11.5	0.210	0.870	350	8×11.5	0.280	1.100	355
100	8×11.5	0.200	0.850	405	8×11.5	0.170	0.680	555
150	8×11.5	0.130	0.520	640	8×15	0.120	0.480	730
220	8×15	0.087	0.350	840	10×16	0.084	0.340	1050
330	10×16	0.060	0.240	1210	10×25	0.055	0.220	1440
470	10×20	0.046	0.180	1400	12.5×20	0.045	0.150	1660
560	10×25	0.042	0.170	1650	12.5×25	0.034	0.110	1950
680	10×30	0.031	0.120	1910	12.5×30	0.030	0.100	2310
820	12.5×25	0.030	0.110	1938	12.5×35	0.025	0.083	2510
1000	12.5×25	0.027	0.089	2230	16×25	0.025	0.075	2555
1200	12.5×30	0.024	0.078	2650	16×31.5	0.022	0.066	3010
1500	12.5×35	0.020	0.065	2880	16×35.5	0.019	0.057	3150
2200	16×31.5	0.017	0.050	3450	18×35.5	0.017	0.046	3680
2700	16×35.5	0.015	0.044	3610	18×40	0.014	0.038	3800
3300	16×40	0.013	0.038	4080				
3900	18×40	0.012	0.032	4280				

Nominal capacitance (uF)	63V				100V			
	Case Size DΦ×L (mm)	Impedance (Ωmax/100kHz)		Max. Rated ripple current @105℃ 100kHz (mA rms)	Case Size DΦ×L (mm)	Impedance (Ωmax/100kHz)		Max. Rated ripple current @105℃ 100kHz (mA rms)
		20℃	-10℃			20℃	-10℃	
10	5×11	2.850	9.300	30	6.3×11	2.200	9.300	60
22	6.3×11	1.850	7.200	60	8×11.5	1.100	5.000	120
33	6.3×11	1.200	5.000	115	8×15	0.620	2.800	242
47	8×11.5	1.000	4.500	170	10×12.5	0.430	1.800	288
68	8×11.5	0.610	2.500	245	10×16	0.310	1.500	357
100	8×15	0.430	1.900	305	10×25	0.200	0.840	531
220	10×20	0.210	0.920	470	12.5×30	0.100	0.420	905
330	12.5×25	0.120	0.450	784	12.5×40	0.071	0.300	1180
470	12.5×30	0.100	0.420	905	16×35.5	0.045	0.170	1790
560	12.5×35	0.083	0.350	1050	16×40	0.040	0.150	2020
680	12.5×40	0.071	0.300	1180	18×35.5	0.040	0.150	2180
820	16×31.5	0.054	0.200	1570	18×40	0.036	0.130	2330
1000	16×35.5	0.045	0.170	1790				
1200	16×40	0.040	0.150	2020				
1500	18×40	0.036	0.130	2330				

◆ **RIPPLE CURRENT MULTIPLIERS**

Frequency Multipliers

Vdc	Cap.(uF)	Frequency (Hz)			
		120	1K	10K	100K
6.3 ~100	10 ~ 68	0.30	0.65	0.85	1.00
	82 ~ 220	0.50	0.70	0.90	1.00
	330 ~ 820	0.60	0.75	0.95	1.00
	1000 ~ 10000	0.70	0.80	0.98	1.00