



ED Series

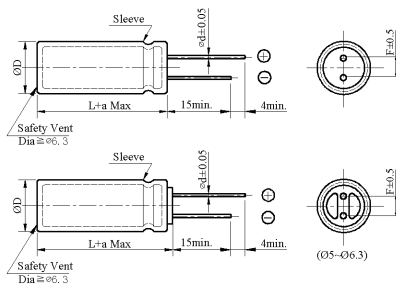
- Suitable for use in high ripple current capability
- Miniaturized, Low E.S.R and low impedance



◆ SPECIFICATIONS

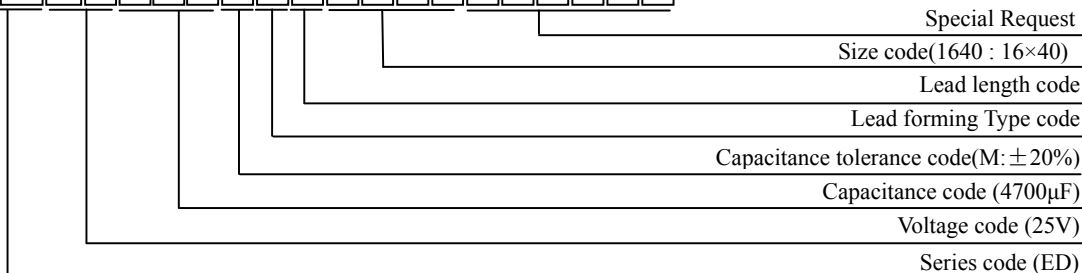
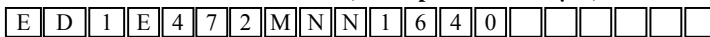
Item	Performance Characteristics																		
Category Temperature Range	-40 ~ +105°C																		
Working Voltage Range	6.3 ~ 100Vdc																		
Capacitance Range	10 ~ 10,000 µF																		
Capacitance Tolerance	±20% (at 25°C and 120Hz)																		
Dissipation Factor (tanδ) (at 25°C, 120Hz)	<table border="1"> <tr> <td>Rated Voltage (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> </tr> <tr> <td>tanδ(Max)</td> <td>0.22</td> <td>0.19</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.09</td> <td>0.08</td> </tr> </table>	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
	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 for 2 minutes																		
Low Temperature Characteristics Impedance Ratio(MAX)	<table border="1"> <tr> <td>Rated voltage (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> </tr> <tr> <td>Z(-40°C)/Z(+20°C)</td> <td>8</td> <td>6</td> <td>6</td> <td>5</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> </tr> </table>	Rated voltage (V)	6.3	10	16	25	35	50	63	100	Z(-40°C)/Z(+20°C)	8	6	6	5	4	3	3	3
	Rated voltage (V)	6.3	10	16	25	35	50	63	100										
Z(-40°C)/Z(+20°C)	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																		
	<table border="1"> <tr> <td>Capacitance change</td> <td>≒ ±25% of the initial value</td> <td>Size</td> <td>Life time (hours)</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≒ 200% of the specified value</td> <td>D×L ~ 8×12</td> <td>2,000</td> </tr> <tr> <td>Leakage current</td> <td>≒ specified value</td> <td>8×16 ~ 10Φ</td> <td>3,000</td> </tr> <tr> <td></td> <td></td> <td>12.5Φ ~ 18Φ</td> <td>5,000</td> </tr> </table>	Capacitance change	≒ ±25% of the initial value	Size	Life time (hours)	Dissipation factor(tanδ)	≒ 200% of the specified value	D×L ~ 8×12	2,000	Leakage current	≒ specified value	8×16 ~ 10Φ	3,000			12.5Φ ~ 18Φ	5,000		
	Capacitance change	≒ ±25% of the initial value	Size	Life time (hours)															
	Dissipation factor(tanδ)	≒ 200% of the specified value	D×L ~ 8×12	2,000															
Leakage current	≒ specified value	8×16 ~ 10Φ	3,000																
		12.5Φ ~ 18Φ	5,000																
The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 500 hours at 105°C without voltage applied.																			
<table border="1"> <tr> <td>Capacitance change</td> <td>≒ ±25% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≒ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≒ 200% of the specified value</td> </tr> </table>				Capacitance change	≒ ±25% of the initial value	Dissipation factor(tanδ)	≒ 200% of the specified value	Leakage current	≒ 200% of the specified value										
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 + 1.5 Max ≥ 40 L + 2.0 Max		L + 1.5 Max	

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





ED Series

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

Nominal capacitance (uF)	6.3V				10V			
	Case Size ΦD×L (mm)	Impedance (Ωmax/100kHz)		Max. Rated ripple current @105°C 100kHz (mA rms)	Case Size ΦD×L (mm)	Impedance (Ωmax/100kHz)		Max. Rated ripple current @105°C 100kHz (mA rms)
		20°C	-10°C			20°C	-10°C	
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 ΦD×L (mm)	Impedance (Ωmax/100kHz)		Max. Rated ripple current @105°C 100kHz (mA rms)	Case Size ΦD×L (mm)	Impedance (Ωmax/100kHz)		Max. Rated ripple current @105°C 100kHz (mA rms)
		20°C	-10°C			20°C	-10°C	
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 ΦD×L (mm)	Impedance (Ωmax/100kHz)		Max. Rated ripple current @105°C 100kHz (mA rms)	Case Size ΦD×L (mm)	Impedance (Ωmax/100kHz)		Max. Rated ripple current @105°C 100kHz (mA rms)
		20°C	-10°C			20°C	-10°C	
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 ΦD×L (mm)	Impedance (Ωmax/100kHz)		Max. Rated ripple current @105°C 100kHz (mA rms)	Case Size ΦD×L (mm)	Impedance (Ωmax/100kHz)		Max. Rated ripple current @105°C 100kHz (mA rms)
		20°C	-10°C			20°C	-10°C	
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