

# 1. Miniature Aluminium Electrolytic Capacitors - Radial

## EA - 7 SERIES For General Purpose

- \* Standard series for General Purpose
- \* Load life of 2000 hours at 85 °C
- \* Single ended

Item	Characteristics																														
Operating temperature range	- 40 ÷ + 85 °C																														
Rated working voltage range Ur	6.3 ÷ 100 VDC																														
Nominal capacitance range Cn	0.1 ÷ 10000 µF /at 20 °C, 120 Hz/																														
Capacitance tolerance	$\geq 0.68 \mu\text{F} \begin{matrix} + 100\% \\ - 10\% \end{matrix}$	$1 \div 2.2 \mu\text{F} \begin{matrix} + 50\% \\ - 10\% \end{matrix}$	$\geq 3.3 \mu\text{F} \pm 20\%$																												
Leakage current max.	$\geq 35 \text{ V, CnUr} \geq 1000$ $0.05 \text{ CnUr or } 5\mu\text{A}$ /after 5 min/	$\geq 50 \text{ V, CnUr} \geq 1000$ $0.05 \text{ CnUr} + 3\mu\text{A}$ /after 5 min/	$6.3 \div 100 \text{ V, CnUr} > 1000$ $0.03 \text{ CnUr} + 3\mu\text{A}$ /after 5 min/																												
Dissipation factor max.	<table border="1"> <tr> <td>Rated voltage (VDC)</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>Dissipation factor</td> <td colspan="2">0.25</td> <td colspan="2">0.20</td> <td colspan="2">0.15</td> <td colspan="2">0.10</td> </tr> </table>				Rated voltage (VDC)	6.3	10	16	25	35	50	63	100	Dissipation factor	0.25		0.20		0.15		0.10										
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Note: The Dissipation factor for capacitors with Cn $\geq 4700 \mu\text{F}$ will not exceed 0.25 (at 20°C, 120 Hz)																															
Low temperature characteristics (impedance ratio at 100 Hz)	<table border="1"> <tr> <td>VDC</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 - 25°C/Z + 20°C</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z - 40°C/Z + 20°C</td> <td>8</td> <td>8</td> <td>6</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> </tr> </table>				VDC	6.3	10	16	25	35	50	63	100	Z - 25°C/Z + 20°C	4	3	2	2	2	2	2	2	Z - 40°C/Z + 20°C	8	8	6	4	3	3	3	3
	VDC	6.3	10	16	25	35	50	63	100																						
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Z - 40°C/Z + 20°C	8	8	6	4	3	3	3	3																							
<table border="1"> <tr> <td>Leakage current</td> <td colspan="8">Less than specified value</td> </tr> <tr> <td>Capacitance change</td> <td colspan="8"><math>\pm 20\%</math></td> </tr> <tr> <td>tg<math>\delta</math></td> <td colspan="8">Less than 150% specified value</td> </tr> </table>				Leakage current	Less than specified value								Capacitance change	$\pm 20\%$								tg $\delta$	Less than 150% specified value								
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Shelf life (at 85°C)	After 1000 hours no load test, leakage current, capacitance and tg $\delta$ are the same as load life values.																														



$\delta D$	5	6.3	8	10	12.5	16	18	22
$\delta d$	0.5			0.65			0.8	08
F	2	2.5	3.5	5		7.5		10
$\delta D'$	D+0.5			D+0.6		D+0.6		
L'	L+1.5					L+2		

\* PERMISSIBLE RIPPLE CURRENT MULTIPLIERS

Frequency µF	50Hz	120Hz	300Hz	1kHz	10kHz
$\geq 47$	0.75	1	1.35	1.55	2.0
68 - 680	0.80	1	1.25	1.34	1.5
$\geq 1000$	0.85	1	1.10	1.13	1.15

Temp. °C	40	60	70	85
Coefficient	2.0	1.5	1.3	1.0

# EA - 7 SERIES

\*DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT mA(rms) at 120 Hz, 85°C

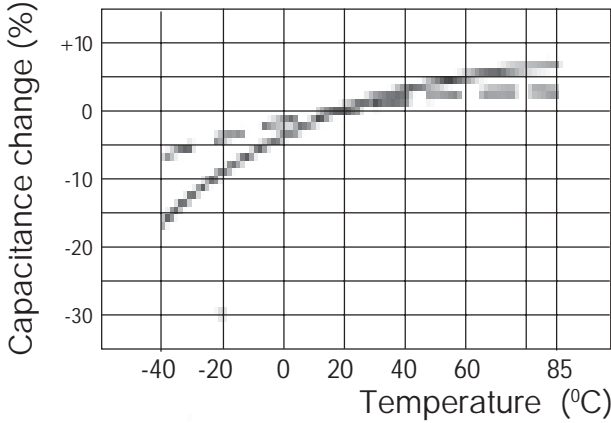
VDC μF	6.3		10		16		25		35		50		63		100	
0.1	5x11	7	5x11	7	5x11	7	5x11	7	5x11	7	5x11	7	5x11	7	5x11	7
0.15	5x11	7	5x11	7	5x11	7	5x11	7	5x11	7	5x11	7	5x11	7	5x11	7.1
0.22	5x11	7	5x11	7	5x11	7	5x11	7	5x11	7	5x11	7	5x11	7.1	5x11	7.1
0.33	5x11	7	5x11	7	5x11	7	5x11	7	5x11	7	5x11	7.2	5x11	7.2	5x11	7.5
0.47	5x11	7	5x11	7	5x11	7	5x11	7	5x11	7	5x11	7.2	5x11	7.5	5x11	7.8
0.68	5x11	7	5x11	7	5x11	7	5x11	7	5x11	7	5x11	7.4	5x11	7.8	5x11	8.0
1.0	5x11	10	5x11	10	5x11	10	5x11	10	5x11	12	5x11	12	5x11	12	5x11	12
1.5	5x11	12	5x11	12	5x11	13	5x11	13	5x11	15	5x11	16	5x11	18	5x11	20
2.2	5x11	18	5x11	18	5x11	18	5x11	21	5x11	21	5x11	21	5x11	21	5x11	24
3.3	5x11	22	5x11	22	5x11	22	5x11	28	5x11	28	5x11	28	5x11	28	5x11	35
4.7	5x11	30	5x11	30	5x11	30	5x11	35	5x11	35	5x11	35	5x11	35	5x11	45
6.8	5x11	33	5x11	33	5x11	33	5x11	43	5x11	43	5x11	50	5x11	50	5x11	62
10	5x11	36	5x11	36	5x11	36	5x11	52	5x11	52	5x11	61	5x11	61	6.3x11	80
15	5x11	44	5x11	44	5x11	44	5x11	72	5x11	72	5x11	85	5x11	85	6.3x11	113
22	5x11	54	5x11	54	5x11	70	5x11	96	5x11	96	5x11	110	6.3x11	120	8x11.5	138
33	5x11	66	5x11	66	5x11	84	5x11	115	5x11	150	6.3x11	150	6.3x11	165	8x14	195
47	5x11	77	5x11	83	5x11	110	5x11	145	6.3x11	170	6.3x11	190	8x11.5	235	10x16.5	250
68	5x11	100	5x11	118	5x11	155	5x11	220	6.3x11	245	8x11.5	265	8x11.5	295	10x16.5	350
100	5x11	125	5x11	146	5x11	200	6.3x11	270	8x11.5	300	8x11.5	330	10x16.5	340	12.5x20.5	420
150	5x11	185	5x11	199	6.3x11	255	8x11.5	355	8x11.5	365	10x16.5	450	10x16.5	480	12.5x24.5	520
220	6.3x11	240	6.3x11	260	6.3x11	325	8x11.5	440	8x14	480	10x16.5	545	10x20.5	570	16x25	640
330	6.3x11	320	6.3x11	340	8x11.5	405	8x14	560	10x16.5	600	10x20.5	640	12.5x20.5	760	16x31.5	920
470	8x11.5	410	8x11.5	435	8x11	515	10x16.5	725	10x20.5	740	12.5x20.5	760	12.5x24.5	1020	16x35.5	1130
680	8x14	510	8x14	580	10x16.5	620	10x20.5	920	12.5x20.5	950	12.5x24.5	1150	16x25	1280	18x37.5	1550
1000	10x16.5	585	10x16.5	680	10x16.5	790	12.5x20.5	1050	12.5x24.5	1095	16x25	1300	16x31.5	1550	18x42	2200
1500	10x20.5	750	10x20.5	780	12.5x20.5	950	12.5x24.5	1150	16x25	1550	16x31.5	1800	18x37.5	2100		
2200	12.5x20.5	870	12.5x20.5	970	12.5x24.5	1050	16x25	1550	16x31.5	1900	18x37.5	2050	18x42	2500		
3300	12.5x24.5	1000	12.5x24.5	1150	16x25	1400	16x25	1750	18x37.5	2050	18x42	2100	22x42	2800		
4700	16x25	1350	16x25	1500	16x31.5	2050	16x35.5	2850	18x37.5	2800	22x42	2500				
6800	16x25	1650	16x25	1950	16x35.5	2250	18x42	3200	22x42	3300						
10000	16x31.5	2050	16x35.5	2800	18x37.5	2990	22x42	3600								

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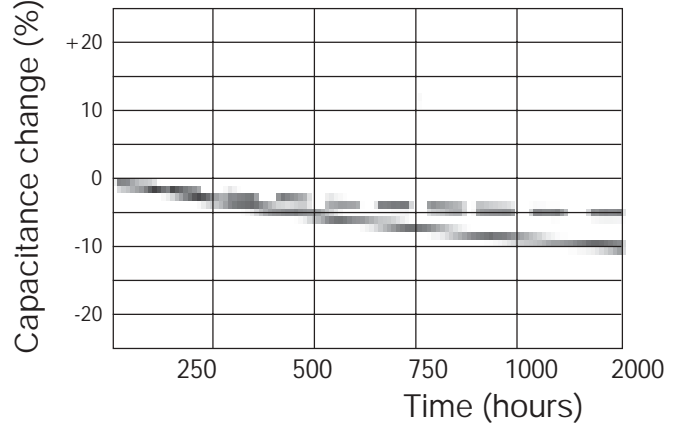
## Typical Performance

——— 330  $\mu\text{F}$  / 16 V  
 - - - 1500  $\mu\text{F}$  / 63 V

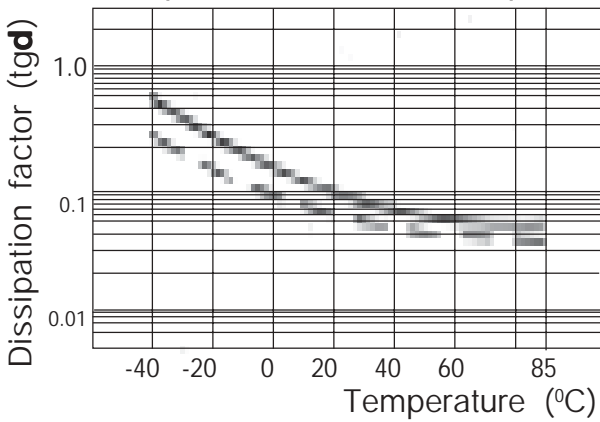
Temperature characteristics  
Capacitance change vs. temperature



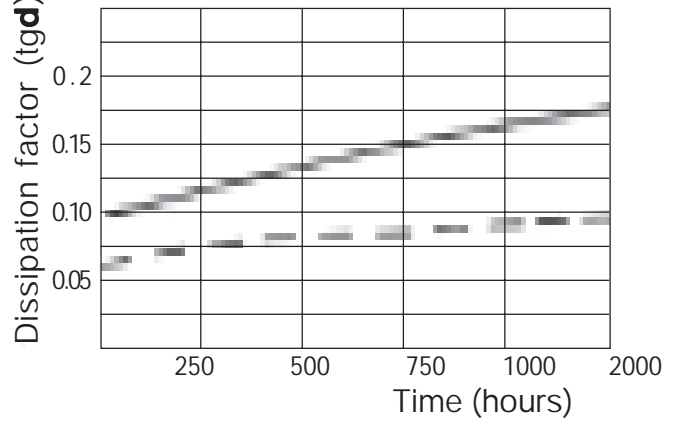
Load Life ( at +85 °C )  
Capacitance change vs. time



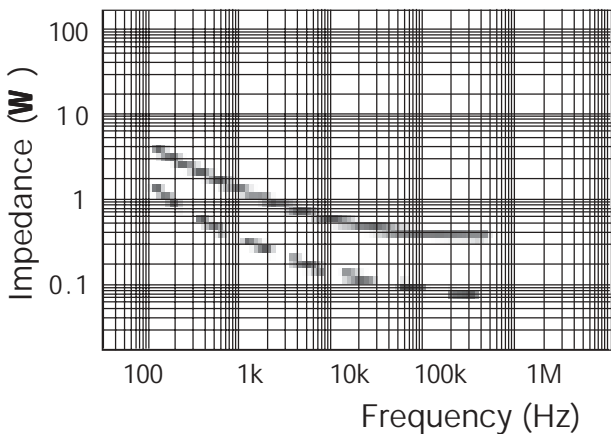
Dissipation factor vs. temperature



Dissipation factor vs. time



Frequency characteristics  
Impedance vs. frequency



Leakage current vs. time

