CONIS COMPANY Ltd.

CAPACITORS
EMI and RFI FILTERS

ALUMINIUM ELECTROLYTIC CAPACITORS - LARGE TYPE SNAP-IN TERMINALS

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Aluminium Electrolytic Capacitors - Large type Snap-in Terminals

List of Products

Series	Features	Operating Temperature Range /°C/	Voltage Range /VDC/	Capaci-tance Range /µF/	Load Life Time /hours/	Page
EA - 16	Standard	-40 to +85	10 to 100	680 to 33000	85 °C - 2000	3
EA - 21	Wide Temp. Range.	-55 to +105	10 to 100	680 to 22000	105 °C - 2000	5
EA - 22	Low ESR. High Reliability	-55 to +105	10 to 63	3300 to 22000	105 °C - 2000	7
EA - 17	Standard	-40 to +85	160 to 400	100 to 2200	85 °C - 2000	9
EA - 18	Wide Temp. Range	-40 to +105	160 to 400	100 to 2200	105 °C - 2000	11

Aluminium Electrolytic Capacitors - Large type Snap-in Terminals

EA - 16 SERIES

For General Purpose

***Standard series for General Purpose**

*** Load life of 2000 hours at 85 ^{0}C**

*** Snap-in terminal series**

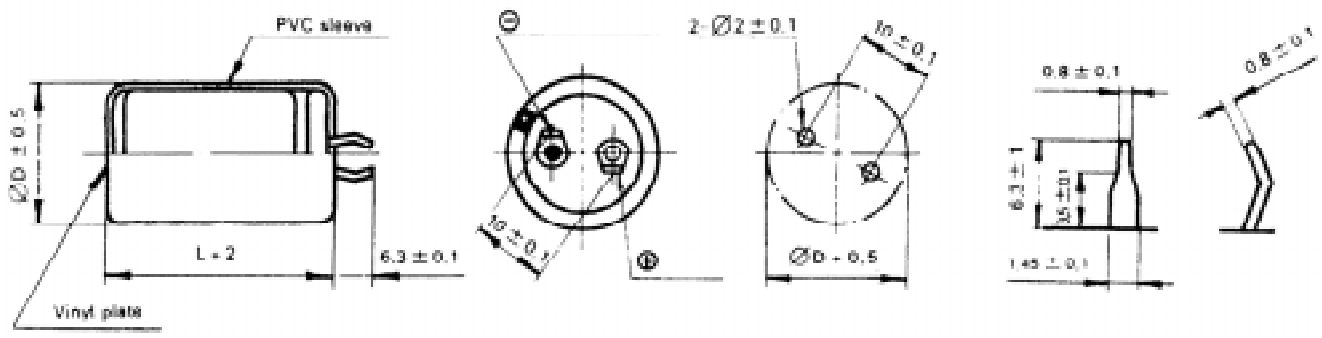
Item	Characteristics
Operating temperature range	- 40 ÷ +85 ^{0}C
Rated working voltage range Ur	10 ÷ 100 VDC
Nominal capacitance range Cn	680 ÷ 33000 μF /at 20 ^{0}C, 120 Hz/
Capacitance tolerance	± 20 %
Leakage current max.	0.02 CnUr /after 5 min/
Dissipation factor max.	See table below
Low temperature characteristics (impedance ratio at 100 Hz)	See table below
Load life (after application of the rated voltage for 2000 hours at 85^{0}C)	See table below
Shelf life (at 85^{0}C)	After 1000 hours no load test, leakage current, capacitance and tgδ are the same as load life values.

Rated voltage (VDC)	10	16	25	35	50	63	80	100
Dissipation factor	0.25		0.20		0.15			

Note: The Dissipation factor for capacitors with Cn ≥ 15000 μF will not exceed 0.25 (at 20^{0}C, 120 Hz)

VDC	10	16	25	35	50	63	80	100
Z - 25^{0}C/Z + 20^{0}C	4	3	2	2	2	2	2	2
Z - 40^{0}C/Z + 20^{0}C	8	6	6	4	3	3	3	3

Leakage current	Less than specified value
Capacitance change	± 20%
tgδ	Less than 150% specified value



*** PERMISSIBLE RIPPLE CURRENT MULTIPLIERS**

Frequency	50Hz	120Hz	300Hz	1kHz	10kHz
Coefficient	0.85	1.00	1.08	1.25	1.35

Temp. ^{0}C	40	60	70	85
Coefficient	2.0	1.5	1.3	1.0

EA - 16 SERIES

*DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT A(rms) at 120 Hz, 85^{0}C & R_{ESR} & Z_{MAX}

Capacitance [μF]	Working voltage [V]	Dimensions φDxL [mm]	R_{ESR} max [Ω] 120Hz 20^{0}C	R_{ESR} max [Ω] 120Hz 20^{0}C	Z max [Ω] 10kHz 20^{0}C	Max Ripple Current A[rms]
10000	10	25x26	0.031	0.023	0.033	3.0
15000		25x32	0.026	0.018	0.033	3.2
22000		30x32	0.018	0.014	0.026	3.8
33000		25x42	0.018	0.014	0.026	3.8
10000	16	25x32	0.039	0.023	0.039	2.9
15000		30x32	0.026	0.018	0.027	3.6
15000		25x42	0.026	0.018	0.027	3.6
22000		30x32	0.018	0.014	0.026	4.1
33000		30x36	0.017	0.013	0.025	5.0
4700	25	25x26	0.067	0.050	0.063	2.6
6800		25x32	0.046	0.039	0.043	2.7
10000		30x36	0.031	0.023	0.030	3.4
10000		25x42	0.031	0.023	0.030	3.4
15000		30x42	0.026	0.018	0.027	4.0
22000		35x42	0.018	0.014	0.026	4.5
22000		30x52	0.018	0.014	0.026	4.5
33000		35x47	0.017	0.013	0.027	5.1
4700	35	25x32	0.050	0.039	0.051	2.7
6800		30x32	0.046	0.035	0.033	3.3
6800		25x42	0.046	0.035	0.033	3.3
10000		30x42	0.031	0.023	0.031	3.8
15000		35x52	0.026	0.018	0.028	4.5
22000		35x52	0.018	0.014	0.026	4.9
33000		35x47	0.017	0.013	0.025	5.4
3300	50	25x32	0.072	0.060	0.050	2.6
4700		30x32	0.050	0.039	0.046	3.1
4700		25x42	0.050	0.039	0.046	3.1
6800		30x42	0.046	0.035	0.031	4.0
6800		30x52	0.046	0.035	0.031	4.0
10000		35x47	0.031	0.023	0.031	4.3
15000		35x52	0.026	0.018	0.028	4.5
2200	63	25x32	0.108	0.085	0.075	2.3
3300		30x32	0.072	0.060	0.050	2.7
3300		25x42	0.072	0.060	0.050	2.7
4700		30x32	0.050	0.039	0.045	3.6
6800		35x42	0.046	0.035	0.031	4.3
6800		30x52	0.046	0.035	0.031	4.3
10000		35x52	0.031	0.023	0.031	4.3
15000		35x52	0.027	0.021	0.028	5.1
1500	80	25x32	0.159	0.125	0.115	2.2
2200		30x32	0.108	0.090	0.073	2.8
2200		25x42	0.108	0.090	0.073	2.8
3300		30x32	0.072	0.060	0.050	3.5
4700		30x42	0.050	0.039	0.045	4.2
6800		35x52	0.046	0.034	0.031	4.4
6800		30x57	0.046	0.034	0.031	4.4
10000		35x57	0.040	0.030	0.028	5.4
680	100	25x26	0.351	0.235	0.165	1.6
1000		25x32	0.238	0.195	0.115	1.9
1500		30x32	0.159	0.125	0.073	2.5
1500		25x42	0.159	0.125	0.073	2.5
2200		30x36	0.108	0.090	0.051	3.1
3300		35x42	0.072	0.060	0.038	3.7
3300		30x52	0.072	0.060	0.038	3.7
4700		35x52	0.050	0.039	0.033	4.4
6800		35x52	0.045	0.033	0.030	5.4

EA - 21 SERIES
Wide Temperature Range

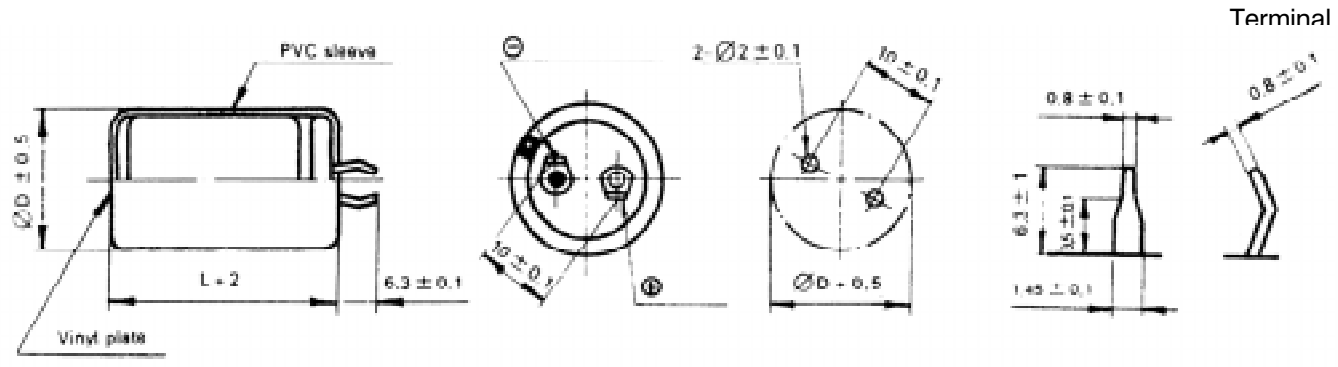
***Wide operating temperature range of - 55 ÷ + 105^{0}C**

*** Standard series for General Purpose**

*** Load life of 2000 hours at 105 ^{0}C**

*** Snap-in terminal series**

Item	Characteristics
Operating temperature range	- 55 ÷ +105 ^{0}C
Rated working voltage range Ur	10 ÷ 100 VDC
Nominal capacitance range Cn	680 ÷ 22000 μF /at 20 ^{0}C, 120 Hz/
Capacitance tolerance	±20 %
Leakage current max.	0.02 CnUr /after 5 min/
Dissipation factor max.	Rated voltage (VDC): 10 / 16 / 25 / 35 / 50 / 63 / 80 / 100 Dissipation factor: 0.25 / 0.20 / 0.15 Note: The Dissipation factor for capacitors with Cn ≥ 15000 μF will not exceed 0.30 (at 20^{0}C, 120 Hz)
Low temperature characteristics (impedance ratio at 100 Hz)	VDC: 10 / 16 / 25 / 35 / 50 / 63 / 80 / 100 Z - 25^{0}C/Z + 20^{0}C: 3 / 2 / 2 / 2 / 2 / 2 / 2 / 2 Z - 55^{0}C/Z + 20^{0}C: 8 / 6 / 4 / 3 / 3 / 3 / 3 / 3
Load life (after application of the rated voltage for 2000 hours at 105^{0}C)	Leakage current: Less than specified value Capacitance change: ±20% tg δ: Less than 150% specified value
Shelf life (at 105^{0}C)	After 1000 hours no load test, leakage current, capacitance and tg δ are the same as load life values.



*** PERMISSIBLE RIPPLE CURRENT MULTIPLIERS**

Frequency	50Hz	120Hz	300Hz	1kHz	10kHz
Coefficient	0.85	1.00	1.08	1.25	1.35

Temp. ^{0}C	40	60	70	85	105
Coefficient	2.00	2.10	1.78	1.65	1.00

EA - 21 SERIES

*DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT A(rms) at 120 Hz, 105^{0}C & R_{ESR} & Z_{MAX}

Capacitance [μF]	Working voltage [V]	Dimensions φDxL [mm]	R_{ESR} max [Ω] 120Hz 20^{0}C	R_{ESR} typ. [Ω] 120Hz 20^{0}C	Z max [Ω] 10kHz 20^{0}C	Max Ripple Current A[rms]
15000	10	25x32	0.026	0.018	0.033	2.4
22000		30x32	0.018	0.014	0.026	2.8
10000	16	25x32	0.039	0.029	0.039	2.2
15000		30x32	0.026	0.018	0.027	2.7
22000		30x47	0.018	0.014	0.026	3.1
4700	25	25x32	0.067	0.050	0.063	1.9
6800		25x32	0.046	0.039	0.043	2.1
10000		30x36	0.031	0.023	0.030	2.6
15000		30x43	0.026	0.018	0.027	3.4
22000		35x43	0.018	0.014	0.026	4.0
4700	35	25x32	0.050	0.039	0.051	2.0
6800		30x36	0.046	0.035	0.033	2.3
10000		30x47	0.031	0.023	0.031	2.9
15000		35x43	0.026	0.018	0.028	3.4
22000		35x47	0.018	0.014	0.026	3.7
3300	50	25x36	0.072	0.060	0.050	1.9
4700		30x36	0.050	0.039	0.046	2.3
6800		30x43	0.046	0.035	0.031	3.0
10000		35x47	0.031	0.023	0.031	3.2
2200	63	25x32	0.108	0.085	0.075	1.7
3300		30x36	0.072	0.060	0.050	2.0
4700		30x43	0.050	0.039	0.045	2.7
6800		35x43	0.046	0.035	0.031	3.2
1500	80	25x32	0.159	0.125	0.115	1.6
2200		30x32	0.108	0.090	0.073	2.0
3300		30x43	0.072	0.060	0.050	2.6
4700		35x43	0.050	0.039	0.045	3.1
6800		35x57	0.046	0.034	0.031	3.4
680	100	25x32	0.351	0.235	0.165	1.2
1000		25x32	0.238	0.195	0.115	1.4
1500		30x32	0.159	0.125	0.073	1.9
2200		30x36	0.108	0.090	0.051	2.3
3300		35x43	0.072	0.060	0.038	2.8
4700		35x57	0.050	0.039	0.033	3.3

EA - 22 SERIES
Wide Temperature Range

***Wide operating temperature range of -55 ÷ +105^{0}C**

*** High performance and exellent temperature characteristics**

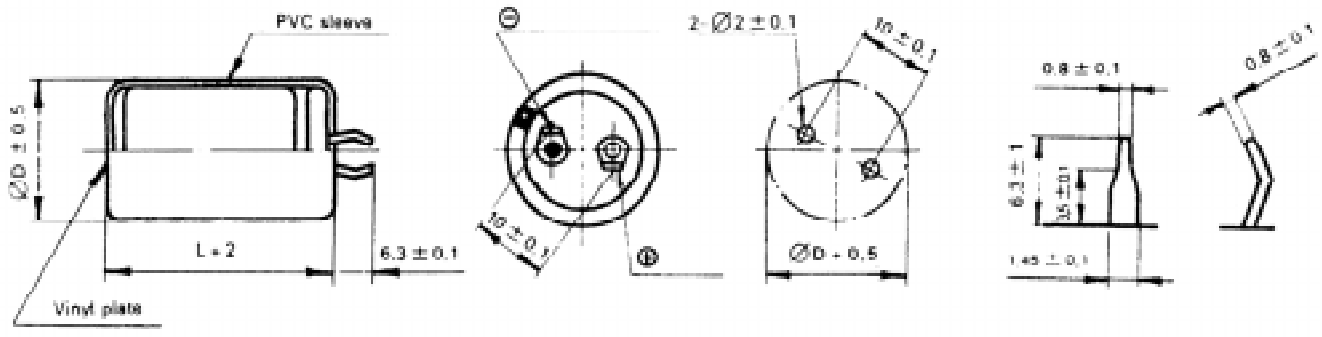
*** Low ESR. High Reliability**

*** Load life of 2000 hours at 105 ^{0}C**

*** Snap-in terminal series**

Item	Characteristics
Operating temperature range	- 55 ÷ +105 ^{0}C
Rated working voltage range Ur	10 ÷ 63 VDC
Nominal capacitance range Cn	3300 ÷ 22000 μF /at 20 ^{0}C, 120 Hz/
Capacitance tolerance	±20 %
Leakage current max.	0.02 CnUr /after 5 min/
Dissipation factor max.	Rated voltage (VDC): 10 / 16 / 25 / 35 / 50 / 63 Dissipation factor: 0.20 / 0.15 / 0.12 / 0.12 / 0.12 / 0.12 Note: The Dissipation factor for capacitors with Cn ≥ 15000 μF will not exceed 0.30 (at 20^{0}C, 120 Hz)
Low temperature characteristics (impedance ratio at 100 Hz)	VDC: 10 / 16 / 25 / 35 / 50 / 63 Z - 25^{0}C/Z + 20^{0}C: 3 / 2 / 2 / 2 / 1.5 / 1.5 Z - 55^{0}C/Z + 20^{0}C: 4 / 3 / 2 / 2 / 2 / 2
Load life (after application of the rated voltage for 2000 hours at 105^{0}C)	Leakage current: Less than specified value Capacitance change: ±20% tg δ: Less than 200% specified value
Shelf life (at 105^{0}C)	After 1000 hours no load test, leakage current, capacitance and tg δ are the same as load life values.

Terminal



*** PERMISSIBLE RIPPLE CURRENT MULTIPLIERS**

Frequency	50Hz	120Hz	300Hz	1kHz	10kHz
Coefficient	0.85	1.00	1.08	1.25	1.35

Temp. ^{0}C	40	60	70	85	105
Coefficient	2.00	1.9	1.78	1.65	1.00

EA - 22 SERIES

*DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT A(rms) at 120 Hz, 105^{0}C & R_{ESR} & Z_{MAX}

Capacitance [μF]	Working voltage [V]	Dimensions φDxL [mm]	R_{ESR} max [Ω] 120Hz 20^{0}C	R_{ESR} typ. [Ω] 120Hz 20^{0}C	Z max [Ω] 10kHz 20^{0}C	Max Ripple Current A[rms]
15000	10	25x32	0.026	0.018	0.033	2.6
22000		30x32	0.018	0.014	0.026	3.1
10000	16	25x32	0.039	0.029	0.039	2.3
15000		30x32	0.026	0.018	0.027	2.8
22000		30x47	0.018	0.014	0.026	3.4
4700	25	25x32	0.067	0.050	0.063	1.9
6800		25x32	0.046	0.039	0.043	2.2
10000		30x36	0.031	0.023	0.030	2.7
15000		30x43	0.026	0.018	0.027	3.3
22000		35x43	0.018	0.014	0.026	4.0
4700	35	25x32	0.050	0.039	0.051	2.1
6800		30x36	0.046	0.035	0.033	2.5
10000		30x47	0.031	0.023	0.031	2.9
15000		35x43	0.026	0.018	0.028	3.4
3300	50	25x36	0.072	0.060	0.050	1.9
4700		30x36	0.050	0.039	0.046	2.5
6800		30x43	0.046	0.035	0.031	3.2
10000		35x47	0.031	0.023	0.031	3.9
2200	63	30x32	0.108	0.090	0.073	2.0
3300		30x43	0.072	0.060	0.050	2.6
4700		35x43	0.050	0.039	0.045	3.1
6800		35x57	0.046	0.034	0.031	3.4

EA - 17 SERIES
Wide Temperature Range

***Standard series for General Purpose**

*** Load life of 2000 hours at 85 ^{0}C**

*** Snap-in terminal series**

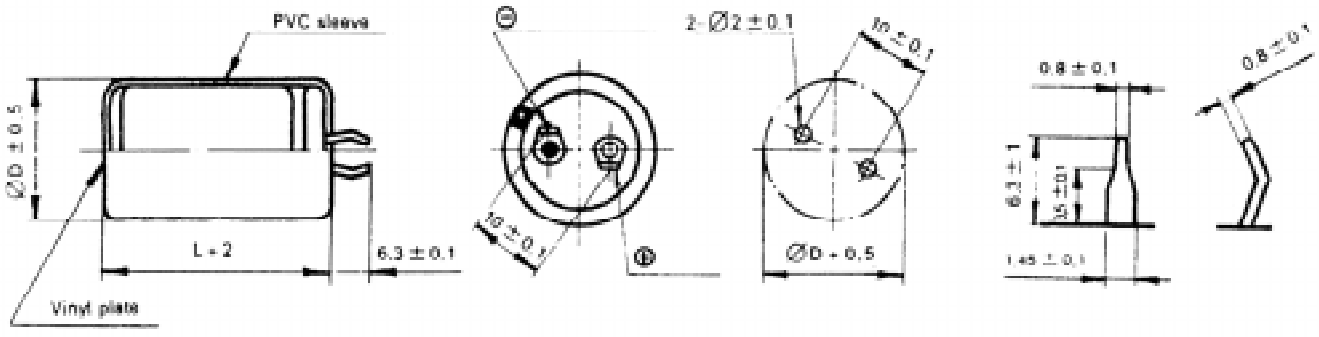
Item	Characteristics
Operating temperature range	- 40 ÷ + 85 ^{0}C
Rated working voltage range Ur	160 ÷ 400 VDC
Nominal capacitance range Cn	100 ÷ 2200 μF /at 20 ^{0}C, 120 Hz/
Capacitance tolerance	±20 %
Leakage current max.	0.02 CnUr + 15μA /after 5 min/
Dissipation factor max.	
Low temperature characteristics (impedance ratio at 100 Hz)	
Load life (after application of the rated voltage for 2000 hours at 85^{0}C)	
Shelf life (at 85^{0}C)	After 1000 hours no load test, leakage current, capacitance and tgδ are the same as load life values.

Rated voltage (VDC)	160	200	250	350	385	400
Dissipation factor	0.15	0.15	0.15	0.17	0.20	0.20

VDC	160	200	250	350	385	400
Z - 25^{0}C/Z + 20^{0}C	6	6	6	8	8	8
Z - 40^{0}C/Z + 20^{0}C	8	8	8	10	12	12

Leakage current	Less than specified value
Capacitance change	±20%
tgδ	Less than 200% specified value

Terminal



*** PERMISSIBLE RIPPLE CURRENT MULTIPLIERS**

Frequency	50Hz	120Hz	300Hz	1kHz	10kHz
Coefficient	0.85	1.00	1.08	1.25	1.35

Temp. ^{0}C	40	60	70	85
Coefficient	2.0	1.5	1.3	1.0

EA - 17 SERIES

*DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT A(rms) at 120 Hz, 85^{0}C & R_{ESR} & Z_{MAX}

Capacitance [μF]	Working voltage [V]	Dimensions φDxL [mm]	R_{ESR} max [Ω] 120Hz 20^{0}C	R_{ESR} typ. [Ω] 120Hz 20^{0}C	Z max [Ω] 10kHz 20^{0}C	Max Ripple Current A[rms]
330	160	25x26	0.579	0.295	0.303	1.6
470		25x32	0.406	0.205	0.214	1.9
680		25x42	0.281	0.150	0.148	2.3
680		30x36	0.281	0.150	0.148	2.2
1000		30x42	0.191	0.099	0.105	2.8
1500		30x52	0.127	0.076	0.080	3.0
1500		35x42	0.127	0.076	0.080	3.0
2200		35x52	0.085	0.065	0.048	3.6
220	200	25x26	0.868	0.455	0.460	0.9
330		25x36	0.579	0.295	0.303	1.2
470		25x42	0.406	0.205	0.214	1.6
680		30x36	0.281	0.150	0.148	2.0
1000		30x52	0.191	0.099	0.105	2.5
1000		35x42	0.191	0.099	0.105	2.5
1500		35x52	0.127	0.076	0.080	3.0
2200		35x57	0.085	0.065	0.048	3.6
150	250	25x26	1.273	0.640	0.670	0.8
220		25x32	0.868	0.455	0.460	0.9
330		25x36	0.579	0.295	0.303	1.2
470		25x42	0.406	0.205	0.214	1.8
470		30x32	0.406	0.205	0.214	1.7
680		30x42	0.281	0.150	0.148	2.0
1000		30x57	0.191	0.099	0.105	2.5
1000		35x42	0.191	0.099	0.105	2.5
1500		35x57	0.127	0.076	0.080	3.0
100	350	25x26	1.910	0.880	1.010	0.9
150		25x32	1.273	0.640	0.669	1.1
220		25x42	0.868	0.455	0.460	1.3
220		30x32	0.868	0.455	0.460	1.3
330		30x42	0.579	0.295	0.303	1.7
470		30x52	0.406	0.200	0.214	2.0
680		35x52	0.281	0.145	0.148	2.1
100	385	25x32	1.910	0.880	1.010	0.9
150		25x42	1.273	0.640	0.669	1.1
220		30x32	0.868	0.455	0.460	1.3
330		30x52	0.579	0.293	0.303	1.8
470		35x52	0.406	0.200	0.214	2.0
680		35x62	0.281	0.145	0.148	2.1
100	400	25x32	1.910	0.880	1.010	0.9
150		25x42	1.273	0.640	0.669	1.1
220		30x32	0.868	0.455	0.460	1.3
330		30x52	0.579	0.295	0.303	1.8
470		35x52	0.406	0.200	0.214	2.0
680		35x62	0.281	0.145	0.148	2.1

EA - 18 SERIES
Wide Temperature Range

***Wide operating temperature range of - 40 ÷ +105°C**

*** High performance and exellent temperature characteristics**

*** Load life of 2000 hours at 105 °C**

*** Snap-in terminal series**

Item	Characteristics
Operating temperature range	- 40 ÷ + 105 °C
Rated working voltage range Ur	160 ÷ 400 VDC
Nominal capacitance range Cn	100 ÷ 2200 μF /at 20 °C, 120 Hz/
Capacitance tolerance	±20 %
Leakage current max.	0.02 CnUr + 15μA /after 5 min/

Dissipation factor max.

Rated voltage (VDC)	160	200	250	350	385	400
Dissipation factor	0.15	0.15	0.15	0.17	0.20	0.20

Low temperature characteristics (impedance ratio at 100 Hz)

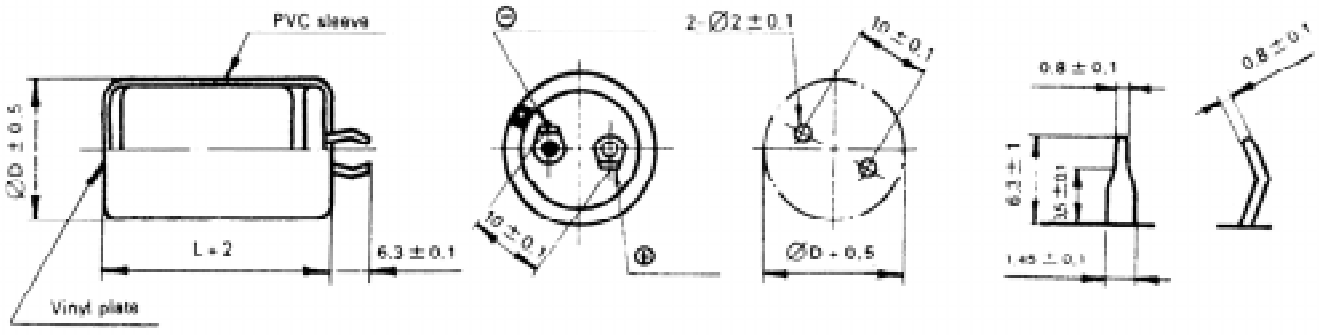
VDC	160	200	250	350	385	400
Z - 25°C/Z + 20°C	4	4	6	6	6	6
Z - 40°C/Z + 20°C	6	6	8	8	8	8

Load life (after application of the rated voltage for 2000 hours at 105°C)

Leakage current	Less than specified value
Capacitance change	±20%
tgδ	Less than 200% specified value

Shelf life (at 105°C) — After 1000 hours no load test, leakage current, capacitance and tgδ are same as load life value.

Terminal



*** PERMISSIBLE RIPPLE CURRENT MULTIPLIERS**

Frequency	50Hz	120Hz	300Hz	1kHz	10kHz
Coefficient	0.75	1	1.35	1.55	2.0

Temp. °C	40	60	70	85	105
Coefficient	2.4	2.1	1.75	1.65	1.0

*DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT mA(rms) at 120 Hz, 105^{0}C & R_{ESR} & Z max

Capacitance [μF]	Working voltage [V]	Dimensions φDxL [mm]	R_{ESR} max [Ω] 120Hz 20^{0}C	R_{ESR} typ. [Ω] 120Hz 20^{0}C	Z max [Ω] 10kHz 20^{0}C	Max Ripple Current A[rms]
330	160	25x26	0.579	0.295	0.303	0.9
470		25x32	0.406	0.205	0.214	1.1
680		25x42	0.281	0.150	0.148	1.5
680		30x36	0.281	0.150	0.148	1.4
1000		30x42	0.191	0.099	0.105	2.0
1500		30x52	0.191	0.099	0.105	1.9
1500		35x42	0.191	0.099	0.105	1.9
2200		35x52	0.191	0.099	0.105	1.9
220	200	25x26	0.868	0.455	0.460	0.6
330		25x36	0.579	0.295	0.303	0.9
470		25x42	0.406	0.205	0.214	1.2
680		30x42	0.281	0.150	0.148	1.5
1000		30x52	0.191	0.099	0.105	2.0
1000		35x42	0.191	0.099	0.105	2.0
1500		35x52	0.191	0.099	0.105	1.9
2200		35x57	0.191	0.099	0.105	2.0
150	250	25x26	1.273	0.640	0.670	0.6
220		25x32	0.868	0.455	0.460	0.7
330		25x36	0.579	0.295	0.303	0.9
470		25x42	0.406	0.205	0.214	1.2
470		30x32	0.406	0.205	0.214	1.1
680		30x42	0.281	0.150	0.148	1.6
1000		30x57	0.191	0.099	0.105	1.9
1000		35x42	0.191	0.099	0.105	1.9
1500		35x57	0.191	0.099	0.105	1.9
100	350	25x26	1.910	0.880	1.010	0.5
150		25x32	1.273	0.640	0.669	0.6
220		25x42	0.868	0.455	0.460	0.7
220		30x32	0.868	0.455	0.460	0.6
330		30x42	0.579	0.295	0.303	1.1
470		30x52	0.406	0.200	0.214	1.3
680		35x52	0.191	0.099	0.105	1.9
100	385	25x32	1.910	0.880	1.010	0.5
150		25x42	1.273	0.640	0.669	0.6
220		30x32	0.868	0.455	0.460	0.7
330		30x52	0.579	0.293	0.303	1.1
470		35x52	0.406	0.200	0.214	1.3
680		35x62	0.200	0.190	0.210	1.4
100	400	25x32	1.910	0.880	1.010	0.5
150		25x42	1.273	0.640	0.669	0.6
220		30x32	0.868	0.455	0.460	0.7
330		30x52	0.579	0.295	0.303	1.1
470		35x52	0.406	0.200	0.214	1.3
680		35x62	0.200	0.190	0.210	1.4