

**TYP 159**

5.000 Std. 105°C

PARAMETERÜBERSICHT	
DESCRIPTION	VALUE
Nominal case size (Ø D x L in mm)	22 x 25 to 35 x 60
Rated capacitance range (E6 / E12 series), C <sub>R</sub>	56 µF to 1800 µF
Tolerance on C <sub>R</sub>	± 20 %
Rated voltage range, U <sub>R</sub>	200 V to 450 V   500 V
Category temperature range	-25 °C to +105 °C
Endurance test at 105 °C	2000 h
Load life at 105 °C	2000 h
Useful life at 105 °C	5000 h
Useful life at 40 °C and 1.6 x I <sub>R</sub> applied	500 000 h
Shelf life at 0 V, 105 °C	1000 h
Based on sectional specification	IEC 60384-4 / EN130300
Climatic category IEC 60068	25 / 105 / 56



**Aluminium Elko für die Leistungselektronik**

- Kleine Baugröße; spezifiziert für Betrieb bis +105°C.
- Tieftemperaturbetrieb bis -40°C auf Anfrage.
- Verpolungsschutz (3-pin) auf Anfrage.

**2-Terminal Snap-In**

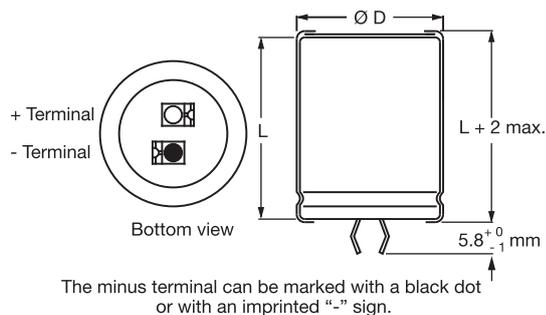


Fig. 2 - Two terminal snap-in

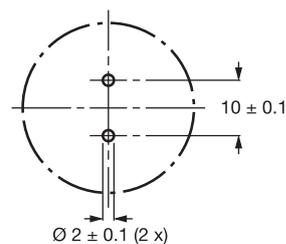


Fig. 3 - Mounting hole diagram

**3-Terminal Snap-In**

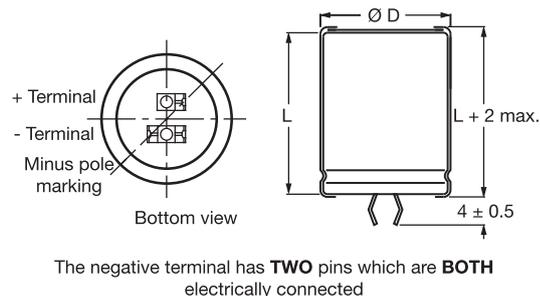


Fig. 4 - Three terminal snap-in

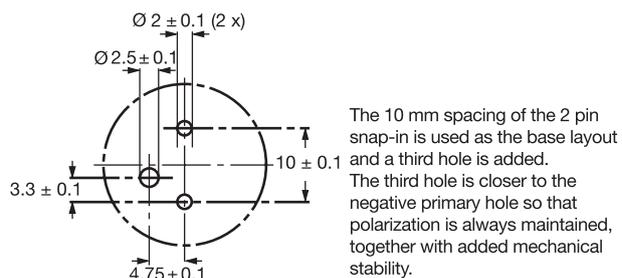


Fig. 5 - Mounting hole diagram

UP TO 40% HIGHER RIPPLE CURRENT POSSIBLE ON REQUEST!

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<b>ELECTRICAL DATA AND ORDERING INFORMATION / WERTETABELLE</b>								
<b>U<sub>R</sub></b> <b>(V)</b>	<b>C<sub>R</sub></b> <b>100 Hz</b> <b>(μF)</b>	<b>NOMINAL</b> <b>CASE SIZE</b> <b>Ø D x L</b> <b>(mm)</b>	<b>I<sub>R</sub></b> <b>120 Hz</b> <b>105 °C</b> <b>(A)</b>	<b>I<sub>L5</sub></b> <b>5 min</b> <b>(mA)</b>	<b>TYP. ESR</b> <b>100 Hz <sup>(1)</sup></b> <b>(mΩ)</b>	<b>MAX. ESR</b> <b>100 Hz <sup>(1)</sup></b> <b>(mΩ)</b>	<b>TYP. Z</b> <b>10 kHz</b> <b>(mΩ)</b>	<b>MAX. Z</b> <b>10 kHz</b> <b>(mΩ)</b>
<b>250</b>	220	22 x 30	1.00	0.55	540	1080	420	700
	220	25 x 25	1.00	0.55	540	1080	420	700
	270	22 x 35	1.07	0.67	440	880	335	560
	270	25 x 30	1.08	0.67	440	880	335	560
	270	30 x 25	1.08	0.67	440	880	335	560
	330	22 x 40	1.20	0.82	360	720	255	430
	330	25 x 30	1.21	0.82	360	720	255	430
	330	30 x 25	1.19	0.82	360	720	255	430
	390	25 x 35	1.39	0.97	330	610	245	410
	390	30 x 30	1.41	0.97	330	610	245	410
	470	25 x 40	1.58	1.17	270	505	240	400
	470	30 x 30	1.57	1.17	270	505	240	400
	470	35 x 25	1.37	1.17	270	505	240	400
	560	25 x 45	1.78	1.40	230	425	185	310
	560	30 x 35	1.71	1.40	230	425	185	310
	560	35 x 30	1.67	1.40	230	425	185	310
	680	30 x 40	1.93	1.70	210	350	155	260
	680	35 x 35	1.92	1.70	210	350	155	260
	820	30 x 45	2.16	2.05	180	290	125	210
	820	35 x 35	1.97	2.05	180	290	125	210
	820	35 x 40	2.16	2.05	180	290	125	210
	1000	35 x 40	2.22	2.50	140	235	105	180
	1000	35 x 45	2.41	2.50	140	235	105	180
	1200	35 x 45	2.46	3.00	130	200	95	160
1200	35 x 50	2.65	3.00	130	200	95	160	
<b>400</b>	68	22 x 25	0.51	0.27	1600	3200	1170	1950
	82	22 x 30	0.60	0.33	1200	2400	910	1520
	82	25 x 25	0.60	0.33	1200	2400	910	1520
	100	22 x 35	0.69	0.40	990	1980	740	1240
	100	25 x 30	0.70	0.40	990	1980	740	1240
	120	22 x 35	0.76	0.48	800	1600	660	1100
	120	25 x 30	0.76	0.48	800	1600	660	1100
	120	30 x 25	0.77	0.48	800	1600	660	1100
	150	22 x 40	0.86	0.60	700	1400	510	860
	150	25 x 35	0.89	0.60	700	1400	510	860
	150	30 x 30	0.92	0.60	700	1400	510	860
	180	25 x 40	1.01	0.72	590	1170	420	700
	180	30 x 30	0.99	0.72	590	1170	420	700
	180	35 x 25	0.96	0.72	590	1170	420	700
	220	25 x 45	1.15	0.88	470	940	350	590
	220	30 x 35	1.15	0.88	470	940	350	590
	220	35 x 30	1.14	0.88	470	940	350	590
	270	25 x 50	1.31	1.08	380	760	330	550
	270	30 x 40	1.30	1.08	380	760	330	550
	270	35 x 30	1.21	1.08	380	760	330	550
	330	30 x 45	1.47	1.32	320	640	270	450
	330	35 x 35	1.40	1.32	320	640	270	450
	390	30 x 50	1.63	1.56	270	540	240	410
	390	35 x 40	1.57	1.56	270	540	240	410
	470	35 x 45	1.72	1.88	230	450	200	330
	560	35 x 50	1.84	2.24	210	420	170	280
	680	35 x 60	2.24	2.72	180	350	130	230

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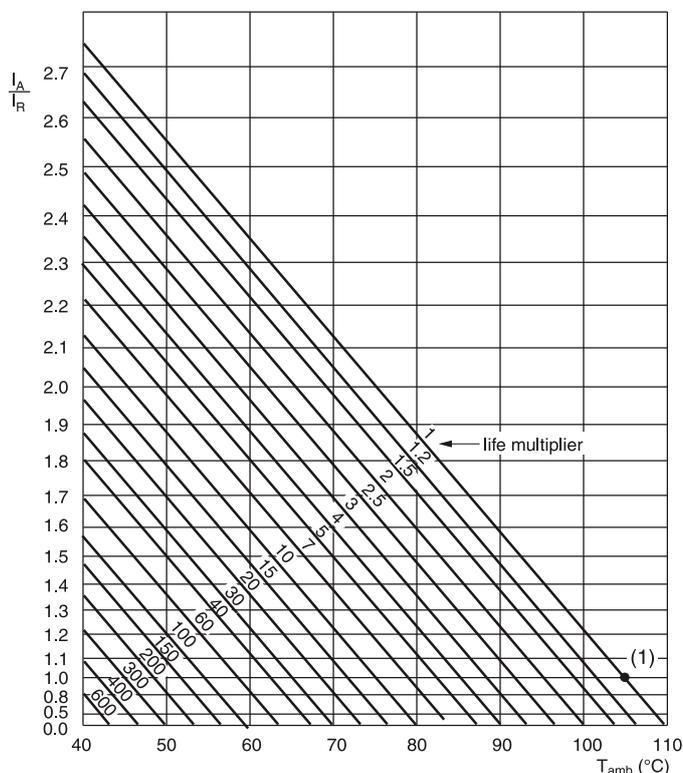
ELECTRICAL DATA AND ORDERING INFORMATION / WERTETABELLE								
U <sub>R</sub> (V)	C <sub>R</sub> 100 Hz (μF)	NOMINAL CASE SIZE Ø D x L (mm)	I <sub>R</sub> 120 Hz 105 °C (A)	I <sub>L5</sub> 5 min (mA)	TYP. ESR 100 Hz <sup>(1)</sup> (mΩ)	MAX. ESR 100 Hz <sup>(1)</sup> (mΩ)	TYP. Z 10 kHz (mΩ)	MAX. Z 10 kHz (mΩ)
<b>450</b>	56	22 x 25	0.48	0.25	1600	3200	1120	1880
	68	22 x 30	0.56	0.30	1200	2400	910	1530
	68	25 x 25	0.56	0.30	1200	2400	910	1530
	82	22 x 35	0.64	0.36	1100	2200	770	1290
	100	22 x 40	0.74	0.45	900	1800	630	1050
	100	25 x 30	0.71	0.45	900	1800	630	1050
	100	30 x 25	0.73	0.45	900	1800	630	1050
	120	25 x 35	0.82	0.54	750	1500	530	885
	150	25 x 40	0.95	0.67	600	1200	420	705
	150	30 x 30	0.93	0.67	600	1200	420	705
	150	35 x 25	0.91	0.67	600	1200	420	705
	180	25 x 45	1.07	0.81	500	1000	360	605
	180	30 x 35	1.06	0.81	500	1000	360	605
	220	30 x 40	1.21	0.99	370	740	310	525
	220	35 x 30	1.14	0.99	370	740	310	525
	270	30 x 45	1.37	1.21	350	700	270	450
	270	35 x 35	1.32	1.21	350	700	270	450
	330	30 x 50	1.54	1.48	300	600	230	390
	330	35 x 40	1.49	1.48	300	600	230	390
	390	35 x 45	1.61	1.75	250	500	200	340
470	35 x 40	1.90	1.50	210	300	115	190	
470	35 x 50	1.72	2.11	210	420	170	290	
560	35 x 60	2.11	2.52	190	380	140	240	
<b>500</b>	56	22 x 30	0.56	0.28	1730	2310	1280	1700
	68	22 x 35	0.63	0.34	1430	1900	1050	1400
	68	25 x 30	0.64	0.34	1430	1910	1060	1410
	82	22 x 35	0.69	0.41	1190	1580	880	1170
	82	25 x 30	0.69	0.41	1190	1590	890	1180
	100	22 x 40	0.80	0.50	980	1300	720	960
	100	25 x 35	0.80	0.50	980	1310	720	960
	120	25 x 40	0.92	0.60	820	1090	610	810
	120	30 x 30	0.91	0.60	830	1110	620	830
	150	25 x 45	1.07	0.75	650	870	490	650
	150	30 x 35	1.05	0.75	670	890	500	660
	180	25 x 50	1.23	0.90	550	730	410	540
	180	30 x 40	1.19	0.90	560	740	410	550
	180	35 x 30	1.20	0.90	580	770	440	590
	220	30 x 45	1.37	1.10	460	610	340	450
	220	35 x 35	1.37	1.10	470	630	360	480
	270	30 x 50	1.57	1.35	380	500	280	370
	270	35 x 40	1.55	1.35	390	520	290	390
	330	35 x 45	1.74	1.65	320	430	240	320
	390	35 x 55	2.02	1.95	270	360	200	270
470	35 x 60	2.24	2.35	230	300	170	230	

**UP TO 40% HIGHER RIPPLE CURRENT POSSIBLE ON REQUEST!**

**Brauchbarkeitsdauer in Abhängigkeit von Temperatur, Frequenz und Strombelastung**

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FREQUENCY (Hz)	I <sub>R</sub> MULTIPLIER
60	0.90
100	0.95
120	1.00
1000	1.30
≥ 10 000	1.40



I<sub>A</sub> = Actual ripple current at 120 Hz  
 I<sub>R</sub> = Rated ripple current at 120 Hz and 105 °C  
 (1) = Life at 105°C and I<sub>R</sub> ⇒ 5.000 Std.

ELEKTRISCHE KENNWERTE		
PARAMETER	CONDITIONS	VALUE
<b>Voltage</b>		
Surge voltage	≥ 400 V versions	U <sub>s</sub> = 1.1 x U <sub>R</sub>
	≤ 250 V versions	U <sub>s</sub> = 1.15 x U <sub>R</sub>
Reverse voltage		≤ 1 V
<b>Current</b>		
Leakage current	After 5 min at U <sub>R</sub>	I <sub>L5</sub> ≤ 0.01 C <sub>R</sub> x U <sub>R</sub>
<b>Inductance</b>		
Equivalent series inductance (ESL)	All case sizes	Typ. 19 nH
		Max. 25 nH

GENORMTE PRÜFPARAMETER			
TEST		PROCEDURE (quick reference)	REQUIREMENTS
NAME OF TEST	REFERENCE		
Endurance	IEC 60384-4 / EN130300 subclause 4.13	T <sub>amb</sub> = 105 °C; U <sub>R</sub> applied; 2000 h	ΔC/C: ± 15 % ESR ≤ 1.3 x spec. limit I <sub>L5</sub> ≤ spec. limit
Load life		T <sub>amb</sub> = 105 °C; U <sub>R</sub> and I <sub>R</sub> applied; 2000 h	ΔC/C: ± 20 % ESR ≤ 2 x spec. limit I <sub>L5</sub> ≤ spec. limit
Useful life	CECC 30301 subclause 1.8.1	T <sub>amb</sub> = 105 °C; U <sub>R</sub> and I <sub>R</sub> applied; 5000 h	ΔC/C: ± 30 % ESR ≤ 3 x spec. limit I <sub>L5</sub> ≤ spec. limit total failure percentage: ≤ 3 %
Shelf life (storage at high temperature)	IEC 60384-4 / EN130300 subclause 4.17	T <sub>amb</sub> = 105 °C; no voltage applied; 1000 h after test: U <sub>R</sub> to be applied for 30 min, 24 h to 48 h before measurement	ΔC/C: ± 15 % ESR ≤ 1.5 x spec. limit I <sub>L5</sub> ≤ spec. limit