PEH200, +85°C

Overview

The KEMET PEH200 capacitors have polarized all-welded design, heavy duty screw terminals, extended cathode construction, safety vent, and plastic insulation. The sealing system is designed for electrolyte leakage-free operation and a very low gas-diffusion rate of an electrolyte. Mechanical contact between the winding and aluminum case allows excellent heat transfer from the winding hot-spot to the ambient, which means cooler operation and very high current ratings.

Applications

Typical applications for KEMET's PEH200 capacitor include uninterruptible power supplies (UPS), ground power units (GPU), welding equipment, and drives where high current ratings and compact size are important.

Benefits

- High CV value
- Long life, up to 29,000 hours at +85°C (V_R, I_R applied)
- Low ESR and ESL
- Compact size
- Optimized designs available upon request



Part Number System

PEH200	H		A	515	0	M	U2
Series	Rated Voltage (VDC)		Size Code	Capacitance Code (µF)	Version	Capacitance Tolerance	Stud Option
Screw Terminal Aluminum Electrolytic	H = 25 K = 40 M = 63 P = 100 S = 250 U = 350	X = 385 V = 400 O = 420 Y = 450 Z = 500	See Dimension table	The last two digits represent significant figures. The first digit specifies the total number of digits.	0 = Standard	M = ±20%	U2 = Plain Can B2 = Threaded mounting stud

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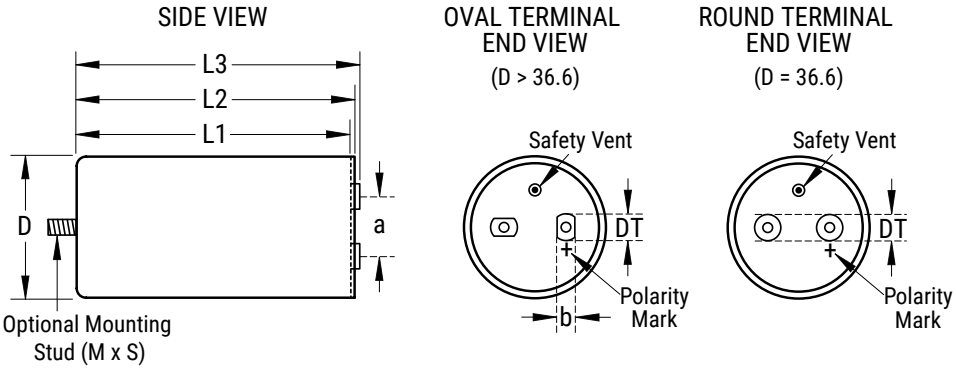
Performance Characteristics

Item	Performance Characteristics		
Capacitance Range	100 – 330,000 µF		
Rated Voltage	25 – 500 VDC		
Operating Temperature	–40 to +85°C		
Capacitance Tolerance	±20% at 100 Hz/+20°C		
Operational Lifetime	D (mm)	Rated Voltage and Ripple Current at +85°C (hours)	Rated Voltage at +85°C (hours)
	35	10,000	
	50	12,000	
	65	15,000	
	75	19,000	
	90	29,000	60,000
Shelf Life	2,000 hours at +85°C or 4 years at +40°C 0 VDC		
Leakage Current	I = 0.003 CV + 4000 (µA) (V_R < 500 VDC)		
	C = rated capacitance (µF), V = rated voltage (VDC). Voltage applied for 5 minutes at +20°C.		
Vibration Test Specifications		Procedure	Requirements
	D ≤ 50 mm	0.75 mm displacement amplitude or 10 g maximum acceleration. Vibration applied for three 2-hour sessions at 10 – 500 Hz (Capacitor clamped by body).	No leakage of electrolyte or other visible damage. Deviations in capacitance from initial measurements must not exceed: Δ C/C < 5%
	D > 50 mm	0.75 mm displacement amplitude or 10 g maximum acceleration. Vibration applied for three 2-hour sessions at 10 – 55 Hz (Capacitor clamped by body).	
Standards	IEC 60384–4 long life grade 40/85/56		

Test Method & Performance

Endurance Life Test		
Conditions	Performance	
Temperature	+85°C	
Test Duration	2,000 hours	
Ripple Current	Maximum ripple current specified in table	
Voltage	The sum of DC voltage and the peak AC voltage must not exceed the rated voltage of the capacitor	
Performance	**The following specifications will be satisfied when the capacitor is tested at +20°C:**	
Capacitance Change	≤ 100 V	Within 15% of the initial value
	> 100 V	Within 10% of the initial value
Equivalent Series Resistance	Does not exceed 200% of the initial value	
Leakage Current	Does not exceed leakage current limit	

Dimensions – Millimeters



Reference Size (mm)	Size Code	Dimensions in mm					Mounting Stud (M x S)	Approximate Weight Grams
		D	L1	L2	L3	a		
		±1.0	±1.0	±1.0	±1.0	±0.5	Nominal	
35 x 51	A	36.6	51.5	54.5	58.9	13.0	M8 x 12	70
35 x 60	B	36.6	59.5	62.5	66.9	13.0	M8 x 12	85
35 x 75	C	36.6	73.5	76.5	80.9	13.0	M8 x 12	105
35 x 95	D	36.6	94.5	97.5	101.9	13.0	M8 x 12	130
50 x 49	G	51.6	48.5	51.5	56.4	22.0	M12 x 16	150
50 x 75	H	51.6	74.5	77.5	82.4	22.0	M12 x 16	180
50 x 95	J	51.6	95.5	98.5	103.4	22.0	M12 x 16	240
50 x 105	K	51.6	103.5	106.5	111.4	22.0	M12 x 16	265
50 x 115	I	51.6	115.5	118.5	123.4	22.0	M12 x 16	300
65 x 105	O	66.6	106.0	109.2	113.0	28.5	M12 x 16	415
65 x 115	Q	66.6	118.0	121.2	125.0	28.5	M12 x 16	460
65 x 130	S	66.6	129.0	132.2	136.0	28.5	M12 x 16	520
65 x 140	R	66.6	141.0	144.2	148.0	28.5	M12 x 16	650
75 x 78	L	76.6	77.0	80.2	84.0	32.0	M12 x 16	430
75 x 98	P	76.6	98.0	101.2	105.0	32.0	M12 x 16	530
75 x 105	T	76.6	106.0	109.2	113.0	32.0	M12 x 16	585
75 x 115	U	76.6	118.0	121.2	125.0	32.0	M12 x 16	640
75 x 145	V	76.6	146.0	149.2	153.0	32.0	M12 x 16	800
75 x 220	X	76.6	221.0	224.2	228.0	32.0	M12 x 16	1400
90 x 78	M	91.6	76.5	79.7	83.4	32.0	M12 x 16	750
90 x 98	N	91.6	97.5	100.7	104.4	32.0	M12 x 16	950
90 x 145	Y	91.6	145.5	148.7	152.4	32.0	M12 x 16	1400
90 x 220	Z	91.6	220.0	224.2	226.9	32.0	M12 x 16	1500

Note: Dimensions include plastic insulation. Additional case sizes available on request

Termination Table

Reference Diameter	Thread	Termination Style	Dimensions in mm	
			DT	b
35	M5 x 0.8	Round	8	
50	M5 x 0.8	Oval	15	13
65	M5 x 0.8	Oval	15	13
75	M5 x 0.8	Oval	15	13
90	M5 x 0.8	Oval	15	13
Note: M6 and other termination options available on request				

Case Polarity

Due to the presence of electrolyte in the capacitor, the aluminum can and stud mounting will essentially be at the same polarity as the negative terminal. We recommend that the stud and can be insulated (see accessories for insulating nuts).

Shelf Life

The capacitance, ESR and impedance of a capacitor will not change significantly after extended storage periods, however, the leakage current will very slowly increase. KEMET products are particularly stable and allow a shelf life in excess of three years at 40°C. See sectional specification under each product for specific data.

Re-age (Reforming) Procedure

Apply the rated voltage to the capacitor at room temperature for a period of one hour, or until the leakage current has fallen to a steady value below the specified limit. During re-aging, a maximum charging current of twice the specified leakage current or 5 mA (whichever is greater) is suggested.

Reliability

The reliability of a component can be defined as the probability that it will perform satisfactorily under a given set of conditions for a given length of time.

In practice, it is impossible to predict with absolute certainty how any individual component will perform. Therefore, we must utilize probability theory. It is also necessary to clearly define the level of stress involved (e.g., operating voltage, ripple current, temperature and time.) Finally, the meaning of satisfactory performance must be defined by specifying a set of conditions which determine the end of life of the component.

Reliability as a function of time, R(t), is normally expressed as: $R(t) = e^{-\lambda t}$, where R(t) is the probability that the component will perform satisfactorily for time t, and λ is the failure rate.

Failure Rate

The failure rate is the number of components failing per unit of time. The failure rate of most electronic components follows the characteristic pattern:

- Early failures are removed during the manufacturing process.
- The operational life is characterized by a constant failure rate.
- The wear out period is characterized by a rapidly increasing failure rate.

The failures in time (FIT) are given with a 60% confidence level for the various type codes. By convention, FIT is expressed as 1×10^{-9} failures per hour. Failure rate is also expressed as a percentage of failures per 1,000 hours, e.g., 100 FIT = 1×10^{-7} failures per hour = 0.01%/1,000 hours.

End of Life Definition

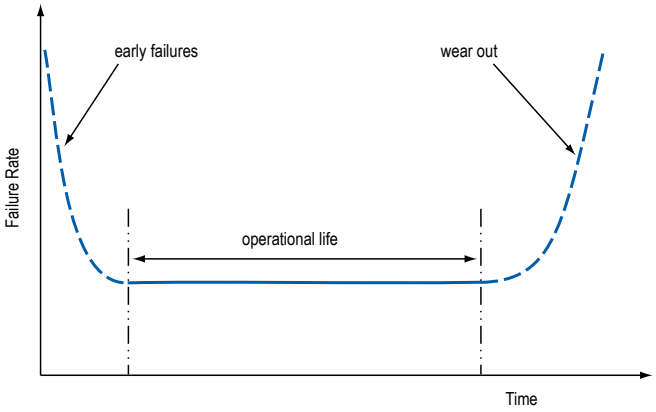
Catastrophic Failure: short circuit, open circuit or safety vent operation
Parametric Failure:

- Change in capacitance > ±10%
- Leakage current > specified limit
- ESR > 2 x initial ESR value

MTBF

The mean time between failures (MTBF) is simply the inverse of the failure rate.

MTBF = 1/λ



The failure rate is derived from our periodic test results. The failure rate (λ_R) is, therefore, only given at test temperature for life tests. An estimation is also given at 60°C. The expected failure rate for this capacitor range is based on our periodic test results for capacitors with structural similarity.

T_a	Failure Rate per Hour
85°C	1,000 FIT
60°C	100 FIT

Failure rate per hour includes both catastrophic and parametric failures.

Environmental Compliance

All Part Numbers in this datasheet are Reach and RoHS compliant and Halogen-Free.

As an environmentally conscious company, KEMET is working continuously with improvements concerning the environmental effects of both our capacitors and their production.

In Europe (RoHS Directive) and in some other geographical areas such as China, legislation has been put in place to prevent the use of some hazardous materials, such as lead (Pb), in electronic equipment. All products in this catalog are produced to help our customers' obligations to guarantee their products and fulfill these legislative requirements. The only material of concern in our products has been lead (Pb), which has been removed from all designs to fulfill the requirement of containing less than 0.1% of lead in any homogeneous material. KEMET will closely follow any changes in legislation worldwide and make any necessary changes in its products, whenever needed.

Some customer segments such as medical, military and automotive electronics may still require the use of lead in electrode coatings. To clarify the situation and distinguish products from each other, a special symbol is used on the packaging labels for RoHS compatible capacitors.

Due to customer requirements, there may appear additional markings such as lead-free (LF), or lead-free wires (LFW) on the label.

Table 1 – Ratings & Part Number Reference

VDC	Rated Capacitance	Size Code	Reference Size	Ripple Current Maximum			ESR Maximum		L_{ESL}	Part Number
	100 Hz 25°C (µF)		D x L (mm)	100 Hz 85°C (A)	10 kHz 50°C (A)[2]	10 kHz 40°C (A)	100 Hz 20°C (mΩ)	100 kHz 20°C (mΩ)	Approximate (nH)	
25	15000	A	35 x 51	11.9	28.7	19.0	25	21	12	PEH200HA5150M(1)
25	22000	C	35 x 75	15.2	34.3	24.4	17	14	12	PEH200HC5220M(1)
25	33000	D	35 x 95	17.8	38.0	28.1	12	10	12	PEH200HD5330M(1)
25	47000	H	50 x 75	20.2	43.3	30.1	11	10	16	PEH200HH5470M(1)
25	68000	J	50 x 95	23.4	47.4	34.6	8	7	16	PEH200HJ5680M(1)
25	100000	K	50 x 105	23.9	46.1	34.7	7	7	16	PEH200HK6100M(1)
25	150000	O	65 x 105	26.3	50.0	37.2	7	7	16	PEH200HO6150M(1)
25	220000	T	75 x 105	35.0	63.6	49.5	5	5	17	PEH200HT6220M(1)
25	330000	V	75 x 145	40.0	73.1	56.9	4	4	17	PEH200HV6330M(1)
40	6800	A	35 x 51	9.9	27.2	18.1	33	25	12	PEH200KA4680M(1)
40	10000	B	35 x 60	12.0	31.5	21.4	23	18	12	PEH200KB5100M(1)
40	15000	C	35 x 75	14.6	36.1	25.5	16	12	12	PEH200KC5150M(1)
40	22000	D	35 x 95	17.1	39.8	29.2	12	9	12	PEH200KD5220M(1)
40	33000	H	50 x 75	18.9	41.1	28.8	11	9	16	PEH200KH5330M(1)
40	47000	J	50 x 95	22.1	46.3	33.6	8	7	16	PEH200KJ5470M(1)
40	68000	O	65 x 105	25.2	49.9	35.6	7	7	16	PEH200KO5680M(1)
40	100000	O	65 x 105	24.9	46.3	36.9	8	8	16	PEH200KO6100M(1)
40	150000	U	75 x 115	35.7	67.7	51.2	5	4	17	PEH200KU6150M(1)
40	220000	V	75 x 145	34.4	62.3	48.9	5	5	17	PEH200KV6220M(1)
63	4700	A	35 x 51	9.0	26.8	18.0	32	21	12	PEH200MA4470M(1)
63	6800	C	35 x 75	11.5	32.7	23.5	21	14	12	PEH200MC4680M(1)
63	10000	D	35 x 95	13.6	36.0	27.0	15	10	12	PEH200MD5100M(1)
63	15000	H	50 x 75	16.1	37.3	26.5	14	11	16	PEH200MH5150M(1)
63	22000	J	50 x 95	19.0	42.0	30.9	10	8	16	PEH200MJ5220M(1)
63	33000	O	65 x 105	22.8	45.9	34.8	10	8	16	PEH200MO5330M(1)
63	47000	O	65 x 105	21.8	42.7	32.0	10	9	16	PEH200MO5470M(1)
63	68000	U	75 x 115	31.5	61.3	46.8	6	5	17	PEH200MU5680M(1)
63	100000	V	75 x 145	34.3	62.2	50.3	5	5	17	PEH200MV6100M(1)
100	1500	A	35 x 51	5.7	18.0	12.1	92	63	12	PEH200PA4150M(1)
100	2200	B	35 x 60	7.0	21.3	14.7	63	44	12	PEH200PB4220M(1)
100	3300	C	35 x 75	8.7	25.0	17.8	43	30	12	PEH200PC4330M(1)
100	4700	D	35 x 95	10.3	28.9	21.1	31	21	12	PEH200PD4470M(1)
100	6800	H	50 x 75	12.7	30.4	21.5	33	27	16	PEH200PH4680M(1)
100	10000	J	50 x 95	15.3	34.7	25.6	23	19	16	PEH200PJ5100M(1)
100	15000	K	50 x 105	17.3	37.6	27.9	17	14	16	PEH200PK5150M(1)
100	22000	O	65 x 105	19.3	38.7	30.1	15	13	16	PEH200PO5220M(1)
100	33000	T	75 x 105	26.3	53.0	39.8	10	8	17	PEH200PT5330M(1)
100	47000	V	75 x 145	30.8	60.5	47.3	7	6	17	PEH200PV5470M(1)
250	330	A	35 x 51	2.2	13.5	8.7	330	170	12	PEH200SA3330M(1)
250	470	B	35 x 60	2.7	15.9	10.6	240	120	12	PEH200SB3470M(1)
250	680	C	35 x 75	3.4	18.7	13.0	160	84	12	PEH200SC3680M(1)
250	1000	D	35 x 95	4.1	21.2	15.6	110	58	12	PEH200SD4100M(1)
250	1000	G	50 x 49	4.3	20.7	12.6	120	69	16	PEH200SG4100M(1)
250	1500	H	50 x 75	5.9	28.7	19.5	78	42	16	PEH200SH4150M(1)
250	2200	J	50 x 95	7.3	32.5	23.2	54	29	16	PEH200SJ4220M(1)
250	3300	O	65 x 105	10.0	39.8	29.4	38	22	16	PEH200SO4330M(1)
250	3300	L	75 x 78	10.5	43.8	29.6	38	22	17	PEH200SL4330M(1)
250	4700	O	65 x 105	11.3	38.2	27.2	29	18	16	PEH200SO4470M(1)
250	4700	M	90 x 78	12.7	44.2	30.4	30	18	16	PEH200SM4470M(1)
250	6800	T	75 x 105	14.7	51.5	36.5	20	12	17	PEH200ST4680M(1)
250	6800	N	90 x 98	15.8	52.1	37.3	21	13	16	PEH200SN4680M(1)
250	10000	V	75 x 145	18.0	59.0	44.0	14	9	17	PEH200SV5100M(1)
250	12000	V	75 x 145	18.8	58.6	43.6	14	9	17	PEH200SV512AM(1)
250	15000	X	75 x 220	20.6	61.6	49.2	10	6	17	PEH200SX5150M(1)
250	15000	Y	90 x 145	21.8	60.1	45.5	12	8	16	PEH200SY5150M(1)
350	220	A	35 x 51	2.0	13.7	8.8	360	170	12	PEH200UA3220M(1)
350	330	B	35 x 60	2.6	16.6	11.0	240	110	12	PEH200UB3330M(1)
350	470	C	35 x 75	3.2	19.3	13.4	170	79	12	PEH200UC3470M(1)
VDC	Rated Capacitance	Size Code	Reference Size	Ripple Current			ESR		L_{ESL}	Part Number

(1) Mounting Code: U2 = plain can, B2 = threaded mounting stud

[2] 2 m/s forced air, studmounted on 3°C/W aluminum chassis.

Table 1 – Ratings & Part Number Reference cont.

VDC	Rated Capacitance	Size Code	Reference Size	Ripple Current Maximum			ESR Maximum		L_{ESL}	Part Number
	100 Hz 25°C (µF)		D x L (mm)	100 Hz 85°C (A)	10 kHz 50°C (A)[2]	10 kHz 40°C (A)	100 Hz 20°C (mΩ)	100 kHz 20°C (mΩ)	Approximate (nH)	
350	680	D	35 x 95	3.8	21.9	16.0	120	55	12	PEH200UD3680M(1)
350	680	G	50 x 49	4.0	20.7	12.6	130	66	16	PEH200UG3680M(1)
350	1000	H	50 x 75	5.5	28.8	19.5	85	41	16	PEH200UH4100M(1)
350	1500	J	50 x 95	6.8	32.9	23.4	57	28	16	PEH200UJ4150M(1)
350	2200	O	65 x 105	9.4	39.8	29.2	41	21	16	PEH200UO4220M(1)
350	2200	L	75 x 78	9.8	43.5	29.4	41	21	17	PEH200UL4220M(1)
350	3300	O	65 x 105	10.9	38.6	27.5	31	17	16	PEH200UO4330M(1)
350	3300	M	90 x 78	13.1	54.0	37.0	28	15	16	PEH200UM4330M(1)
350	4700	U	75 x 115	14.5	54.7	39.5	20	11	17	PEH200UU4470M(1)
350	4700	N	90 x 98	15.0	51.3	36.7	22	13	16	PEH200UN4470M(1)
350	6800	V	75 x 145	16.8	57.0	42.3	15	8	17	PEH200UV4680M(1)
350	10000	X	75 x 220	19.4	60.8	48.5	11	7	17	PEH200UX5100M(1)
350	10000	Y	90 x 145	23.3	75.2	56.9	11	6	16	PEH200UY5100M(1)
350	15000	Z	90 x 220	27.3	79.8	64.4	8	5	16	PEH200UZ515AM(1)
385	220	A	35 x 51	2.1	14.6	9.3	330	150	12	PEH200XA3220M(1)
385	330	C	35 x 75	2.7	17.0	12.0	220	97	12	PEH200XC3330M(1)
385	470	D	35 x 95	3.3	19.1	14.2	150	69	12	PEH200XD3470M(1)
385	470	G	50 x 49	3.6	20.9	12.8	160	78	16	PEH200XG3470M(1)
385	680	H	50 x 75	4.7	26.8	18.4	110	51	16	PEH200XH3680M(1)
385	1000	J	50 x 95	5.9	31.7	22.8	76	35	16	PEH200XJ4100M(1)
385	1500	K	50 x 105	7.1	34.1	24.7	52	25	16	PEH200XK4150M(1)
385	2200	O	65 x 105	9.6	36.7	26.1	38	20	16	PEH200XO4220M(1)
385	2200	L	75 x 78	10.0	42.7	28.8	38	20	17	PEH200XL4220M(1)
385	3300	T	75 x 105	12.8	52.5	37.4	25	13	17	PEH200XT4330M(1)
385	3300	M	90 x 78	13.3	52.6	36.0	26	14	16	PEH200XM4330M(1)
385	4700	V	75 x 145	15.2	57.6	43.9	19	11	17	PEH200XV4470M(1)
385	4700	N	90 x 98	16.6	62.4	44.4	19	10	16	PEH200XN4470M(1)
385	6800	Y	90 x 145	20.9	74.8	57.2	14	8	16	PEH200XY4680M(1)
385	6800	X	75 x 220	17.4	58.9	47.0	14	8	17	PEH200XX4680M(1)
400	220	A	35 x 51	2.2	11.4	9.6	310	130	12	PEH200VA3220M(1)
400	330	C	35 x 75	2.8	14.3	12.6	210	90	12	PEH200VC3330M(1)
400	470	D	35 x 95	3.4	16.5	14.8	140	63	12	PEH200VD3470M(1)
400	470	G	50 x 49	3.7	15.0	12.7	150	73	16	PEH200VG3470M(1)
400	680	H	50 x 75	4.9	21.2	18.3	110	55	16	PEH200VH3680M(1)
400	1000	J	50 x 95	5.9	24.2	21.3	76	38	16	PEH200VJ4100M(1)
400	1500	O	65 x 105	9.1	49.1	35.1	53	27	16	PEH200VO415AQ(1)
400	1500	L	75 x 78	8.8	34.0	29.0	52	27	17	PEH200VL4150M(1)
400	2200	O	65 x 105	9.6	29.1	25.6	39	21	16	PEH200VO4220M(1)
400	2200	M	90 x 78	11.8	44.1	37.1	36	19	16	PEH200VM4220M(1)
400	3300	O	65 x 105	11.0	30.5	26.7	29	16	16	PEH200VO433AM(1)
400	3300	U	75 x 115	13.8	52.0	45.7	22	10	17	PEH200VU433AQ(1)
400	3300	N	90 x 98	14.9	52.8	45.2	25	13	16	PEH200VN4330M(1)
400	3300	T	75 x 105	13.0	41.5	36.3	26	14	17	PEH200VT4330M(1)
400	4700	V	75 x 145	15.6	57.0	42.5	18	10	17	PEH200VV447AM(1)
400	6800	X	75 x 220	17.6	51.2	47.7	13	8	17	PEH200VX4680M(1)
400	6800	Y	90 x 145	21.4	64.1	56.8	13	7	16	PEH200VY4680M(1)
400	10000	Z	90 x 220	24.7	69.2	64.0	9	5	16	PEH200VZ5100M(1)
420	150	A	35 x 51	1.8	12.1	7.8	400	170	12	PEH200OA3150M(1)
420	220	C	35 x 75	2.3	14.3	10.3	270	110	12	PEH200OC3220M(1)
420	330	D	35 x 95	2.9	16.3	12.3	180	76	12	PEH200OD3330M(1)
420	330	G	50 x 49	3.2	20.4	12.6	190	80	16	PEH200OG3330M(1)
420	470	H	50 x 75	4.2	24.8	17.0	140	62	16	PEH200OH3470M(1)
420	680	J	50 x 95	5.1	28.1	20.4	96	44	16	PEH200OJ3680M(1)
420	1000	K	50 x 105	6.3	32.0	23.2	67	31	16	PEH200OK4100M(1)
420	1500	O	65 x 105	8.8	38.9	28.4	47	23	16	PEH200OO4150M(1)
420	1500	L	75 x 78	9.1	42.3	28.5	47	23	17	PEH200OL4150M(1)
420	2200	T	75 x 105	11.5	51.6	37.0	32	16	17	PEH200OT4220M(1)
420	2200	M	90 x 78	12.2	52.7	36.0	33	17	16	PEH200OM4220M(1)
VDC	Rated Capacitance	Size Code	Reference Size	Ripple Current			ESR		L_{ESL}	Part Number

(1) Mounting Code: U2 = plain can, B2 = threaded mounting stud

[2] 2 m/s forced air, studmounted on 3°C/W aluminum chassis.

Table 1 – Ratings & Part Number Reference cont.

VDC	Rated Capacitance	Size Code	Reference Size	Ripple Current Maximum			ESR Maximum		L_{ESL}	Part Number
	100 Hz 25°C (µF)		D x L (mm)	100 Hz 85°C (A)	10 kHz 50°C (A)[2]	10 kHz 40°C (A)	100 Hz 20°C (mΩ)	100 kHz 20°C (mΩ)	Approximate (nH)	
420	2700	O	65 x 105	12.4	57.3	40.1	24	10	16	PEH200OO427AM(1)
420	3300	V	75 x 145	14.0	57.5	43.7	22	11	17	PEH200OV4330M(1)
420	3300	N	90 x 98	15.4	61.9	44.0	22	12	16	PEH200ON4330M(1)
420	4700	X	75 x 220	15.7	57.6	46.8	16	8	17	PEH200OX4470M(1)
420	4700	Y	90 x 145	18.2	62.2	47.5	17	9	16	PEH200OY4470M(1)
420	8200	Z	90 x 220	23.8	77.3	63.1	10	5	16	PEH200OZ4820M(1)
450	150	A	35 x 51	2.0	14.6	9.3	350	150	12	PEH200YA3150M(1)
450	220	C	35 x 75	2.5	16.8	11.9	240	99	12	PEH200YC3220M(1)
450	330	D	35 x 95	3.1	19.4	14.5	160	66	12	PEH200YD3330M(1)
450	330	G	50 x 49	3.5	20.8	12.7	170	75	16	PEH200YG3330M(1)
450	470	H	50 x 75	4.5	25.5	17.5	120	58	16	PEH200YH3470M(1)
450	680	J	50 x 95	5.5	28.8	20.8	86	41	16	PEH200YJ3680M(1)
450	1000	K	50 x 105	6.7	32.7	23.6	60	29	16	PEH200YK4100M(1)
450	1500	O	65 x 105	9.3	39.2	28.2	43	22	16	PEH200YO4150M(1)
450	1500	L	75 x 78	9.6	42.3	28.5	43	22	17	PEH200YL4150M(1)
450	1800	O	65 x 105	10.6	47.8	34.0	43	22	17	PEH200YO418AM(1)
450	2200	T	75 x 105	12.1	50.1	35.6	29	15	17	PEH200YT4220M(1)
450	2200	M	90 x 78	12.7	52.4	35.8	30	16	16	PEH200YM4220M(1)
450	3300	V	75 x 145	14.7	57.3	43.7	20	10	17	PEH200YV4330M(1)
450	3300	N	90 x 98	16.1	61.9	43.9	21	11	16	PEH200YN4330M(1)
450	4700	X	75 x 220	16.8	59.3	47.6	14	8	17	PEH200YX4470M(1)
450	4700	Y	90 x 145	18.9	61.4	46.9	16	9	16	PEH200YY4470M(1)
450	8200	Z	90 x 220	24.9	77.7	63.4	10	5	16	PEH200YZ4820M(1)
500	100	A	35 x 51	1.5	6.1	3.9	1290	760	12	PEH200ZA3100M(1)
500	150	B	35 x 60	1.9	7.5	4.9	670	390	12	PEH200ZB3150M(1)
500	220	C	35 x 75	2.3	8.4	5.8	570	345	12	PEH200ZC3220M(1)
500	220	G	50 x 49	2.5	10.1	6.1	595	365	12	PEH200ZG3220M(1)
500	330	D	35 x 95	2.9	10.7	7.7	390	234	12	PEH200ZD3330M(1)
500	470	H	50 x 75	4.2	15.8	10.5	280	165	16	PEH200ZH3470M(1)
500	680	J	50 x 95	5.1	18.4	12.8	195	115	16	PEH200ZJ3680M(1)
500	1000	O	65 x 105	6.8	21.4	15.5	130	79	16	PEH200ZO4100M(1)
500	1500	T	75 x 105	9.2	29.8	21.0	90	57	17	PEH200ZT4150M(1)
500	1800	O	65 x 105	10.6	40.9	28.2	71	45	16	PEH200ZO418HM(1)
500	2200	V	75 x 145	11.1	33.7	25.1	62	40	17	PEH200ZV4220M(1)
500	3300	X	75 x 220	12.8	36.5	29.0	43	28	17	PEH200ZX4330M(1)
500	3300	Y	90 x 145	15.7	46.9	35.4	38	24	16	PEH200ZY4330M(1)
500	5600	Z	90 x 220	19.6	53.4	42.6	31	21	16	PEH200ZZ4560M(1)
VDC	**Rated Capacitance**	**Size Code**	**Reference Size**	**Ripple Current**			**ESR**		**L_{ESL}**	**Part Number**

(1) Mounting Code: U2 = plain can, B2 = threaded mounting stud

[2] 2 m/s forced air, studmounted on 3°C/W aluminum chassis.

Mechanical Data

Polarity and Reversed Voltage
Aluminium Electrolytic capacitors manufactured for use in DC applications contain an anode foil and a cathode foil. As such, they are polarized devices and must be connected with the +ve to the anode foil and the -ve to the cathode foil. If this were to be reversed then the electrolytic process that took place in forming the oxide layer on the anode would be recreated in trying to form an oxide layer on the cathode. In forming the cathode foil in this way, heat would be generated and gas given off within the capacitor, usually leading to catastrophic failure.

The cathode foil already possesses a thin stabilized oxide layer. This thin oxide layer is equivalent to a forming voltage of approximately 2 V. As a result, the capacitor can withstand a voltage reversal of up to 2 V for short periods. Above this voltage, the formation process will commence. Aluminium Electrolytic capacitors can also be manufactured for use in intermittent AC applications by using two anode foils in place of one anode and one cathode.

Mounting Position
The capacitor can be mounted upright or inclined to a horizontal position.

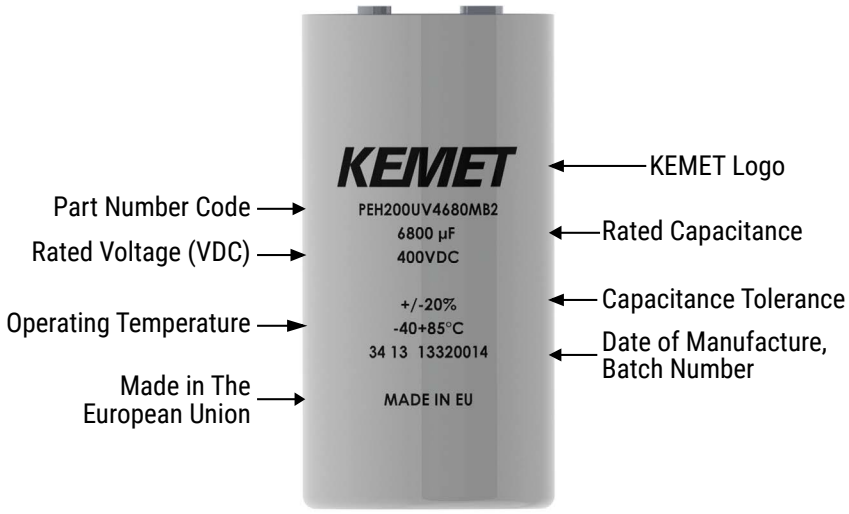
Clamp Fixing
Clips must be ordered separately.

Stud Fixing
Nylon cap nut must be ordered separately. For the stud fixing insulated version, the outer insulation serves as lock washer.
Maximum tightening torque:
M8 = 3 Nm
M12 = 8 Nm
Maximum chassis thickness 5 mm.

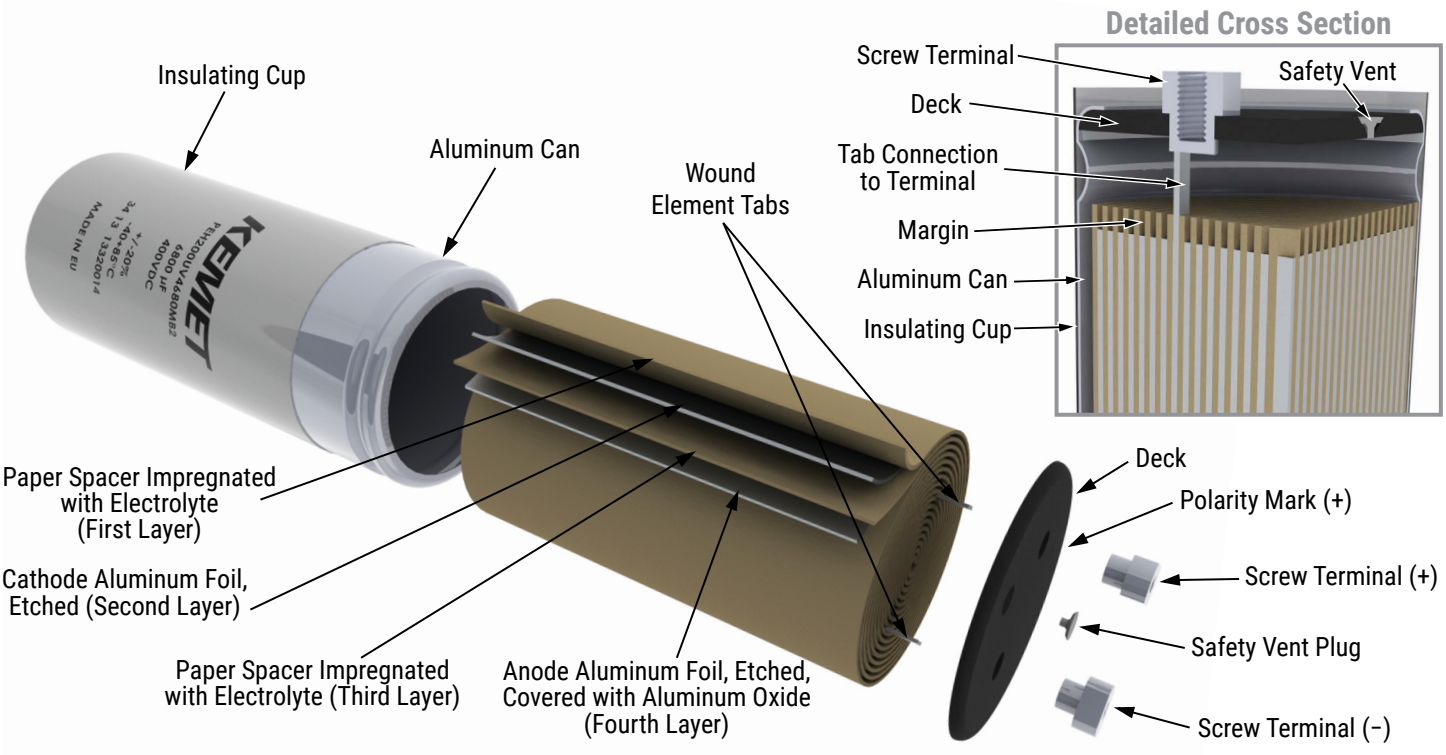
Screw Terminals
M5 x 10 according to DIN 41.248.
Maximum tightening torque = 2.5 Nm.
Must be ordered separately.
Recommended maximum connector thickness with delivered screw = 4 mm. M6 thread upon request.

Insulating Cup
PEH200 is supplied with a 0.8 mm thick polypropylene insulating cup. Voltage proof of the insulating cup: ≥ 4,000 VDC

Marking

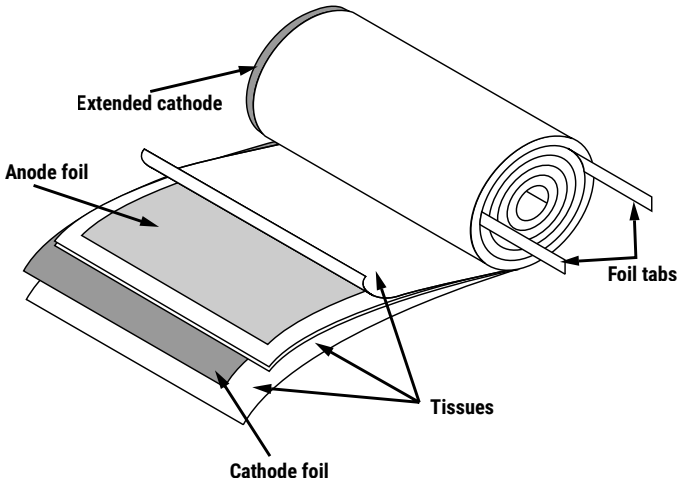


Construction



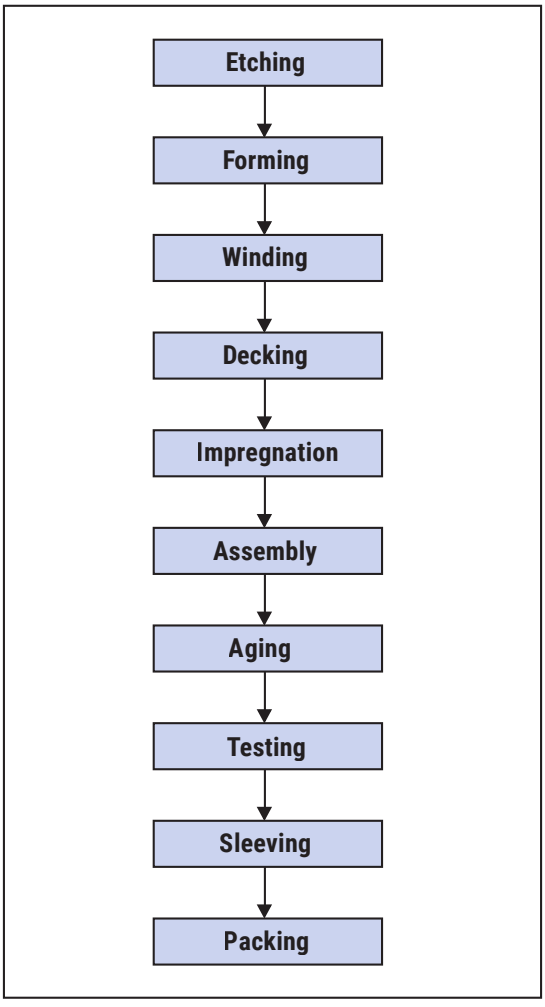
Construction Data

The manufacturing process begins with the anode foil being electrochemically etched to increase the surface area and then "formed" to produce the aluminum oxide layer. Both the anode and cathode foils are then interleaved with absorbent paper and wound into a cylinder. During the winding process, aluminum tabs are attached to each foil to provide the electrical contact.



The deck, complete with terminals, is attached to the tabs and then folded down to rest on top of the winding. The complete winding is impregnated with electrolyte before being housed in a suitable container, usually an aluminum can, and sealed. Throughout the process, all materials inside the housing must be maintained at the highest purity and be compatible with the electrolyte.

Each capacitor is aged and tested before being sleeved and packed. The purpose of aging is to repair any damage in the oxide layer and thus reduce the leakage current to a very low level. Aging is normally carried out at the rated temperature of the capacitor and is accomplished by applying voltage to the device while carefully controlling the supply current. The process may take several hours to complete.



Damage to the oxide layer can occur due to variety of reasons:

- Slitting of the anode foil after forming
- Attaching the tabs to the anode foil
- Minor mechanical damage caused during winding

A sample from each batch is taken by the quality department after completion of the production process. This sample size is controlled by the use of recognized sampling tables defined in BS 6001.

The following tests are applied and may be varied at the request of the customer. In this case the batch, or special procedure, will determine the course of action.

Electrical:

- Leakage current
- Capacitance
- ESR
- Impedance
- Tan Delta

Mechanical/Visual:

- Overall dimensions
- Torque test of mounting stud
- Print detail
- Box labels
- Packaging, including packed quantity

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