PEH 169 105°C

RoHS Compliant

- **High performance**
- **Long Life, > 10 years at 50°C**
- **Low ESR and ESL**
- **High stability, 10 years shelf life**
- **Optimized designs available on request**

APPLICATION

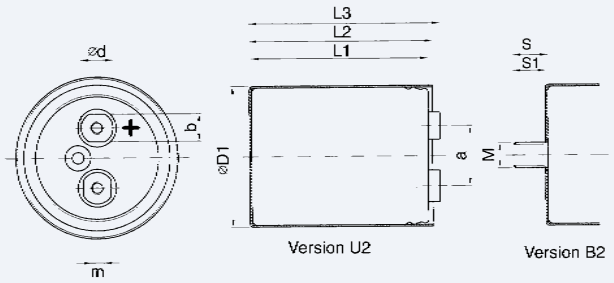
Smoothing, energy storage, or pulse operation in telecommunication demanding power supplies, process control, AC-motor control, traction, welding and measuring.

BASIC DESIGN

PEH 169 is a Long Life electrolytic capacitor with outstanding reliability and electrical performance. Polarized, all-welded design, heavy duty screw terminals, extended cathode construction, safety vent and plastic insulation. The PEH 169 winding is housed in a cylindrical aluminium can with a reinforced moulded lid incorporating a safety vent. The sealing system is designed for electrolyte leakage free operation and a very low gas-diffusion rate of electrolyte. Mechanical contact between the winding and the case allows excellent heat transfer from the winding to the ambient, which means cooler operation. Low ESR is a result of a low resistive paper/electrolyte system, at least two tabs per foil and all-welded design.

SPECIFICATION

Standards	Standards IEC 60384-4 Long Life Grade 40/105/56, DIN 41240, type 1A CECC 30300 DIN 40040 GPF, DIN 41248
CECC	CECC 30301-030, Corresponding to CECC 30301-803
Capacitance range	100–330000 µF
Capacitance tolerance	–10 to +30%
Rated voltage	10–350 VDC
Temperature range	–40 to +105°C
Operational life time	25000 h at 105°C Case Ø = 90 mm
Shelf life	5000h at 0V +105°C, or 10 years at 0V +40°C
Diameter range	35–90 mm



Dimensions table PEH 169 (mm)

D x L	Case code	D1 ±1.0	L1 ±1.0	L2 ±1.0	L3 ±1.0	S	S1	M	a ±0.5	b	d	m*	Weight approx (g)
35 x 51	A	36.6	51.5	54.5	58.9	12	11.0	M8	13.0	—	8	M5	70
35 x 60	B	36.6	59.5	62.5	66.9	12	11.0	M8	13.0	—	8	M5	85
35 x 75	C	36.6	73.5	76.5	80.9	12	11.0	M8	13.0	—	8	M5	105
35 x 95	D	36.6	94.5	97.5	101.9	12	11.0	M8	13.0	—	8	M5	130
50 x 75	H	51.6	74.5	77.5	82.4	16	15.0	M12	22.0	13	15	M5	180
50 x 95	J	51.6	95.5	98.5	103.4	16	15.0	M12	22.0	13	15	M5	240
50 x 105	K	51.6	103.5	106.5	111.4	16	15.0	M12	22.0	13	15	M5	265
50 x 115	I**	51.6	115.5	118.5	123.4	16	15.0	M12	22.0	13	15	M5	300
65 x 105	O	66.6	106.0	109.2	113.0	16	14.8	M12	28.5	13	15	M5	415
65 x 115	Q**	66.6	118.0	121.2	125.0	16	14.8	M12	28.5	13	15	M5	460
65 x 130	S**	66.6	129.0	132.2	136.0	16	14.8	M12	28.5	13	15	M5	520
75 x 78	L	76.6	77.0	80.2	84.0	16	14.8	M12	32.0	13	15	M5	430
75 x 98	P**	76.6	98.0	101.2	105.0	16	14.8	M12	32.0	13	15	M5	530
75 x 105	T	76.6	106.0	109.2	113.0	16	14.8	M12	32.0	13	15	M5	585
75 x 115	U	76.6	118.0	121.2	125.0	16	14.8	M12	32.0	13	15	M5	640
75 x 145	V	76.6	146.0	149.2	153.0	16	14.8	M12	32.0	13	15	M5	800
75 x 220	X	76.6	221.0	224.2	228.0	16	14.8	M12	32.0	13	15	M5	1400
90 x 78	M	91.6	76.5	79.7	83.4	16	14.8	M12	32.0	13	15	M5	750
90 x 98	N	91.6	97.5	100.7	104.4	16	14.8	M12	32.0	13	15	M5	950
90 x 145	Y	91.6	145.5	148.7	152.4	16	14.8	M12	32.0	13	15	M5	1400

* M6 and other threads on request. **on request

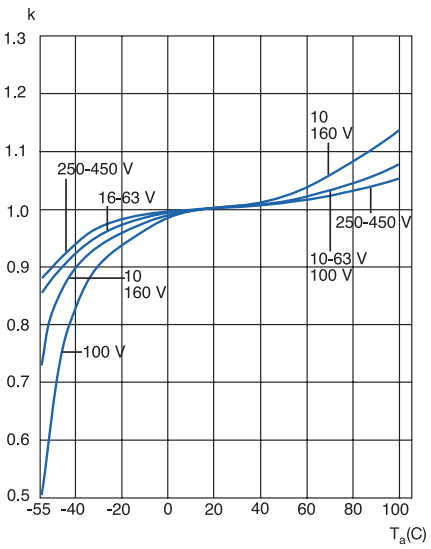
ARTICLE TABLE PEH 169 (105°C)

C_R	D x L	Case code	I_{RAC} * 105°C	I_{RAC} * 50°C **	I_{RAC} * 40°C	ESR* 20°C	ESR* 20°C	L_{ESL} Approx.	Article code
µF	mm		100 Hz A	10 kHz A	10 kHz A	100 Hz mΩ	100 kHz mΩ	nH	U2 = Plain can B2 = Stud can
10 VDC (U_R)									
6800	35 x 51	A	5.2	21.8	15.4	46	37	12	PEH169EA4680Q--
10000	35 x 51	A	6.2	26.3	17.5	33	27	12	PEH169EA5100Q--
15000	35 x 60	B	7.4	28.9	20.5	23	19	12	PEH169EB5150Q--
22000	35 x 75	C	8.8	34.8	24.3	17	14	12	PEH169EC5220Q--
33000	35 x 95	D	10.4	38.3	28.0	12	10	12	PEH169ED5330Q--
47000	50 x 75	H	11.0	42.9	30.0	12	10	16	PEH169EH5470Q--
68000	50 x 95	J	13.5	51.8	34.1	9	8	16	PEH169EJ5680Q--
100000	50 x 105	K	14.0	48.5	35.0	8	7	16	PEH169EK6100Q--
150000	65 x 105	O	14.7	47.6	35.5	9	8	16	PEH169EO6150Q--
220000	75 x 105	T	19.4	62.8	46.7	6	5	17	PEH169ET6220Q--
330000	75 x 145	V	22.5	70.7	54.6	4	4	17	PEH169EV6330Q--
16 VDC (U_R)									
6800	35 x 51	A	5.5	25.5	16.7	36	28	12	PEH169GA4680Q--
10000	35 x 51	A	6.4	28.0	18.9	27	21	12	PEH169GA5100Q--
15000	35 x 75	C	8.3	34.3	24.6	18	14	12	PEH169GC5150Q--
22000	35 x 95	D	9.7	38.6	28.5	13	10	12	PEH169GD5220Q--
33000	50 x 75	H	11.7	43.0	31.0	12	10	16	PEH169GH5330Q--
47000	50 x 95	J	13.2	46.2	34.5	9	8	16	PEH169GJ5470Q--
68000	65 x 105	O	14.4	47.7	36.2	9	8	16	PEH169GO5680Q--
100000	75 x 105	T	21.6	70.9	54.7	6	5	17	PEH169GT6100Q--
150000	75 x 115	U	19.8	67.3	50.0	5	5	17	PEH169GU6150Q--
220000	75 x 145	V	23.6	74.7	58.0	4	4	17	PEH169GV6220Q--
25 VDC (U_R)									
4700	35 x 51	A	4.9	24.1	16.5	41	29	12	PEH169HA4470Q--
6800	35 x 51	A	5.8	27.7	18.5	30	22	12	PEH169HA4680Q--
10000	35 x 75	C	7.1	31.2	22.8	20	15	12	PEH169HC5100Q--
15000	35 x 95	D	8.7	36.8	27.2	15	11	12	PEH169HD5150Q--
22000	50 x 75	H	11.0	42.9	30.9	13	10	16	PEH169HH5220Q--
33000	50 x 95	J	12.6	46.5	34.6	10	8	16	PEH169HJ5330Q--
47000	65 x 105	O	15.8	53.7	42.1	8	7	16	PEH169HO5470Q--
68000	75 x 105	T	20.2	68.1	51.9	6	6	17	PEH169HT5680Q--
100000	75 x 115	U	21.9	70.3	55.4	5	5	17	PEH169HU6100Q--
150000	75 x 145	V	22.1	71.4	55.3	4	4	17	PEH169HV6150Q--
40 VDC (U_R)									
3300	35 x 51	A	4.6	26.3	17.6	41	25	12	PEH169KA4330Q--
4700	35 x 60	B	5.6	29.6	20.5	30	19	12	PEH169KB4470Q--
6800	35 x 75	C	6.7	32.6	23.6	22	14	12	PEH169KC4680Q--
10000	35 x 95	D	7.8	34.8	26.8	16	11	12	PEH169KD5100Q--
15000	50 x 75	H	10.2	42.9	30.5	14	10	16	PEH169KH5150Q--
22000	50 x 95	J	11.9	46.5	34.8	10	8	16	PEH169KJ5220Q--
33000	65 x 105	O	15.0	53.8	41.4	8	7	16	PEH169KO5330Q--
47000	75 x 105	T	19.9	69.5	55.0	6	5	17	PEH169KT5470Q--
68000	75 x 115	U	20.6	70.7	53.9	6	5	17	PEH169KU5680Q--
100000	75 x 145	V	23.0	71.0	59.0	4	4	17	PEH169KV6100Q--
63 VDC (U_R)									
1500	35 x 51	A	3.5	23.1	15.9	63	31	12	PEH169MA4150Q--
2200	35 x 51	A	4.1	27.0	18.1	46	23	12	PEH169MA4220Q--
3300	35 x 75	C	5.3	31.6	22.9	30	15	12	PEH169MC4330Q--
4700	35 x 95	D	6.2	34.2	25.9	22	11	12	PEH169MD4470Q--
6800	50 x 75	H	8.5	42.6	30.8	18	10	16	PEH169MH4680Q--
10000	50 x 95	J	9.9	45.3	34.2	13	8	16	PEH169MJ5100Q--

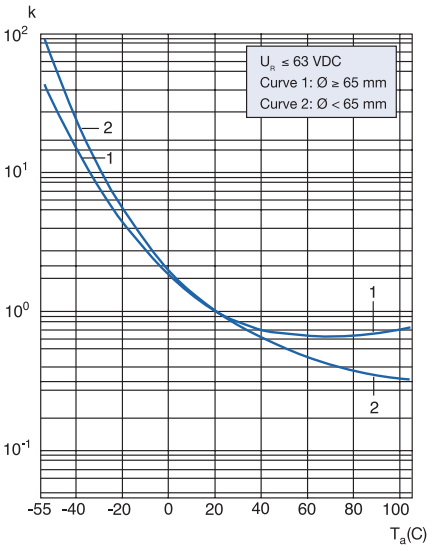
* Maximum values
** 2 m/s forced air, studmounted on 3°C/W aluminium chassis.

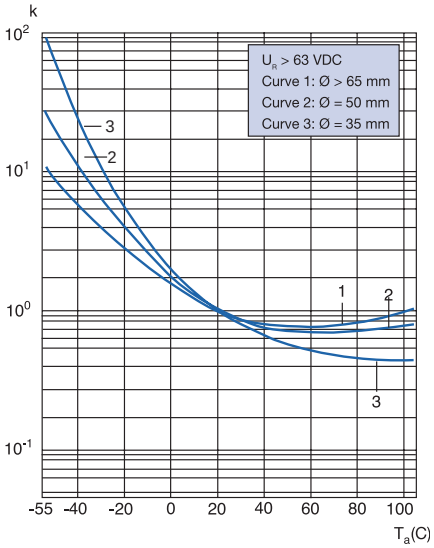
TECHNICAL DATA PEH 169 (85°C AND 105°C)

The capacitance vs ambient temperature
(T_a) at f = 100 Hz



ESR as a function of ambient temperature
(T_a) at f = 100 kHz. k = R_{ESR} (T_a)/R_{ESR}(20°C)





LEAKAGE CURRENT

Rated leakage current, I_{RL} (µA).
Rated voltage, U_R (V).
Rated capacitance, C_R (µF). $I_{RL} = 0.003 \times C_R \times U_R + 4$

R_{th} – short form table versus chassis area and air speed

D x L	Case code	STUD MOUNTED R_{thhs} = 3°C/W (0.5 m/s)	STUD MOUNTED R_{thhs} = 2°C/W (0.5 m/s)	STUD MOUNTED R_{thhs} = 3°C/W (2.0 m/s)	STUD MOUNTED R_{thhs} = 2°C/W (2.0 m/s)	CLIP MOUNTED (0.5 m/s)	CLIP MOUNTED (2.0 m/s)
35 x 51	A	5.6	5.3	4.5	4.4	10.6	7.4
35 x 60	B	5.4	5.1	4.4	4.3	9.8	7.0
35 x 75	C	5.3	5.1	4.4	4.3	9.2	6.7
35 x 95	D	5.3	5.1	4.4	4.3	8.9	6.7
50 x 75	H	3.6	3.3	2.8	2.7	6.3	4.4
50 x 95	J	3.4	3.2	2.7	2.6	5.8	4.2
50 x 105	K	3.4	3.2	2.7	2.6	5.8	4.2
50 x 115	I	3.4	3.2	2.7	2.6	5.8	4.2
65 x 105	O	2.6	2.4	2.1	2.0	4.2	3.1
65 x 115	Q	2.6	2.4	2.1	2.0	4.2	3.1
65 x 130	S	2.6	2.4	2.1	2.0	4.2	3.1
75 x 78	L	2.3	2.0	1.8	1.7	4.1	2.7
75 x 98	P	2.3	2.0	1.8	1.7	4.0	2.7
75 x 105	T	2.3	2.1	1.7	1.6	3.7	2.6
75 x 115	U	2.2	2.0	1.6	1.5	3.5	2.5
75 x 145	V	2.2	2.0	1.6	1.5	3.4	2.5
75 x 220	X	2.3	2.1	2.0	1.9	3.4	2.6
90 x 78	M	1.9	1.7	1.6	1.4	3.4	2.2
90 x 98	N	1.9	1.7	1.5	1.4	3.1	2.1
90 x 145	Y	1.8	1.6	1.5	1.4	2.7	1.9

OPERATIONAL DATA

Please see operational lifetime section.

RELIABILITY

The failure rate is derived from our periodic test results. The failure rate (I_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	1×10^{-6}
60°C	1×10^{-7}

Failure rate per hour for catastrophic plus parametric failures.

MECHANICAL DATA

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

Clamp fixing
Clips must be ordered seperately. See “Accessories”.

Stud fixing
Nylon cap nut must be ordered separately.

For the stud fixing insulated version the outer insulation serves as lock washer. See “Accessories”. Max tightening torque: M8: 3 Nm M12: 8 Nm. Max chassis thickness 5 mm. Mounting hole: See “Accessories”.

Screw terminals
M5 x 10 according to DIN 41.248. Max tightening torque: 2.5 Nm. Must be ordered separately: See “Accessories”.

Recommended max connector thickness with delivered screw: 4 mm. M6 thread on request.

Insulation can
PEH169 is supplied with a polypropylene insulation can, thickness 0.8 mm. Voltage proof of the insulation sleeve:
≥ 4000 VDC.

PVC shrink sleeve only on request.

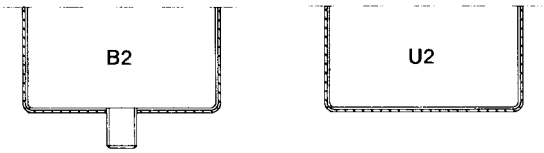
ORDERING INFORMATION

Pos 1–20

P	E	H	1	6	9	K	U	5	6	8	0	Q	B	2					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

Capacitance tolerances:
Pos. 13: Q= –10 to +30%
M: -20 to +20%

Pos. 14-15: B2 = with bottom stud
U2 = without bottom stud



Quantities and weights

CASE CODE	A	B	C	D	H	I	J	K	L	M	N	O	P	Q	S	T	U	V	X	Y
Weight approx (g)	70	85	105	130	180	300	240	265	430	750	950	415	530	460	520	585	640	800	1400	1400
Standard box quantity	42	42	42	42	20	20	20	20	9	6	6	12	9	12	12	9	9	9	9	6