

# PEH 430 105°C

- Snap-In
- Long Life Grade
- PCB Mounting
- Low ESR and ESL
- High ripple current

See also the new catalog supplement for snap-in capacitors showing four new series including PEH526 for automotive applications!

## APPLICATION

Typical applications for PEH 430 would be SMPS, drives, welding equipment, UPS and other power electronic applications where high current ratings and compact size are important.

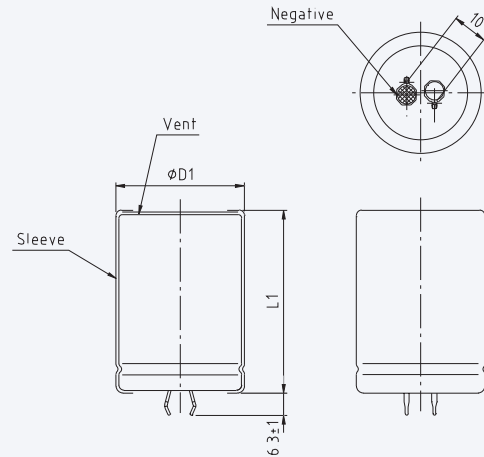
## BASIC DESIGN

PEH 430 is a Long Life electrolytic capacitor designed to offer high ripple current capability and low mounting cost. The low ESR is a result of very low resistive paper/electrolyte system.

The low ESR together with the TDC thermal concept gives the PEH 430 a high ripple current capability.

## SPECIFICATION

<b>Standards</b>	IEC 384-4 Long Life Grade 40/105/56, in accordance with CECC 30 301-809
<b>Capacitance range</b>	150–22000 $\mu\text{F}$
<b>Capacitance tolerance</b>	–20 to +20%
<b>Rated voltage</b>	35–450 VDC
<b>Temperature range</b>	–40 to +105°C
<b>Leakage current, <math>I_{RL}</math> (<math>\mu\text{A}</math>)</b>	$0.01 (\mu\text{A}) \times C_R (\mu\text{F}) \times U_R (\text{V})$
<b>Operational life time</b>	4000 hours at +105°C
<b>Shelf life</b>	4 years at 0 Volt and +40°C
<b>Diameter range</b>	25–35 mm



Dimensions table PEH 430 (mm)

D x L	Case code	D1 $\pm 0.5$	L1 $\pm 1.0$	Weight approx (g)
25 x 30	H	25.5	31	21
25 x 35	J	25.5	36	24
25 x 40	K	25.5	41	27
25 x 45	L	25.5	46	30
25 x 50	M	25.5	51	33
30 x 25	N	30.5	26	24
30 x 30	P	30.5	31	29
30 x 35	Q	30.5	36	34
30 x 40	R	30.5	41	39
30 x 45	S	30.5	46	45
30 x 50	T	30.5	51	51
35 x 25	U	35.5	26	32
35 x 30	V	35.5	31	40
35 x 35	W	35.5	36	48
35 x 40	X	35.5	41	56
35 x 45	Y	35.5	46	64
35 x 50	Z	35.5	51	72

## ARTICLE TABLE PEH 430 (105°C)

$C_R$	D x L	Case code	$I_{RAC}^*$ 105°C 100 Hz A	$I_{RAC}^*$ 40°C 20kHz A	ESR* 20°C 100 Hz mΩ	ESR* 20°C 100 kHz mΩ	Article code 1st block
μF	mm						
<b>35 VDC (<math>U_R</math>)</b>							
5600	25 x 30	H	2.1	8.4	42	32	PEH430JH4560M2
6800	25 x 35	J	2.3	10.0	34	26	PEH430JJ4680M2
6800	30 x 25	N	2.3	10.0	34	26	PEH430JN4680M2
8200	25 x 40	K	2.8	11.3	28	22	PEH430JK4820M2
8200	30 x 30	P	2.8	11.3	28	22	PEH430JP4820M2
8200	35 x 25	U	2.8	11.3	28	22	PEH430JU4820M2
10000	25 x 45	L	3.1	12.6	24	19	PEH430JL5100M2
10000	30 x 35	Q	3.1	12.6	24	19	PEH430JQ5100M2
15000	30 x 45	S	4.6	15.4	17	13	PEH430JS5150M2
15000	35 x 35	W	4.6	15.4	17	13	PEH430JW5150M2
22000	35 x 50	Z	6.5	21.0	12	10	PEH430JZ5220M2
<b>63 VDC (<math>U_R</math>)</b>							
2200	25 x 30	H	1.7	7.5	80	56	PEH430MH4220M2
3300	25 x 40	K	2.3	9.6	51	36	PEH430MK4330M2
3300	30 x 30	P	2.3	9.6	51	36	PEH430MP4330M2
4700	30 x 40	R	2.8	12.1	37	26	PEH430MR4470M2
4700	35 x 30	V	2.8	12.1	37	26	PEH430MV4470M2
5600	30 x 45	S	3.9	14.3	30	22	PEH430MS4560M2
5600	35 x 35	W	3.9	14.3	30	22	PEH430MW4560M2
6800	30 x 50	T	4.4	15.1	26	19	PEH430MT4680M2
6800	35 x 40	X	4.4	15.1	26	19	PEH430MX4680M2
8200	35 x 45	Y	4.9	17.3	21	15	PEH430MY4820M2
10000	35 x 50	Z	5.3	18.9	18	13	PEH430MZ5100M2
<b>100 VDC (<math>U_R</math>)</b>							
1500	25 x 40	K	2.0	8.1	100	74	PEH430PK4150M2
1500	30 x 30	P	2.0	8.1	100	74	PEH430PP4150M2
2200	30 x 40	R	2.7	11.8	71	51	PEH430PR4220M2
2200	35 x 30	V	2.7	11.8	71	51	PEH430PV4220M2
3300	30 x 50	T	3.5	13.5	47	34	PEH430PT4330M2
3300	35 x 40	X	3.5	13.5	47	34	PEH430PX4330M2
3900	35 x 45	Y	3.9	15.0	40	29	PEH430PY4390M2
4700	35 x 50	Z	4.4	16.5	34	25	PEH430PZ4470M2
<b>200 VDC (<math>U_R</math>)</b>							
470	25 x 35	J	1.4	5.9	240	115	PEH430RJ3470M2
560	25 x 40	K	1.5	6.6	200	102	PEH430RK3560M2
560	30 x 30	P	1.5	6.6	200	102	PEH430RP3560M2
680	25 x 45	L	1.7	7.3	170	84	PEH430RL3680M2
680	30 x 35	Q	1.7	7.3	170	84	PEH430RQ3680M2
680	35 x 30	V	1.7	7.3	170	84	PEH430RV3680M2
820	30 x 40	R	1.9	8.5	130	71	PEH430RR3820M2
820	35 x 30	V	1.9	8.5	130	71	PEH430RV3820M2
1000	30 x 50	T	2.1	10.0	110	58	PEH430RT4100M2
1000	35 x 35	W	2.1	10.0	110	58	PEH430RW4100M2
1500	35 x 45	Y	2.6	12.5	74	37	PEH430RY4150M2
<b>250 VDC (<math>U_R</math>)</b>							
390	25 x 40	K	1.4	6.3	330	190	PEH430SK3390M2
390	30 x 30	P	1.4	6.3	330	190	PEH430SP3390M2
470	25 x 45	L	1.5	6.5	270	150	PEH430SL3470M2
470	30 x 35	Q	1.5	6.5	270	150	PEH430SQ3470M2
470	35 x 30	V	1.5	6.5	270	150	PEH430SV3470M2
560	25 x 50	M	1.7	7.4	220	130	PEH430SM3560M2

\* Maximum values

## ARTICLE TABLE PEH 430 (105°C)

$C_R$	D x L	Case code	$I_{RAC}^*$ 105°C 100 Hz A	$I_{RAC}^*$ 40°C 20kHz A	ESR* 20°C 100 Hz mΩ	ESR* 20°C 100 kHz mΩ	Article code 1st block
μF	mm						
<b>250 VDC (<math>U_R</math>)</b>							
560	30 x 40	R	1.7	7.4	220	130	PEH430SR3560M2
680	30 x 45	S	1.8	8.7	190	110	PEH430SS3680M2
680	35 x 35	W	1.8	8.7	190	110	PEH430SW3680M2
820	30 x 50	T	2.1	9.2	150	88	PEH430ST3820M2
820	35 x 40	X	2.1	9.2	150	88	PEH430SX3820M2
1000	35 x 45	Y	2.3	10.6	130	72	PEH430SY4100M2
<b>350 VDC (<math>U_R</math>)</b>							
220	25 x 40	K	1.0	4.4	410	195	PEH430UK3220M2
220	30 x 30	P	1.0	4.4	410	195	PEH430UP3220M2
220	35 x 25	U	1.0	4.4	410	195	PEH430UU3220M2
330	30 x 40	R	1.3	5.6	270	135	PEH430UR3330M2
330	35 x 30	V	1.3	5.6	270	135	PEH430UV3330M2
390	30 x 45	S	1.5	6.7	235	115	PEH430US3390M2
390	35 x 35	W	1.5	6.7	235	115	PEH430UW3390M2
470	35 x 40	X	1.7	7.1	200	94	PEH430UX3470M2
560	35 x 45	Y	1.9	8.0	180	79	PEH430UY3560M2
<b>400 VDC (<math>U_R</math>)</b>							
150	25 x 35	J	0.83	3.6	700	360	PEH430VJ3150M2
150	30 x 25	N	0.83	3.6	700	360	PEH430VN3150M2
220	25 x 45	L	1.1	4.6	470	250	PEH430VL3220M2
220	30 x 35	Q	1.1	4.6	470	250	PEH430VQ3220M2
<b>220</b>	<b>35 x 30</b>	<b>V</b>	<b>1.1</b>	<b>4.6</b>	<b>470</b>	<b>250</b>	<b>PEH430VV3220M2</b>
330	30 x 45	S	1.4	5.8	320	165	PEH430VS3330M2
<b>330</b>	<b>35 x 35</b>	<b>W</b>	<b>1.4</b>	<b>5.8</b>	<b>320</b>	<b>165</b>	<b>PEH430VW3330M2</b>
390	30 x 50	T	1.5	6.4	270	138	PEH430VT3390M2
<b>390</b>	<b>35 x 40</b>	<b>X</b>	<b>1.5</b>	<b>6.4</b>	<b>270</b>	<b>138</b>	<b>PEH430VX3390M2</b>
<b>470</b>	<b>35 x 45</b>	<b>Y</b>	<b>1.7</b>	<b>7.3</b>	<b>220</b>	<b>115</b>	<b>PEH430VY3470M2</b>
<b>560</b>	<b>35 x 50</b>	<b>Z</b>	<b>1.8</b>	<b>7.9</b>	<b>185</b>	<b>96</b>	<b>PEH430VZ3560M2</b>
<b>450 VDC (<math>U_R</math>)</b>							
<b>150</b>	<b>25 x 40</b>	<b>K</b>	<b>0.80</b>	<b>3.5</b>	<b>680</b>	<b>375</b>	<b>PEH430YK3150M2</b>
150	30 x 30	P	0.80	3.5	680	375	PEH430YP3150M2
150	35 x 25	U	0.80	3.5	680	375	PEH430YU3150M2
<b>220</b>	<b>30 x 40</b>	<b>R</b>	<b>1.1</b>	<b>4.6</b>	<b>470</b>	<b>255</b>	<b>PEH430YR3220M2</b>
220	35 x 30	V	1.1	4.6	470	255	PEH430YV3220M2
330	30 x 50	T	1.4	5.8	310	170	PEH430YT3330M2
<b>330</b>	<b>35 x 40</b>	<b>X</b>	<b>1.4</b>	<b>5.8</b>	<b>310</b>	<b>170</b>	<b>PEH430YX3330M2</b>
<b>390</b>	<b>35 x 45</b>	<b>Y</b>	<b>1.6</b>	<b>6.5</b>	<b>260</b>	<b>134</b>	<b>PEH430YY3390M2</b>
<b>470</b>	<b>35 x 50</b>	<b>Z</b>	<b>1.7</b>	<b>7.2</b>	<b>220</b>	<b>120</b>	<b>PEH430YZ3470M2</b>

\* Maximum values

Standard range items are marked in **bold** and are available from stock.

Minimum annual usage for the non-standard range items is 10 000 pcs.

## OPERATIONAL DATA

Please see operational life section, page 57.

## MECHANICAL DATA

The capacitor may be mounted in any position. The PEH 430 is supplied with PVC insulation sleeve, thickness 0.3 mm. Voltage proof of the insulation sleeve = 2.5 kVDC (1 min). The minus pole is marked on the case surface.

ORDERING INFORMATION

1st block (pos 1–13)

2nd block (pos 14–20)

<b>P</b>	<b>E</b>	<b>H</b>	<b>4</b>	<b>3</b>	<b>0</b>	<b>J</b>	<b>H</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>0</b>	<b>M</b>
1	2	3	4	5	6	7	8	9	10	11	12	13

<b>2</b>
14

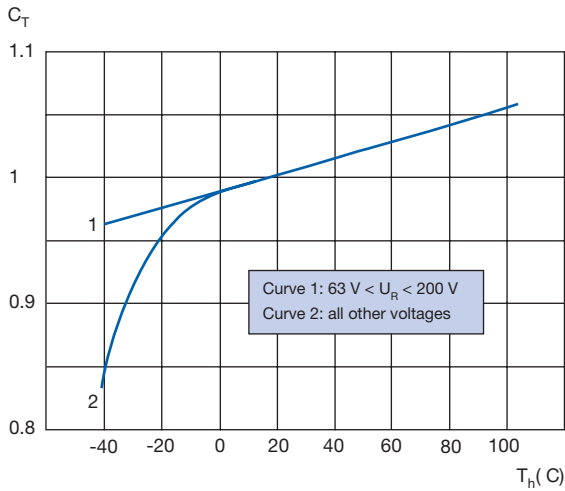
Pos. 13: Capacitance tolerance M = -20 to +20%

Quantities and weights

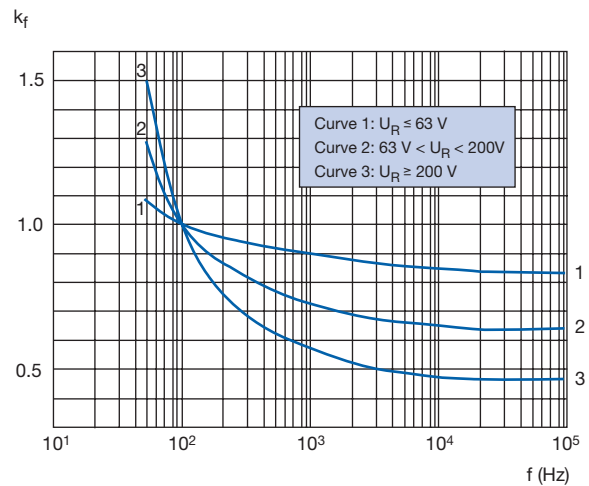
CASE CODE	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	X	Y	Z
Weight approx (g)	21	24	27	30	33	24	29	34	39	45	51	32	40	48	56	64	72
Standard box quantity	100	100	100	100	100	100	100	100	100	100	100	400	400	400	400	400	400

TYPICAL DATA PEH 430

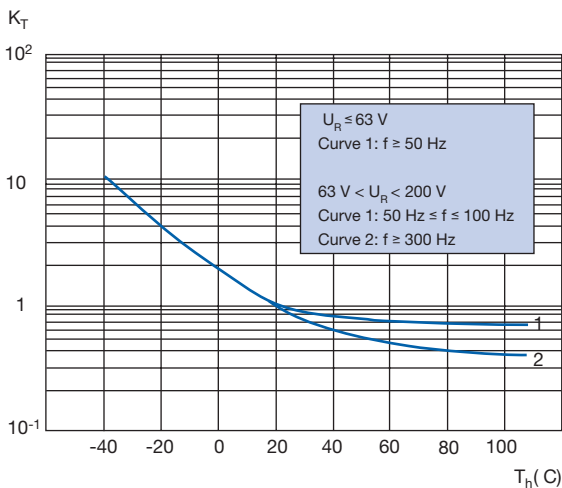
**Fig. 1**  
 $C_T = C(f=100 \text{ Hz}, T_h) / C(f=100 \text{ Hz}, T_h = 20^\circ\text{C})$  vs  $T_h$



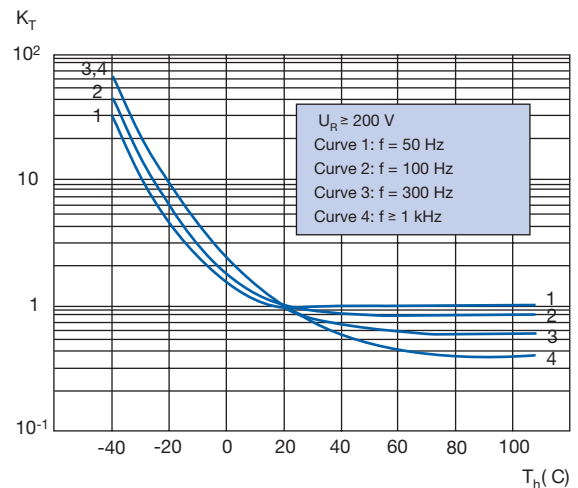
**Fig. 4**  
 $k_f = \text{ESR}(f, T_h = 20^\circ\text{C}) / \text{ESR}(f = 100 \text{ Hz}, T_h = 20^\circ\text{C})$  vs  $f$



**Fig. 2**  
 $K_T = \text{ESR}(f, T_h) / \text{ESR}(f, T_h = 20^\circ\text{C})$  vs  $T_h, U_R < 200 \text{ V}$



**Fig. 5**  
 $K_T = \text{ESR}(f, T_h) / \text{ESR}(f, T_h = 20^\circ\text{C})$  vs  $T_h, U_R \bullet 200 \text{ V}$



## THERMAL RESISTANCE

Thermal resistance for different case sizes, as a function of case air speed  $v$ .

$R_{th}$  Thermal resistance between hot-spot and ambient  
 $R_{thca}$  Thermal resistance between case and ambient

At ambient temperature  $T_a = 40^\circ\text{C}$

Case	Air speed $v$											
	$v=0.5$ m/s		$v=1.0$ m/s		$v=2.0$ m/s		$v=3.0$ m/s		$v=4.0$ m/s		$v=5.0$ m/s	
	$R_{thca}$ °C/W	$R_{th}$	$R_{thca}$ °C/W	$R_{th}$	$R_{thca}$ °C/W	$R_{th}$	$R_{thca}$ °C/W	$R_{th}$	$R_{thca}$ °C/W	$R_{th}$	$R_{thca}$ °C/W	$R_{th}$
25x30	19,3	20,2	15,3	16,1	12,0	12,8	10,5	11,3	9,2	10,0	8,2	9,1
25x45	14,7	16,2	11,8	13,3	9,4	10,9	8,4	9,9	7,4	8,9	6,8	8,3
30x25	18,9	19,5	14,9	15,5	11,7	12,3	10,0	10,6	8,7	9,3	7,8	8,4
30x50	11,9	12,9	9,7	10,7	7,8	8,8	6,8	7,8	6,1	7,1	5,5	6,6
35x25	16,5	17,0	13,1	13,6	10,5	11,0	8,6	9,1	7,5	8,0	6,7	7,2
35x50	10,5	11,3	8,5	9,3	7,0	7,8	5,9	6,7	5,3	6,0	4,8	5,6