

# 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.

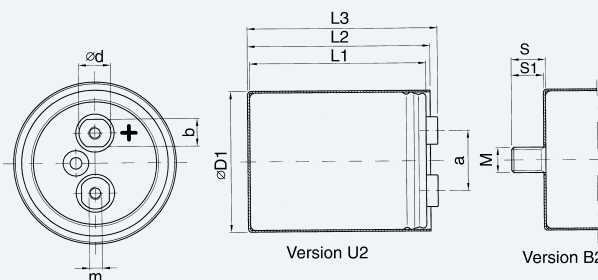
## BASIC DESIGN

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

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



Dimensions table PEH 169 (mm)

| D x L    | Case code | D1<br>±1.0 | L1<br>±1.0 | L2<br>±1.0 | L3<br>±1.0 | S  | S1   | M   | a<br>±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 <sub>R</sub>           | D x L    | Case code | I <sub>RAC</sub> *<br>105°C | I <sub>RAC</sub> *<br>50°C<br>** | I <sub>RAC</sub> *<br>40°C | ESR*<br>20°C | ESR*<br>20°C  | L <sub>ESL</sub><br>Approx. | Article code                    |
|--------------------------|----------|-----------|-----------------------------|----------------------------------|----------------------------|--------------|---------------|-----------------------------|---------------------------------|
| μF                       | mm       |           | 100 Hz<br>A                 | 10 kHz<br>A                      | 10 kHz<br>A                | 100 Hz<br>mΩ | 100 kHz<br>mΩ | nH                          | U2 = Plain can<br>B2 = Stud can |
| 10 VDC (U <sub>R</sub> ) |          |           |                             |                                  |                            |              |               |                             |                                 |
| 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 <sub>R</sub> ) |          |           |                             |                                  |                            |              |               |                             |                                 |
| 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 <sub>R</sub> ) |          |           |                             |                                  |                            |              |               |                             |                                 |
| 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 <sub>R</sub> ) |          |           |                             |                                  |                            |              |               |                             |                                 |
| 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 <sub>R</sub> ) |          |           |                             |                                  |                            |              |               |                             |                                 |
| 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.

## ARTICLE TABLE PEH 169 (105°C)

| C <sub>R</sub>            | D x L    | Case code | I <sub>RAC</sub> *<br>105°C | I <sub>RAC</sub> *<br>50°C<br>** | I <sub>RAC</sub> *<br>40°C | ESR*<br>20°C | ESR*<br>20°C  | L <sub>ESL</sub><br>Approx. | Article code                    |
|---------------------------|----------|-----------|-----------------------------|----------------------------------|----------------------------|--------------|---------------|-----------------------------|---------------------------------|
| μF                        | mm       |           | 100 Hz<br>A                 | 10 kHz<br>A                      | 10 kHz<br>A                | 100 Hz<br>mΩ | 100 kHz<br>mΩ | nH                          | U2 = Plain can<br>B2 = Stud can |
| 63 VDC (U <sub>R</sub> )  |          |           |                             |                                  |                            |              |               |                             |                                 |
| 15000                     | 65 x 105 | O         | 13.1                        | 53.0                             | 41.1                       | 10           | 6             | 16                          | PEH169MO5150Q--                 |
| 22000                     | 75 x 105 | T         | 17.7                        | 73.0                             | 55.8                       | 6            | 4             | 17                          | PEH169MT5220Q--                 |
| 33000                     | 75 x 115 | U         | 18.9                        | 71.0                             | 54.3                       | 6            | 5             | 17                          | PEH169MU5330Q--                 |
| 47000                     | 75 x 145 | V         | 20.9                        | 73.0                             | 58.0                       | 5            | 4             | 17                          | PEH169MV5470Q--                 |
| 100 VDC (U <sub>R</sub> ) |          |           |                             |                                  |                            |              |               |                             |                                 |
| 680                       | 35 x 51  | A         | 2.4                         | 14.4                             | 9.9                        | 160          | 95            | 12                          | PEH169PA3680Q--                 |
| 1000                      | 35 x 51  | A         | 2.9                         | 17.4                             | 11.7                       | 110          | 67            | 12                          | PEH169PA4100Q--                 |
| 1500                      | 35 x 75  | C         | 3.6                         | 20.5                             | 14.9                       | 73           | 44            | 12                          | PEH169PC4150Q--                 |
| 2200                      | 35 x 95  | D         | 4.3                         | 23.2                             | 17.6                       | 50           | 31            | 12                          | PEH169PD4220Q--                 |
| 3300                      | 50 x 75  | H         | 6.4                         | 33.8                             | 23.8                       | 30           | 23            | 16                          | PEH169PH4330Q--                 |
| 4700                      | 50 x 95  | J         | 7.7                         | 37.1                             | 27.6                       | 26           | 17            | 16                          | PEH169PJ4470Q--                 |
| 6800                      | 65 x 105 | O         | 10.4                        | 46.4                             | 35.5                       | 18           | 12            | 16                          | PEH169PO4680Q--                 |
| 10000                     | 65 x 105 | O         | 11.7                        | 49.1                             | 36.6                       | 14           | 10            | 16                          | PEH169PO5100Q--                 |
| 15000                     | 75 x 115 | U         | 16.0                        | 67.5                             | 51.1                       | 9            | 6             | 17                          | PEH169PU5150Q--                 |
| 22000                     | 75 x 145 | V         | 18.2                        | 70.6                             | 55.3                       | 7            | 5             | 17                          | PEH169PV5220Q--                 |
| 160 VDC (U <sub>R</sub> ) |          |           |                             |                                  |                            |              |               |                             |                                 |
| 330                       | 35 x 51  | A         | 1.4                         | 9.6                              | 6.6                        | 400          | 210           | 12                          | PEH169QA3330Q--                 |
| 470                       | 35 x 51  | A         | 1.7                         | 11.2                             | 7.6                        | 290          | 160           | 12                          | PEH169QA3470Q--                 |
| 680                       | 35 x 75  | C         | 2.1                         | 13.8                             | 10.3                       | 190          | 100           | 12                          | PEH169QC3680Q--                 |
| 1000                      | 35 x 95  | D         | 2.6                         | 15.7                             | 12.3                       | 130          | 70            | 12                          | PEH169QD4100Q--                 |
| 1500                      | 50 x 75  | H         | 3.8                         | 22.1                             | 16.2                       | 93           | 51            | 16                          | PEH169QH4150Q--                 |
| 2200                      | 50 x 95  | J         | 4.7                         | 25.4                             | 19.6                       | 64           | 36            | 16                          | PEH169QJ4220Q--                 |
| 3300                      | 65 x 105 | O         | 6.5                         | 32.0                             | 25.0                       | 45           | 26            | 16                          | PEH169QO4330Q--                 |
| 4700                      | 75 x 105 | T         | 8.7                         | 48.1                             | 36.9                       | 26           | 13            | 17                          | PEH169QT4470Q--                 |
| 6800                      | 75 x 115 | U         | 10.2                        | 50.9                             | 39.6                       | 19           | 10            | 17                          | PEH169QU4680Q--                 |
| 10000                     | 75 x 145 | V         | 11.9                        | 55.7                             | 43.2                       | 14           | 8             | 17                          | PEH169QV5100Q--                 |
| 200 VDC (U <sub>R</sub> ) |          |           |                             |                                  |                            |              |               |                             |                                 |
| 330                       | 35 x 51  | A         | 1.5                         | 8.1                              | 5.6                        | 480          | 300           | 12                          | PEH169RA3330Q--                 |
| 470                       | 35 x 60  | B         | 1.8                         | 9.7                              | 6.9                        | 340          | 210           | 12                          | PEH169RB3470Q--                 |
| 680                       | 35 x 95  | D         | 2.2                         | 10.0                             | 7.9                        | 250          | 160           | 12                          | PEH169RD3680Q--                 |
| 1000                      | 50 x 75  | H         | 3.3                         | 15.5                             | 11.4                       | 170          | 110           | 16                          | PEH169RH4100Q--                 |
| 1500                      | 50 x 95  | J         | 4.0                         | 18.0                             | 14.0                       | 120          | 76            | 16                          | PEH169RJ4150Q--                 |
| 2200                      | 50 x 105 | K         | 4.9                         | 23.1                             | 17.2                       | 76           | 49            | 16                          | PEH169RK4220Q--                 |
| 3300                      | 65 x 105 | O         | 6.7                         | 28.8                             | 22.0                       | 55           | 37            | 16                          | PEH169RO4330Q--                 |
| 4700                      | 75 x 105 | T         | 8.6                         | 41.6                             | 31.1                       | 33           | 20            | 17                          | PEH169RT4470Q--                 |
| 6800                      | 75 x 145 | V         | 10.1                        | 45.2                             | 35.2                       | 24           | 16            | 17                          | PEH169RV4680Q--                 |
| 250 VDC (U <sub>R</sub> ) |          |           |                             |                                  |                            |              |               |                             |                                 |
| 150                       | 35 x 51  | A         | 1.0                         | 7.0                              | 4.9                        | 730          | 370           | 12                          | PEH169SA3150Q--                 |
| 220                       | 35 x 51  | A         | 1.3                         | 8.9                              | 6.0                        | 500          | 250           | 12                          | PEH169SA3220Q--                 |
| 330                       | 35 x 60  | B         | 1.6                         | 11.0                             | 7.7                        | 320          | 160           | 12                          | PEH169SB3330Q--                 |
| 470                       | 35 x 75  | C         | 2.0                         | 11.7                             | 8.9                        | 240          | 130           | 12                          | PEH169SC3470Q--                 |
| 680                       | 50 x 75  | H         | 2.9                         | 17.2                             | 12.6                       | 170          | 90            | 16                          | PEH169SH3680Q--                 |
| 1000                      | 50 x 75  | H         | 3.5                         | 21.0                             | 15.5                       | 110          | 58            | 16                          | PEH169SH4100Q--                 |
| 1500                      | 50 x 105 | K         | 4.2                         | 24.1                             | 17.9                       | 79           | 43            | 16                          | PEH169SK4150Q--                 |
| 2200                      | 65 x 105 | O         | 5.8                         | 25.8                             | 23.6                       | 56           | 32            | 16                          | PEH169SO4220Q--                 |
| 3300                      | 75 x 105 | T         | 7.9                         | 41.5                             | 31.5                       | 36           | 20            | 17                          | PEH169ST4330Q--                 |
| 4700                      | 75 x 145 | V         | 9.2                         | 46.6                             | 37.8                       | 26           | 14            | 17                          | PEH169SV4470Q--                 |
| 6800                      | 75 x 220 | X         | 9.4                         | 42.6                             | 36.8                       | 19           | 12            | 17                          | PEH169SX4680Q--                 |
| 6800                      | 90 x 145 | Y         | 11.9                        | 53.5                             | 43.5                       | 20           | 12            | 16                          | PEH169SY4680Q--                 |

\* Maximum values.

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

ARTICLE TABLE PEH 169 (105°C)

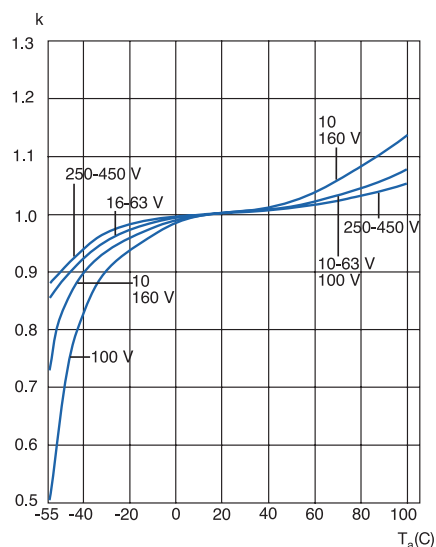
| $C_R$             | D x L    | Case code | $I_{RAC}^*$<br>105°C | $I_{RAC}^*$<br>50°C<br>** | $I_{RAC}^*$<br>40°C | ESR*<br>20°C         | ESR*<br>20°C          | $L_{ESL}$<br>Approx. | Article code                    |
|-------------------|----------|-----------|----------------------|---------------------------|---------------------|----------------------|-----------------------|----------------------|---------------------------------|
| $\mu F$           | mm       |           | 100 Hz<br>A          | 10 kHz<br>A               | 10 kHz<br>A         | 100 Hz<br>m $\Omega$ | 100 kHz<br>m $\Omega$ | nH                   | U2 = Plain can<br>B2 = Stud can |
| 350 VDC ( $U_R$ ) |          |           |                      |                           |                     |                      |                       |                      |                                 |
| 100               | 35 x 51  | A         | 1.0                  | 6.7                       | 4.6                 | 810                  | 410                   | 12                   | PEH169UA3100Q--                 |
| 150               | 35 x 51  | A         | 1.3                  | 8.8                       | 6.1                 | 520                  | 250                   | 12                   | PEH169UA3150Q--                 |
| 220               | 35 x 75  | C         | 1.5                  | 10.1                      | 7.3                 | 360                  | 180                   | 12                   | PEH169UC3220Q--                 |
| 330               | 35 x 95  | D         | 1.9                  | 11.8                      | 9.1                 | 250                  | 120                   | 12                   | PEH169UD3330Q--                 |
| 470               | 50 x 75  | H         | 2.7                  | 17.1                      | 12.3                | 180                  | 91                    | 16                   | PEH169UH3470Q--                 |
| 680               | 50 x 95  | J         | 3.3                  | 19.9                      | 14.8                | 120                  | 64                    | 16                   | PEH169UJ3680Q--                 |
| 1000              | 50 x 105 | K         | 4.1                  | 24.3                      | 18.0                | 82                   | 42                    | 16                   | PEH169UK4100Q--                 |
| 1500              | 65 x 105 | O         | 5.5                  | 30.6                      | 23.5                | 60                   | 33                    | 16                   | PEH169UO4150Q--                 |
| 2200              | 75 x 105 | T         | 7.5                  | 42.6                      | 32.6                | 39                   | 20                    | 17                   | PEH169UT4220Q--                 |
| 3300              | 75 x 145 | V         | 9.0                  | 44.1                      | 38.0                | 26                   | 14                    | 17                   | PEH169UV4330Q--                 |
| 4700              | 75 x 220 | X         | 9.4                  | 41.4                      | 35.9                | 22                   | 13                    | 17                   | PEH169UX4470Q--                 |
| 4700              | 90 x 145 | Y         | 11.6                 | 50.8                      | 41.7                | 23                   | 14                    | 16                   | PEH169UY4470Q--                 |

\* Maximum values

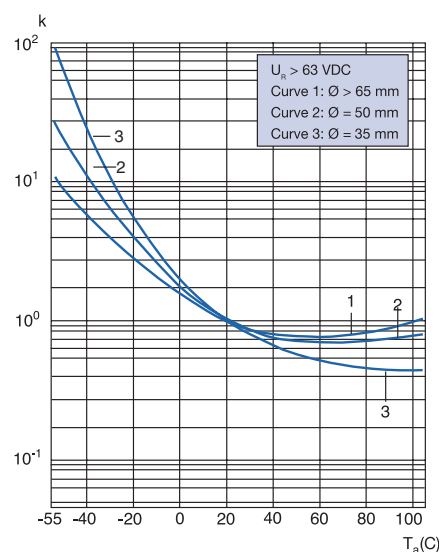
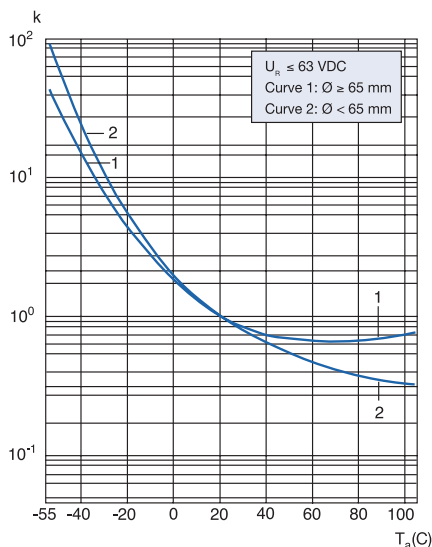
\*\* 2 m/s forced air, studmounted on 3°C/W aluminium chassis.

## 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.  $k = R_{ESR}(T_a)/R_{ESR}(20^\circ\text{C})$



## LEAKAGE CURRENT

Rated leakage current,  $I_{RL}$  ( $\mu\text{A}$ ).

Rated voltage,  $U_R$  (V).

Rated capacitance,  $C_R$  ( $\mu\text{F}$ ).  $I_{RL} = 0.003 \times C_R \times U_R + 4$

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

| D x L    | Case code | STUD MOUNTED                                |                                             |                                             |                                             | CLIP MOUNTED |           |
|----------|-----------|---------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|--------------|-----------|
|          |           | $R_{thhs} = 3^\circ\text{C/W}$<br>(0.5 m/s) | $R_{thhs} = 2^\circ\text{C/W}$<br>(0.5 m/s) | $R_{thhs} = 3^\circ\text{C/W}$<br>(2.0 m/s) | $R_{thhs} = 2^\circ\text{C/W}$<br>(2.0 m/s) | (0.5 m/s)    | (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  | $1 \times 10^{-6}$    |
| 60°C  | $1 \times 10^{-7}$    |

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 separately. 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:  $\geq 4000$  VDC.

PVC shrink sleeve only on request.

## ORDERING INFORMATION

Pos 1–20

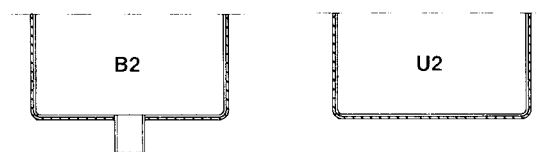
| P | E | H | 1 | 6 | 9 | K | U | 5 | 6  | 8  | 0  | Q  | B  | 2  |    |    |    |    |    |  |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|--|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |  |

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    |