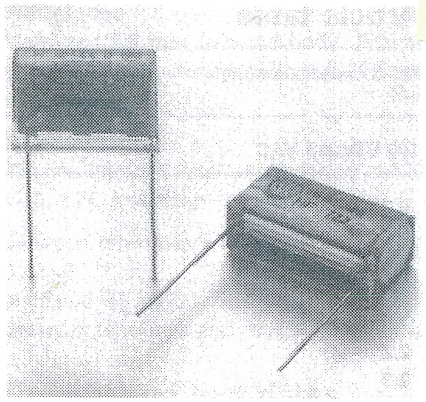
PHE 280

- Small dimensions
- Low dissipation factor
- Long life



Applications

For general purpose and industrial use in electronic equipment eg for coupling and decoupling applications.

Basic data

Rated voltage (U_R)	100 VDC 63 VAC (50 Hz)	250 VDC 160 VAC (50 Hz)	400 VDC 200 VAC (50 Hz)
Rated capacitance (C_R)	0.33–10 µF	0.1-4.7 µF	0.047-1.0 µF
Capacitance tolerance ($\Delta C/C_R$)	±20% for C_R <0.1 µF ±10% for C_R ≥0.1 µF		
Climatic category	55/100/56		
Rated temperature	+85°C		
Complies with IEC 384-2 Grade 1			

Basic design

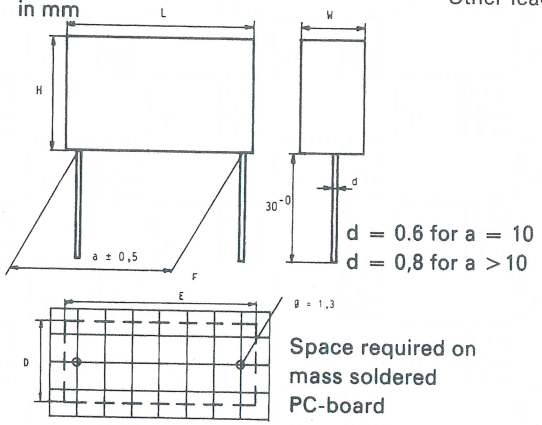
PHE 280 has PETP dielectric with aluminium. Encaupsulation is made under vacuum in self-extinguishing epoxy resin. (UI 94/V.0 quality) the embedded metal label provides an excellent humidity protection and small dimensions.

Mechanical data

Dimensions and packaging

Dimension Code	W_{max} (mm)	H_{max} (mm)	L_{max} (mm)	a (mm)	Weight (g)	Qty/box
B20	5.5	10.5	18	15	1.5	500
B17	7.0	12	18	15	2.4	400
B14	7.5	13.5	18	15	2.5	400
D10	7	13	26	22.5	2.8	250
D11	7.2	15.5	26	22.5	3.5	250
D12	8	16.5	26	22.5	3.9	200
D13	10	19	26	22.5	5.8	150
F12	9.3	14.5	31	27.5	4.9	1500
F28	10.1	17	31	27.5	6.7	1000
F10	10.5	19	31	27.5	7.5	1000
F23	13.5	22.5	31	27.5	12.1	800
F13	18	23	31	27.5	16	500

Dimensions in mm



Other lead lenghs can be offered on request

Ordering Information

Example
PHE 280, 2,2 µF 250 VDC/160 VAC
Article code number: PHE 280 HF7220K
On request special types are offered giving the relevant article code number.

Article table

Rated Capacitance (C^2) (µF)	Dimension Code	Article code number
100 VDC/63 VAC		
0.33	B20	PHE 280DB6330K
0.47	B20	PHE 280DB6470K
0.68	B17	PHE 280DB6680K
1.0	B14	PHE 280DB7100K
1.5	B10	PHE 280DD7150K
2.2	D12	PHE 280DD7220K
3.3	D13	PHE 280DD7330K
4.7	F10	PHE 280DF7470K
6.8	F23	PHE 280DF7680K
10.0	F13	PHE 280DF8100K
250 VDC/160 VAC		
0.10	B20	PHE 280HB6100K
0.15	B20	PHE 280HB6150K
0.22	B20	PHE 280HB6220K
0.33	B14	PHE 280HB6330K
0.47	D10	PHE 280HD6470K
0.68	D11	PHE 280HD6680K
1.0	D12	PHE 280HD7100K
1.5	F12	PHE 280HF7150K
2.2	F28	PHE 280HF7220K
3.3	F23	PHE 280HF7330K
4.7	F13	PHE 280HF7470K
400 VDC/200 VAC		
0.047	B20	PHE 280KB5470M
0.068	B20	PHE 280KB5680M
0.100	B17	PHE 280KB6100K
0.15	B14	PHE 280KB6150K
0.22	D11	PHE 280KD6220K
0.33	D12	PHE 280KD6330K
0.47	D13	PHE 280KD6470K
0.68	F10	PHE 280KF6680K
1.0	F23	PHE 280KF7100K

Other values within the range can be offered on request.

Technical data

See also "General Technical Information".

Rated voltage, U_R
according to article table

Category voltage, U_C
The category voltage ISO 85 × U_R at 100°C.

The max continous voltage for temperatures between +85°C and +100°C can be calculated with the following formula U = U_R [1−0.01 × (T-85)], where U_R is rated voltage and T the ambient temperature in °C.

Rated capacitance, C_R
according to article table

Capacitance tolerance $\Delta C/C_R$
±20% for C_R <0,1 µF (code M)
±10% for C_R ⩾ 0,1 µF (code K)

Tangent of the loss angle (tan δ, dissipation factor)

Tan δ (1 kHz) ⩽ 1% for C_R >1µF
Tan δ (1 kHz) ⩽ 0,8% for C_R ⩽ 1 µF
Tan δ (10 kHz) ⩽ 1,5%

Pulse durability
The capacitor can withstand an unlimited number of pulses with a maximum pulse steepness according to given values in table.

Pulse rise time for different sizes of capacitor leadspace

U_R VDC	Max dU/dt (V/µs) a=15[1)]	a=22.5	a=27.5
100	7	4	3
250	13	9	7
400	20	13	11

[1)] a is the leadspace, see mechanical data

Inductance
Measured 1.5 mm fron the body. Typical value 20 nH. Increases with 1.5 nH/mm wire length.

Insulation
The insulation resistance measured at 100 VDC, 23°C and after 60 seconds.

Between terminals ⩾ 30,000 MΩ for C ⩽ 0.33 µF
⩾ 10,000 ΩF for C ⩾ 0.33 µF
Between terminals and case ⩾ 30,000 MΩ

Quality and test datas

See "General Technical Information"

Climatic sequency
Requirements after test:
$\Delta C/C_R$ ⩽0.05
Δtan δ ⩽0.005 10 kHz C^R ⩽1 µF
⩽0.003 1 kHz C^R >1 µF
Insulation >50% of initial stated value

Endurance test DC
Requirements efter test:
$\Delta C/C_R$ ⩽0.05
Δtan δ ⩽0.003
Insulation ⩾30 000 MΩ for C_R ⩽0.33 µF
⩾10 000 ΩF for C_R >0.33 µF

Endurance test AC
Same requirements as for DC