PHE840E

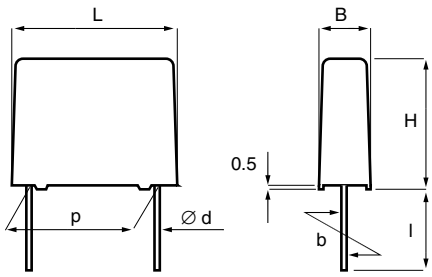
- **EMI suppressor, class X2, metallized polypropylene**
- **0.01 – 10 µF, 300 VAC, +105°C**

TYPICAL APPLICATIONS

For worldwide use as electromagnetic interference suppressor in all X2 and across-the-line applications.

CONSTRUCTION

Metallized polypropylene winding, encapsulated in self-extinguishing material meeting the requirements of UL 94 V–0.



P	d	std l	max l	b
10.0 ± 0.4	0.6	17	30	±0.4
15.0 ± 0.4	0.8	17	30	±0.4
22.5 ± 0.4	0.8	6	30	±0.4
27.5 ± 0.4	0.8	6	30	±0.4
37.5 ± 0.5	1.0	6	30	±0.7

Tolerance in lead length
< 30 mm $^{+0}_{-1}$ mm
≥ 30 mm $^{+5}_{-0}$ mm

TECHNICAL DATA

Rated voltage
300 VAC 50/60 Hz

Capacitance range
0.01 – 10 µF

Capacitance tolerance
± 20% standard, ± 10% option

Temperature range
–55 to +105°C

Climatic category
55/105/56/B

Approvals
ENEC, UL, CSA

Dissipation factor tanδ
Maximum values at +23°C

	C ≤ 0.1 µF	0.1µF < C ≤ 1 µF	C > 1 µF
1 kHz	0.1%	0.1%	0.1%
10 kHz	0.2%	0.4%	0.8%
100 kHz	0.6%	–	–

Test voltage between terminals
The 100% screening factory test is carried out at 2200 VDC. The voltage level is selected to meet the requirements in applicable equipment standards. All electrical characteristics are checked after the test.

Resonance frequency
Tabulated self-resonance frequencies f_0 refer to 5 mm lead length.

Insulation resistance
C ≤ 0.33 µF: ≥ 30 000 MΩ
C > 0.33 µF: ≥ 10 000 ΩF

In DC applications
Recommended voltage ≤ 760 VDC

DATA SHEET PHE840E

Specifications subject to change without notice.

ENVIRONMENTAL TEST DATA

Endurance	IEC 60384–14	1.25 x U_R VAC 50 Hz, once every hour increased to 1000 VAC for 0.1 s, 1000 h at upper rated temperature	
Vibration	IEC 60068–2–6 Test Fc	3 directions at 2 hours each, 10–55 Hz at 0.75 mm or 98 m/s²	No visible damage No open or short circuit
Bump	IEC 60068–2–29 Test Eb	1000 bumps at 390 m/s²	No visible damage No open or short circuit
Change of temperature	IEC 60068–2–14 Test Na	Upper and lower rated temperature 5 cycles	No visible damage
Active flammability	EN 132400		
Passive flammability	IEC 60384-14 (1993) EN 132400 UL1414	Enclosure material of UL94V–0 flammability class	
Humidity	IEC 60068-2-3 Test Ca	+40°C and 90 – 95% R.H.	56 days

ARTICLE TABLE

Capacitance µF	Max dimensions in mm B	H	L	p	Quantity per package Bulk pcs	Tray pcs	reel taped pcs	Weight g	f_0 MHz	Max dU/dt V/µs	Approvals ENEC	UL	CSA	Article code
LEAD SPACING 10 MM														
0.010	4.0	9.0	13.0	10.0	1000		900	0.7	11	100	√	√	√	PHE840 EA 5100 M A01R17
0.012	4.0	9.0	13.0	10.0	1000		900	0.7	10	100	√	√	√	PHE840 EA 5120 M A01R17
0.015	4.0	9.0	13.0	10.0	1000		900	0.7	9.4	100	√	√	√	PHE840 EA 5150 M A01R17
0.018	4.0	9.0	13.0	10.0	1000		900	0.7	8.9	100	√	√	√	PHE840 EA 5180 M A01R17
0.022	4.0	9.0	13.0	10.0	1000		900	0.7	8.6	100	√	√	√	PHE840 EA 5220 M A01R17
0.027	4.5	10.5	13.0	10.0	1000		800	0.9	8.1	100	√	√	√	PHE840 EA 5270 M A02R17
0.033	4.5	10.5	13.0	10.0	1000		800	0.9	7.6	100	√	√	√	PHE840 EA 5330 M A02R17
0.039	5.0	11.0	13.0	10.0	800		700	1.0	6.6	100	√	√	√	PHE840 EA 5390 M A03R17
0.047	5.0	11.0	13.0	10.0	800		700	1.0	6.1	100	√	√	√	PHE840 EA 5470 M A03R17
0.056	6.0	12.0	13.0	10.0	600		500	1.2	5.6	100	√	√	√	PHE840 EA 5560 M A04R17
0.068	6.0	12.0	13.0	10.0	600		500	1.2	5.0	100	√	√	√	PHE840 EA 5680 M A04R17
LEAD SPACING 15 MM														
0.033	5.5	10.5	18.0	15.0	800		600	1.4	5.9	100	√	√	√	PHE840 EB 5330 M B04R17
0.039	5.5	10.5	18.0	15.0	800		600	1.4	5.4	100	√	√	√	PHE840 EB 5390 M B04R17
0.047	5.5	10.5	18.0	15.0	800		600	1.4	5.0	100	√	√	√	PHE840 EB 5470 M B04R17
0.056	5.5	10.5	18.0	15.0	800		600	1.4	4.6	100	√	√	√	PHE840 EB 5560 M B04R17
0.068	5.5	10.5	18.0	15.0	800		600	1.4	4.2	100	√	√	√	PHE840 EB 5680 M B04R17
0.082	5.5	12.5	18.0	15.0	800		600	1.6	3.9	100	√	√	√	PHE840 EB 5820 M B05R17
0.10	5.5	12.5	18.0	15.0	800		600	1.6	3.7	100	√	√	√	PHE840 EB 6100 M B05R17
0.12	6.5	12.5	18.0	15.0	600		500	1.9	3.3	100	√	√	√	PHE840 EB 6120 M B10R17
0.15	6.5	12.5	18.0	15.0	600		500	1.9	2.8	100	√	√	√	PHE840 EB 6150 M B10R17
0.18	7.5	14.5	18.0	15.0	400		400	2.2	2.7	100	√	√	√	PHE840 EB 6180 M B06R17
0.22	7.5	14.5	18.0	15.0	400		400	2.2	2.6	100	√	√	√	PHE840 EX 6220 M B06R17
0.22	13.0	12.5	18.0	15.0	300		250	3.4	2.5	100	√	√	√	PHE840 EQ 6220 M B17R17
0.22	8.0	15.0	18.0	15.0	400		400	2.5	2.5	100	√	√	√	PHE840 EB 6220 M B12R17
0.27	8.5	16.5	18.0	15.0	400		400	2.9	2.3	100	√	√	√	PHE840 EB 6270 M B11R17
0.33	8.5	16.5	18.0	15.0	400		400	2.9	2.2	100	√	√	√	PHE840 EX 6330 M B11R17
0.33	13.0	12.5	18.0	15.0	300		250	3.4	2.2	100	√	√	√	PHE840 EH 6330 M B17R17
0.33	9.5	17.5	18.0	15.0	300		350	3.5	2.0	100	√	√	√	PHE840 EB 6330 M B14R17
0.39	11.0	19.0	18.0	15.0	250		300	4.4	1.9	100	√	√	√	PHE840 EB 6390 M B16R17
0.47	11.0	19.0	18.0	15.0	250		300	4.4	1.8	100	√	√	√	PHE840 EB 6470 M B16R17
LEAD SPACING 22.5 MM														
0.22	6.5	14.5	26.0	22.5		234		2.7	2.1	100	√	√	√	PHE840 ED 6220 M D13R06L2
0.27	7.0	16.5	26.0	22.5		216		3.2	1.9	100	√	√	√	PHE840 ED 6270 M D17R06L2
0.33	7.0	16.5	26.0	22.5		216		3.2	1.8	100	√	√	√	PHE840 ED 6330 M D17R06L2
0.39	8.0	16.0	26.0	22.5		186		3.8	1.7	100	√	√	√	PHE840 ED 6390 M D14R06L2
0.47	8.0	16.0	26.0	22.5		186		3.8	1.6	100	√	√	√	PHE840 EY 6470 M D14R06L2
0.47	9.0	18.5	26.0	22.5		168		5.0	1.5	100	√	√	√	PHE840 ED 6470 M D15R06L2
0.56	9.0	18.5	26.0	22.5		168		5.0	1.4	100	√	√	√	PHE840 ED 6560 M D15R06L2
0.68	9.0	18.5	26.0	22.5		168		5.0	1.3	100	√	√	√	PHE840 EY 6680 M D15R06L2
0.68	10.5	19.0	26.0	22.5		264		5.8	1.2	100	√	√	√	PHE840 ED 6680 M D18R06L2
0.82	11.0	21.5	26.0	22.5		253		6.6	1.1	100	√	√	√	PHE840 ED 6820 M D16R06L2
1.0	11.0	21.5	26.0	22.5		253		6.6	1.1	100	√	√	√	PHE840 EY 7100 M D16R06L2
1.0	13.5	23.0	26.0	22.5		209		8.2	1.0	100	√	√	√	PHE840 ED 7100 M D20R06L2
1.2	15.5	24.5	26.0	22.5		176		10	0.90	100	√	√	√	PHE840 ED 7120 M D19R06L2
1.5	15.5	24.5	26.0	22.5		176		10	0.85	100	√	√	√	PHE840 ED 7150 M D19R06L2
LEAD SPACING 27.5 MM														
0.82	10.5	20.5	31.5	27.5		216		8.0	1.0	100	√	√	√	PHE840 EF 6820 M F11R06L2
1.0	10.5	20.5	31.5	27.5		216		8.0	1.0	100	√	√	√	PHE840 EZ 7100 M F11R06L2
1.0	11.5	22.5	31.5	27.5		198		9.0	0.95	100	√	√	√	PHE840 EF 7100 M F12R06L2
1.0	21.0	12.5	31.5	27.5		108		9.0	0.95	100	√	√	√	PHE840 ET 7100 M F17R06L2
1.2	13.5	23.0	31.5	27.5		171		11	0.82	100	√	√	√	PHE840 EF 7120 M F03R06L2
1.5	14.5	24.5	31.5	27.5		153		14	0.73	100	√	√	√	PHE840 EF 7150 M F13R06L2
1.8	17.5	28.0	31.5	27.5		126		17	0.65	100	√	√	√	PHE840 EF 7180 M F14R06L2

ARTICLE TABLE

Capacitance µF	Max dimensions in mm B	H	L	p	Quantity per package Bulk pcs	Tray pcs	reel taped pcs	Weight g	f_0 MHz	Max dU/dt V/µs	Approvals ENEC	UL	CSA	Article code
LEAD SPACING 27.5 MM														
2.2	17.5	28.0	31.5	27.5		126		17	0.64	100	√	√	√	PHE840 EZ 7220 M F14R06L2
2.2	19.0	29.0	31.5	27.5		117		20	0.62	100	√	√	√	PHE840 EF 7220 M F15R06L2
2.2	27.5	16.0	31.5	27.5		81		17	0.62	100	√	√	√	PHE840 ET 7220 M F19R06L2
2.7	19.0	29.0	31.5	27.5		117		20	0.58	100	√	√	√	PHE840 EF 7270 M F15R06L2
3.3	19.0	29.0	31.5	27.5		117		20	0.54	100	√	√	√	PHE840 EZ 7330 M F15R06L2
3.3	21.0	30.0	31.5	27.5		108		23	0.50	100	√	√	√	PHE840 EF 7330 M F16R06L2
3.3	31.0	18.5	31.5	27.5		72		20	0.50	100	√	√	√	PHE840 ET 7330 M F18R06L2
LEAD SPACING 37.5 MM														
1.8	13.0	24.0	41.0	37.5		140		14	0.60	100	√	√	√	PHE840 ER 7180 M R05R06L2
2.2	13.0	24.0	41.0	37.5		140		14	0.58	100	√	√	√	PHE840 ER 7220 M R05R06L2
2.7	15.0	26.0	41.0	37.5		119		17	0.53	100	√	√	√	PHE840 ER 7270 M R04R06L2
3.3	15.0	26.0	41.0	37.5		119		17	0.49	100	√	√	√	PHE840 ER 7330 M R04R06L2
3.9	16.5	32.0	41.0	37.5		105		23	0.46	100	√	√	√	PHE840 ER 7390 M R02R06L2
4.7	19.0	36.0	41.0	37.5		91		28	0.44	100	√	√	√	PHE840 ER 7470 M R03R06L2
6.8	21.0	38.0	41.0	37.5		84		34	0.41	100	√	√	√	PHE840 ER 7560 M R06R06L2
6.8	21.0	38.0	41.0	37.5		84		34	0.39	100	√	√	√	PHE840 ER 7680 M R06R06L2
8.2	28.0	43.0	41.0	37.5		63		53	0.30	100	√	√	√	PHE840 ER 7820 M R08R06L2
10	28.0	43.0	41.0	37.5		63		53	0.26	100	√	√	√	PHE840 ER 8100 M R08R06L2

APPROVALS/REFERENCE DOCUMENTS

Certification Body	Specification	Approval reference
ENEC	EN 132400	SE/0140-5
UL	UL 1283 UL 1414	E100117 E73869 (U_R = 250 VAC)
cUL recognition	C 22.2 No. 8 C 22.2 No. 1	E100117 E73869

MARKING

- RIFA
- RIFA article code
- Rated capacitance
- Capacitance tolerance code
- Rated voltage
- X2
- Approval marks
- Manufacturing date code
- IEC climatic category
- Passive flammability class

ORDERING INFORMATION

The article code for the standard part is given in the article table.
For other options, see page 21 in the Film Capacitors 2003 catalogue.

PACKING

The box dimensions for bulk packaging are 245 x 145 x 80 mm. Quantity/package as per article table.

Reels with taped capacitors are packed 10 in a box with dimension 370 x 370 x 560 mm. Quantity/reel according to article table. The standard quantity/reel is for 360 mm reel. If 500 mm reel is required, it must be specified when ordering and the quantity is 2 x the given quantity.