

PHE840M

- EMI suppressor, class X2, metallized polypropylene
- 0.01 – 10.0 μF , 275/280 VAC, +105°C
- New, small dimensions
- Replaces PHE843

TYPICAL APPLICATIONS

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

CONSTRUCTION

Metallized polypropylene film encapsulated with selfextinguishing epoxy resin in a box of material recognized to UL 94 V-0.

TECHNICAL DATA

Rated voltage

275 VAC 50/60 Hz
280 VAC 50/60 Hz USA, Canada

Capacitance range

0.01 – 10.0 μF

Capacitance tolerance

$\pm 20\%$ standard, $\pm 10\%$ option, $\pm 5\%$ on request

Temperature range

-55 to +105°C

Climatic category

55/105/56/B

Approvals

ENEC, UL, CSA

Dissipation factor

Maximum values at +23°C

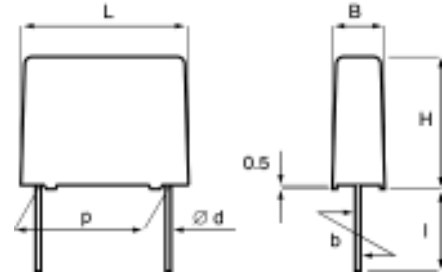
	$C \leq 0.1 \mu\text{F}$	$0.1 \mu\text{F} < C \leq 1 \mu\text{F}$	$C > 1 \mu\text{F}$
1 kHz	0.1%	0.1%	0.1%
10 kHz	0.2%	0.4%	0.8%
100 kHz	0.6%	–	–

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.

Insulation resistance

$C \leq 0.33 \mu\text{F}$: $\geq 30\,000 \text{ M}\Omega$
 $C > 0.33 \mu\text{F}$: $\geq 10\,000 \text{ s}$



p	d	std l	max l	b
7.5 ± 0.4	0.6	17	20	± 0.4
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

$< 30 \text{ mm}$ $+0$
 -1 mm

$\geq 30 \text{ mm}$ $+5$
 -0 mm

MARKING

- Capacitor class and sub-class
- Capacitance code acc. to IEC 62 3.3
- Article code, type
- Climate category acc. to IEC 68 incl. passive flammability
- Date code acc. to IEC 62 5.1
- Approval marks

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/s ²	No visible damage No open or short circuit
Bump	IEC 60068-2-29 Test Eb	1000 bumps at 390 m/s ²	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				Bulk pcs	Tray pcs	reel taped pcs	Weight g	f ₀ MHz	Max dU/dt V/μs	Approvals			Article code 1 st block
	B	H	L	p							ENE C	UL	CSA	
LEAD SPACING 7.5 MM														
0.010	4.0	8.0	10.5	7.5	1000		1700	0.5	14	100	✓	✓	✓	PHE840MK5100MK01
0.012	4.0	8.0	10.5	7.5	1000		1700	0.5	13	100	✓	✓	✓	PHE840MK5120MK01
0.015	4.0	8.0	10.5	7.5	1000		1700	0.5	12	100	✓	✓	✓	PHE840MK5150MK01
0.018	5.0	11.0	10.5	7.5	1000		1300	0.8	11	100	✓	✓	✓	PHE840MK5180MK03
0.022	5.0	11.0	10.5	7.5	1000		1300	0.8	10	100	✓	✓	✓	PHE840MK5220MK03
0.027	5.0	11.0	10.5	7.5	1000		1300	0.8	9.5	100	✓	✓	✓	PHE840MK5270MK03
0.033	5.0	11.0	10.5	7.5	1000		1300	0.8	8.8	100	✓	✓	✓	PHE840MK5330MK03
0.039	5.0	11.0	10.5	7.5	1000		1300	0.8	8.3	100	✓	✓	✓	PHE840MK5390MK03
0.047	6.0	12.0	10.5	7.5	1000		1000	1.0	7.5	100	✓	✓	✓	PHE840MK5470MK04
LEAD SPACING 10 MM														
0.022	4.0	9.0	13.0	10.0	1000		900	0.7	8.5	100	✓	✓	✓	PHE840MA5220MA01
0.027	4.0	9.0	13.0	10.0	1000		900	0.7	8.0	100	✓	✓	✓	PHE840MA5270MA01
0.033	4.0	9.0	13.0	10.0	1000		900	0.7	7.6	100	✓	✓	✓	PHE840MA5330MA01
0.039	4.5	10.5	13.0	10.0	1000		800	0.9	6.7	100	✓	✓	✓	PHE840MA5390MA02
0.047	4.5	10.5	13.0	10.0	1000		800	0.9	5.9	100	✓	✓	✓	PHE840MA5470MA02
0.056	5.0	11.0	13.0	10.0	800		700	1.0	5.5	100	✓	✓	✓	PHE840MA5560MA03
0.068	5.0	11.0	13.0	10.0	800		700	1.0	4.9	100	✓	✓	✓	PHE840MA5680MA03
0.082	6.0	12.0	13.0	10.0	600		500	1.2	4.4	100	✓	✓	✓	PHE840MA5820MA04
0.10	9.5	7.5	13.0	10.0	600		350	1.2	4.0	100	✓	✓	✓	PHE840MP6100MA05
0.10	6.0	12.0	13.0	10.0	600		500	1.2	4.0	100	✓	✓	✓	PHE840MA6100MA04
LEAD SPACING 15 MM														
0.047	5.5	10.5	18.0	15.0	800		600	1.4	5.0	100	✓	✓	✓	PHE840MB5470MB04
0.056	5.5	10.5	18.0	15.0	800		600	1.4	4.6	100	✓	✓	✓	PHE840MB5560MB04
0.068	5.5	10.5	18.0	15.0	800		600	1.4	4.2	100	✓	✓	✓	PHE840MB5680MB04
0.082	5.5	12.5	18.0	15.0	800		600	1.6	3.9	100	✓	✓	✓	PHE840MB5820MB05
0.10	5.5	12.5	18.0	15.0	800		600	1.6	3.7	100	✓	✓	✓	PHE840MB6100MB05
0.12	6.5	12.5	18.0	15.0	600		500	1.9	3.3	100	✓	✓	✓	PHE840MB6120MB10
0.15	6.5	12.5	18.0	15.0	600		500	1.9	2.8	100	✓	✓	✓	PHE840MB6150MB10
0.18	7.5	14.5	18.0	15.0	400		400	2.2	2.7	100	✓	✓	✓	PHE840MB6180MB06
0.22	7.5	14.5	18.0	15.0	400		400	2.2	2.6	100	✓	✓	✓	PHE840MX6220MB06 *
0.22	13.0	12.5	18.0	15.0	300		250	3.4	2.5	100	✓	✓	✓	PHE840MQ6220MB17
0.22	8.0	15.0	18.0	15.0	400		400	2.5	2.5	100	✓	✓	✓	PHE840MB6220MB12
0.27	8.5	16.0	18.0	15.0	400		400	2.9	2.3	100	✓	✓	✓	PHE840MB6270MB11
0.33	8.5	16.0	18.0	15.0	400		400	2.9	2.2	100	✓	✓	✓	PHE840MX6330MB11 *
0.33	13.0	12.5	18.0	15.0	300		250	3.4	2.2	100	✓	✓	✓	PHE840MH6330MB17 *
0.33	9.5	17.5	18.0	15.0	300		350	3.5	2.0	100	✓	✓	✓	PHE840MB6330MB14
0.39	11.0	19.0	18.0	15.0	250		300	4.4	1.9	100	✓	✓	✓	PHE840MB6390MB16
0.47	11.0	19.0	18.0	15.0	250		300	4.4	1.8	100	✓	✓	✓	PHE840MB6470MB16
LEAD SPACING 22.5 MM														
0.22	6.5	14.5	26.0	22.5		234		2.7	2.1	100	✓	✓	✓	PHE840MD6220MD13
0.27	7.0	16.5	26.0	22.5		216		3.2	1.9	100	✓	✓	✓	PHE840MD6270MD17
0.33	7.0	16.5	26.0	22.5		216		3.2	1.8	100	✓	✓	✓	PHE840MD6330MD17
0.39	8.0	16.0	26.0	22.5		186		3.8	1.7	100	✓	✓	✓	PHE840MD6390MD14
0.47	8.0	16.0	26.0	22.5		186		3.8	1.6	100	✓	✓	✓	PHE840MY6470MD14 *
0.47	9.0	18.5	26.0	22.5		168		5.0	1.5	100	✓	✓	✓	PHE840MD6470MD15
0.56	9.0	18.5	26.0	22.5		168		5.0	1.4	100	✓	✓	✓	PHE840MD6560MD15
0.68	9.0	18.5	26.0	22.5		168		5.0	1.3	100	✓	✓	✓	PHE840MY6680MD15 *
0.68	10.5	19.0	26.0	22.5		264		5.8	1.2	100	✓	✓	✓	PHE840MD6680MD18
0.82	11.0	21.5	26.0	22.5		253		6.6	1.1	100	✓	✓	✓	PHE840MD6820MD16
1.0	11.0	21.5	26.0	22.5		253		6.6	1.1	100	✓	✓	✓	PHE840MY7100MD16 *
1.0	13.5	23.0	26.0	22.5		209		8.2	1.0	100	✓	✓	✓	PHE840MD7100MD20
1.2	15.5	24.5	26.0	22.5		176		10.0	0.90	100	✓	✓	✓	PHE840MD7120MD19
1.5	15.5	24.5	26.0	22.5		176		10.0	0.85	100	✓	✓	✓	PHE840MD7150MD19

* Only $\pm 20\%$ tolerance

ARTICLE TABLE

Capacitance μF	Max dimensions in mm				p	Bulk pcs	Tray pcs	reel taped pcs	Weight g	f ₀ MHz	Max dU/dt V/μs	Approvals			Article code 1 st block
	B	H	L	ENECEC ULCSA											
LEAD SPACING 27.5 MM															
0.82	10.5	20.5	31.5	27.5		216			8.0	1.0	100	✓	✓	✓	PHE840MF6820MF11
1.0	10.5	20.5	31.5	27.5		216			8.0	1.0	100	✓	✓	✓	PHE840MZ7100MF11 *
1.0	11.5	22.5	31.5	27.5		198			9.1	0.95	100	✓	✓	✓	PHE840MF7100MF12
1.2	13.5	23.0	31.5	27.5		171			10.8	0.82	100	✓	✓	✓	PHE840MF7120MF03
1.5	14.5	24.5	31.5	27.5		153			14.5	0.73	100	✓	✓	✓	PHE840MF7150MF13
1.8	17.5	28.0	31.5	27.5		126			17.0	0.65	100	✓	✓	✓	PHE840MF7180MF14
2.2	17.5	28.0	31.5	27.5		126			17.0	0.64	100	✓	✓	✓	PHE840MZ7220MF14 *
2.2	19.0	29.0	31.5	27.5		117			19.5	0.62	100	✓	✓	✓	PHE840MF7220MF15
2.7	19.0	29.0	31.5	27.5		117			19.5	0.58	100	✓	✓	✓	PHE840MF7270MF15
3.3	19.0	29.0	31.5	27.5		117			19.5	0.54	100	✓	✓	✓	PHE840MZ7330MF15 *
3.3	21.0	30.0	31.5	27.5		108			22.6	0.50	100	✓	✓	✓	PHE840MF7330MF16
3.3	31.0	18.5	31.5	27.5		72			20.0	0.50	100	✓	✓	✓	PHE840MT7330MF18

LEAD SPACING 37.5 MM

1.8	13.0	24.0	41.0	37.5			140		14.0	0.60	100	✓	✓	✓	PHE840MR7180MR05
2.2	13.0	24.0	41.0	37.5			140		14.0	0.58	100	✓	✓	✓	PHE840MR7220MR05
2.7	15.0	26.0	41.0	37.5			119		17.0	0.53	100	✓	✓	✓	PHE840MR7270MR04
3.3	15.0	26.0	41.0	37.5			119		17.0	0.49	100	✓	✓	✓	PHE840MR7330MR04
3.9	16.5	32.0	41.0	37.5			105		23.0	0.46	100	✓	✓	✓	PHE840MR7390MR02
4.7	19.0	36.0	41.0	37.5			91		28.5	0.44	100	✓	✓	✓	PHE840MR7470MR03
5.6	21.0	38.0	41.0	37.5			84		34.4	0.41	100	✓	✓	✓	PHE840MR7560MR06
6.8	21.0	38.0	41.0	37.5			84		34.4	0.39	100	✓	✓	✓	PHE840MR7680MR06
8.2	28.0	43.0	41.0	37.5			63		53.0	0.30	100	✓	✓	✓	PHE840MR7820MR08
10.0	28.0	43.0	41.0	37.5			63		53.0	0.26	100	✓	✓	✓	PHE840MR8100MR08

* Only $\pm 20\%$ tolerance

APPROVALS/REFERENCE DOCUMENTS

Country	Specification	Approval reference
ENEC UL = USA	EN 132400	SE/0140-4
	UL 1283	E100117
	($U_R = 280 \text{ VAC}$)	
CSA = Canada (cUL recognition)	UL 1414	E73869
	($U_R = 250 \text{ VAC}$)	
	C 22.2 No. 8	E100117
	($U_R = 280 \text{ VAC}$)	
	C 22.2 No. 1	E73869
	($U_R = 250 \text{ VAC}$)	

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

Article code

1st block

See article table
Pos. 13 Capacitance tolerance code:
M = $\pm 20\%$ standard
K = $\pm 10\%$ option
J = $\pm 5\%$ on request
Pos. 14–16, box size code

2nd block

If not standard lead length,
add R06 – R30 in pos. 17–19.
For reel taped, add 17T0 or 17T1
in pos. 17–20.
For packing on trays (6 mm lead
length), add L2 in pos. 20–21.

P H E 8 4 0 M B 5 5 6 0 M B 0 4 R 0 6

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

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.