

PHE840

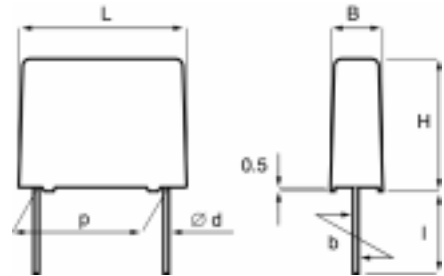
- EMI suppressor, class X2, metallized polypropylene
- 0.01 – 4.7 μF , 275 VAC, +100°C
- New, small dimensions

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.



TECHNICAL DATA

Rated voltage	275 VAC 50/60 Hz			
Capacitance range	0.01 – 4.7 μF			
Capacitance tolerance	$\pm 20\%$ standard, $\pm 10\%$ option			
Temperature range	-40 to +100°C			
Climatic category	40/100/56/C			
Approvals	S, VDE, UL, CSA			
Dissipation factor	Maximum values at +23°C			
		$C \leq 0.1 \mu\text{F}$	$0.1 \mu\text{F} < C \leq 0.47 \mu\text{F}$	$C > 0.47 \mu\text{F}$
	1 kHz	0.1%	0.1%	0.1%
	10 kHz	0.1%	0.2%	0.5%
	100 kHz	0.6%	0.9%	-

p	d	std l	max l	b
10.0 \pm 0.4	0.6	17	30	\pm 0.4
15.0 \pm 0.4	0.8	17	30	\pm 0.4
22.5 \pm 0.4	0.8	6	30	\pm 0.4
27.5 \pm 0.4	0.8	6	30	\pm 0.4
37.5 \pm 0.4	1.0	6	30	\pm 0.4

Tolerance in lead length
 $< 30 \text{ mm}$ $\begin{matrix} +0 \\ -1 \end{matrix} \text{ mm}$
 $\geq 30 \text{ mm}$ $\begin{matrix} +5 \\ -0 \end{matrix} \text{ mm}$

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

ENVIRONMENTAL TEST DATA

Endurance	IEC384-14	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	IEC68-2-6 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	IEC68-2-29 Test Eb	1000 bumps at 390 m/s ²	No visible damage No open or short circuit
Change of temperature	IEC68-2-14 Test Na	Upper and lower rated temperature 5 cycles	No visible damage
Active flammability	EN 132400		
Passive flammability	IEC384-14 (1993) EN 132400 UL1414	Enclosure material of UL94V-0 flammability class	
Humidity	IEC 68-2-3 Test Ca	+40°C and 90 – 95% R.H.	56 days

ARTICLE TABLE

Capacitance μF	Max dimensions in mm			p	Quantity per package			Weight g	f_0 MHz	Max dU/dt V/ μs	Approvals				Article code 1 st block
	B	H	L		Bulk pcs	Tray pcs	reel taped pcs				S	VDE	UL	CSA	
LEAD SPACING 10 MM															
0.010	4.0	9.0	13.0	10.0	1000		900	0.7	11	100	√	√	√	√	PHE840MA5100M
0.012	4.0	9.0	13.0	10.0	1000		900	0.7	10	100	√	√	√	√	PHE840MA5120M
0.015	4.0	9.0	13.0	10.0	1000		900	0.7	9.4	100	√	√	√	√	PHE840MA5150M
0.018	4.5	10.5	13.0	10.0	1000		800	0.9	8.7	100	√	√	√	√	PHE840MA5180M
0.022	4.5	10.5	13.0	10.0	1000		800	0.9	8.1	100	√	√	√	√	PHE840MA5220M
0.027	5.0	11.0	13.0	10.0	800		700	1.0	7.5	100	√	√	√	√	PHE840MA5270M
0.033	5.0	11.0	13.0	10.0	800		700	1.0	6.9	100	√	√	√	√	PHE840MA5330M
0.039	6.0	12.0	13.0	10.0	600		500	1.2	6.5	100	√	√	√	√	PHE840MA5390M
0.047	6.0	12.0	13.0	10.0	600		500	1.2	6.0	100	√	√	√	√	PHE840MA5470M
LEAD SPACING 15 MM															
0.010	5.5	10.5	18.0	15.0	500		600	1.4	10	100	√	√	√	√	PHE840MB5100M
0.012	5.5	10.5	18.0	15.0	500		600	1.4	9.7	100	√	√	√	√	PHE840MB5120M
0.015	5.5	10.5	18.0	15.0	500		600	1.4	8.7	100	√	√	√	√	PHE840MB5150M
0.018	5.5	10.5	18.0	15.0	500		600	1.4	7.9	100	√	√	√	√	PHE840MB5180M
0.022	5.5	10.5	18.0	15.0	500		600	1.4	7.2	100	√	√	√	√	PHE840MB5220M
0.027	5.5	10.5	18.0	15.0	500		600	1.4	6.5	100	√	√	√	√	PHE840MB5270M
0.033	5.5	10.5	18.0	15.0	500		600	1.4	5.9	100	√	√	√	√	PHE840MB5330M
0.039	5.5	10.5	18.0	15.0	500		600	1.4	5.4	100	√	√	√	√	PHE840MB5390M
0.047	5.5	10.5	18.0	15.0	500		600	1.4	5.0	100	√	√	√	√	PHE840MB5470M
0.056	5.5	12.5	18.0	15.0	500		600	1.6	4.6	100	√	√	√	√	PHE840MB5560M
0.068	5.5	12.5	18.0	15.0	500		600	1.6	4.2	100	√	√	√	√	PHE840MB5680M
0.082	6.5	12.5	18.0	15.0	500		500	1.9	3.8	100	√	√	√	√	PHE840MB5820M
0.10	5.5	12.5	18.0	15.0	500		600	1.6	3.7	100	√	√	√	√	PHE840MX6100M *
0.10	6.0	12.0	18.0	15.0	500		500	1.7	3.5	100	√	√	√	√	PHE840MB6100M
0.12	7.5	14.5	18.0	15.0	500		400	2.2	3.2	100	√	√	√	√	PHE840MB6120M
0.15	8.0	15.0	18.0	15.0	500		400	2.5	2.8	100	√	√	√	√	PHE840MB6150M
0.18	8.5	16.0	18.0	15.0	250		400	2.9	2.6	100	√	√	√	√	PHE840MB6180M
0.22	8.5	16.0	18.0	15.0	250		400	2.9	2.5	100	√	√	√	√	PHE840MX6220M *
0.22	9.5	17.5	18.0	15.0	250		350	3.5	2.4	100	√	√	√	√	PHE840MB6220M
0.27	9.5	17.5	18.0	15.0	250		350	3.5	2.1	100	√	√	√	√	PHE840MB6270M
0.33	9.5	17.5	18.0	15.0	250		350	3.5	2.0	100	√	√	√	√	PHE840MX6330M *
LEAD SPACING 22.5 MM															
0.10	6.5	14.5	26.0	22.5		234		2.7	2.7	100	√	√	√	√	PHE840MD6100M
0.12	6.5	14.5	26.0	22.5		234		2.7	2.6	100	√	√	√	√	PHE840MD6120M
0.15	6.5	14.5	26.0	22.5		234		2.7	2.5	100	√	√	√	√	PHE840MD6150M
0.18	6.5	14.5	26.0	22.5		234		2.7	2.3	100	√	√	√	√	PHE840MD6180M
0.22	7.0	16.5	26.0	22.5		216		3.2	2.2	100	√	√	√	√	PHE840MD6220M
0.27	8.0	16.0	26.0	22.5		186		3.8	2.0	100	√	√	√	√	PHE840MD6270M
0.33	8.0	16.0	26.0	22.5		186		3.8	1.9	100	√	√	√	√	PHE840MY6330M *
0.33	9.0	18.5	26.0	22.5		168		5.0	1.7	100	√	√	√	√	PHE840MD6330M
0.39	9.0	18.5	26.0	22.5		168		5.0	1.6	100	√	√	√	√	PHE840MD6390M
0.47	9.0	18.5	26.0	22.5		168		5.0	1.5	100	√	√	√	√	PHE840MY6470M *
0.47	10.5	19.0	26.0	22.5		144		5.8	1.4	100	√	√	√	√	PHE840MD6470M
0.56	11.0	21.5	26.0	22.5		138		6.6	1.3	100	√	√	√	√	PHE840MD6560M
0.68	11.0	21.5	26.0	22.5		138		6.6	1.2	100	√	√	√	√	PHE840MY6680M *
0.82	15.5	24.5	26.0	22.5		96		10.6	1.1	100	√	√	√	√	PHE840MD6820M
1.0	15.5	24.5	26.0	22.5		96		10.0	1.0	100	√	√	√	√	PHE840MD7100M
LEAD SPACING 27.5 MM															
0.47	10.5	20.5	31.5	27.5		216		8.0	1.3	100	√	√	√	√	PHE840MF6470M
0.56	10.5	20.5	31.5	27.5		216		8.0	1.2	100	√	√	√	√	PHE840MF6560M
0.68	10.5	20.5	31.5	27.5		216		8.0	1.1	100	√	√	√	√	PHE840MF6680M
0.82	11.5	22.5	31.5	27.5		198		9.1	1.0	100	√	√	√	√	PHE840MF6820M
1.0	11.5	22.5	31.5	27.5		198		9.1	1.0	100	√	√	√	√	PHE840MZ7100M *
1.0	13.5	23.0	31.5	27.5		171		10.8	0.94	100	√	√	√	√	PHE840MF7100M
1.2	14.5	24.5	31.5	27.5		153		14.5	0.87	100	√	√	√	√	PHE840MF7120M
1.5	17.5	28.0	31.5	27.5		126		17.0	0.78	100	√	√	√	√	PHE840MF7150M
1.8	19.0	29.0	31.5	27.5		117		19.5	0.72	100	√	√	√	√	PHE840MF7180M
2.2	19.0	29.0	31.5	27.5		117		19.5	0.70	100	√	√	√	√	PHE840MZ7220M *
2.2	21.0	30.0	31.5	27.5		108		22.6	0.66	100	√	√	√	√	PHE840MF7220M

ARTICLE TABLE

Capacitance µF	Max dimensions in mm			p	Quantity per package			Weight g	f ₀ MHz	Max dU/dt V/µs	Approvals				Article code 1 st block
	B	H	L		Bulk pcs	Tray pcs	reel taped pcs				S	VDE	UL	CSA	
LEAD SPACING 37.5 MM															
1.0	13.0	24.0	41.0	37.5		140	14.0	0.93	100	√	√	√	√	PHE840MR7100M	
1.2	13.0	24.0	41.0	37.5		140	14.0	0.84	100	√	√	√	√	PHE840MR7120M	
1.5	13.0	24.0	41.0	37.5		140	14.0	0.74	100	√	√	√	√	PHE840MR7150M	
1.8	15.0	26.0	41.0	37.5		119	17.0	0.67	100	√	√	√	√	PHE840MR7180M	
2.2	15.0	26.0	41.0	37.5		119	17.0	0.60	100	√	√	√	√	PHE840MR7220M	
2.7	16.5	32.0	41.0	37.5		105	23.0	0.54	100	√	√	√	√	PHE840MR7270M	
3.3	19.0	36.0	41.0	37.5		91	28.5	0.48	100	√	√	√	√	PHE840MR7330M	
3.9	19.0	36.0	41.0	37.5		91	28.5	0.44	100	√	√	√	√	PHE840MR7390M	
4.7	21.0	38.0	41.0	37.5		84	34.4	0.39	100	√	√	√	√	PHE840MR7470M	

* Only ±20 %

APPROVALS/REFERENCE DOCUMENTS

Country	Specification	Approval reference
S = Sweden	EN 132400	9837223-01
VDE = Germany	EN 132400	115119
UL = USA	UL 1283 (U _R =280 VAC)	E100117
	UL 1414 (U _R = 250 VAC)	E73869
CSA = Canada (cUL recognition)	C 22.2 No. 8-M1986 (U _R =280 VAC)	E100117
	C 22.2 No. 1-M90 (U _R =250 VAC)	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

Article code	
1st block	2nd block
See article table Pos. 13 Capacitance tolerance code: M = ± 20% standard K = ± 10% option	If not standard lead length, add R06 – R50 in pos. 14–16). For reel taped, add 17T0 or 17T1 in pos. 14–15. For packing on trays (6 mm lead length), add L2 in pos. 17–18.
P H E 8 4 0 M B 5 3 3 0 M	R 0 6
1 2 3 4 5 6 7 8 9 10 11 12 13	14 15 16 17 18 19 20

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.