

# PHE820

- EMI suppressor, class X2, metallized polyester
- 0.01 – 2.2  $\mu\text{F}$ , 275/300 VAC, +100°C

## TYPICAL APPLICATIONS

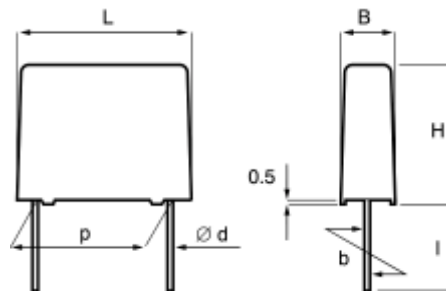
The capacitors are intended for use as Interference suppressor in X2 and across-the-line applications.

## CONSTRUCTION

Series winding of metallized polyester, encapsulated in self-extinguishing material meeting the requirements of UL 94V-0.

## TECHNICAL DATA

	PHE820 M	PHE820 E
Rated voltage	275 VAC 50/60 Hz	300 VAC 50/60 Hz
Capacitance range	0.01 – 2.2 $\mu\text{F}$	0.01 – 2.2 $\mu\text{F}$
Capacitance tolerance	$\pm 20\%$ standard, $\pm 10\%$ option	
Temperature range	-40 to +100°C	
Climatic category	40/100/56/C	
Approvals	S, N, D, FI, VDE, SEV, IMQ, UL, CSA	
Dissipation factor $\tan\delta$	$\leq 1.0\%$ at 1 kHz	
Insulation resistance	C $\leq 0.33 \mu\text{F}$ $\geq 30\,000 \text{ M}\Omega$ C $> 0.33 \mu\text{F}$ $\geq 10\,000 \text{ s}$	
Resonance frequency	Tabulated self-resonance frequencies $f_0$ refer to 5 mm lead length.	
Test voltage between terminals	The 100% screening factory test is carried out at 2150 VDC. The voltage level is selected to meet the requirements in applicable equipment standards. All electrical characteristics are checked after the test.	



p	d	std l	max l	b
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 $\pm 0.5$	1.0	6	30	$\pm 0.7$

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

## 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 temp.	
Vibration	IEC 60068-2-6 Test Fc	3 directions at 2 hours each, 10 – 55 Hz at 0.75 mm or 98 $\text{m/s}^2$	No visible damage No open or short circuit
Bump	IEC 60068-2-29 Test Eb	1000 bumps at 390 $\text{m/s}^2$	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		
Humidity	IEC 60068-2-3 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 <sub>0</sub> MHz	Max dU/dt V/μs	Approvals								Article code 1 st block
	B	H	L		Bulk pcs	Tray pcs	reel taped pcs				S	Z	D	FI	VDE	SEV	IMO	JL	
<b>275 VAC, PHE820M</b>																			
0.010	5.5	10.5	18.0	15.0	800		600	1.5	13	100	√	√	√	√	√	√	√	√	PHE820MB5100M
0.015	5.5	10.5	18.0	15.0	800		600	1.5	11	100	√	√	√	√	√	√	√	√	PHE820MB5150M
0.022	5.5	10.5	18.0	15.0	800		600	1.5	9.0	100	√	√	√	√	√	√	√	√	PHE820MB5220M
0.033	5.5	12.5	18.0	15.0	800		600	2.0	7.5	100	√	√	√	√	√	√	√	√	PHE820MB5330M
0.047	6.5	12.5	18.0	15.0	600		500	2.5	6.5	100	√	√	√	√	√	√	√	√	PHE820MB5470M
0.068	7.5	14.5	18.0	15.0	400		400	3.0	5.5	100	√	√	√	√	√	√	√	√	PHE820MB5680M
0.10	8.5	16.0	18.0	15.0	400		400	3.5	4.5	100	√	√	√	√	√	√	√	√	PHE820MB6100M
0.10	6.5	14.5	26.0	22.5		234		3.5	4.5	100	√	√	√	√	√	√	√	√	PHE820MD6100M
0.15	8.0	16.0	26.0	22.5		186		4.5	3.9	100	√	√	√	√	√	√	√	√	PHE820MD6150M
0.22	9.0	18.5	26.0	22.5		168		6.0	2.7	100	√	√	√	√	√	√	√	√	PHE820MD6220M
0.33	11.0	21.5	26.0	22.5		253		8.0	2.5	100	√	√	√	√	√	√	√	√	PHE820MD6330M
0.47	11.5	22.5	31.5	27.5		198		10.5	1.9	100	√	√	√	√	√	√	√	√	PHE820MF6470M
0.68	14.5	24.5	31.5	27.5		153		15.0	1.6	100	√	√	√	√	√	√	√	√	PHE820MF6680M
1.0	17.5	28.0	31.5	27.5		126		20.0	1.3	100	√	√	√	√	√	√	√	√	PHE820MF7100M
1.5	16.5	32.0	41.0	37.5		105		27.0	0.75	100	√	√	√	√	√	√	√	√	PHE820MR7150M
2.2	19.0	36.0	41.0	37.5		91		37.0	0.65	100	√	√	√	√	√	√	√	√	PHE820MR7220M
<b>300 VAC, PHE820E</b>																			
0.010	5.5	10.5	18.0	15.0	800		600	1.5	13	100	√							√	PHE820EB5100M
0.015	5.5	10.5	18.0	15.0	800		600	1.5	11	100	√							√	PHE820EB5150M
0.022	5.5	10.5	18.0	15.0	800		600	1.5	9.0	100	√							√	PHE820EB5220M
0.033	5.5	12.5	18.0	15.0	800		600	2.0	7.5	100	√							√	PHE820EB5330M
0.047	6.5	12.5	18.0	15.0	600		500	2.5	6.5	100	√							√	PHE820EB5470M
0.068	7.5	14.5	18.0	15.0	400		400	3.0	5.5	100	√							√	PHE820EB5680M
0.10	8.5	16.0	18.0	15.0	400		400	3.5	4.5	100	√							√	PHE820EB6100M
0.10	6.5	14.5	26.0	22.5		234		3.5	4.5	100	√							√	PHE820ED6100M
0.15	8.0	16.0	26.0	22.5		186		4.5	3.9	100	√							√	PHE820ED6150M
0.22	9.0	18.5	26.0	22.5		168		6.0	2.7	100	√							√	PHE820ED6220M
0.33	11.0	21.5	26.0	22.5		253		8.0	2.5	100	√							√	PHE820ED6330M
0.33	10.5	20.5	31.5	27.5		216		9.0	2.4	100	√							√	PHE820EF6330M
0.47	11.5	22.5	31.5	27.5		198		10.5	1.9	100	√							√	PHE820EF6470M
0.68	14.5	24.5	31.5	27.5		153		15.0	1.6	100	√							√	PHE820EF6680M
1.0	17.5	28.0	31.5	27.5		126		20.0	1.3	100	√							√	PHE820EF7100M
1.5	16.5	32.0	41.0	37.5		105		27.0	0.75	100	√							√	PHE820ER7150M
2.2	19.0	36.0	41.0	37.5		91		37.0	0.65	100	√							√	PHE820ER7220M

\*The complete serie includes C values according to the E12 series. Details on request.

APPROVALS/REFERENCE DOCUMENTS			
Country	Specification	Approval reference	
		PHE820M	PHE820E
S = Sweden	EN 132400	9510033, 9719009-01	9510034
N = Norway	EN 132400	P97101751	
D = Denmark	EN 132400	306839	
FI = Finland	EN 132400	196591-01	
VDE = Germany	EN 132400	89758, 101314	
SEV = Switzerland	EN 132400	95.7 70721.01	
IMQ = Italy	EN 132400	V 2884	
UL = USA	UL 1283 (U <sub>R</sub> = 250 VAC)	E 100117	
	UL 1414 (U <sub>R</sub> = 250 VAC)	E 73869	E 73869
CSA = Canada	C 22.2 No.8	53108	53108
	C 22.2 No.1 (U <sub>R</sub> = 125 VAC) (≤0.47 µF)	53108	

- | MARKING   |
|---|
| <ul style="list-style-type: none"> <li>• RIFA</li> <li>• RIFA article code</li> <li>• Rated capacitance</li> <li>• Capacitance tolerance code</li> <li>• Rated voltage</li> <li>• X2</li> <li>• SH, for self healing</li> <li>• Approval marks</li> <li>• Manufacturing code (year, month)</li> <li>• Climatic category according to IEC 60068-1, appendix A</li> <li>• Passive flammability class</li> </ul> |

ORDERING INFORMATION	
<b>Article code</b>	
<b>1st block</b> See article table Pos. 13, capacitance tolerance code: M = ± 20%, K = ± 10% option	<b>2nd block</b> If not standard lead length, add R06 to R50 in pos. 14–16, Reel taped: Add 17T0 or 17T1 in pos. 15–18. For packing on trays (6 mm lead length), add L2 in pos. 17–18.
<b>P H E 8 2 0 M/E B 5 3 3 0 M</b>	<b>R 0 6</b>
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/package as per 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.