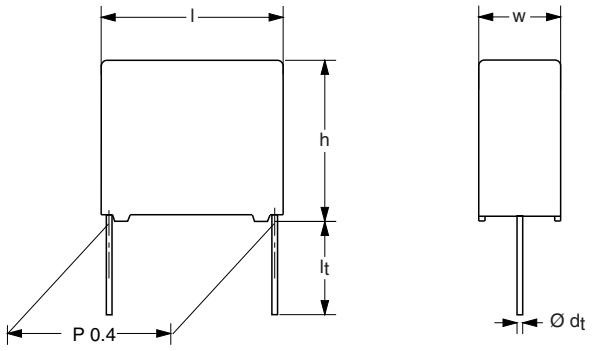
Interference Suppression Film Capacitors
MKP Radial Potted Type



NO FOCUS PRODUCT: USE MKP 339 X2

APPLICATIONS

X2 class
For X2 electromagnetic interference suppression in across the line applications (50/60 Hz) with a maximum mains voltage of 275 VAC.
For application limitations please refer page 5.

REFERENCE STANDARDS

"IEC 60384-14 2nd edition and EN 132400"
"IEC 60065, pass. flamm. class B"
250 V: CSA-C22.2 No 1; UL1414
275 V: ENEC; CQC;

MARKING

C-value; tolerance; rated voltage; sub-class; manufacturer's type designation; code for dielectric material; manufacturer location; manufacturer's emblem; year and week

DIELECTRIC

Polypropylene film

ELECTRODES

Metallized film

CONSTRUCTION

Mono construction

RATED VOLTAGE

AC 275 V; 50 to 60 Hz

FEATURES

15 to 22.5 mm lead pitch. Supplied loose in box and taped on reel
Lead (Pb)-free product

RoHS compliant product

PERMISSIBLE DC VOLTAGE

DC 630 V

ENCAPSULATION

Plastic case, epoxy resin sealed, flame retardant UL-class 94 V-0

CLIMATIC TESTING CLASS ACC. TO EN 60068-1

55/100/56/B

CAPACITANCE RANGE (E12 SERIES)

E12 series 0.01 to 0.47 µF
Preferred values acc. to E6

CAPACITANCE TOLERANCE

± 20 %; ± 10 %

LEADS

Tinned wire

RATED TEMPERATURE

100 °C

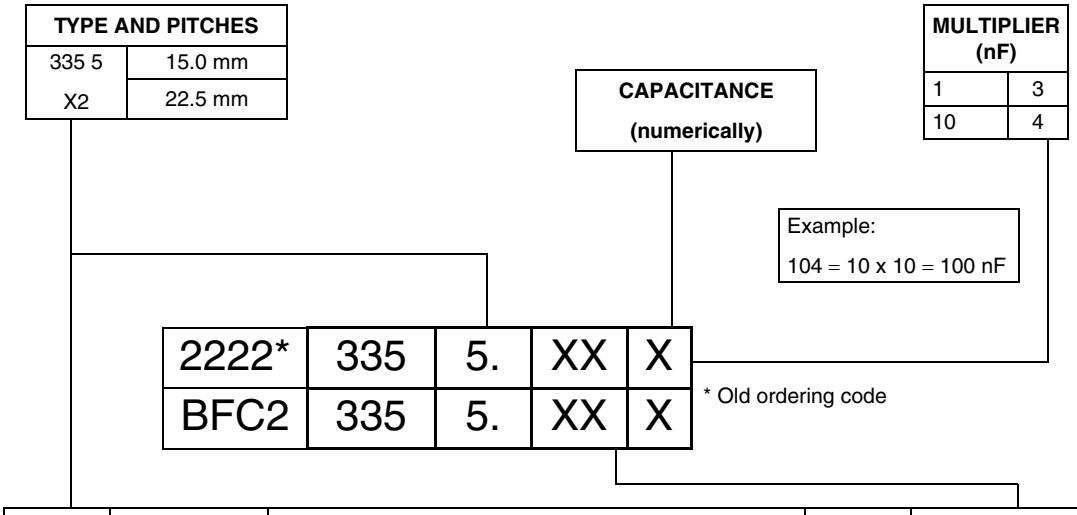
MAXIMUM APPLICATION TEMPERATURE

100 °C

DETAIL SPECIFICATION

For more detailed data and test requirements, contact:
RFI@vishay.com

COMPOSITION OF CATALOG NUMBER



TYPE	PACKAGING	LEAD CONFIGURATION	C-TOL	PREFERRED TYPES
335 5 X2	Loose in box	Lead length 3.5 ± 0.5 mm	± 20 %	BFC2 335 50...
		Lead length 25.0 ± 2.0 mm		BFC2 335 54...
				ON REQUEST
335 5 X2	Loose in box	Lead length 3.5 ± 0.5 mm	± 10 %	BFC2 335 51...
		Lead length 5.0 ± 1.0 mm	± 20 %	BFC2 335 56...
			± 10 %	BFC2 335 57...
		Lead length 25.0 ± 2.0 mm	± 10 %	BFC2 335 55...

SPECIFIC REFERENCE DATA MKP 335 5 275 Vac

DESCRIPTION	VALUE	
Tangent of loss angle:	at 1 kHz	at 10 kHz
$C \leq 100$ nF	$\leq 7 \times 10^{-4}$	$\leq 10 \times 10^{-4}$
100 nF $< C \leq$ 470 nF	$\leq 10 \times 10^{-4}$	$\leq 20 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$ at 385 Vdc	100 V/µs	
R between leads, for $C \leq 0.33$ µF at 100 V; 1 min	> 15 000 MΩ	
RC between leads, for $C > 0.33$ µF at 100 V; 1 min	> 5000 s	
R between leads and case; 100 V; 1 min	> 30 000 MΩ	
Withstanding voltage DC (cut off current 10 mA); rise time 100 V/s	2200 V; 1 min	
Withstanding voltage AC between leads and case	2050 V; 1 min	

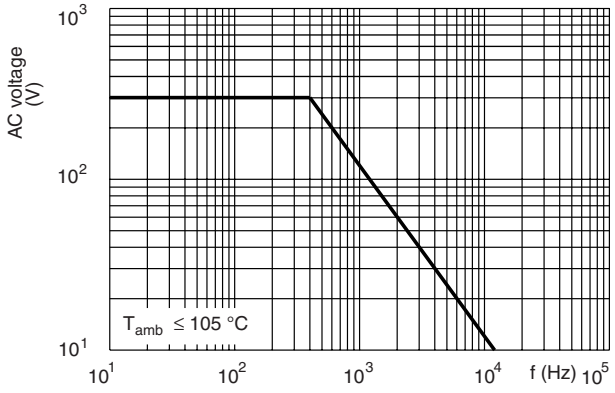
U_{Rac} = 275 V; C-tol = ± 20 %

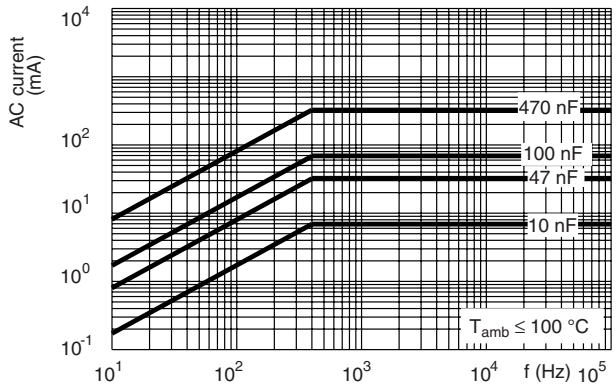
C (µF)	DIMENSIONS (1) w x h x l (mm)	MASS (g)	CATALOG NUMBER BFC2 335 ..... AND PACKAGING				
			LOOSE IN BOX				
			Short leads			Long leads	
			l_t = 3.5 ± 0.5 mm	l_t = 5.0 ± 1.0 mm		l_t = 25.0 ± 2.0 mm	
			Last 5 digits of catalog number	Last 5 digits of catalog number	SPQ	Last 5 digits of catalog number	SPQ
Pitch = 15.0 ± 0.4 mm; d_t = 0.60 ± 0.06 mm							
0.01	5.0 x 11.0 x 17.5	1.1	50103	56103	1250	54103	1000
0.015			50153	56153		54153	
0.022			50223	56223		54223	
0.033			50333	56333		54333	
0.047	6.0 x 12.0 x 17.5	1.4	50473	56473	1000	54473	1000
Pitch = 15.0 ± 0.4 mm; d_t = 0.80 ± 0.08 mm							
0.068	7.0 x 13.5 x 17.5	1.8	50683	56683	750	54683	500
0.1	8.5 x 15.0 x 17.5	2.3	50104	56104	750	54104	500
0.15	10.0 x 16.5 x 17.5	3.0	50154	56154	500	54154	450
Pitch = 22.5 ± 0.4 mm; d_t = 0.80 ± 0.08 mm							
0.22	8.5 x 18.0 x 26.0	4.1	50224	56224	200	54224	250
0.33	10.0 x 19.5 x 26.0	5.0	50334	56334	200	54334	200
0.47	12.0 x 22.0 x 26.0	6.9	50474	56474	150	54474	200

Note

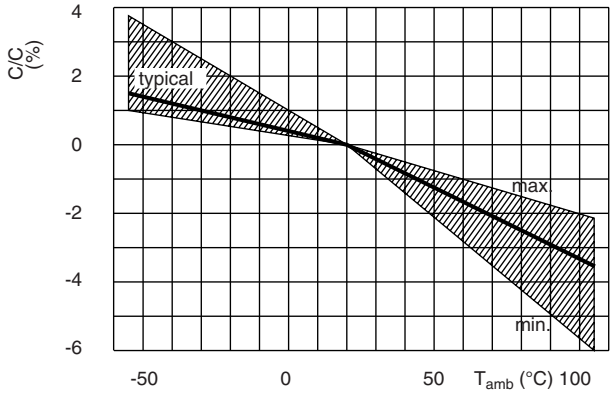
(1) Specified dimensions only valid for ± 20 % tolerance values.

MAXIMUM RMS VOLTAGE AND AC CURRENT (SINEWAVE) AS A FUNCTION OF FREQUENCY

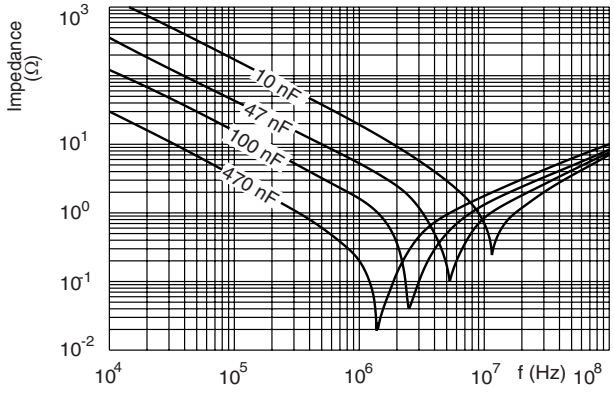




CAPACITANCE



IMPEDANCE



APPROVALS

COUNTRY	SPECIFICATION	ELECTRICAL VALUES	FILE NUMBERS	APPROVAL MARK
U.S.A. (for AC 250 V)	UL1414	10 nF to 1.0 µF	E112471	
Canada (for AC 250 V)	CSA-C22.2 No.1	10 nF to 1.0 µF	1104861 (LR94054-16)	
China (for AC 275 V)	CQC	10 nF to 1.5 µF	CQC02001001482 (Shanghai factory) CQC03001004371 (Roeselare factory)	
CB TEST CERTIFICATE (for AC 275 V)		10 nF to 1.5 µF: 55/100/56/B	FI 1185 A2	
Europe (for AC 275 V)	EN132400 IEC 60384-14 2nd edition	10 nF to 1.5 µF	14216	02

APPLICATION NOTES

- For X2 electromagnetic interference suppression in **across the line applications** (50/60 Hz) with a maximum mains voltage of 275 Vac.
- These capacitors are not intended for continuous pulse applications. For these situations, capacitors of the AC and pulse programs must be used.
- These capacitors are not intended for series impedance application. For these situations in case safety approvals are requested, please refer to our special capacitors of 1772 series with internal series connection.
- The maximum ambient temperature must not exceed 100 °C.
- Rated voltage pulse slope:
  If the pulse voltage is lower than the rated voltage, the values of the specific reference data can be multiplied by 385 Vdc and divided by the applied voltage.

Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “Vishay”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay’s knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer’s responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer’s technical experts. Product specifications do not expand or otherwise modify Vishay’s terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

Material Category Policy

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.

Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.