

AC Line Rated Ceramic Disc Capacitors Class X1, 440 V_{AC}, Class Y2, 300 V_{AC}



LINKS TO ADDITIONAL RESOURCES


[3D Models](#)

QUICK REFERENCE DATA	
DESCRIPTION	VALUE
Ceramic Class	2
Ceramic Dielectric	Y5U
Voltage (V _{AC})	440
Min. Capacitance (pF)	1000
Max. Capacitance (pF)	4700
Mounting	Radial

MARKING

Marking indicates series, AC rating, capacitance, tolerance code, and approvals.

OPERATING TEMPERATURE RANGE

-40 °C to +125 °C

TEMPERATURE CHARACTERISTICS

Class 2 Y5U

SECTIONAL SPECIFICATIONS

Climatic category (according to EN 60058-1)

Class 2 40/125/21

APPROVALS

IEC 60384-14.4

UL 60384-14.1

CSA E60384-1:03 2nd edition, CSA E60384-14:09 2nd edition

FEATURES

- Complying with IEC 60384-14 4th edition
- High reliability
- Wide range of different leadstyles
- Small dimensions
- Singlelayer AC disc safety capacitors
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT

APPLICATIONS

- X1, Y2 according to IEC 60384-14.4
- Line-by-pass
- EMI / RFI suppression

DESIGN

The capacitors consist of ceramic disc both sides of which are silver plated. Connection leads are made of tinned copper having diameters of 0.6 mm.

The capacitors may be supplied with straight or kinked leads having a lead spacing of 7.5 mm.

Coating is made of blue colored flame retardant epoxy resin in accordance with UL 94 V-0.

CAPACITANCE RANGE

1.0 nF to 4.7 nF

TOLERANCE ON CAPACITANCE

± 10 %, ± 20 %

RATED VOLTAGE

- X1: 440 V_{AC}, 50 Hz (IEC 60384-14.4)
440 V_{AC}, 50 Hz / 60 Hz (US/UL/CSA 60384-14)
- Y2: 300 V_{AC}, 50 Hz (IEC 60384-14.4)
300 V_{AC}, 50 Hz / 60 Hz (US/UL/CSA 60384-14)

TEST VOLTAGE

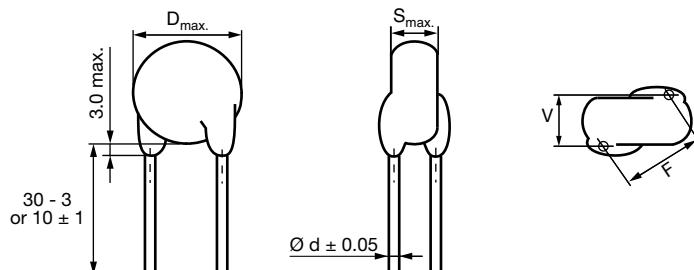
- 2600 V_{AC}, 50 Hz, 2 s Component test (100 %)
- 2600 V_{AC}, 50 Hz, 60 s Random sampling test (destructive)
- 2600 V_{AC}, 50 Hz, 60 s Voltage proof of coating (destructive)

INSULATION RESISTANCE AT 500 V_{DC}

≥ 6000 MΩ (60 s)

DISSIPATION FACTOR

Class 2: max. 2.5 % (1 kHz)

DIMENSIONS in millimeters

TECHNICAL DATA

CAPACITANCE C (pF) ⁽²⁾	CAPACITANCE TOLERANCE	BODY DIAMETER D _{MAX.} (mm)	BODY THICKNESS S _{MAX.} (mm)	LEAD SPACING ⁽¹⁾ F (mm) ± 1 mm	LEAD DIAMETER ⁽¹⁾ d (mm) ± 0.05 mm	WIDTH ⁽¹⁾ V (mm) ± 0.5 mm	PART NUMBER			
							MISSING DIGITS SEE ORDERING CODE BELOW			
Y5U (2E3)										
1000	± 10 %, ± 20 %	7.0	4.5	7.5	0.6	1.6	VKO102#CQ###KR			
1500			8.0				VKO152#CQ###KR			
2200			10.0				VKO222#CQ###KR			
3300			12.0				VKO332#CQ###KR			
3900		13.5	4.5				VKO392#CQ###KR			
4700			13.5				VKO472#CQ###KR			

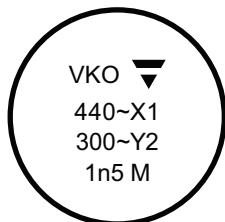
Notes

(1) Standard lead configuration, other lead spacing and diameter available on request

(2) When capacitance values less than 1 nF are required, the usage of WKO series is recommended

ORDERING CODE

#	7 th digit	Capacitance tolerance	± 10 % = K, ± 20 % = M
###	10 th to 12 th digit	Lead configuration	see "General Information"
Example	VKO	102	K CQ TC0 K R
	Series	Capacitance value	Tolerance code Voltage code Lead configuration Internal code RoHS compliant

MARKING


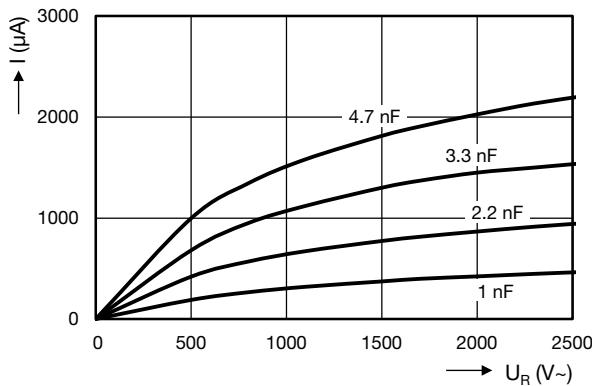
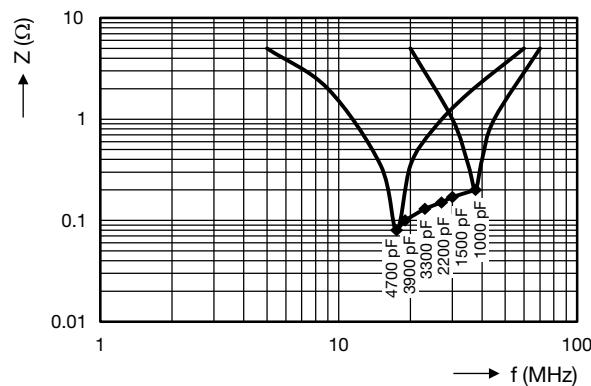
VKO 1.0 nF to 1.5 nF



VKO 2.2 nF to 4.7 nF



APPROVALS				
IEC 60384-14.4 - Safety tests This approval together with CB test certificate substitutes all national approvals.				
CB Certificate				
Y2-capacitor: CB test certificate:	US-26162-UL	1 nF to 4.7 nF	300 V _{AC}	
X1-capacitor: CB test certificate:	US-26162-UL	1 nF to 4.7 nF	440 V _{AC}	
Minimum thickness of insulation: 0.4 mm				
VDE				
Y2-capacitor: VDE marks approval:	137866	1 nF to 4.7 nF	300 V _{AC}	
X1-capacitor: VDE marks approval:	137866	1 nF to 4.7 nF	440 V _{AC}	
DIN EN 60384-14 VDE 0565-1-1:2006-04 - Safety tests				
Minimum thickness of insulation: 0.4 mm				
Underwriters Laboratories Inc. / Canadian Standards Association				
Y2-capacitor: UL-test certificate:	E183844	1 nF to 4.7 nF	300 V _{AC}	
X1-capacitor: UL-test certificate:	E183844	1 nF to 4.7 nF	440 V _{AC}	
UL 60384-14.1, CSA E60384-1:03 2 nd edition, CSA E60384-14:09 2 nd edition				
Across-the-line, antenna-coupling and line-by-pass component				
Minimum thickness of insulation: 0.4 mm				

LEAKAGE CURRENT VS. VOLTAGE (typical)

IMPEDANCE VS. FREQUENCY (typical)


RELATED DOCUMENTS	
General Information	www.vishay.com/doc?22001
CB Test Certificate	www.vishay.com/doc?22220
VDE Marks Approval	www.vishay.com/doc?22222
UL Test Certificate	www.vishay.com/doc?22221

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.