

## AC Line Rated Ceramic Disc Capacitors Class X1, 440 V<sub>AC</sub>, Class Y2, 300 V<sub>AC</sub>


**RoHS**  
COMPLIANT

### FEATURES

- Complying with IEC 60384-14 3<sup>rd</sup> 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](http://www.vishay.com/doc?99912)

### APPLICATIONS

- X1, Y2 according to IEC 60384-14.3
- Line-by-pass

### 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<sub>AC</sub>, 50 Hz (IEC 60384-14.3)  
440 V<sub>AC</sub>, 50 Hz/60 Hz (US/UL/CSA 60384-14)
- Y2: 300 V<sub>AC</sub>, 50 Hz (IEC 60384-14.3)  
300 V<sub>AC</sub>, 50 Hz/60 Hz (US/UL/CSA 60384-14)

### TEST VOLTAGE

- 2600 V<sub>AC</sub>, 50 Hz, 2 s Component test (100 %)
- 2600 V<sub>AC</sub>, 50 Hz, 60 s Random sampling test (destructive)
- 2600 V<sub>AC</sub>, 50 Hz, 60 s Voltage proof of coating (destructive)

### INSULATION RESISTANCE AT 500 V<sub>DC</sub>

≥ 6000 MΩ (60 s)

### DISSIPATION FACTOR

Class 2: Max. 2.5 % (1 kHz)

### QUICK REFERENCE DATA

DESCRIPTION	VALUE	
Ceramic Class	2	
Ceramic Dielectric	Y5U	
Voltage (V <sub>AC</sub> )	440	300
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)

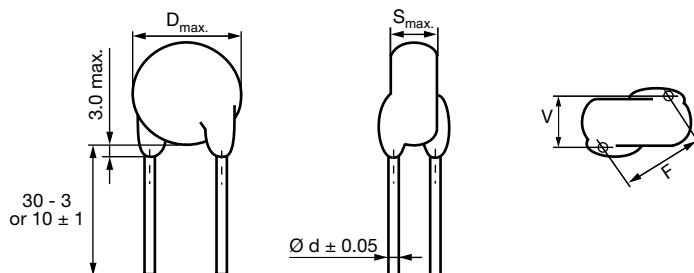
Class 2 40/125/21

### APPROVALS

IEC 60384-14.3

UL 60384-14.1

CSA E60384-1:03 2<sup>nd</sup> edition, CSA E60384-14:09 2<sup>nd</sup> edition

**DIMENSIONS** in millimeters

**TECHNICAL DATA**

CAPACITANCE C (pF) <sup>(2)</sup>	CAPACITANCE TOLERANCE	BODY DIAMETER D <sub>MAX.</sub> (mm)	BODY THICKNESS S <sub>MAX.</sub> (mm)	LEAD SPACING <sup>(1)</sup> F (mm) ± 1 mm	LEAD DIAMETER <sup>(1)</sup> d (mm) ± 0.05 mm	WIDTH <sup>(1)</sup> V (mm) ± 0.5 mm	PART NUMBER			
							MISSING DIGITS SEE ORDERING CODE BELOW			
<b>Y5U (2E3)</b>										
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			

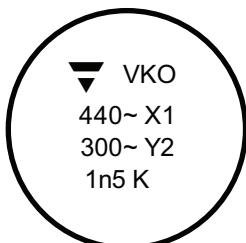
**Notes**

(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**

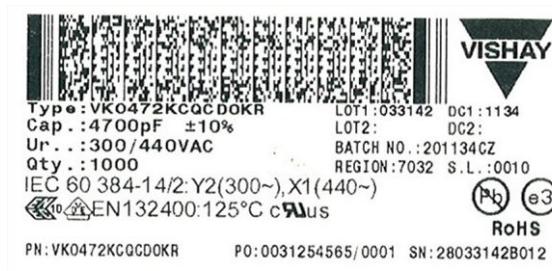
#	7 <sup>th</sup> digit	Capacitance tolerance	± 10 % = K, ± 20 % = M
###	10 <sup>th</sup> to 12 <sup>th</sup> digit	Lead configuration	see "General Information"
Example	VKO	102	K CQ TC0 K R
	Series	Capacitance value	Tolerance code Voltage code Lead configuration Internal code RoHS compliant

**MARKING**


VKO 1.0 nF to 1.5 nF



VKO 2.2 nF to 4.7 nF



**APPROVALS**

IEC 60384-14.3 - Safety tests

This approval together with CB test certificate substitutes all national approvals.

**CB Certificate**

Y2-capacitor: CB test certificate:

US-19598-UL

1 nF to 4.7 nF

300 V<sub>AC</sub>

X1-capacitor: CB test certificate:

US-19598-UL

1 nF to 4.7 nF

440 V<sub>AC</sub>

Minimum thickness of insulation: 0.4 mm


**VDE**

Y2-capacitor: VDE marks approval:

137866

1 nF to 4.7 nF

300 V<sub>AC</sub>

X1-capacitor: VDE marks approval:

137866

1 nF to 4.7 nF

440 V<sub>AC</sub>

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<sub>AC</sub>

X1-capacitor: UL-test certificate:

E183844

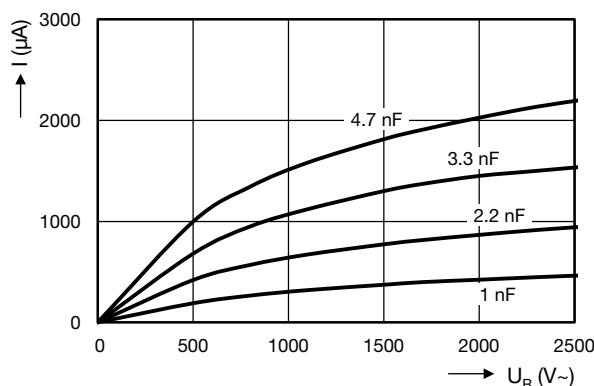
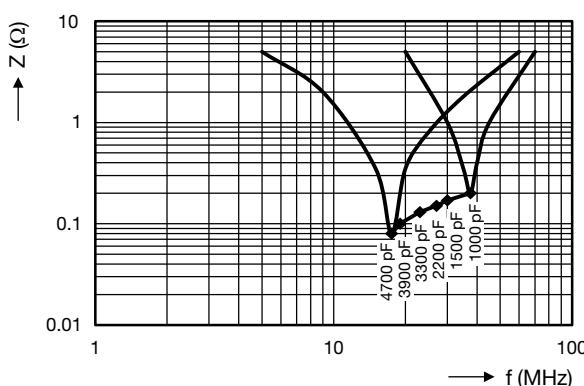
1 nF to 4.7 nF

440 V<sub>AC</sub>

UL 60384-14.1, CSA E60384-1:03 2<sup>nd</sup> edition, CSA E60384-14:09 2<sup>nd</sup> 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	<a href="http://www.vishay.com/doc?22001">www.vishay.com/doc?22001</a>
CB Test Certificate	<a href="http://www.vishay.com/doc?22220">www.vishay.com/doc?22220</a>
VDE Marks Approval	<a href="http://www.vishay.com/doc?22222">www.vishay.com/doc?22222</a>
UL Test Certificate	<a href="http://www.vishay.com/doc?22221">www.vishay.com/doc?22221</a>

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