

AC Line Rated Ceramic Disc Capacitors

Class X1, 440 V_{AC}, Class Y2, 300 V_{AC}


RoHS
COMPLIANT

FEATURES

- Complying with IEC 60384-14 3rd edition
- High reliability
- Wide range of different leadstyles
- Singlelayer AC disc safety capacitors
- Material categorization: for definitions of compliance please see 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 or 0.8 mm.

The capacitors may be supplied with straight or kinked leads having a lead spacing of 7.5 mm or 12.5 mm.

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

CAPACITANCE RANGE

33 pF to 4.7 nF

TOLERANCE ON CAPACITANCE

± 10 %, ± 20 %

RATED VOLTAGE

- X1: 440 V_{AC}, 50 Hz (IEC 60384-14.3)
440 V_{AC}, 50 Hz / 60 Hz (US/UL/CSA 60384-14)
- Y2: 300 V_{AC}, 50 Hz (IEC 60384-14.3)
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 1: max. 0.5 % (1 MHz)
- Class 2: max. 2.5 % (1 kHz)

QUICK REFERENCE DATA

DESCRIPTION	VALUE			
Ceramic Class	1		2	
Ceramic Dielectric	N750	N750	Y5S, Y5T, Y5U	Y5S, Y5T, Y5U
Voltage (V _{AC})	300	440	300	440
Min. Capacitance (pF)	33		68	
Max. Capacitance (pF)	47		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 1 N750 (U2J)

Class 2 Y5S, Y5T, Y5U

SECTIONAL SPECIFICATIONS

Climatic category (according to EN 60058-1)

Class 1 40/125/21

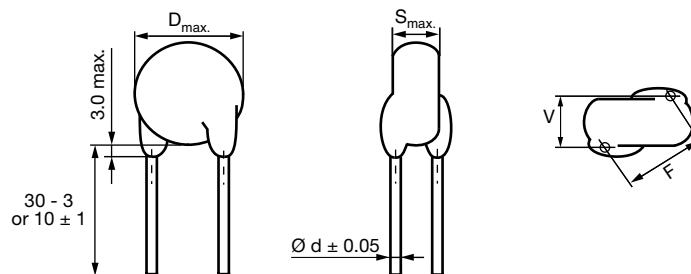
Class 2 40/125/21

APPROVALS

IEC 60384-14.3

UL 60384-14.1

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

DIMENSIONS in millimeters

TECHNICAL DATA

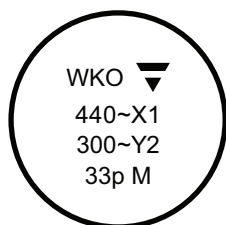
CAPACITANCE ⁽²⁾ C (pF)	CAPACITANCE TOLERANCE	BODY DIAMETER D _{MAX.} (mm)	BODY THICKNESS S _{MAX.} (mm)	LEAD SPACING ⁽¹⁾ F (mm) ± 1 mm	LEAD DIAMETER ⁽¹⁾ d (mm) ± 0.05 mm	WIDTH ⁽¹⁾ V (mm) ± 0.5 mm	PART NUMBER
							MISSING DIGITS SEE ORDERING CODE BELOW
N750 (U2J)							
33	± 10 %, ± 20 %	8.0	5.0	7.5	0.6	1.6	WKO330#CP###KR
47							WKO470#CP###KR
Y5S (2C3)							
68	± 10 %, ± 20 %	8.0	5.0	7.5	0.6	1.9	WKO680#CP###KR
100							WKO101#CP###KR
Y5T (2D3)							
150	± 10 %, ± 20 %	8.0	5.0	7.5	0.6	1.9	WKO151#CP###KR
220							WKO221#CP###KR
330							WKO331#CP###KR
Y5U (2E3)							
470	± 10 %, ± 20 %	8.0	5.0	7.5	0.6	2.0	WKO471#CP###KR
680		9.0			0.8		WKO681#CP###KR
1000		10.0					WKO102#CP###KR
1500		12.0					WKO152#CP###KR
2200		13.0		1.6		WKO222#CP###KR	
3300		15.0				WKO332#CP###KR	
3900		16.0				WKO392#CP###KR	
4700		18.0				WKO472#CP###KR	

Notes

- (1) Standard lead configuration, other lead spacing and diameter available on request
(2) Capacitance values from 1 nF to 4.7 nF: the alternative usage of VKO series is recommended for new application

ORDERING CODE

#	7 th digit	Capacitance tolerance	± 10 % = K, ± 20 % = M
###	10 th to 12 th digit	Lead configuration	see "General Information"
Example	WKO	222	M
	Series	Capacitance value	Tolerance code
			CP
			Voltage code
			CJ0
			Lead configuration
			K
			Internal code
			R
			RoHS compliant

MARKING


WKO 33 pF to 1.0 nF



WKO 1.5 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-19595-UL

33 pF to 4.7 nF

300 V_{AC}

X1-capacitor: CB test certificate:

US-19595-UL

33 pF to 4.7 nF

440 V_{AC}

Minimum thickness of insulation: 0.4 mm



VDE

Y2-capacitor: VDE marks approval:

136820

33 pF to 4.7 nF

300 V_{AC}

X1-capacitor: VDE marks approval:

136820

33 pF 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

33 pF to 4.7 nF

300 V_{AC}

X1-capacitor: UL-test certificate:

E183844

33 pF to 4.7 nF

440 V_{AC}

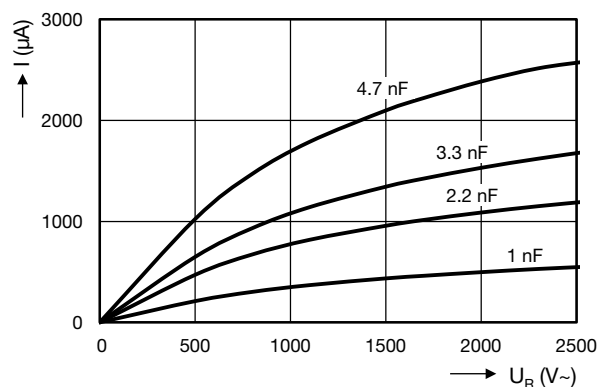
UL 60384-14.1, CSA E60384-1:03 2nd edition, CSA E60384-14:09 2nd edition

Across-the-line, antenna-coupling and line-by-pass component

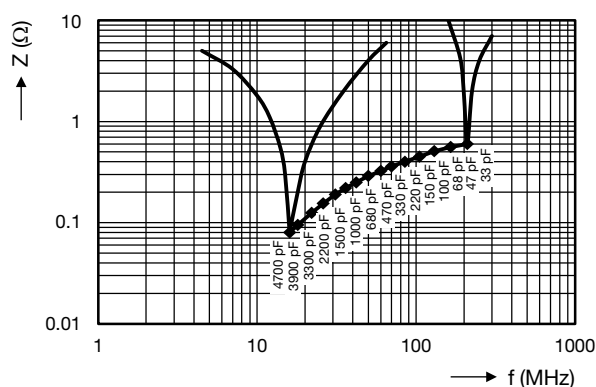
Minimum thickness of insulation: 0.4 mm



LEAKAGE CURRENT VS. VOLTAGE (typical)



IMPEDANCE VS. FREQUENCY (typical)



RELATED DOCUMENTS

General Information	www.vishay.com/doc?222001
CB Test Certificate	www.vishay.com/doc?22217
VDE Marks Approval	www.vishay.com/doc?22219
UL Test Certificate	www.vishay.com/doc?22218



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