

## AC Line Rated Ceramic Disc Capacitors Class X1, 760 V<sub>AC</sub>, Class Y1, 500 V<sub>AC</sub>


**RoHS**  
COMPLIANT

### FEATURES

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

### APPLICATIONS

- X1, Y1 according to IEC 60384-14.3
- Across-the-line
- Line-by-pass
- Antenna coupling

### 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 10.0 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: 760 V<sub>AC</sub>, 50 Hz (IEC 60384-14.3)  
760 V<sub>AC</sub>, 50 Hz / 60 Hz (US/UL/CSA 60384-14)
- Y1: 500 V<sub>AC</sub>, 50 Hz (IEC 60384-14.3)  
500 V<sub>AC</sub>, 50 Hz / 60 Hz (US/UL/CSA 60384-14)

### TEST VOLTAGE

- 4000 V<sub>AC</sub>, 50 Hz, 2 s Component test (100 %)
- 4000 V<sub>AC</sub>, 50 Hz, 60 s Random sampling test (destructive)
- 4000 V<sub>AC</sub>, 50 Hz, 60 s Voltage proof of coating (destructive)

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

≥ 10 000 MΩ (60 s)

### DISSIPATION FACTOR

Class 1:	max. 0.5 % (1 kHz)
Class 2:	max. 2.5 % (1 kHz)

### QUICK REFERENCE DATA

DESCRIPTION	VALUE			
	1		2	
Ceramic Class				
Ceramic Dielectric	N750	N750	Y5S, Y5T, Y5U	Y5S, Y5T, Y5U
Voltage (V <sub>AC</sub> )	500	760	500	760
Min. Capacitance (pF)	33		47	
Max. Capacitance (pF)	33		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

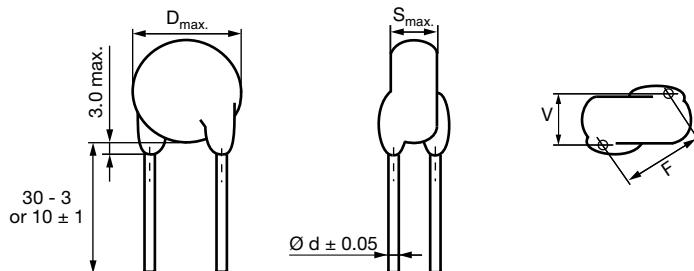
Class 2 40/125/21

### APPROVALS

IEC 60384-14.3

UL 60384-14.1

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

**DIMENSIONS** in millimeters

**TECHNICAL DATA**

CAPACITANCE (2) C (pF)	CAPACITANCE TOLERANCE	BODY DIAMETER D <sub>MAX.</sub> (mm)	BODY THICKNESS S <sub>MAX.</sub> (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
<b>N750 (U2J)</b>							
33	± 10 %, ± 20 %	8.0	6.0	12.5	0.6	1.9	WKP330#CP###KR
<b>Y5S (2C3)</b>							
47	± 10 %, ± 20 %	8.0	6.0	12.5	0.6	2.3	WKP470#CP###KR
68							WKP680#CP###KR
100							WKP101#CP###KR
<b>Y5T (2D3)</b>							
150	± 10 %, ± 20 %	8.0	6.0	12.5	0.6	2.3	WKP151#CP###KR
220							WKP221#CP###KR
<b>Y5U (2E3)</b>							
330	± 10 %, ± 20 %	8.0	6.0	12.5	0.6	2.5	WKP331#CP###KR
470							WKP471#CP###KR
680							WKP681#CP###KR
1000							WKP102#CP###KR
1500							WKP152#CP###KR
2200							WKP222#CP###KR
3300							WKP332#CP###KR
3900							WKP392#CP###KR
4700							WKP472#CP###KR

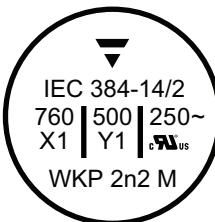
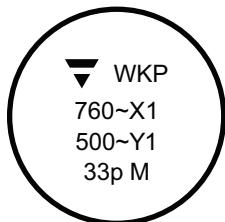
**Notes**

(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 smaller VKP series is recommended for new application.

**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	WKP	M	
	222	CP	K R
Series	Capacitance value	Tolerance code	Voltage code Lead configuration Internal code RoHS compliant

**MARKING**


WKP 33 pF to 1.5 nF

WKP 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**

Y1-capacitor: CB test certificate:

US-19592-UL

33 pF to 4.7 nF

 500 V<sub>AC</sub>

X1-capacitor: CB test certificate:

US-19592-UL

33 pF to 4.7 nF

 760 V<sub>AC</sub>

Minimum thickness of insulation: 0.4 mm


**VDE**

Y1-capacitor: VDE marks approval:

136493

33 pF to 4.7 nF

 500 V<sub>AC</sub>

X1-capacitor: VDE marks approval:

136493

33 pF to 4.7 nF

 760 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**

Y1-capacitor: UL-test certificate:

E183844

33 pF to 4.7 nF

 500 V<sub>AC</sub>

X1-capacitor: UL-test certificate:

E183844

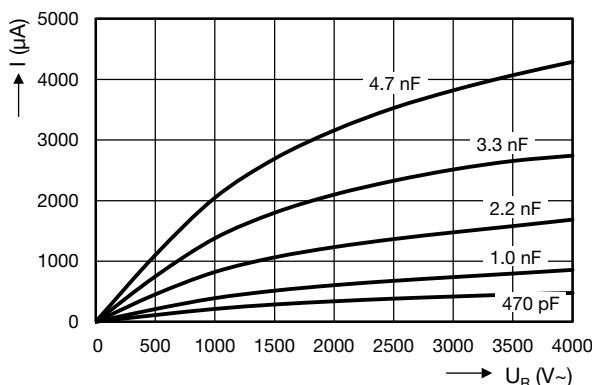
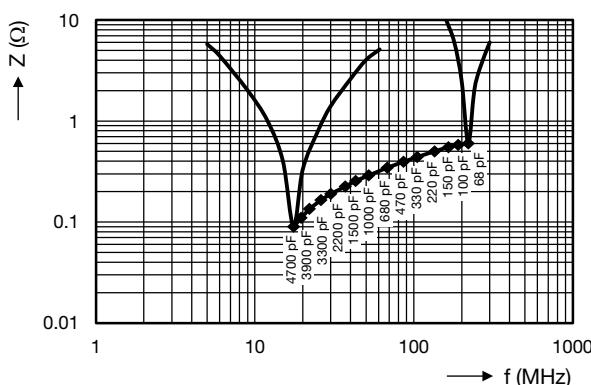
33 pF to 4.7 nF

 760 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?22214">www.vishay.com/doc?22214</a>
VDE Marks Approval	<a href="http://www.vishay.com/doc?22216">www.vishay.com/doc?22216</a>
UL Test Certificate	<a href="http://www.vishay.com/doc?22215">www.vishay.com/doc?22215</a>

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