

AC Line Rated Ceramic Disc Capacitors

Class X1, 760 V_{AC}, Class Y1, 500 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, 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_{AC}, 50 Hz (IEC 60384-14.3)
760 V_{AC}, 50 Hz / 60 Hz (US/UL/CSA 60384-14)
- Y1: 500 V_{AC}, 50 Hz (IEC 60384-14.3)
500 V_{AC}, 50 Hz / 60 Hz (US/UL/CSA 60384-14)

TEST VOLTAGE

- 4000 V_{AC}, 50 Hz, 2 s Component test (100 %)
- 4000 V_{AC}, 50 Hz, 60 s Random sampling test (destructive)
- 4000 V_{AC}, 50 Hz, 60 s Voltage proof of coating (destructive)

INSULATION RESISTANCE AT 500 V_{DC}

≥ 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			
Ceramic Class	1		2	
Ceramic Dielectric	N750	N750	Y5S, Y5T, Y5U	Y5S, Y5T, Y5U
Voltage (V _{AC})	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

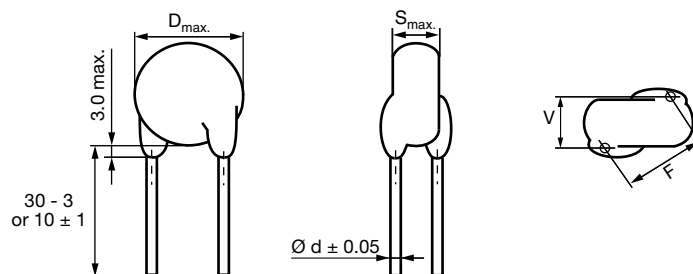
SECTIONAL SPECIFICATIONS

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

DIMENSIONS in millimeters

TECHNICAL DATA

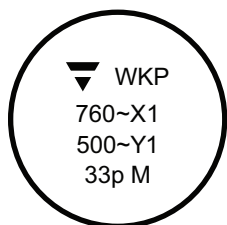
CAPACITANCE ⁽²⁾ C (pF)	CAPACITANCE TOLERANCE	BODY DIAMETER D _{MAX.} (mm)	BODY THICKNESS S _{MAX.} (mm)	LEAD SPACING ⁽¹⁾ F (mm) ± 1 mm	LEAD DIAMETER ⁽¹⁾ d (mm) ± 0.05 mm	WIDTH ⁽¹⁾ V (mm) ± 0.5 mm	PART NUMBER
							MISSING DIGITS SEE ORDERING CODE BELOW
N750 (U2J)							
33	± 10 %, ± 20 %	8.0	6.0	12.5	0.6	1.9	WKP330#CP###KR
Y5S (2C3)							
47	± 10 %, ± 20 %	8.0	6.0	12.5	0.6	2.3	WKP470#CP###KR
68							WKP680#CP###KR
100							WKP101#CP###KR
Y5T (2D3)							
150	± 10 %, ± 20 %	8.0	6.0	12.5	0.6	2.3	WKP151#CP###KR
220							WKP221#CP###KR
Y5U (2E3)							
330	± 10 %, ± 20 %	8.0	6.0	12.5	0.6	2.5	WKP331#CP###KR
470		9.0					WKP471#CP###KR
680		10.0					WKP681#CP###KR
1000		12.0			0.8	2.7	WKP102#CP###KR
1500		13.0					WKP152#CP###KR
2200		15.0					WKP222#CP###KR
3300		16.0					WKP332#CP###KR
3900		18.0					WKP392#CP###KR
4700							WKP472#CP###KR

Notes

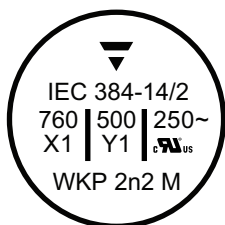
- ⁽¹⁾ Standard lead configuration, other lead spacing and diameter available on request
⁽²⁾ Capacitance values from 1 nF to 4.7 nF: the alternative usage of smaller VKP series is recommended for new application.

ORDERING CODE

#	7 th digit	Capacitance tolerance	± 10 % = K, ± 20 % = M
###	10 th to 12 th digit	Lead configuration	see "General Information"
Example	WKP	222	M
	Series	Capacitance value	Tolerance code
			CP
			Voltage code
			ED0
			Lead configuration
			K
			Internal code
			R
			RoHS compliant

MARKING


WKP 33 pF to 1.5 nF



WKP 2.2 nF to 4.7 nF



Type: WKP222MCPRECKR LOT1: 032691 DC1: 1134
 Cap.: 2200pF ±20% LOT2: DC2:
 Ur.: 500/760VAC BATCH NO.: 201134CZ
 Qty.: 600 REGION: 7032 S.L.: 0010
 IEC 60 384-14/2: Y1 (500~), X1 (760~)
 EN132400: 125°C cAuS
 H=18+2, F=12.5
 PN: WKP222MCPRECKR PO: 0031254565/0001 SN: 28032691B005



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_{AC}

X1-capacitor: CB test certificate:

US-19592-UL

33 pF to 4.7 nF

760 V_{AC}

Minimum thickness of insulation: 0.4 mm



VDE

Y1-capacitor: VDE marks approval:

136493

33 pF to 4.7 nF

500 V_{AC}

X1-capacitor: VDE marks approval:

136493

33 pF to 4.7 nF

760 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

Y1-capacitor: UL-test certificate:

E183844

33 pF to 4.7 nF

500 V_{AC}

X1-capacitor: UL-test certificate:

E183844

33 pF to 4.7 nF

760 V_{AC}

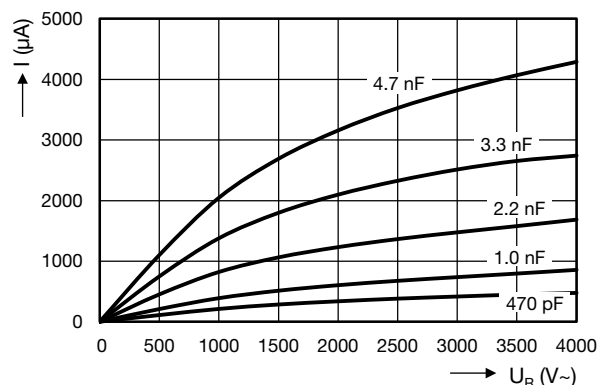
UL 60384-14.1, CSA E60384-1:03 2nd edition, CSA E60384-14:09 2nd edition

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

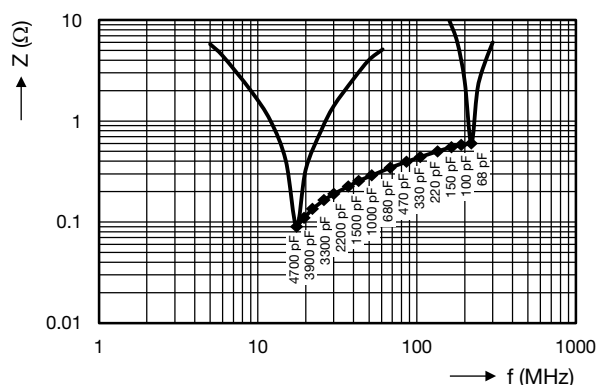
Minimum thickness of insulation: 0.4 mm



LEAKAGE CURRENT VS. VOLTAGE (typical)



IMPEDANCE VS. FREQUENCY (typical)



RELATED DOCUMENTS

General Information	www.vishay.com/doc?22001
CB Test Certificate	www.vishay.com/doc?22214
VDE Marks Approval	www.vishay.com/doc?22216
UL Test Certificate	www.vishay.com/doc?22215



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