

AC Line Rated Ceramic Disc Capacitors Class X1, 760 V_{AC}, Class Y1, 500 V_{AC}



DESIGN SUPPORT TOOLS


[click logo to get started](#)

RoHS
COMPLIANT

FEATURES

- Complying with IEC 60384-14 4th 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 60384-14.4
- 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 60384-14.4)
760 V_{AC}, 50 Hz / 60 Hz (US/UL/CSA 60384-14)
- Y1: 500 V_{AC}, 50 Hz (IEC 60384-14.4)
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)

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 60068-1)

Class 1 40/125/21

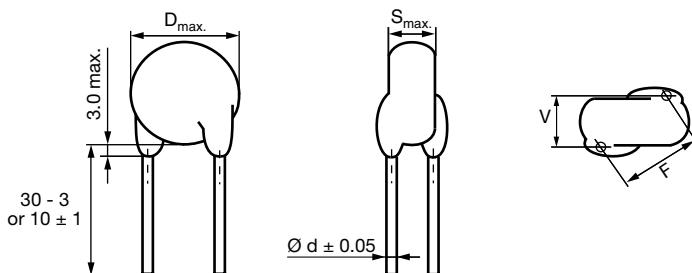
Class 2 40/125/21

APPROVALS

IEC 60384-14.4

UL 60384-14.1

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

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							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

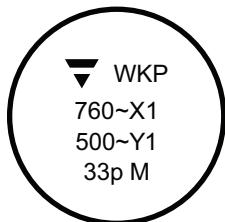
Notes

(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 th digit	Capacitance tolerance	± 10 % = K, ± 20 % = M
##	10 th to 12 th 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


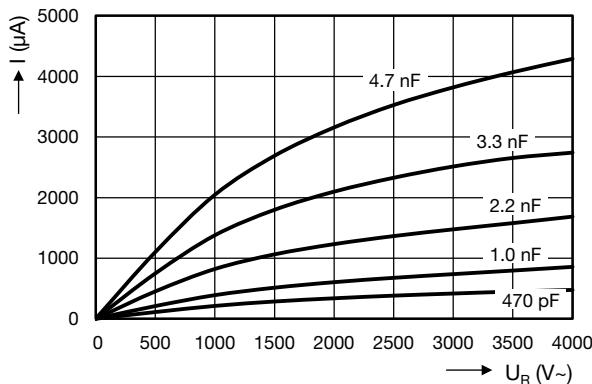
WKP 33 pF to 1.5 nF

WKP 2.2 nF to 4.7 nF

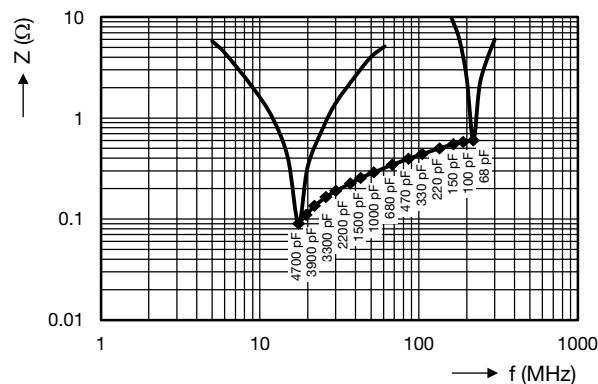


APPROVALS				
IEC 60384-14.4 - Safety tests This approval together with CB test certificate substitutes all national approvals.				
CB Certificate				
Y1-capacitor: CB test certificate:	US-26549-UL	33 pF to 4.7 nF	500 V _{AC}	
X1-capacitor: CB test certificate:	US-26549-UL	33 pF to 4.7 nF	760 V _{AC}	
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 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?22214
VDE Marks Approval	www.vishay.com/doc?22216
UL Test Certificate	www.vishay.com/doc?22215

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.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Vishay:

[WKP332MCPSUTK](#) [WKP102MCPERUK](#) [WKP332MCPEJ0KR](#) [WKP221MCPEF0KR](#) [WKP152MCPEJ0KR](#)
[WKP221KCPEF0K](#) [WKP221MCPEF0K](#) [WKP222MCPEJ0K](#) [WKP221MCPEJ0K](#) [WKP332MCPERUK](#)
[WKP332MCPEJ0K](#) [WKP392MCPEJ0K](#) [WKP222MCPEJ0KR](#) [WKP102MCPSKNK](#) [WKP151MCPEJ0K](#)
[WKP472MCPERUK](#) [WKP471MCPERUK](#) [WKP102MCPEJ0KR](#) [WKP151MCPEF0KR](#) [WKP471MCPEF0KR](#)
[WKP221MCPEJ0KR](#) [WKP681MCPEF0K](#) [WKP471MCPERUKR](#) [WKP680MCPEF0K](#) [WKP680KCPEF0K](#)
[WKP331MCPEF0K](#) [WKP330MCPEJ0K](#) [WKP472MCPEJ0K](#) [WKP152MCPEJ0K](#) [WKP152KCPEJ0K](#)
[WKP102MCPEJ0K](#) [WKP101MCPEF0K](#) [WKP101KCPEF0K](#) [WKP102KCPEF0K](#) [WKP102MCPEF0K](#)
[WKP470MCPEF0K](#) [WKP471MCPEF0K](#) [WKP681MCPEF0KR](#) [WKP330MCPEF0KR](#) [WKP331MCPEF0KR](#)
[WKP101MCPEF0KR](#) [WKP472MCPEJ0KR](#) [WKP680MCPEF0KR](#) [WKP470MCPEF0KR](#) [WKP222MCPEF0KR](#)
[WKP472MCPERUKR](#) [WKP102MCPERUKR](#) [WKP221MCPERUKR](#) [WKP222MCPERUKR](#) [WKP472MCPEFYKR](#)
[WKP102MCPED0KR](#) [WKP332MCPERUKR](#) [WKP101KCPEF0KR](#) [WKP102MCPEF0KR](#) [WKP102KCPEF0KR](#)
[WKP332MCPSUTKR](#) [WKP392MCPEJ0KR](#) [WKP221KCPEF0KR](#)