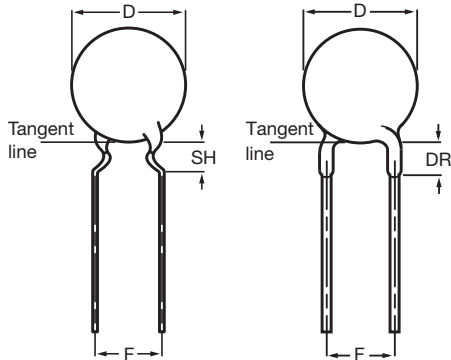


Ceramic Disc Capacitors

Class 1 and 2, 50 V_{DC}, General Purpose



Capacitors with 5 mm (0.20") and 2.5 mm (0.10") lead spacing

QUICK REFERENCE DATA

DESCRIPTION	CLASS 1 (NP0, SL0)	CLASS 2 (Y5P, Z5U, Y5V, Z5V)
Voltage (V _{DC})	50	
Min. Capacitance (pF)	1	150
Max. Capacitance (pF)	100	47 000
Mounting	Through hole	

MARKING

Marking indicates capacitance value and tolerance in accordance with "EIA 198"

OPERATING TEMPERATURE RANGE

Class 1, - 55 °C to + 125 °C

Class 2, - 30 °C to + 85 °C

TEMPERATURE COEFFICIENT Y5R (2C4) - 30 °C TO + 85 °C

Class 1, NP0; SL0

Class 2, Y5P; Z5U; Y5V; Z5V

SECTIONAL SPECIFICATIONS

Class 1, IEC 60 384-8,

Class 2, IEC 60 384-9,

EIA 198

CLIMATIC CATEGORY

Class 1, - 55 °C to + 125 °C

Class 2, - 30 °C to + 85 °C

Note

- The capacitors meet the essential requirements of "IEC 60384-9 and EIA 198". Unless stated otherwise all electrical values apply at an ambient temperature of 25 °C ± 3 °C, at normal atmospheric conditions

FEATURES

- Low losses
- High stability
- High capacitance in small size
- Kinked (preferred) or straight leads
- Compliant to RoHS directive 2002/95/EC



RoHS
COMPLIANT

APPLICATIONS

- Bypassing
- Coupling
- Resonant circuit

DESIGN

The capacitors consist of a ceramic disc both sides of which are silver-plated. Connection leads are made of tinned copper having a diameter of 0.6 mm.

The capacitors have inward kinked leads with a spacing of 5 mm (0.20") and straight leads with 2.5 mm (0.10"), lead length from 4 mm to 30 mm.

Encapsulation is made of phenolic resin.

CAPACITANCE RANGE

Class 1, at 1 MHz, 1.2 V_{RMS}; 1.0 pF to 100 pF

1 kHz, 1 V_{RMS} ± 0.2 V_{RMS} for capacitance values higher than 1000 pF

Class 2, at 1 kHz, 1 V_{RMS} ± 0.2 V_{RMS} 150 pF to 47 000 pF

RATED DC VOLTAGE

50 V

DIELECTRIC STRENGTH

250 % of rated voltage

INSULATION RESISTANCE AT 500 V_{DC}

≥ 10 000 MΩ

TOLERANCE ON CAPACITANCE

± 5 %; ± 10 %; ± 20 %; + 80 %/- 20 %

DISSIPATION FACTOR

Class 1, C ≤ 30 pF ≤ 20 × (10/C + 0.7) × 10⁻⁴ maximum

Class 1, C > 30 pF ≤ 0.2 %

Class 2, ≤ 3.0 %



Ceramic Disc Capacitors
Class 1 and 2, 50 V_{DC}, General Purpose

Vishay BCcomponents

ORDERING INFORMATION, CLASS 1, 50 V_{DC}, KINKED					
C (pF)	TOL. (%)	D _{MAX.} (mm)	SH/DR _{MAX.} ⁽¹⁾ (mm)	CLEAR TEXT CODE	
				13 TH DIGIT: T = REEL; U = AMMO; 3 = BULK	
CLASS 1 NPO					
1.0	± 0.25 pF	5.0	5.0	4.0	D109C20C0KF6.J5R
			2.5	1.5	D109C20C0KF6.L2R
1.5			5.0	4.0	D159C20C0KF6.J5R
			2.5	1.5	D159C20C0KF6.L2R
2.2			5.0	4.0	D229C20C0JF6.J5R
			2.5	1.5	D229C20C0JF6.L2R
3.3	± 0.5 pF		5.0	4.0	D339C20C0JF6.J5R
			2.5	1.5	D339C20C0JF6.L2R
4.7			5.0	4.0	D479C20C0HF6.J5R
			2.5	1.5	D479C20C0HF6.L2R
6.8			5.0	4.0	D689D20C0HF6.J5R
			2.5	1.5	D689D20C0HF6.L2R
10	± 5.0		5.0	4.0	D100J20C0GF6.J5R
			2.5	1.5	D100J20C0GF6.L2R
12			5.0	4.0	D120J20C0GF6.J5R
			2.5	1.5	D120J20C0GF6.L2R
15			5.0	4.0	D150J20C0GF6.J5R
			2.5	1.5	D150J20C0GF6.L2R
18			5.0	4.0	D180J20C0GF6.J5R
			2.5	1.5	D180J20C0GF6.L2R
22			5.0	4.0	D220J20C0GF6.J5R
			2.5	1.5	D220J20C0GF6.L2R
27			5.0	4.0	D270J20C0GF6.J5R
			2.5	1.5	D270J20C0GF6.L2R
33		5.0	4.0	D330J20C0GF6.J5R	
		2.5	1.5	D330J20C0GF6.L2R	
39		5.0	4.0	D390J20C0GF6.J5R	
		2.5	1.5	D390J20C0GF6.L2R	
47		5.0	4.0	D470J20C0GF6.J5R	
		2.5	1.5	D470J20C0GF6.L2R	
CLASS 1 SLO					
56	± 5.0	5.0	4.0	D560J20SLOF6.J5R	
		2.5	1.5	D560J20SLOF6.L2R	
68		5.0	4.0	D680J20SLOF6.J5R	
		2.5	1.5	D680J20SLOF6.L2R	
82		5.0	4.0	D820J20SLOF6.J5R	
		2.5	1.5	D820J20SLOF6.L2R	
100	5.0	4.0	D101J20SLOF6.J5R		
	2.5	1.5	D101J20SLOF6.L2R		

Notes

- (1) SH = seated height; DR = run down
- Maximum thickness 4.0 mm
- Lead style codes refer to lead configurations

ORDERING INFORMATION, CLASS 2, 50 V _{DC} , KINKED					
C (pF)	TOL. (%)	D _{MAX.} (mm)	SH/DR _{MAX.} ⁽¹⁾ (mm)	CLEAR TEXT CODE	
				13 TH DIGIT: T = REEL; U = AMMO; 3 = BULK	
CLASS 2 Y5P					
150	± 10	5	5.0	4.0	D151K20Y5PF6.J5R
			2.5	1.5	D151K20Y5PF6.L2R
180			5.0	4.0	D181K20Y5PF6.J5R
			2.5	1.5	D181K20Y5PF6.L2R
220			5.0	4.0	D221K20Y5PF6.J5R
			2.5	1.5	D221K20Y5PF6.L2R
330			5.0	4.0	D331K20Y5PF6.J5R
			2.5	1.5	D331K20Y5PF6.L2R
470			5.0	4.0	D471K20Y5PF6.J5R
			2.5	1.5	D471K20Y5PF6.L2R
680		5.0	4.0	D681K20Y5PF6.J5R	
		2.5	1.5	D681K20Y5PF6.L2R	
1000		5.0	4.0	D102K20Y5PF6.J5R	
		2.5	1.5	D102K20Y5PF6.L2R	
1500		5.0	4.0	D152K20Y5PF6.J5R	
		2.5	1.5	D152K20Y5PF6.L2R	
1800		6.5	5.0	4.0	D182K25Y5PF6.J5R
			2.5	1.5	D182K25Y5PF6.L2R
2200			5.0	4.0	D222K25Y5PF6.J5R
			2.5	1.5	D222K25Y5PF6.L2R
3300	5.0		4.0	D332K25Y5PF6.J5R	
	2.5	1.5	D332K25Y5PF6.L2R		
4700	7.5	5.0	4.0	D472K29Y5PF6.J5R	
		2.5	1.5	D472K29Y5PF6.L2R	
6800	8.5	5.0	4.0	D682K33Y5PF6.J5R	
		2.5	1.5	D682K33Y5PF6.L2R	
10 000	10	5.0	4.0	D103K39Y5PF6.J5R	
		2.5	1.5	D103K39Y5PF6.L2R	

Notes

(1) SH = seated height; DR = run down

- Maximum thickness 4.0 mm
- Lead style codes refer to lead configurations

ORDERING INFORMATION, CLASS 2, 50 V _{DC} , KINKED AND STRAIGHT					
C (pF)	TOL. (%)	D _{MAX.} (mm)	SH/DR _{MAX.} ⁽¹⁾ (mm)	CLEAR TEXT CODE	
				13 TH DIGIT: T = REEL; U = AMMO; 3 = BULK	
CLASS 2 Z5U					
1000	± 20	5	5.0	4.0	D102M20Z5UF6.J5R
			2.5	1.5	D102M20Z5UF6.L2R
1500			5.0	4.0	D152M20Z5UF6.J5R
			2.5	1.5	D152M20Z5UF6.L2R
2200			5.0	4.0	D222M20Z5UF6.J5R
		2.5	1.5	D222M20Z5UF6.L2R	
3300		5.0	4.0	D332M20Z5UF6.J5R	
		2.5	1.5	D332M20Z5UF6.L2R	
4700		5.0	4.0	D472M20Z5UF6.J5R	
		2.5	1.5	D472M20Z5UF6.L2R	
6800	± 20	6.5	5.0	4.0	D682M25Z5UF6.J5R
			2.5	1.5	D682M25Z5UF6.L2R



Ceramic Disc Capacitors
Class 1 and 2, 50 V_{DC}, General Purpose

Vishay BCcomponents

ORDERING INFORMATION, CLASS 2, 50 V _{DC} , KINKED AND STRAIGHT							
C (pF)	TOL. (%)	D _{MAX.} (mm)	SH/DR _{MAX.} ⁽¹⁾ (mm)	CLEAR TEXT CODE			
				13 TH DIGIT: T = REEL; U = AMMO; 3 = BULK			
CLASS 2 Z5U							
10 000	± 20	7.5	5.0	4.0	D103M29Z5UF6.J5R		
			2.5	1.5	D103M29Z5UF6.L2R		
15 000		8.5	5.0	4.0	D153M33Z5UF6.J5R		
			2.5	1.5	D153M33Z5UF6.L2R		
22 000		10	5.0	4.0	D223M39Z5UF6.J5R		
			2.5	1.5	D223M39Z5UF6.L2R		
CLASS 2 Y5V							
1000	+ 80/-20	5	5.0	4.0	D102Z20Y5VF6.J5R		
			2.5	1.5	D102Z20Y5VF6.L2R		
1500			5.0	4.0	D152Z20Y5VF6.J5R		
			2.5	1.5	D152Z20Y5VF6.L2R		
2200			5.0	4.0	D222Z20Y5VF6.J5R		
			2.5	1.5	D222Z20Y5VF6.L2R		
3300		6.5	5.0	4.0	D332Z20Y5VF6.J5R		
			2.5	1.5	D332Z20Y5VF6.L2R		
4700			5.0	4.0	D472Z20Y5VF6.J5R		
			2.5	1.5	D472Z20Y5VF6.L2R		
6800			5.0	4.0	D682Z25Y5VF6.J5R		
			2.5	1.5	D682Z25Y5VF6.L2R		
10 000		7.5	5.0	4.0	D103Z29Y5VF6.J5R		
			2.5	1.5	D103Z29Y5VF6.L2R		
15 000			8.5	5.0	4.0	D153Z33Y5VF6.J5R	
				2.5	1.5	D153Z33Y5VF6.L2R	
22 000				10	5.0	4.0	D223Z39Y5VF6.J5R
					2.5	1.5	D223Z39Y5VF6.L2R
CLASS 2 Z5V							
4700	+ 80/-20	5			5.0	4.0	D472Z20Z5VF6.J5R
			2.5		1.5	D472Z20Z5VF6.L2R	
10 000		6.5	5.0		4.0	D103Z25Z5VF6.J5R	
			2.5	1.5	D103Z25Z5VF6.L2R		
22 000			7.5	5.0	4.0	D223Z29Z5VF6.J5R	
				2.5	1.5	D223Z29Z5VF6.L2R	
47 000	10			5.0	4.0	D473Z39Z5VF6.J5R	
				2.5	1.5	D473Z39Z5VF6.L2R	

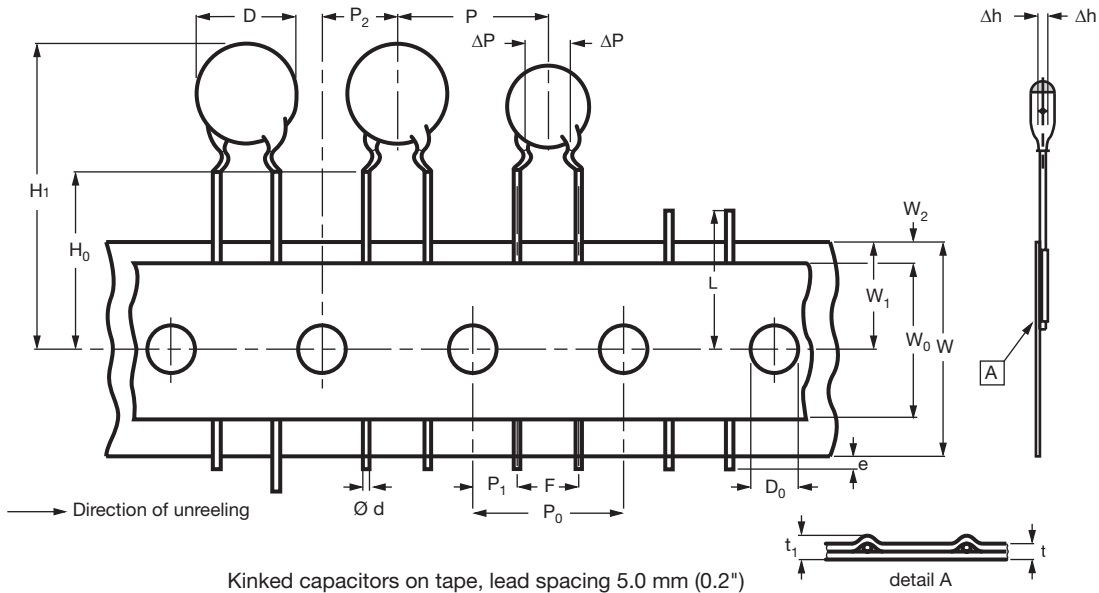
Notes

- ⁽¹⁾ SH = seated height; DR = run down
- Maximum thickness 4.0 mm
- Lead style codes refer to lead configurations

PACKAGING				
D _{MAX.}	SIZE CODE	PACKAGING QUANTITIES		
		BULK	REEL	AMMO
5.0 (0.20")	20	1000	2500	2000
6.5 (0.25")	25			
7.5 (0.29")	29			
8.5 (0.33")	33			
10.0 (0.39")	39			
11.0 (0.43")	43			

Note

- The capacitors are supplied in bulk packaging (cardboard boxes), in tape on reel or in ammpack

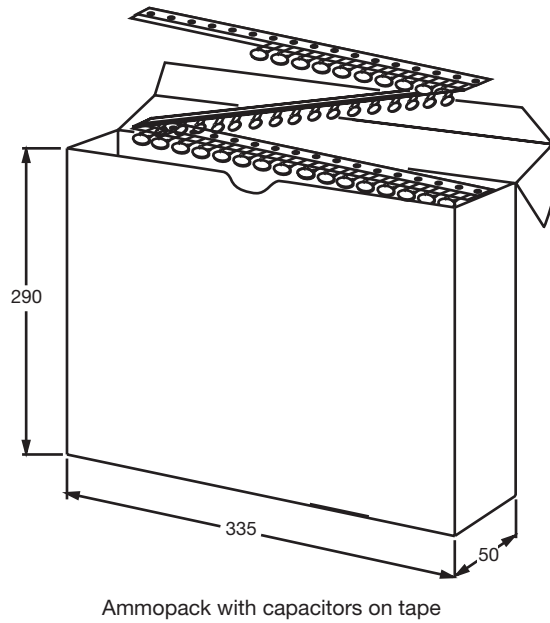
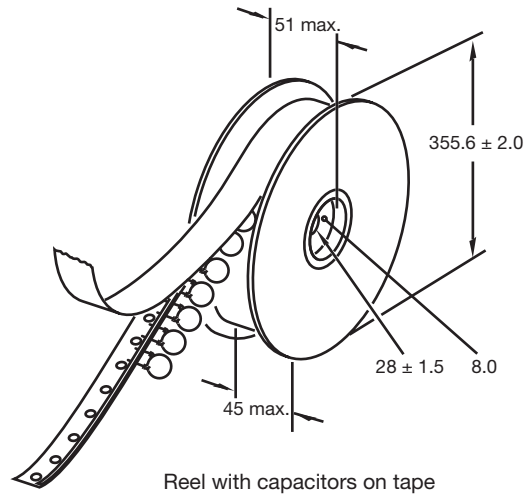


DIMENSIONS OF TAPE			
SYMBOL	PARAMETER	DIMENSIONS (mm)	
		FEED-HOLE PITCH P ₀ = 12.7 NOMINAL	FEED-HOLE PITCH P ₀ = 15.0 TOLERANCE
D	Body diameter	11.0 maximum	-
d	Lead diameter	0.6	± 0.05
P	Pitch between capacitors	12.7	± 1.0
P ₀ ⁽¹⁾	Feed-hole pitch	12.7	± 0.3
ΔP	Plane deviation	1.0 maximum	-
P ₁ ⁽²⁾	Feed-hole center to lead center	3.85	± 0.7
P ₂ ⁽²⁾	Feed-hole center to component center	6.35	± 1.3
F	Lead spacing	5.0	0.6/- 0.4
Δh	Component alignment	0	± 1.0
W	Tape width	18.0	+ 1.0/- 0.5
W ₀	Hold-down tape width	5.0 minimum	-
W ₁	Hole position	9.0	+ 0.75/- 0.5
W ₂	Hold-down tape margin	3.0 maximum	-
H ₀	Height to seating plane	16.0	± 0.5
H ₁	Maximum component height	32.0	-
e	Lead end protrusion	1.0 maximum	-
L	Maximum length of snapped lead	11.0	-
D ₀	Feed-hole diameter	4.0	± 0.2
t	Total tape thickness	0.9 maximum	-
t ₁	Maximum thickness of tape and wires	1.5 maximum	-

Notes

(1) Cumulative pitch error: ± ≤ 1 mm/20 pitches

(2) Obliquity maximum 3°

REEL AND TAPE DATA in millimeters



Disclaimer

All product specifications and data are subject to change without notice.

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 herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

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.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.