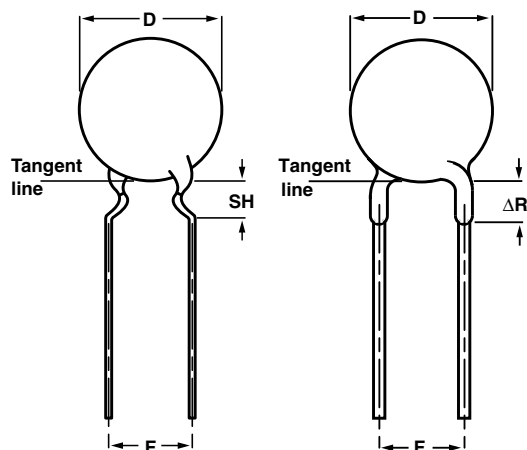


Ceramic Disc Capacitors

Class 1 and 2, 50 V (DC) General Purpose



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

FEATURES

- Low losses
- High stability
- High capacitance in small size
- Kinked (preferred) or straight leads
- Lead (Pb)-free available



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 (0.200") and straight leads with 2.5 mm (0.100"), lead length from 4 to 30 mm.

Encapsulation is made of phenolic resin.

TEMPERATURE COEFFICIENTS

Class 1 NPO; 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 55/125/21

Class 2 10/85/21 and 30/85/21

OPERATING TEMPERATURE RANGE

Class 1 - 55 to + 125 °C

Class 2 - 30 to + 85 °C

MARKING

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

CAPACITANCE RANGE

Class 1, at 1 MHz, 1.2 V (RMS); 1.0 to 100 pF

1 kHz, 1 ± 0.2 V (RMS) for capacitance values higher than 1000 pF

Class 2, at 1 kHz, 1 ± 0.2 V (RMS) 150 to 47 000 pF

RATED DC VOLTAGE

50 V

DIELECTRIC STRENGTH

250 % of rated voltage

INSULATION RESISTANCE AT 50 V (DC)

$\geq 10\,000\text{ M}\Omega$

TOLERANCE ON CAPACITANCE

$\pm 5\%$; $\pm 10\%$; $\pm 20\%$; $+ 80\%$ /- 20 %

DISSIPATION FACTOR

Class 1, $C \leq 30\text{ pF} \leq 20 \times (10/C + 0.7) \times 10^{-4}$ maximum

Class 1, $C > 30\text{ pF} \leq 0.2\%$

Class 2, $\leq 3.0\%$

ORDERING INFORMATION, CLASS 1, 50 V (DC), KINKED							
C (pF)	TOL. (%)	D _{max.} (mm)	LEAD SPACING F (mm)	SH/DR _{max.} ⁽²⁾ (mm)	CLEAR TEXT CODE		
					13 th DIGIT: T = REEL; U = AMMO; 3 = BULK		
CLASS 1 NP0							
1.0	± 0.25 pF	5.0	5.0	4.0	D109C20C0KF6.J5R		
1.5			2.5	1.5	D109C20C0KF6.L2R		
			5.0	4.0	D159C20C0KF6.J5R		
2.2			2.5	1.5	D159C20C0KF6.L2R		
			5.0	4.0	D229C20C0JF6.J5R		
3.3			2.5	1.5	D229C20C0JF6.L2R		
			5.0	4.0	D339C20C0JF6.J5R		
4.7			2.5	1.5	D339C20C0JF6.L2R		
			5.0	4.0	D479C20C0HF6.J5R		
6.8			2.5	1.5	D479C20C0HF6.L2R		
	5.0		4.0	D689D20C0HF6.J5R			
± 5	10		2.5	1.5	D689D20C0HF6.L2R		
			5.0	4.0	D100J20C0GF6.J5R		
	12		2.5	1.5	D100J20C0GF6.L2R		
			5.0	4.0	D120J20C0GF6.J5R		
	15		2.5	1.5	D120J20C0GF6.L2R		
			5.0	4.0	D150J20C0GF6.J5R		
	18		2.5	1.5	D150J20C0GF6.L2R		
			5.0	4.0	D180J20C0GF6.J5R		
	22		2.5	1.5	D180J20C0GF6.L2R		
			5.0	4.0	D220J20C0GF6.J5R		
	27		2.5	1.5	D220J20C0GF6.L2R		
			5.0	4.0	D270J20C0GF6.J5R		
	33		2.5	1.5	D270J20C0GF6.L2R		
			5.0	4.0	D330J20C0GF6.J5R		
	39		2.5	1.5	D330J20C0GF6.L2R		
			5.0	4.0	D390J20C0GF6.J5R		
	47		2.5	1.5	D390J20C0GF6.L2R		
			5.0	4.0	D470J20C0GF6.J5R		
	CLASS 1 SL0						
	56		± 5	5.0	5.0	4.0	D560J20SL0F6.J5R
68	2.5	1.5			D560J20SL0F6.L2R		
	5.0	4.0			D680J20SL0F6.J5R		
82	2.5	1.5			D680J20SL0F6.L2R		
	5.0	4.0			D820J20SL0F6.J5R		
100	2.5	1.5			D820J20SL0F6.L2R		
	5.0	4.0			D101J20SL0F6.J5R		
	2.5	1.5			D101J20SL0F6.L2R		

Notes

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

Ceramic Disc Capacitors
Class 1 and 2, 50 V (DC) General Purpose

Vishay BCcomponents

ORDERING INFORMATION, CLASS 2, 50 V (DC), KINKED					
C (pF)	TOL. (%)	D _{max.} (mm)	LEAD SPACING F (mm)	CLEAR TEXT CODE	
				SH/DR _{max.} ⁽²⁾ (mm)	13 th DIGIT: T = REEL; U = AMMO; 3 = BULK
CLASS 2 Y5P					
150	± 10	5.0	5.0	4.0	D151K20Y5PF6.J5R
180			2.5	1.5	D151K20Y5PF6.L2R
			5.0	4.0	D181K20Y5PF6.J5R
			2.5	1.5	D181K20Y5PF6.L2R
			5.0	4.0	D221K20Y5PF6.J5R
220			2.5	1.5	D221K20Y5PF6.L2R
			5.0	4.0	D331K20Y5PF6.J5R
330			2.5	1.5	D331K20Y5PF6.L2R
			5.0	4.0	D471K20Y5PF6.J5R
470			2.5	1.5	D471K20Y5PF6.L2R
			5.0	4.0	D681K20Y5PF6.J5R
680			2.5	1.5	D681K20Y5PF6.L2R
			5.0	4.0	D102K20Y5PF6.J5R
1000			2.5	1.5	D102K20Y5PF6.L2R
			5.0	4.0	D152K20Y5PF6.J5R
1500			2.5	1.5	D152K20Y5PF6.L2R
		6.5	5.0	4.0	D182K25Y5PF6.J5R
2.5			1.5	D182K25Y5PF6.L2R	
5.0			4.0	D222K25Y5PF6.J5R	
2.5			1.5	D222K25Y5PF6.L2R	
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		10.0	5.0	4.0	D103K39Y5PF6.J5R
			2.5	1.5	D103K39Y5PF6.L2R

Notes

1. Maximum thickness 4.0 mm.
2. SH = seated height; DR = run down
3. Lead Style codes refer to lead configurations

ORDERING INFORMATION, CLASS 2, 50 V (DC), KINKED AND STRAIGHT

C (pF)	TOL. (%)	D _{max.} (mm)	LEAD SPACING F (mm)	CLEAR TEXT CODE	
				SH/DR _{max.} ⁽²⁾ (mm)	13 th DIGIT: T = REEL; U = AMMO; 3 = BULK
CLASS 2 Z5U					
1000	± 20	5.0	5.0	4.0	D102M20Z5UF6.J5R
1500			2.5	1.5	D102M20Z5UF6.L2R
			5.0	4.0	D152M20Z5UF6.J5R
			2.5	1.5	D152M20Z5UF6.L2R
			5.0	4.0	D222M20Z5UF6.J5R
2200			2.5	1.5	D222M20Z5UF6.L2R
			5.0	4.0	D332M20Z5UF6.J5R
3300			2.5	1.5	D332M20Z5UF6.L2R
			5.0	4.0	D472M20Z5UF6.J5R
4700			2.5	1.5	D472M20Z5UF6.L2R
		6.5	5.0	4.0	D682M25Z5UF6.J5R
2.5			1.5	D682M25Z5UF6.L2R	
10 000		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		10.0	5.0	4.0	D223M39Z5UF6.J5R
			2.5	1.5	D223M39Z5UF6.L2R
CLASS 2 Y5V					
1000	+ 80/- 20	5.0	5.0	4.0	D102Z20Y5VF6.J5R
1500			2.5	1.5	D102Z20Y5VF6.L2R
			5.0	4.0	D152Z20Y5VF6.J5R
			2.5	1.5	D152Z20Y5VF6.L2R
			5.0	4.0	D222Z20Y5VF6.J5R
2200			2.5	1.5	D222Z20Y5VF6.L2R
			5.0	4.0	D332Z20Y5VF6.J5R
3300			2.5	1.5	D332Z20Y5VF6.L2R
			5.0	4.0	D472Z20Y5VF6.J5R
4700			2.5	1.5	D472Z20Y5VF6.L2R
		6.5	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		10.0	5.0	4.0	D223Z39Y5VF6.J5R
			2.5	1.5	D223Z39Y5VF6.L2R
CLASS 2 Z5V					
4700	+ 80/- 20	5.0	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		10.0	5.0	4.0	D473Z39Z5VF6.J5R
			2.5	1.5	D473Z39Z5VF6.L2R

Notes

- Maximum thickness 4.0 mm.
- SH = seated height; DR = run down
- Lead Style codes refer to lead configurations

Ceramic Disc Capacitors

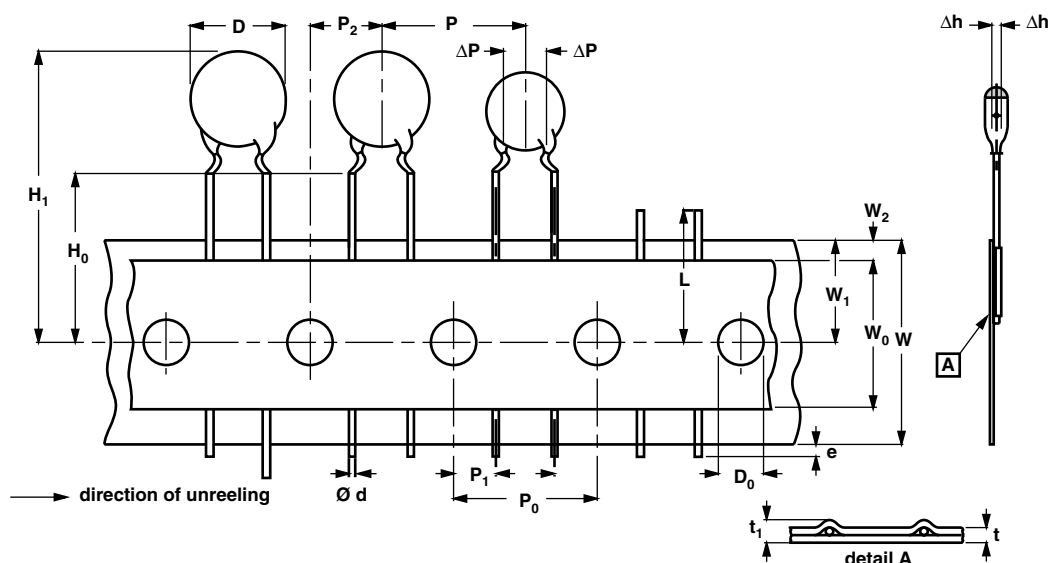
Class 1 and 2, 50 V (DC) General Purpose

Vishay BCcomponents

PACKAGING				
D _{max.} (mm)	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



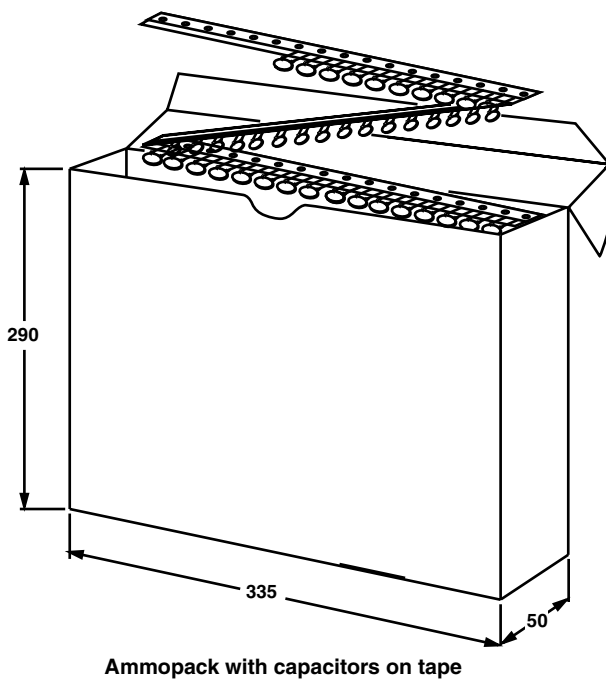
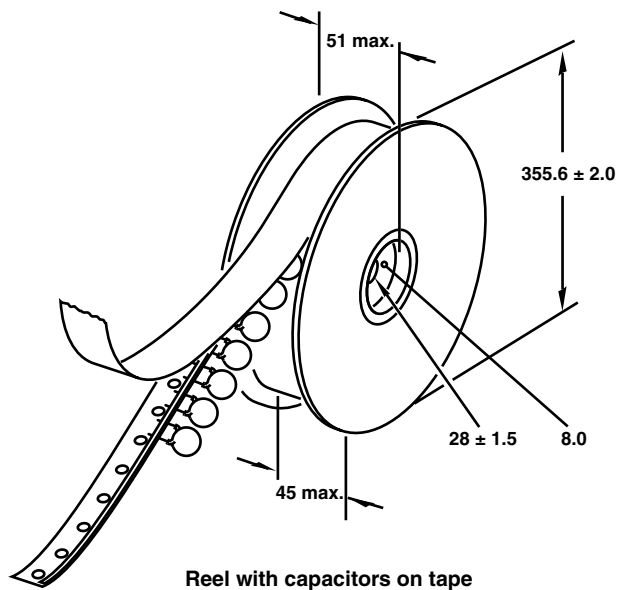
Kinked capacitors on tape, lead spacing 5.0 mm (0.2"), on tape

DIMENSIONS OF TAPE			
SYMBOL	PARAMETER	DIMENSIONS (mm)	
		NOMINAL	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; note
ΔP	Plane deviation	1.0 maximum	—
P ₁ ⁽²⁾	Feed-hole centre to lead center	3.85	± 0.7; note
P ₂ ⁽²⁾	Feed-hole centre to component center	6.35	± 1.3; note
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

- Cumulative pitch error: $\pm \leq 1$ mm/20 pitches.
- 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.