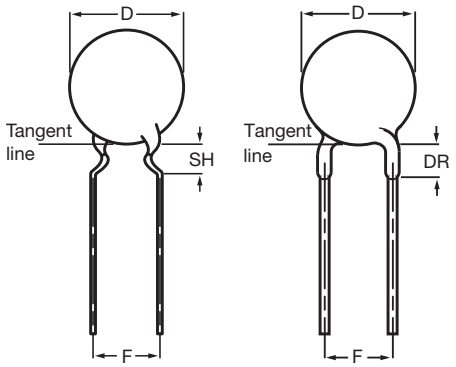
Ceramic Disc Capacitors
Class 1 and 2, 50 V_{DC}, General Purpose



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

FEATURES

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

Pb e3 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.

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

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 x (10/C + 0.7) x 10^{-4} maximum

Class 1, C > 30 pF ≤ 0.2 %

Class 2, ≤ 3.0 %

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

ORDERING INFORMATION, CLASS 1, 50 V_{DC}, KINKED					
C (pF)	TOL. (%)	$D_{MAX.}$ (mm)	$SH/DR_{MAX.}$ [1] (mm)	CLEAR TEXT CODE	
				13TH DIGIT: T = REEL; U = AMMO; 3 = BULK	
CLASS 1 NP0					
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			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	± 0.5 pF		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 SL0					
56	± 5.0	5.0	5.0	4.0	D560J20SL0F6.J5R
			2.5	1.5	D560J20SL0F6.L2R
68			5.0	4.0	D680J20SL0F6.J5R
			2.5	1.5	D680J20SL0F6.L2R
82			5.0	4.0	D820J20SL0F6.J5R
			2.5	1.5	D820J20SL0F6.L2R
100			5.0	4.0	D101J20SL0F6.J5R
			2.5	1.5	D101J20SL0F6.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 13TH 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 13TH 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

ORDERING INFORMATION, CLASS 2, 50 V_{DC}, KINKED AND STRAIGHT

C (pF)	TOL. (%)	$D_{MAX.}$ (mm)	$SH/DR_{MAX.}$ [1] (mm)	CLEAR TEXT CODE 13TH 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			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		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	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

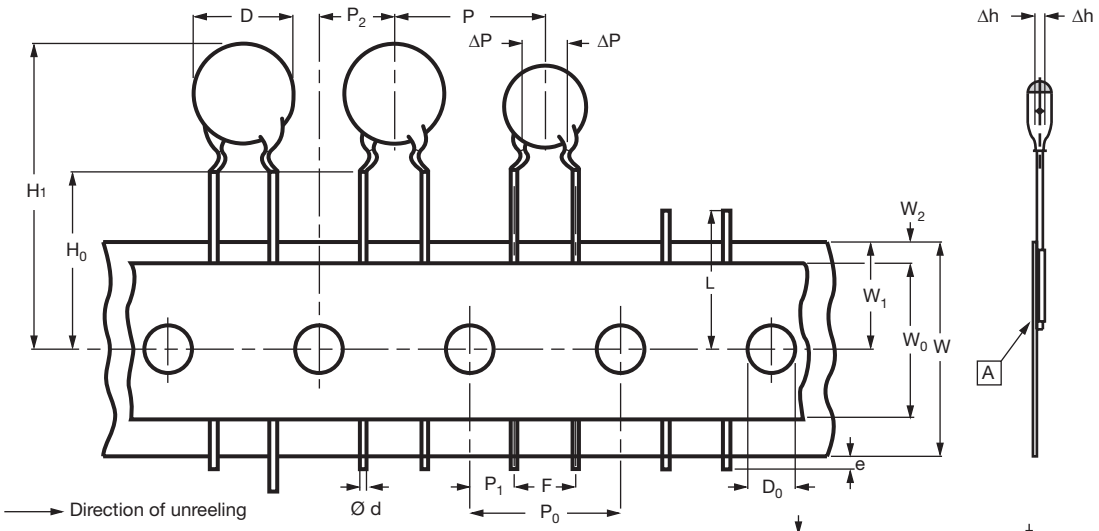
- Maximum thickness 4.0 mm
- Lead style codes refer to lead configurations

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 ammopack



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

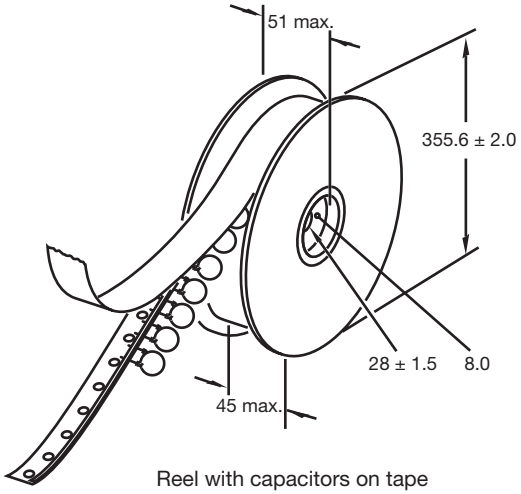
DIMENSIONS OF TAPE			
SYMBOL	PARAMETER	DIMENSIONS (mm)	
		FEED-HOLE PITCH P_0 = 12.7	FEED-HOLE PITCH P_0 = 15.0
		NOMINAL	TOLERANCE
D	Body diameter	11.0 maximum	-
d	Lead diameter	0.6	± 0.05
P	Pitch between capacitors	12.7	± 1.0
P_0 (1)	Feed-hole pitch	12.7	± 0.3
ΔP	Plane deviation	1.0 maximum	-
P_1 (2)	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 snipped 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

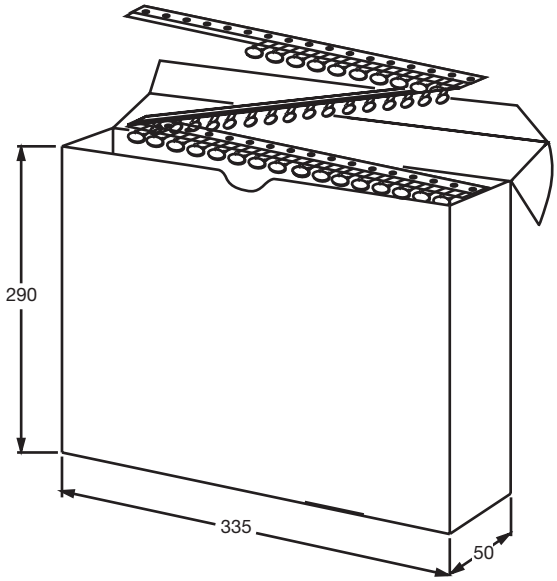
(1) Cumulative pitch error: ± ≤ 1 mm/20 pitches

(2) Obliquity maximum 3°

REEL AND TAPE DATA in millimeters



Reel with capacitors on tape



Ammopack with capacitors on tape

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