

## Ceramic Disc Capacitors Class 1 and 2, 500 V<sub>DC</sub>, General Purpose



Capacitors with 5 mm (0.20") and 7.5 mm (0.30") lead spacing

QUICK REFERENCE DATA		
DESCRIPTION	CLASS 1 (C0G (NP0), SL0)	CLASS 2 (Y5P, Z5U, Y5V, X5F)
Voltage (V <sub>DC</sub> )	500	
Min. Capacitance (pF)	10	100
Max. Capacitance (pF)	82	22 000
Mounting	Through hole	

### MARKING

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

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

### OPERATING TEMPERATURE RANGE

Class 1, - 55 °C to + 125 °C

Class 2, - 55 °C to + 85 °C

### TEMPERATURE COEFFICIENTS

Class 1, C0G (NP0); SL0

Class 2, Y5P; Z5U; Y5V; X5F

### 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, 30/85/21 and 55/85/21

### 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 (0.200") or 7.5 mm (0.300") and a lead length from 4 mm to 30 mm. Encapsulation is made of phenolic resin.

### CAPACITANCE RANGE

Class 1, at 1 MHz, 1.2 V<sub>RMS</sub>; 10 pF to 82 pF

Class 2, at 1 kHz, 1 ± 0.2 V<sub>RMS</sub>; 100 pF to 22 000 pF

1 kHz, 1 V<sub>RMS</sub> ± 0.2 V<sub>RMS</sub> for capacitance values higher than 1000 pF

### RATED DC VOLTAGE

500 V

### DIELECTRIC STRENGTH

250 % of rated voltage

### INSULATION RESISTANCE AT 500 V<sub>DC</sub>

≥ 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<sup>-4</sup> maximum

Class 1, C > 30 pF; ≤ 0.2 %

Class 2, ≤ 3.0 %



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<b>ORDERING INFORMATION (PREFERRED TYPES), CLASS 1, 500 V<sub>DC</sub>, KINKED</b>					
C (pF)	TOL. (%)	D <sub>MAX.</sub> (mm)	LEAD SPACING (mm)	SH <sup>(1)</sup> (mm)	CLEAR TEXT CODE
					13 <sup>TH</sup> DIGIT: T = REEL; U = AMMO; 3 = BULK 16 <sup>TH</sup> DIGIT: R = RoHS COMPLIANT
<b>CLASS 1 NP0</b>					
10	± 5	5.0	5.0	4.0	D100J20C0GL6.J5.
12					D120J20C0GL6.J5.
15					D150J20C0GL6.J5.
18		D180J25C0GL6.J5.			
22		D220J25C0GL6.J5.			
27		D270J25C0GL6.J5.			
<b>CLASS 1 SL0</b>					
33	± 5	5.0	5.0	4.0	D330J20SL0L6.J5.
39					D390J20SL0L6.J5.
47					D470J20SL0L6.J5.
56		D560J20SL0L6.J5.			
68		D680J25SL0L6.J5.			
82		D820J25SL0L6.J5.			

**Notes**

<sup>(1)</sup> SH = seated height

- Maximum thickness 4.0 mm
- Lead style codes refer to inward kinked leads. Other styles available on request

<b>ORDERING INFORMATION (PREFERRED TYPES), CLASS 2, 500 V<sub>DC</sub>, KINKED</b>					
C (pF)	TOL. (%)	D <sub>MAX.</sub> (mm)	LEAD SPACING (mm)	SH <sup>(1)</sup> (mm)	CLEAR TEXT CODE
					13 <sup>TH</sup> DIGIT: T = REEL; U = AMMO; 3 = BULK 16 <sup>TH</sup> DIGIT: R = RoHS COMPLIANT
<b>CLASS 2 Y5P</b>					
100	± 10	5	5	4.0	D101K20Y5PL6.J5.
150					D151K20Y5PL6.J5.
220					D221K20Y5PL6.J5.
330					D331K20Y5PL6.J5.
470					D471K20Y5PL6.J5.
680					D681K25Y5PL6.J5.
1000		D102K25Y5PL6.J5.			
1500		D152K29Y5PL6.J5.			
2200		D222K33Y5PL6.J5.			
3300		D332K39Y5PL6.J5.			
4700		D472K43Y5PL6.J5.			
6800		D682K53Y5PL6.J7			
10 000		D103K69Y5PL6.J7.			
<b>CLASS 2 Y5V</b>					
1000	+ 80/- 20	5	5	4.0	D102Z20Y5VL6.J5.
1500					D152Z20Y5VL6.J5.
2200					D222Z25Y5VL6.J5.
3300		D322Z25Y5VL6.J5.			
4700		D472Z29Y5VL6.J5.			
6800		D682Z33Y5VL6.J5.			
10 000		D103Z39Y5VL6.J5.			
15 000		D153Z43Y5VL6.J5.			
22 000		D223Z53Y5VL6.J7.			
					13.5

ORDERING INFORMATION (PREFERRED TYPES), CLASS 2, 500 V <sub>DC</sub> , KINKED						
C (pF)	TOL. (%)	D <sub>MAX.</sub> (mm)	LEAD SPACING (mm)	SH <sup>(1)</sup> (mm)	CLEAR TEXT CODE	
					13 <sup>TH</sup> DIGIT: T = REEL; U = AMMO; 3 = BULK 16 <sup>TH</sup> DIGIT: R = RoHS COMPLIANT	
<b>CLASS 2 Z5U</b>						
1000	± 20	5.0	5.0	4.0	D102M20Z5UL6.J5.	
1500					D152M25Z5UL6.J5.	
2200					D222M25Z5UL6.J5.	
3300					7.5	D332M29Z5UL6.J5.
4700					8.5	D472M33Z5UL6.J5.
6800					10.0	D682M39Z5UL6.J5.
10 000		11.0	D103M43Z5UL6.J5.			
15 000		13.5	D153M53Z5UL6.J7.			
22 000		15.0	7.5		D223M59Z5UL6.J7.	
<b>CLASS 2 X5F</b>						
1 00	± 10	5.0	5.0	4.0	D101K20X5FL6.J5.R.	
2 20					D221K20X5FL6.J5.R.	
330					D331K20X5FL6.J5.R.	
470					6.5	D471K25X5FL6.J5.R.
680					7.5	D681K25X5FL6.J5.R.
1000					10.0	D102K29X5FL6.J5.R.
2200		12.0	D222K39X5FL6.J5.R.			
3300		13.5	7.5		D332K47X5FL6.J7R.	
4700					4.8	D472K53X5FL6.J7R.

**Note**

- (1) SH = seated height
- Maximum thickness 4.0 mm
- Lead style codes refer to inward kinked leads. Other styles available on request

PACKAGING				
D <sub>MAX.</sub> (mm)	SIZE CODE	PACKAGING QUANTITIES		
		BULK	REEL	AMMO
5.0 (0.20")	20	1000	2000	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			
12.0 (0.47")	47	500	-	-
13.5 (0.53")	53			
15.0 (0.59")	59			
17.5 (0.69")	69			

**Note**

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

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

**Notes**
<sup>(1)</sup> Cumulative pitch error: ± ≤ 1 mm/20 pitches

<sup>(2)</sup> Obliquity maximum 3°

# D Series

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## REEL AND TAPE DATA in millimeters





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