Disc Ceramic Capacitors

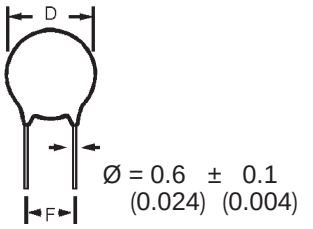
General Specifications - Class II General Purpose

DIELECTRIC - CLASS II

These ceramic capacitors have a high dielectric constant, what makes possible a high capacitance values in reduced dimensions, however temperature coefficient and loss factor are greater than Class I.

Typical applications are decoupling and by pass.

Meets IEC 384-9 (1988).



DIMENSIONS

millimeters (inches)

Digit 9 (ø)	D ± 2 (0.079)	T max.	Available Lead Spacing				
			Vn = 100V/500V	Vn = 1000V	Vn = 2000V	Vn = 3000V	Vn = 4000/5000V
A	4.0 (0.157)	3.0 (0.118)	A,B,D,E,O,R	A,B,E,N,R	A,B,E,N,R	B,E	
B	5.0 (0.197)	4.0 (0.157)	A,B,D,E,O,R,X	A,B,E,N,R,X	A,B,E,N,R	B,E	
C	6.0 (0.236)	4.0 (0.157)	A,B,C,D,E,O,R,X	A,B,C,E,N,R,X	A,B,C,E,N,R,	B,C,E	C
D	7.0 (0.276)	4.0 (0.157)	A,B,C,D,E,O,R,X	A,B,C,E,N,Q,R,X	A,B,C,E,N,Q,R	B,C,E	C
E	8.0 (0.315)	4.0 (0.157)	A,B,C,D,E,O,R,X	A,B,C,E,N,Q,R,X	A,B,C,E,N,Q,R	B,C,E	C
F	9.0 (0.354)	5.0 (0.197)	A,B,C,E,O,R,X	A,B,C,E,N,R,X	A,B,C,E,N,R	B,C,E	C
G	10.0 (0.394)	5.0 (0.197)	A,B,C,E,O,R,X	A,B,C,E,N,R,X	A,B,C,E,N,R	B,C,E	C
H	11.0 (0.433)	5.0 (0.197)	A,B,C,E,O,R,X	A,B,C,E,N,P,R,W	A,B,C,E,N,P,R,W	B,C,E,P,W	C,P
J	13.0 (0.512)	6.0 (0.236)	B,C,R,W	B,C,N,P,R,W	B,C,P,W	B,C,P,W	C,P
K	15.0 (0.591)	6.0 (0.236)	B,C,R,W	B,C,N,P,R,W	B,C,P,W	B,C,P,W	C,P
M	19.0 (0.748)	7.0 (0.276)	B,C	B,C,P	B,C,P	B,C,P	C,P

(E), (X), (W): upon request

LEAD SPACING – DIGIT 8 OF P.N.

millimeters (inches)

	100V/500V		1kV...5kV/100Vac...150Vac		
F					
2.5 (0.100)	D	—	—	—	—
5 (0.200)	A	O	A	—	N
6 (0.250)	E	X	E	X	—
7.5 (0.300)	B	R	B	R	Q
10 (0.400)	C	W	C	W	—
12.5 (0.500)	P	—	P	—	—

Disc Ceramic Capacitors

General Specifications - Class II General Purpose

100V / 500V PERFORMANCE CHARACTERISTICS CLASS II

Voltage Rating	100V and 500V
Measured at	1.0 kHz / 0.3 Vrms / 25ºC
Dissipation Factor	Y5E / Y5F / Y5P ≤ 2.5% Y5U / Y5V / Z5V ≤ 3.0%
Capacitance Tolerance	Y5E / Y5F / Y5P → ±10% Y5E / Y5E / Y5P / Y5U → ±20% Y5U / Y5V / Z5V → -20% +50%
Insulation Resistance	@ V_R → ≥ 10 GΩ
Dielectric Strength NOTE: Charging current limited to 50 mA	V_R = 100V → Vt = 250V (DC) V_R = 500V → Vt = 1250V (DC)
Operating Temperature Range (ºC)	-30... +85
Climatic Category	30 / 085 / 21 Phenolic Coated

Note: Damp Heat Steady State: 90... 95% R.H. 40ºC / 21 days. No voltage to be applied.

1kV ... 5kV PERFORMANCE CHARACTERISTICS CLASS II

Voltage Rating	1kV ... 5kV
Measured at	1.0 kHz / 0.3 Vrms / 25ºC
Dissipation Factor	Y5F → ≤ 2.5% Y5U / Y5V ≤ 3.0%
Capacitance Tolerance	Y5F → ±10% / ±20% Y5U → ±20% / -20 +50% Y5V → -20 +50%
Insulation Resistance	@ 500V → ≥ 10 GΩ
Dielectric Strength NOTE: Charging current limited to 50 mA	1.5 x V_R + 500 (DC)
Operating Temperature Range (ºC)	-30... +85 Phenolic Coated -30... +125 Epoxy Coated
Climatic Category	30 / 085 / 21 Phenolic Coated 30 / 085 / 56 Epoxy Coated

Note: Damp Heat Steady State: 90... 95% R.H. 40ºC / 21 days. No voltage to be applied.

Disc Ceramic Capacitors
Dimension Table
High Voltage - Class II General Purpose

1kV / 5kV CLASS II – CAPACITANCE VS. DISC DIAMETER

millimeters (inches)

Temp. Coefficient	Y5F			Y5U					Y5V		
Digits 1,2,3 of P.N.	5NR	5NS	5NT	5SR	5SS	5ST	5SU	5SW	5TR	5TS	5TT
Rated Voltage (V_R)	1000 VDC 100 VAC	2000 VDC 150 VAC	3000 VDC 150 VAC	1000 VDC 100 VAC	2000 VDC 150 VAC	3000 VDC 150 VAC	4000 VDC 150 VAC	5000 VDC 150 VAC	1000 VDC 150 VAC	2000 VDC 150 VAC	3000 VDC 150 VAC
C_R (pF)											
100	4.0 (0.157)	4.0 (0.157)		Use Y5F	Use Y5F	Use Y5F	8.0 (0.315)	11.0 (0.433)	Use Y5F	Use Y5F	Use Y5F
120											
150											
180		5.0 (0.197)	6.0 (0.236)								
220			7.0 (0.276)								
270											
330		6.0 (0.236)		4.0 (0.157)	5.0 (0.197)	7.0 (0.276)			Use Y5U	Use Y5U	Use Y5U
390	5.0 (0.197)	7.0 (0.276)	8.0 (0.315)								
470											
560	6.0 (0.236)				6.0 (0.236)						
680	7.0 (0.276)	8.0 (0.315)	9.0 (0.354)				10.0 (0.394)		4.0 (0.157)	6.0 (0.236)	7.0 (0.276)
820			10.0 (0.394)	5.0 (0.197)	7.0 (0.276)	8.0 (0.315)					
1,000		9.0 (0.354)					11.0 (0.433)	13.0 (0.512)	5.0 (0.197)	7.0 (0.276)	8.0 (0.315)
1,200			11.0 (0.433)			9.0 (0.354)			6.0 (0.236)		
1,500	8.0 (0.315)	10.0 (0.394)	13.0 (0.512)	6.0 (0.236)	8.0 (0.315)				7.0 (0.276)	8.0 (0.315)	9.0 (0.354)
1,800	9.0 (0.354)	11.0 (0.433)		7.0 (0.276)	9.0 (0.354)	10.0 (0.394)			8.0 (0.315)		
2,200	11.0 (0.433)	13.0 (0.512)	15.0 (0.591)			11.0 (0.433)	13.0 (0.512)	15.0 (0.591)		9.0 (0.354)	11.0 (0.433)
2,700									9.0 (0.354)		
3,300	13.0 (0.512)	15.0 (0.591)	19.0 (0.748)	8.0 (0.315)	10.0 (0.394)	13.0 (0.512)	15.0 (0.591)	19.0 (0.748)		11.0 (0.433)	13.0 (0.512)
3,900	15.0 (0.591)								10.0 (0.394)		
4,700				9.0 (0.354)	11.0 (0.433)		19.0 (0.748)			13.0 (0.512)	15.0 (0.591)
5,600				10.0 (0.394)	13.0 (0.512)	15.0 (0.591)			13.0 (0.512)	15.0 (0.591)	19.0 (0.748)
6,800				11.0 (0.433)							
8,200				13.0 (0.512)	15.0 (0.591)	19.0 (0.748)			15.0 (0.591)		
10,000											
12,000				15.0 (0.591)							
15,000											
22,000											

Diameter (ϕ) = 9th Part Number Digit

Disc Ceramic Capacitors

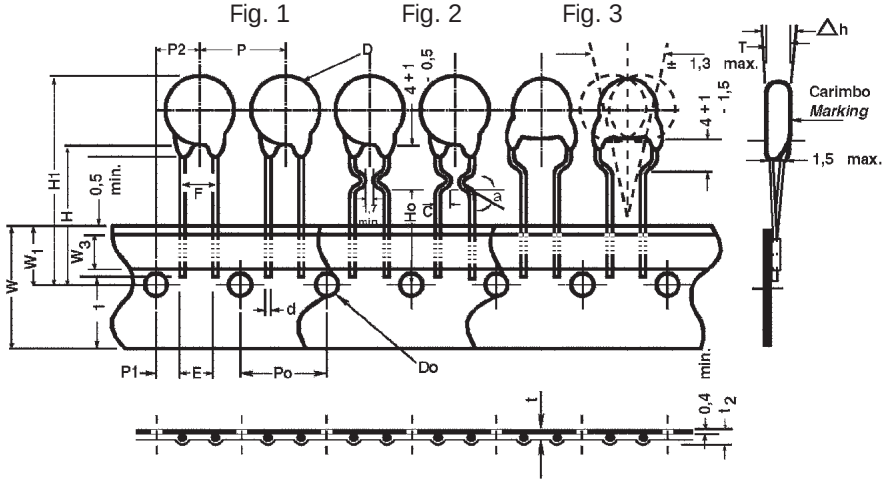
Tape and Reel Specifications

There are two types of taped disc ceramic capacitors:
Straight or crimped leads.

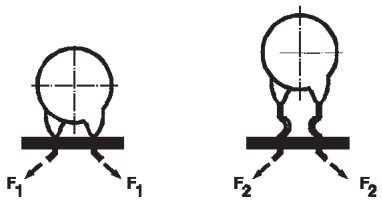
Both types can be shipped on reels or ammopack.
The standard packaging quantities are shown bellow:

millimeters (inches)

Fig. 1 Fig. 2 Fig. 3



Straight leads Crimped leads



Maximum pull force during insertion and lead cut

	F_1	F_2
4 (0.157) ≤ D < 6 (0.236)	12N	20N
D ≥ 6 (0.236)	20N	25N

Digit 11		Available Tapings		Digit 9
L M	→	Sizes	4 (0.157) ≤ D ≤ 11 (0.433)	A... H
J H K I	→	Sizes	6 (0.236) ≤ D ≤ 11 (0.433)	C... H

TPC Code Digit 11

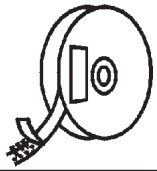
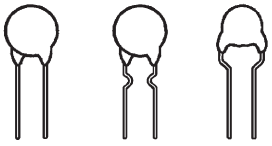
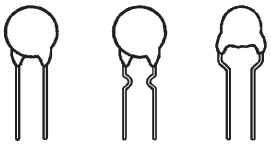
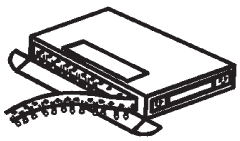
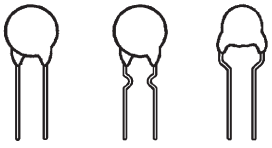
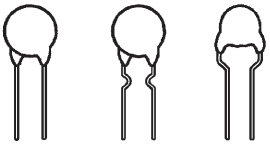
Packaging	Avisert	Panasert
Reel 	 H L L FIGURE 1 FIGURE 2 FIGURE 3	 J L L FIGURE 1 FIGURE 2 FIGURE 3
Ammopack 	 I M M FIGURE 1 FIGURE 2 FIGURE 3	 K M M FIGURE 1 FIGURE 2 FIGURE 3

Figure 2: Inside Crimp 100V... 1000V
Figure 3: Outside Crimp 1000V

Disc Ceramic Capacitors

Tape and Reel Specifications

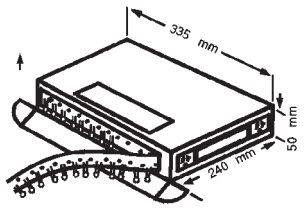
millimeters (inches)

Description of Symbols		Straight Leads		Crimped
		Figure 1		Figure 2 & 3
		A (Avisert)	P (Panasert)	Avisert & Panasert
Crimp angle	∝	—	—	20º...45º
Crimp length	C	—	—	1.7 min.
Lead diameter	d	0.60 ± 0.1		
Disc diameter	D	11 max.		
Lead hole diameter	Do	4.0 ± 0.2		
Disc thickness	T	See Catalog		
Lead spacing	F	$5.0^{+0.6}_{-0.2}$		
Component alignment, front-rear	Δ h	0 ± 1		
Height of component from tape center	H	19.5 ± 0.5	16.5 ± 0.5 - 0	—
Height from tape center to crimp	Ho	—	—	16 + 0.5 - 0
Component height	H1	32.25 max.	>23.5 <32.25	32.25 max.
Distance from component leads to tape bottom	ℓ_1	12 max.		
Tape width	W	$18^{+1}_{-0.5}$		
Bonding tape width	W_3	5.5 min.		
Feed hole position	W_1	9.0 ± 0.5		
Pitch between discs	P	12.7 ± 1		
Feed hole pitch	Po	12.7 ± 0.3		
Hole center to lead	P1	3.85 ± 0.7		
Feed hole center to component center	P2	6.35 ± 1		
Tape + bonding tape thickness	t	0.7 ± 0.2		
Total tape thickness. including lead	t_2	1.5 max.		

PACKAGING

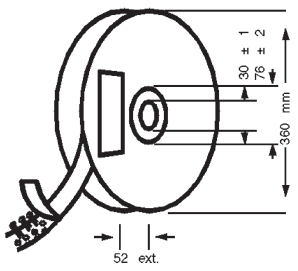
Ammopack

This side up during storage and transportation



max. stacking: 10 boxes

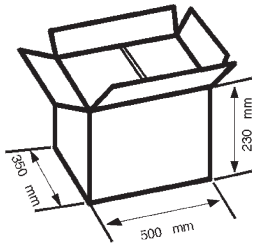
Reel



max. stacking: 10 reels

SHIPPING CONTAINER

8 Ammopack



5 Reel