

Lower Voltage Ceramic Singlelayer DC Disc Capacitors 2 kV_{DC} to 7.5 kV_{DC}


FEATURES

- Low losses
- High capacitance in small sizes
- High stability
- Radial leads
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


**RoHS
COMPLIANT**
APPLICATIONS

- Lighting ballasts
- SMPS
- DC and pulse high voltage

DESIGN

The capacitors consist of a ceramic disc of which both sides are silver-plated. Connection leads are made of tinned copper having diameters of 0.025" (0.64 mm) or 0.032" (0.81 mm).

The capacitors may be supplied with radial kinked or straight leads having lead spacing of 0.250" (6.35 mm) or 0.375" (9.5 mm) or 0.500" (12.7 mm).

The standard tolerances are $\pm 10\%$ or $\pm 20\%$.

Coating is made of resin coating or flame retardant epoxy resin in accordance with "UL 94 V-0".

CAPACITANCE RANGE

10 pF to 0.10 μ F

RATED VOLTAGE

2 kV_{DC}
3 kV_{DC}
6 kV_{DC}
7.5 kV_{DC}

DIELECTRIC STRENGTH BETWEEN LEADS

Component test:

2 kV_{DC} 3600 V_{DC}, 2 s
3 kV_{DC} 5000 V_{DC}, 2 s
6 kV_{DC} 10 500 V_{DC}, 2 s
7.5 kV_{DC} 11 250 V_{DC}, 2 s

CERAMIC DIELECTRIC

C0G, U2J, R3L (Class 1)
X7R, X5F, X5S, Y5S, Y5U, Y5V, Z5U (Class 2)

QUICK REFERENCE DATA						
DESCRIPTION	VALUE					
Ceramic Class	1		2			
Ceramic Dielectric	U2J, R3L	C0G, U2J, R3L	X7R, Y5S, Y5U, Z5U, Y5V	X5F, X5R, X5S, X7R, Y5S, Y5U, Z5U	X5F, X5S, Y5U, Z5U	X5F, Y5U, Z5U
Voltage (V _{DC})	3000	6000	2000	3000	6000	7500
Min. Capacitance (pF)	10	10	100	47	100	100
Max. Capacitance (pF)	33	47	100 000	33 000	10 000	2500
Mounting	Radial					

INSULATION RESISTANCE

2 kV_{DC} min. 10 000 M Ω
3 kV_{DC} min. 50 000 M Ω ⁽¹⁾
6 kV_{DC} min. 75 000 M Ω
7.5 kV_{DC} min. 200 000 M Ω

Note

⁽¹⁾ Exemption: 565R30GASS33 min. 25 000 M Ω

TOLERANCE ON CAPACITANCE

$\pm 10\%$, $\pm 20\%$, -20% to $+80\%$

DISSIPATION FACTOR

Class 1: 0.2 % max. at 1 MHz; 1 V
Class 2: 2.0 % max. at 1 kHz; 1 V

CATEGORY TEMPERATURE RANGE

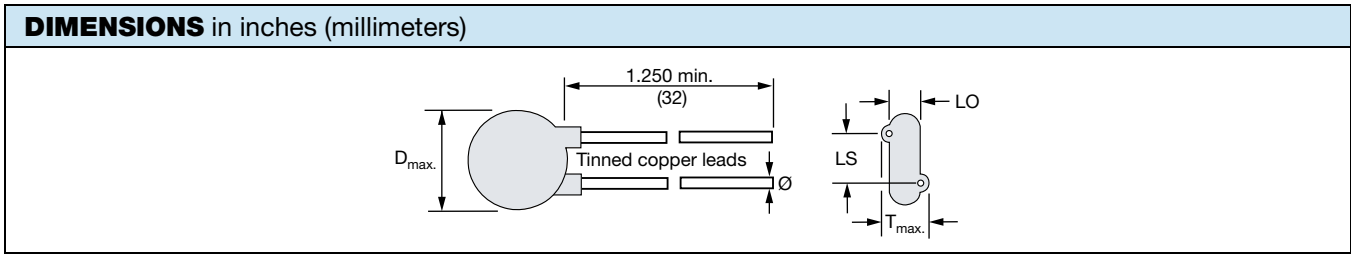
-25 °C to +85 °C

CLIMATIC CATEGORY ACC. TO EN 60068-1

25/085/21

OPERATING TEMPERATURE RANGE

-25 °C to +105 °C



ORDERING INFORMATION, CERAMIC 2 kV _{DC}											
C (pF)	TOL. (%)	D _{max.} DIAMETER INCH (mm)	T _{max.} THICKNESS INCH (mm)	LS LEAD SPACE INCH (mm) ± 1 mm	LO LEAD OFFSET INCH (mm) ± 0.5 mm	WIRE SIZE		ORDERING CODE			
						AWG	INCH (mm)				
X7R											
100	± 10	0.330 (8.4)	0.190 (4.8)	0.250 (6.4)	0.075 (1.9)	20	0.032 (0.81)	564R20TST10			
220			0.180 (4.6)					564R20TST22			
330			0.075 (1.9)					564R20TST33			
470			0.170 (4.3)					0.063 (1.6)	564R20TST47		
560			0.185 (4.7)					0.087 (2.2)	564R20TST56		
680			0.075 (1.9)					564R20TST68			
1000		0.400 (10.2)	0.175 (4.4)					0.083 (2.1)	564R20TSD10		
1500		0.460 (11.7)	0.160 (4.1)					0.063 (1.6)	564R20TSD15		
1800								0.055 (1.4)	564R20TSD18		
2200								0.067 (1.7)	564R20TSD22		
3300								0.530 (13.5)	0.170 (4.3)	0.063 (1.6)	564R20TSD33
3900								0.680 (17.3)	0.170 (4.3)	0.075 (1.9)	564R20TSD39
4700										0.375 (9.5)	0.071 (1.8)
Y5S											
1000	± 20	0.330 (8.4)	0.175 (4.4)	0.250 (6.4)	0.067 (1.7)	20	0.032 (0.81)	564R20TSSD10			
2200		0.460 (11.7)	0.170 (4.3)		0.071 (1.8)			564R20TSSD22			
5600		0.790 (20.0)	0.190 (4.8)		0.375 (9.5)			0.091 (2.3)	564R20TSSD56		
Y5U											
1000	± 20	0.330 (8.4)	0.170 (4.3)	0.250 (6.4)	0.067 (1.7)	20	0.032 (0.81)	564R20GAD10			
1500		0.330 (8.4)	0.170 (4.3)		0.071 (1.8)			564R20GAD15			
Z5U											
1800	± 20	0.360 (9.1)	0.170 (4.3)	0.250 (6.4)	0.071 (1.8)	20	0.032 (0.81)	564R20GAD18			
2200		0.400 (10.2)	0.175 (4.4)		0.075 (1.9)			564R20GAD22			
3300		0.430 (10.9)			0.071 (1.8)			564R20GAD33			
4700		0.530 (13.5)			0.075 (1.9)			564R20GAD47			
6800		0.560 (14.2)	0.170 (4.3)		0.375 (9.5)			0.067 (1.7)	564R20GAD68		
Y5V											
0.01 µF	± 20	0.620 (15.7)	0.170 (4.3)	0.375 (9.5)	0.067 (1.7)	20	0.032 (0.81)	564R20GASS10			
0.05 µF		0.950 (24.1)	0.174 (4.4)		0.067 (1.7)			20	564R20GAS50		
0.10 µF		0.950 (24.1)	0.240 (6.1)		0.067 (1.7)			22	0.025 (0.64)	565R20GAP10	



ORDERING INFORMATION, CERAMIC 3 kV _{DC}									
C (pF)	TOL. (%)	D _{max.} DIAMETER INCH (mm)	T _{max.} THICKNESS INCH (mm)	LS LEAD SPACE INCH (mm) ± 1 mm	LO LEAD OFFSET INCH (mm) ± 0.5 mm	WIRE SIZE		ORDERING CODE	
						AWG	INCH (mm)		
U2J (N750)									
10	± 20	0.330 (8.4)	0.210 (5.3)	0.250 (6.4)	0.110 (2.8)	20	0.032 (0.81)	564R30GAQ10	
R3L (N2200)									
22	± 20	0.330 (8.4)	0.200 (5.1)	0.250 (6.4)	0.102 (2.6)	20	0.032 (0.81)	564R30GAQ22	
27			0.190 (4.8)		0.091 (2.3)			564R30GAQ27	
33			0.170 (4.3)		0.071 (1.8)			564R30GAQ33	
X5F									
56	± 20	0.330 (8.4)	0.190 (4.8)	0.250 (6.4)	0.091 (2.3)	20	0.032 (0.81)	564R30GAQ56	
68			0.200 (5.1)		0.102 (2.6)			564R30GAQ68	
270			0.180 (4.6)		0.083 (2.1)			564R30GAT27	
X5R									
330	± 20	0.330 (8.4)	0.175 (4.4)	0.250 (6.4)	0.075 (1.9)	20	0.032 (0.81)	564R30GAT33	
X5S									
470	± 20	0.330 (8.4)	0.175 (4.4)	0.250 (6.4)	0.075 (1.9)	20	0.032 (0.81)	564R30GAT47	
X7R									
47	± 20	0.330 (8.4)	0.230 (5.8)	0.250 (6.4)	0.130 (3.3)	20	0.032 (0.81)	564R30GAQ47	
100			0.180 (4.6)		0.083 (2.1)			564R30GAT10	
150			0.190 (4.8)		0.091 (2.3)			564R30GAT15	
220			0.175 (4.4)		0.075 (1.9)			564R30GAT22	
390	± 10	0.330 (8.4)	0.180 (4.6)	0.250 (6.4)	0.083 (2.1)	20	0.032 (0.81)	564R30GAT39	
680			0.190 (4.8)		0.079 (2.0)			564R30TST68	
1000			0.400 (10.2)		0.091 (2.3)			564R30TSD10	
1500			0.490 (12.5)		0.087 (2.2)			564R30TSD15	
1800			0.530 (13.5)		0.185 (4.7)			0.079 (2.0)	564R30TSD18
2200					0.180 (4.6)			0.083 (2.1)	564R30TSD22
2700			0.620 (15.7)		0.185 (4.7)			0.083 (2.1)	564R30TSD27
3300					0.170 (4.3)			0.075 (1.9)	564R30TSD33
3900			0.720 (18.3)		0.185 (4.7)			0.087 (2.2)	564R30TSD39
4700					0.175 (4.4)			0.075 (1.9)	564R30TSD47
6800	0.185 (4.7)	0.087 (2.2)		564R30TSD68					
6800	0.900 (22.9)	0.185 (4.7)		0.087 (2.2)	564R30TSD68				
Y5S									
1000	± 20	0.400 (10.2)	0.190 (4.8)	0.250 (6.4)	0.098 (2.5)	20	0.032 (0.81)	564R30TSSD10	
1500		0.460 (11.7)			0.091 (2.3)			564R30TSSD15	
1800		0.490 (12.4)			0.087 (2.2)			564R30TSSD18	
2200		0.530 (13.5)			0.083 (2.1)			564R30TSSD22	
2700		0.560 (14.2)	0.185 (4.7)	0.375 (9.5)	0.087 (2.2)	564R30TSSD27			
3300					0.620 (15.7)	0.083 (2.1)	564R30TSSD33		
3900		0.680 (17.3)	0.190 (4.8)	0.375 (9.5)	0.087 (2.2)	564R30TSSD39			
4700					0.790 (20.0)	0.091 (2.3)	564R30TSSD47		
5600		0.900 (22.9)	0.205 (5.2)	0.375 (9.5)	0.091 (2.3)	564R30TSSD56			
6800					0.102 (2.6)	564R30TSSD68			
Y5U									
680	± 20	0.330 (8.4)	0.175 (4.4)	0.250 (6.4)	0.075 (1.9)	20	0.032 (0.81)	564R30GAT68	
0.010 µF		0.720 (18.3)	0.185 (4.7)	0.375 (9.5)	0.091 (2.3)			564R30GAS10	
Z5U									
1000	± 20	0.330 (8.4)	0.190 (4.8)	0.250 (6.4)	0.098 (2.5)	20	0.032 (0.81)	564R30GAD10	
1500		0.360 (9.1)			0.091 (2.3)			564R30GAD15	
1800		0.400 (10.2)	0.098 (2.5)		564R30GAD18				
2200		0.430 (10.9)	0.091 (2.3)		564R30GAD22				
2700		0.460 (11.7)	0.200 (5.1)	0.098 (2.5)	564R30GAD27				
3300			0.087 (2.2)	0.087 (2.2)	564R30GAD33				
3900		0.530 (13.5)	0.185 (4.7)	0.375 (9.5)	0.091 (2.3)	564R30GAD39			
4700					0.620 (15.7)	0.195 (5.0)	564R30GAD47		
6800		0.720 (18.3)	0.200 (5.1)	0.375 (9.5)	0.102 (2.6)	564R30GAD68			
8200					0.087 (2.2)	0.087 (2.2)	564R30GAD82		
0.033 µF	0.900 (22.9)	0.240 (6.1)	0.375 (9.5)	0.087 (2.2)	22	0.025 (0.64)	565R30GASS33		



ORDERING INFORMATION, CERAMIC 6 kV _{DC}								
C (pF)	TOL. (%)	D _{max.} DIAMETER INCH (mm)	T _{max.} THICKNESS INCH (mm)	LS LEAD SPACE INCH (mm) ± 1 mm	LO LEAD OFFSET INCH (mm) ± 0.5 mm	WIRE SIZE		ORDERING CODE
						AWG	INCH (mm)	
C0G (NP0)								
10	± 20	0.400 (10.2)	0.220 (5.6)	0.375 (9.5)	0.122 (3.1)	20	0.032 (0.81)	564R60GAQ10
U2J (N750)								
22	± 20	0.460 (11.7)	0.240 (6.1)	0.375 (9.5)	0.142 (3.6)	20	0.032 (0.81)	564R60GAQ22
R3L (N2200)								
33	± 20	0.400 (10.2)	0.230 (5.8)	0.375 (9.5)	0.130 (3.3)	20	0.032 (0.81)	564R60GAQ33
47		0.460 (11.7)			0.126 (3.2)			564R60GAQ47
X5F								
100	± 20	0.400 (10.2)	0.240 (6.1)	0.375 (9.5)	0.142 (3.6)	20	0.032 (0.81)	564R60GAT10
220			0.265 (6.7)		0.165 (4.2)			564R60GAT22
X5S								
330	± 20	0.400 (10.2)	0.260 (6.6)	0.375 (9.5)	0.161 (4.1)	20	0.032 (0.81)	564R60GAT33
Y5U								
470	± 20	0.400 (10.2)	0.290 (7.4)	0.375 (9.5)	0.193 (4.9)	20	0.032 (0.81)	564R60GAT47
560			0.240 (6.1)		0.142 (3.6)			564R60GAT56
Z5U								
1000	± 20	0.400 (10.2)	0.270 (6.9)	0.375 (9.5)	0.173 (4.4)	20	0.032 (0.81)	564R60GAD10
1500		0.460 (11.7)	0.280 (7.1)		0.157 (4.0)			564R60GAD15
2200		0.530 (13.5)	0.240 (6.1)		0.142 (3.6)			564R60GAD22
3300		0.620 (15.7)	0.260 (6.6)		0.169 (4.3)			564R60GAD33
4700		0.790 (20.0)			0.161 (4.1)			564R60GAD47
0.010 μF		0.950 (24.1)	0.250 (6.4)		0.150 (3.8)			564R60GAS10

ORDERING INFORMATION, CERAMIC 7.5 kV _{DC}								
C (pF)	TOL. (%)	D _{max.} DIAMETER INCH (mm)	T _{max.} THICKNESS INCH (mm)	LS LEAD SPACE INCH (mm) ± 1 mm	LO LEAD OFFSET INCH (mm) ± 0.5 mm	WIRE SIZE		ORDERING CODE
						AWG	INCH (mm)	
X5F								
100	± 20	0.530 (13.5)	0.310 (7.9)	0.500 (12.7)	0.181 (4.6)	20	0.032 (0.81)	564R75GAT10
470		0.620 (15.7)	0.270 (6.9)		0.161 (4.1)			564R75GAT47
Y5U								
1000	+ 80 / - 20	0.620 (15.7)	0.320 (8.1)	0.500 (12.7)	0.181 (4.6)	20	0.032 (0.81)	564R75GAD10
Z5U								
2500	+ 80 / - 20	0.620 (15.7)	0.280 (7.1)	0.500 (12.7)	0.181 (4.6)	20	0.032 (0.81)	564R75GAD25

TAPE AND REEL OPTIONS

Part number codes and specifications for tape and reel packaging are found in the general information document - find web-link below.

RELATED DOCUMENTS	
General Information	www.vishay.com/doc?23140



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