

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/doc299912


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

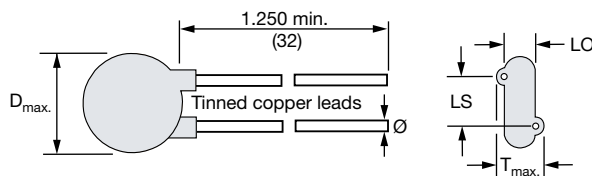
-25 °C to +85 °C

CLIMATIC CATEGORY ACC. TO EN 60068-1

25/085/21

OPERATING TEMPERATURE RANGE

-25 °C to +105 °C

DIMENSIONS in inches (millimeters)

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
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)		0.071 (1.8)			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			0.175 (4.4)		0.075 (1.9)			564R20TST68
1000		0.083 (2.1)			564R20TSD10			
1500		0.460 (11.7)	0.160 (4.1)		0.063 (1.6)			564R20TSD15
1800			0.170 (4.3)		0.055 (1.4)			564R20TSD18
2200					0.067 (1.7)			564R20TSD22
3300		0.063 (1.6)			564R20TSD33			
3900		0.075 (1.9)			564R20TSD39			
4700		0.680 (17.3)	0.375 (9.5)		0.071 (1.8)			564R20TSD47
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)	0.170 (4.3)		0.075 (1.9)			564R20GAD47
6800		0.560 (14.2)		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					0.083 (2.1)			564R30GAT39			
680	± 10	0.180 (4.6)	0.079 (2.0)		564R30TST68						
1000		0.190 (4.8)	0.091 (2.3)		564R30TSD10						
1500		0.490 (12.5)	0.185 (4.7)		564R30TSD15						
1800		0.087 (2.2)			564R30TSD18						
2200		0.530 (13.5)	0.180 (4.6)		0.079 (2.0)			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						
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)						564R30TSSD22			
2700		0.560 (14.2)	0.185 (4.7)	0.375 (9.5)	564R30TSSD27						
3300		0.620 (15.7)			0.083 (2.1)			564R30TSSD33			
3900		0.680 (17.3)			0.087 (2.2)			564R30TSSD39			
4700					0.091 (2.3)			564R30TSSD47			
5600		0.790 (20.0)	0.190 (4.8)		0.102 (2.6)			564R30TSSD56			
6800		0.900 (22.9)	0.205 (5.2)					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)	0.195 (5.0)	0.250 (6.4)	0.098 (2.5)	20	0.032 (0.81)	564R30GAD10			
1500		0.360 (9.1)	0.190 (4.8)		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		0.530 (13.5)	0.185 (4.7)	0.375 (9.5)	0.087 (2.2)			564R30GAD33			
3900					0.091 (2.3)			564R30GAD39			
4700		0.620 (15.7)	0.195 (5.0)					0.102 (2.6)			564R30GAD47
6800		0.720 (18.3)	0.200 (5.1)								564R30GAD68
8200											564R30GAD82
0.033 µF			0.900 (22.9)		0.240 (6.1)		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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