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

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 MΩ
3 kV_{DC}	min. 50 000 MΩ (1)
6 kV_{DC}	min. 75 000 MΩ
7.5 kV_{DC}	min. 200 000 MΩ

Note

(1) Exemption: 565R30GASS33 min. 25 000 MΩ

TOLERANCE ON CAPACITANCE

± 10 %, ± 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

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 ± 10 % or ± 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 µF

RATED VOLTAGE

2 kV_{DC}

3 kV_{DC}

6 kV_{DC}

7.5 kV_{DC}

DIELECTRIC STRENGTH BETWEEN LEADS

Component test:

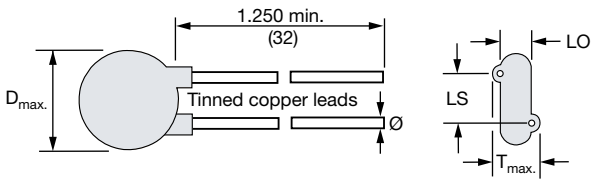
2 kV_{DC}	3600 V_{DC}, 2 s
3 kV_{DC}	5000 V_{DC}, 2 s
6 kV_{DC}	10 500 V_{DC}, 2 s
7.5 kV_{DC}	11 250 V_{DC}, 2 s

CERAMIC DIELECTRIC

C0G, U2J, R3L (Class 1)

X7R, X5F, X5S, Y5S, Y5U, Y5V, Z5U (Class 2)

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 AWG	WIRE SIZE INCH (mm)	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		0.400 (10.2)			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		0.530 (13.5)			0.063 (1.6)			564R20TSD33
3900		0.680 (17.3)			0.075 (1.9)			564R20TSD39
4700				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 AWG	WIRE SIZE INCH (mm)	ORDERING CODE
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		0.400 (10.2)	0.190 (4.8)		0.091 (2.3)			564R30TSD10
1500		0.490 (12.5)	0.185 (4.7)					564R30TSD15
1800		0.530 (13.5)			0.087 (2.2)			564R30TSD18
2200			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)	0.375 (9.5)	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		0.900 (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)						564R30TSSD18
2200		0.530 (13.5)			0.087 (2.2)			564R30TSSD22
2700		0.560 (14.2)	0.185 (4.7)					564R30TSSD27
3300		0.620 (15.7)		0.375 (9.5)	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)					564R30TSSD56
6800		0.900 (22.9)	0.205 (5.2)		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)	0.195 (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)		0.087 (2.2)			564R30GAD33
3900				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)		0.102 (2.6)			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 AWG	WIRE SIZE INCH (mm)	ORDERING CODE
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 AWG	WIRE SIZE INCH (mm)	ORDERING CODE
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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