

## Lower Voltage Ceramic Singlelayer DC Disc Capacitors 2 kV<sub>DC</sub> to 7.5 kV<sub>DC</sub>


**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](http://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 ± 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<sub>DC</sub>  
 3 kV<sub>DC</sub>  
 6 kV<sub>DC</sub>  
 7.5 kV<sub>DC</sub>
**DIELECTRIC STRENGTH BETWEEN LEADS**

Component test:

 2 kV<sub>DC</sub>      3500 V<sub>DC</sub>, 2 s  
 3 kV<sub>DC</sub>      5000 V<sub>DC</sub>, 2 s  
 6 kV<sub>DC</sub>      10 500 V<sub>DC</sub>, 2 s  
 7.5 kV<sub>DC</sub>    11 250 V<sub>DC</sub>, 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	X7R, Y5S, Y5U, Z5U, Y5V	X5F, X5S, Y5U, Z5U	X5F, Y5U, Z5U
Voltage (V <sub>DC</sub> )	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<sub>DC</sub>      min. 10 000 MΩ  
 3 kV<sub>DC</sub>      min. 50 000 MΩ  
 6 kV<sub>DC</sub>      min. 75 000 MΩ  
 7.5 kV<sub>DC</sub>    min. 200 000 MΩ

**TOLERANCE ON CAPACITANCE**

± 10 %, ± 20 %, - 20 % to + 80 %

**DISSIPATION FACTOR**

 0.2 % max. at 1 MHz; 1 V  
 2.0 % max. at 1 kHz; 1 V

**CATEGORY TEMPERATURE RANGE**

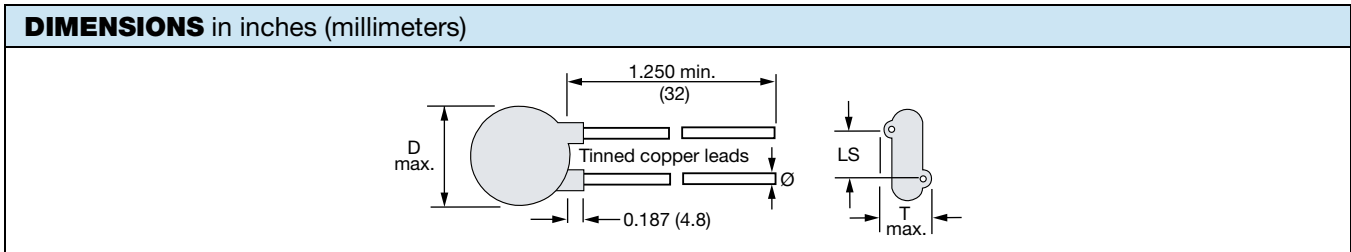
- 25 °C to + 85 °C

**CLIMATIC CATEGORY ACC. TO EN 60068-1**

25/085/21

**OPERATING TEMPERATURE RANGE**

- 25 °C to + 105 °C



<b>ORDERING INFORMATION, CERAMIC 2 kV<sub>DC</sub></b>								
C (pF)	TOL. (%)	D <sub>max.</sub> DIAMETER INCH (mm)	T <sub>max.</sub> THICKNESS INCH (mm)	LS LEAD SPACE INCH (mm)	WIRE SIZE		ORDERING CODE	
					AWG	INCH (mm)		
<b>X7R</b>								
100	± 10	0.330 (8.4)	0.190 (4.8)	0.250 (6.4)	20	0.032 (0.81)	564R20TST10	
220			0.180 (4.6)				564R20TST22	
330			0.170 (4.3)				564R20TST33	
470			0.185 (4.7)				564R20TST47	
560			0.170 (4.3)				564R20TST56	
680			0.170 (4.3)				564R20TST68	
1000		0.400 (10.2)	0.175 (4.4)				564R20TSD10	
1500		0.430 (10.9)	0.160 (4.1)				564R20TSD15	
1800		0.460 (11.7)	0.170 (4.3)				564R20TSD18	
2200		0.530 (13.5)	0.170 (4.3)				564R20TSD22	
2700			0.160 (4.1)	564R20TSD27				
3300			0.160 (4.1)	564R20TSD33				
3900			0.170 (4.3)	564R20TSD39				
4700		0.680 (17.3)	0.170 (4.3)	564R20TSD47				
				0.375 (9.5)				564R20TSD47
<b>Y5S</b>								
1000	± 20	0.330 (8.4)	0.175 (4.4)	0.250 (6.4)	20	0.032 (0.81)	564R20TSSD10	
1500		0.400 (10.2)	0.170 (4.3)				564R20TSSD15	
1800		0.430 (10.9)					564R20TSSD18	
2200		0.460 (11.7)					564R20TSSD22	
2700		0.530 (13.5)	0.175 (4.4)				564R20TSSD27	
3300							564R20TSSD33	
3900				564R20TSSD39				
4700		0.620 (15.7)	0.170 (4.3)	564R20TSSD47				
5600		0.680 (17.3)		564R20TSSD56				
6800		0.720 (18.3)	0.170 (4.3)	564R20TSSD68				
<b>Y5U</b>								
1000		± 20	0.330 (8.4)	0.170 (4.3)	0.250 (6.4)	20	0.032 (0.81)	564R20GAD10
1500	0.330 (8.4)		0.170 (4.3)	564R20GAD15				
<b>Z5U</b>								
1800	± 20	0.360 (9.1)	0.170 (4.3)	0.250 (6.4)	20	0.032 (0.81)	564R20GAD18	
2200		0.400 (10.2)	0.175 (4.4)				564R20GAD22	
2700		0.430 (10.9)					564R20GAD27	
3300		0.490 (12.4)					564R20GAD33	
3900			564R20GAD39					
4700		0.560 (14.2)	0.170 (4.3)	564R20GAD47				
6800				564R20GAD68				
0.010 μF		0.680 (17.3)	0.170 (4.3)	0.375 (9.5)	564R20GAS10			
<b>Y5V</b>								
0.01 μF	± 20	0.620 (15.7)	0.170 (4.3)	0.375 (9.5)	20	0.032 (0.81)	564R20GASS10	
0.05 μF		0.950 (24.1)	0.174 (4.4)		20		564R20GAS50	
0.10 μF		0.950 (24.1)	0.240 (6.1)		22	0.025 (0.64)	565R20GAP10	



ORDERING INFORMATION, CERAMIC 3 kV <sub>DC</sub>										
C (pF)	TOL. (%)	D <sub>max.</sub> DIAMETER INCH (mm)	T <sub>max.</sub> THICKNESS INCH (mm)	LS LEAD SPACE INCH (mm)	WIRE SIZE		ORDERING CODE			
					AWG	INCH (mm)				
<b>U2J (N750)</b>										
10	± 20	0.330 (8.4)	0.210 (5.3)	0.250 (6.4)	20	0.032 (0.81)	564R30GAQ10			
12			0.210 (5.3)				564R30GAQ12			
15			0.180 (4.6)				564R30GAQ15			
<b>R3L (N2200)</b>										
22	± 20	0.330 (8.4)	0.200 (5.1)	0.250 (6.4)	20	0.032 (0.81)	564R30GAQ22			
27			0.190 (4.8)				564R30GAQ27			
33			0.170 (4.3)				564R30GAQ33			
<b>X7R</b>										
47	± 20	0.330 (8.4)	0.230 (5.8)	0.250 (6.4)	20	0.032 (0.81)	564R30GAQ47			
56			0.190 (4.8)				564R30GAQ56			
68			0.200 (5.1)				564R30GAQ68			
100			0.180 (4.6)				564R30GAT10			
150			0.190 (4.8)				564R30GAT15			
220			0.175 (4.4)				564R30GAT22			
270			0.180 (4.6)				564R30GAT27			
330			0.175 (4.4)				564R30GAT33			
390							564R30GAT39			
470			± 10				0.400 (10.2)	0.180 (4.6)	0.375 (9.5)	20
680	0.175 (4.4)	564R30TST68								
1000	0.490 (12.5)	564R30TSD10								
1500	0.530 (13.5)	564R30TSD15								
1800		564R30TSD18								
2200	0.620 (15.7)	564R30TSD22								
2700		564R30TSD27								
3300	0.720 (18.3)	564R30TSD33								
3900		564R30TSD39								
4700	0.900 (22.9)	0.175 (4.4)		564R30TSD47						
6800		0.185 (4.7)	564R30TSD68							
<b>Y5S</b>										
1000	± 20	0.400 (10.2)	0.190 (4.8)	0.250 (6.4)	20	0.032 (0.81)	564R30TSSD10			
1500		0.460 (11.7)					564R30TSSD15			
1800		0.490 (12.4)					564R30TSSD18			
2200		0.530 (13.5)					564R30TSSD22			
2700		0.560 (14.2)					564R30TSSD27			
3300		0.620 (15.7)	564R30TSSD33							
3900			564R30TSSD39							
4700		0.680 (17.3)	564R30TSSD47							
5600		0.790 (20.0)	564R30TSSD56							
6800		0.900 (22.9)	0.205 (5.2)	564R30TSSD68						
<b>Y5U</b>										
680	± 20	0.330 (8.4)	0.175 (4.4)	0.250 (6.4)	20	0.032 (0.81)	564R30GAT68			
<b>Z5U</b>										
1000	± 20	0.330 (8.4)	0.195 (5.0)	0.250 (6.4)	20	0.032 (0.81)	564R30GAD10			
1500		0.360 (9.1)	0.190 (4.8)				564R30GAD15			
1800		0.400 (10.2)					564R30GAD18			
2200		0.430 (10.9)					564R30GAD22			
2700		0.460 (11.7)					564R30GAD27			
3300		0.490 (12.4)	0.185 (4.7)	564R30GAD33						
3900		0.530 (13.5)		564R30GAD39						
4700		0.620 (15.7)	0.195 (5.0)	564R30GAD47						
6800		0.680 (17.3)	0.185 (4.7)	0.375 (9.5)			564R30GAD68			
8200							564R30GAD82			
0.010 μF							0.720 (18.3)	564R30GAS10		
0.020 μF		0.720 (18.3)	0.265 (6.7)	22			0.025 (0.64)	565R30GASS20		
0.033 μF		0.900 (22.9)	0.240 (6.1)	22			0.025 (0.64)	565R30GASS33		
<b>Y5V</b>										
0.010 μF		± 20	0.720 (18.3)	0.185 (4.7)			0.375 (9.5)	20	0.032 (0.81)	564R30GASS10



ORDERING INFORMATION, CERAMIC 6 kV <sub>DC</sub>							
C (pF)	TOL. (%)	D <sub>max.</sub> DIAMETER INCH (mm)	T <sub>max.</sub> THICKNESS INCH (mm)	LS LEAD SPACE INCH (mm)	WIRE SIZE		ORDERING CODE
					AWG	INCH (mm)	
<b>C0G (NP0)</b>							
10	± 20	0.400 (10.2)	0.220 (5.6)	0.375 (9.5)	20	0.032 (0.81)	564R60GAQ10
<b>U2J (N750)</b>							
22	± 20	0.460 (11.7)	0.240 (6.1)	0.375 (9.5)	20	0.032 (0.81)	564R60GAQ22
<b>R3L (N2200)</b>							
33	± 20	0.400 (10.2)	0.230 (5.8)	0.375 (9.5)	20	0.032 (0.81)	564R60GAQ33
47		0.460 (11.7)	0.205 (5.2)				564R60GAQ47
<b>X5F</b>							
100	± 20	0.400 (10.2)	0.240 (6.1)	0.375 (9.5)	20	0.032 (0.81)	564R60GAT10
220			0.265 (6.7)				564R60GAT22
<b>X5S</b>							
330	± 20	0.400 (10.2)	0.260 (6.6)	0.375 (9.5)	20	0.032 (0.81)	564R60GAT33
<b>Y5U</b>							
470	± 20	0.400 (10.2)	0.265 (6.7)	0.375 (9.5)	20	0.032 (0.81)	564R60GAT47
560			0.240 (6.1)				564R60GAT56
<b>Z5U</b>							
1000	± 20	0.400 (10.2)	0.270 (6.9)	0.375 (9.5)	20	0.032 (0.81)	564R60GAD10
1500		0.460 (11.7)	0.280 (7.1)				564R60GAD15
2200		0.530 (13.5)	0.240 (6.1)				564R60GAD22
3300		0.620 (15.7)	0.260 (6.6)				564R60GAD33
4700		0.790 (20.0)					564R60GAD47
0.010 µF		0.950 (24.1)	0.250 (6.4)				564R60GAS10

ORDERING INFORMATION, CERAMIC 7.5 kV <sub>DC</sub>							
C (pF)	TOL. (%)	D <sub>max.</sub> DIAMETER INCH (mm)	T <sub>max.</sub> THICKNESS INCH (mm)	LS LEAD SPACE INCH (mm)	WIRE SIZE		ORDERING CODE
					AWG	INCH (mm)	
<b>X5F</b>							
100	± 20	0.530 (13.5)	0.310 (7.9)	0.500 (12.7)	20	0.032 (0.81)	564R75GAT10
470		0.620 (15.7)	0.270 (6.9)				564R75GAT47
<b>Y5U</b>							
1000	+ 80/- 20	0.620 (15.7)	0.320 (8.1)	0.500 (12.7)	20	0.032 (0.81)	564R75GAD10
<b>Z5U</b>							
2500	+ 80/- 20	0.620 (15.7)	0.280 (7.1)	0.500 (12.7)	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	<a href="http://www.vishay.com/doc?23140">www.vishay.com/doc?23140</a>



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# Mouser Electronics

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## Vishay:

[30GASS40](#) [30GASS20](#) [75GAT10](#) [75GAD25](#) [75GAT47](#) [30GAD10PM](#) [565RTGP10](#) [564R20GAD33](#) [564R30GAD33](#)  
[564R30GAD22](#) [564R20GAD10](#) [564R20GAP10](#) [564R20GAS10](#) [564R20GASS10](#) [564R20TSD22](#) [564R20TST22](#)  
[564R2DF0T18](#) [564R2DF0T22](#) [564R2DF0T33](#) [564R30GAD10](#) [564R30GAD15](#) [564R30GAD47](#) [564R30GAD50](#)  
[564R30GAD68](#) [564R30GAD82](#) [564R30GAQ10](#) [564R30GAQ15](#) [564R30GAQ27](#) [564R30GAQ33](#) [564R30GAQ56](#)  
[564R30GAQ68](#) [564R30GAS40](#) [564R30GASS10](#) [564R30GASS20](#) [564R30GASS33](#) [564R30GAT10](#) [564R30GAT22](#)  
[564R30GAT27](#) [564R30GAT33](#) [564R30GAT39](#) [564R30GAT47](#) [564R30GAT68](#) [564R30TSD10](#) [564R30TSD22](#)  
[564R30TSD33](#) [564R30TSD47](#) [564R3DF0D10](#) [564R3DF0D12](#) [564R3DF0D18](#) [564R3DF0Q22](#) [564R3DF0Q27](#)  
[564R3DF0Q33](#) [564R60GAD10](#) [564R60GAD33](#) [564R60GAD47](#) [564R60GAQ10](#) [564R60GAQ22](#) [564R60GAQ33](#)  
[564R60GAQ47](#) [564R60GAT22](#) [564R60GAT33](#) [564R60GAT47](#) [564RC0GAA202EC100J](#) [564RC0GAA202EF120J](#)  
[564RC0GAA202EF150J](#) [564RC0GAA202EF180J](#) [564RC0GAA202EF200J](#) [564RC0GAA202EG270J](#)  
[564RC0GAA202EG330J](#) [564RC0GAA302EH180J](#) [564RC0GAA302EJ220J](#) [564RC0GAA302EJ680J](#)  
[564RC0GAA302EK270J](#) [564RC0GAA302EK330J](#) [564RC0GAA302EL390J](#) [564RC0GAA302EL470J](#)  
[564RC0GAA302EL680J](#) [564RC0GAA302EP101J](#) [564RC0GAA302EP121J](#) [564RC0GAA302EP151J](#)  
[564RC0GAA302ES181J](#) [564RC0GAA302ES271J](#) [564RC0GHJ602EM470J](#) [564RC0HAE402EE4R7D](#)  
[564RC0HAE402EE5R6D](#) [564RC0JAE402EE3R0D](#) [564RC0JAE402EE3R9D](#) [564RC0KAA502EE1R0C](#)  
[564RC0KAE402EE1R0D](#) [564RC0KAE402EE2R0D](#) [564RC0KNA202EC1R5D](#) [564RX5EAA302EF271K](#)  
[564RX5RAJ402EG911M](#) [564RX5SAA402EP472M](#) [564RX7RAA602EF271K](#) [564RX7RAA602EK152M](#)  
[564RX7RBA202EE751K](#) [564RX7RBJ202EL103K](#) [564RX7RBR602EF470M](#) [565R10GAP10](#)