

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



LEAD OFFSET "LO"	
<b>NOMINAL</b>	~ THICKNESS - 0.100"
	0.07" (1.8 mm) -565R20GAP10
<b>EXCEPTION</b>	0.08" (2.0 mm) -565R30GASS20
	0.10" (2.54 mm) -565R30GASS33

QUICK REFERENCE DATA						
DESCRIPTION	VALUE					
Ceramic Class	1	1	2	2	2	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	10 000	10 000	2500
Mounting	Through hole					

### 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 EN60068-1

25/085/21

### OPERATING TEMPERATURE RANGE

- 25 °C to + 105 °C

### 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)



ORDERING INFORMATION, CERAMIC 2 kV <sub>DC</sub>											
C (pF)	TOL. (%)	D DIAMETER INCH (mm)	T 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			0.175 (4.4)				564R20TST68				
1000		0.430 (10.9)	0.160 (4.1)				564R20TSD10				
1500		0.460 (11.7)	0.170 (4.3)				564R20TSD15				
1800		0.530 (13.5)	0.170 (4.3)				564R20TSD18				
2200			0.160 (4.1)				564R20TSD22				
2700			0.170 (4.3)				564R20TSD27				
3300			0.160 (4.1)				564R20TSD33				
3900			0.170 (4.3)				564R20TSD39				
4700			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)					564R20TSSD27				
3300		0.620 (15.7)	0.175 (4.4)				564R20TSSD33				
3900							564R20TSSD39				
4700							564R20TSSD47				
5600		0.680 (17.3)	0.170 (4.3)				564R20TSSD56				
6800		0.720 (18.3)					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			564R20GAD47								
6800		0.560 (14.2)	0.170 (4.3)				564R20GAD68				
0.010 μF		0.680 (17.3)					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					

**TAPE AND REEL OPTIONS**

To specify tape and reel, add two letter suffix to the ordering code (for details of the packaging code see general section of the catalog).



ORDERING INFORMATION, CERAMIC 3 kV <sub>DC</sub>							
C (pF)	TOL. (%)	D DIAMETER INCH (mm)	T 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			0.180 (4.6)				564R30GAT39
470			0.175 (4.4)				564R30GAT47
680	± 10	0.400 (10.2)	0.180 (4.6)	0.375 (9.5)	20	0.032 (0.81)	564R30TST68
1000			0.490 (12.5)				564R30TSD10
1500			0.185 (4.7)				564R30TSD15
1800			0.180 (4.6)				564R30TSD18
2200			0.180 (4.6)				564R30TSD22
2700			0.185 (4.7)				564R30TSD27
3300			0.170 (4.3)				564R30TSD33
3900			0.185 (4.7)				564R30TSD39
4700			0.175 (4.4)				564R30TSD47
6800			0.900 (22.9)				0.185 (4.7)
<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)	0.185 (4.7)	0.375 (9.5)	564R30TSSD27		
3300		0.620 (15.7)			564R30TSSD33		
3900		0.680 (17.3)	0.190 (4.8)	564R30TSSD39			
4700		0.790 (20.0)	0.190 (4.8)	564R30TSSD47			
5600		0.900 (22.9)	0.205 (5.2)	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)	0.190 (4.8)	0.250 (6.4)	20	0.032 (0.81)	564R30GAD10
1500		0.360 (9.1)					564R30GAD15
1800		0.400 (10.2)					564R30GAD18
2200		0.430 (10.9)					564R30GAD22
2700		0.460 (11.7)	0.200 (5.1)	0.375 (9.5)	564R30GAD27		
3300		0.490 (12.4)	0.185 (4.7)		564R30GAD33		
3900		0.530 (13.5)	0.195 (5.0)	564R30GAD39			
4700		0.620 (15.7)		564R30GAD47			
6800		0.680 (17.3)	0.185 (4.7)	564R30GAD68			
8200		0.720 (18.3)	0.265 (6.7)	22	0.025 (0.64)	564R30GAD82	
0.010 μF		0.720 (18.3)				564R30GAS10	
0.020 μF		0.720 (18.3)				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

**TAPE AND REEL OPTIONS**

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ORDERING INFORMATION, CERAMIC 6 kV <sub>DC</sub>							
C (pF)	TOL. (%)	D DIAMETER INCH (mm)	T 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)
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 DIAMETER INCH (mm)	T 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



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