

## 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		0.680 (17.3)	0.170 (4.3)				564R20TSD22
2700		0.375 (9.5)	0.160 (4.1)				564R20TSD27
3300			0.170 (4.3)				564R20TSD33
3900			0.170 (4.3)				564R20TSD39
4700			0.170 (4.3)				564R20TSD47
7000			0.170 (4.3)				564R20TSD70
<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		0.175 (4.4)	0.620 (15.7)				564R20TSSD33
3900			0.680 (17.3)				564R20TSSD39
4700			0.170 (4.3)				564R20TSSD47
5600		0.375 (9.5)	0.720 (18.3)				564R20TSSD56
6800			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		0.170 (4.3)					0.560 (14.2)
4700			0.680 (17.3)				564R20GAD47
6800			0.170 (4.3)				564R20GAD68
0.010 μF		0.375 (9.5)	0.680 (17.3)				564R20GAS10
0.010 μF			0.680 (17.3)				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			0.175 (4.4)				564R30TSD10	
1500			0.490 (12.5)				564R30TSD15	
1800			0.185 (4.7)				564R30TSD18	
2200			0.530 (13.5)				564R30TSD22	
2700			0.180 (4.6)				564R30TSD27	
3300			0.185 (4.7)				564R30TSD33	
3900			0.170 (4.3)				564R30TSD39	
4700			0.720 (18.3)				564R30TSD47	
6800			0.175 (4.4)				564R30TSD68	
6800	0.900 (22.9)	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)	0.185 (4.7)	0.375 (9.5)	564R30TSSD27			
3300		0.620 (15.7)			564R30TSSD33			
3900		0.680 (17.3)			564R30TSSD39			
4700		0.790 (20.0)			564R30TSSD47			
5600		0.190 (4.8)	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)	564R30GAD15					
1800		0.400 (10.2)	0.190 (4.8)				564R30GAD18	
2200		0.430 (10.9)	0.200 (5.1)				564R30GAD22	
2700		0.460 (11.7)	0.185 (4.7)	0.375 (9.5)	564R30GAD27			
3300		0.490 (12.4)			564R30GAD33			
3900		0.530 (13.5)			564R30GAD39			
4700		0.620 (15.7)			564R30GAD47			
6800		0.680 (17.3)	0.195 (5.0)					564R30GAD68
8200		0.680 (17.3)	0.185 (4.7)					564R30GAD82
0.010 µF		0.720 (18.3)	0.265 (6.7)	0.240 (6.1)	22	0.025 (0.64)	565R30GASS20	
0.020 µF		0.720 (18.3)						
0.033 µF		0.900 (22.9)						
<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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