

**ORDERING CODE** VK20 B A 101 J B R CECC TR

Style \_\_\_\_\_

Temperature range (-55°C + 125°C) \_\_\_\_\_

Dielectric (A=NPO) \_\_\_\_\_

Capacitance according to EIA<sup>1</sup> \_\_\_\_\_

Tolerance according to EIA \_\_\_\_\_

Rated Voltage A=50/63V B=100V C=200V \_\_\_\_\_

Termination: R = RoHS compliant, blank = Tin/Lead alloy \_\_\_\_\_

Release Code: Commercial = blank, CECC release = CECC, BS release = N023 / F002 \_\_\_\_\_

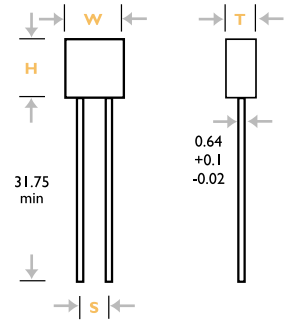
Denotes customer special requirements eg, packaging, marking, testing etc. \_\_\_\_\_

**Dimensions mm**

**Case:** Plastic Case with Epoxy Resin fill

**Tolerances available:**  
Standard  
<10pF, C = ±0.25pF D = ±0.5pF  
≥10pF, F = ±1% G = ±2% J = ±5%  
K = ±10% M = ±20%

Other capacitance values, voltages and lead configurations are available.



<sup>1</sup>Capacitance values are in pF. The first two digits give the nominal value, the third digit the number of noughts, e.g. 102=1000pF. For values below 10pF an R is substituted for a decimal point e.g. 2R2 = 2.2pF.

Style	VK20			VK21		VK30		
Max. Height H	5.08			5.08		7.62		
Max. Width W	5.08			5.08		7.62		
Max. Thickness T	2.54			2.54		2.54		
Lead Spacing S ± 0.38	5.08			2.54		5.08		
Rated Voltage V D.C.	50/63	100	200	100	200	50/63	100	200
Cap. (pF)	Minimum and Maximum Capacitance values available. (Capacitance values to the E24 range also available).							
EIA Code	Minimum and Maximum Capacitance values available. (Capacitance values to the E24 range also available).							
1.0	1R0							
1.2	1R2							
1.5	1R5							
1.8	1R8							
2.2	2R2							
2.7	2R7							
3.3	3R3							
3.9	3R9							
4.7	4R7							
5.6	5R6							
6.8	6R8							
8.2	8R2							
10	100							
12	120							
15	150							
18	180							
22	220							
27	270							
33	330							
39	390							
47	470							
56	560							
68	680							
82	820							
100	101							
120	121							
150	151							
180	181							
220	221							
270	271							
330	331							
390	391							
470	471							
560	561							
680	681							
820	821							
1,000	102							
1,200	122							
1,500	152							
1,800	182							
2,200	222							
2,700	272							
3,300	332							
3,900	392							
4,700	472							
5,600	562							
6,800	682							
8,200	822							
10,000	103							
12,000	123							
15,000	153							
18,000	183							
22,000	223							
27,000	273							
33,000	333							
39,000	393							
47,000	473							
56,000	563							
68,000	683							
82,000	823							

**ORDERING CODE** VK20 B Y 103 K B R F002 TR

Style \_\_\_\_\_

Temperature range (-55°C + 125°C) \_\_\_\_\_

Dielectric (Y=X7R) \_\_\_\_\_

Capacitance according to EIA<sup>1</sup> \_\_\_\_\_

Tolerance according to EIA \_\_\_\_\_

Rated Voltage A=50/63V B=100V C=200V \_\_\_\_\_

Termination: R = RoHS compliant, blank = Tin/Lead alloy \_\_\_\_\_

Release Code: Commercial = blank, CECC release = CECC, BS release = N024 / F002 \_\_\_\_\_

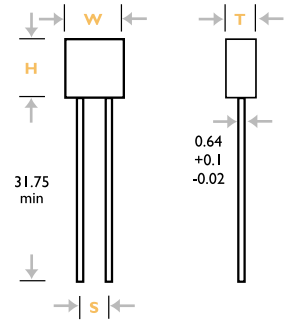
Denotes customer special requirements eg, packaging, marking, testing etc. \_\_\_\_\_

**Dimensions mm**

**Case:**  
Plastic Case with Epoxy Resin fill

**Tolerances available:**  
Standard  
J = ±5% K = ±10% M = ±20%

Other capacitance values, voltages and lead configurations are available.



<sup>1</sup>Capacitance values are in pF. The first two digits give the nominal value, the third digit the number of noughts, e.g. 103=10000pF.

Style	VK20			VK21			VK30		
Max. Height H	5.08			5.08			7.62		
Max. Width W	5.08			5.08			7.62		
Max. Thickness T	2.54			2.54			2.54		
Lead Spacing S ± 0.38	5.08			2.54			5.08		
Rated Voltage V D.C.	50/63	100	200	50/63	100	200	50/63	100	200
Cap. (pF)	Minimum and Maximum Capacitance values available. (Capacitance values to the E24 range also available).								
EIA Code									
10	100								
12	120								
15	150								
18	180								
22	220								
27	270								
33	330								
39	390								
47	470								
56	560								
68	680								
82	820								
100	101								
120	121								
150	151								
180	181								
220	221								
270	271								
330	331								
390	391								
470	471								
560	561								
680	681								
820	821								
1,000	102								
1,200	122								
1,500	152								
1,800	182								
2,200	222								
2,700	272								
3,300	332								
3,900	392								
4,700	472								
5,600	562								
6,800	682								
8,200	822								
10,000	103								
12,000	123								
15,000	153								
18,000	183								
22,000	223								
27,000	273								
33,000	333								
39,000	393								
47,000	473								
56,000	563								
68,000	683								
82,000	823								
100,000	104								
120,000	124								
150,000	154								
180,000	184								
220,000	224								
270,000	274								
330,000	334								
470,000	474								
560,000	564								
680,000	684								
820,000	824								
1,000,000	105								

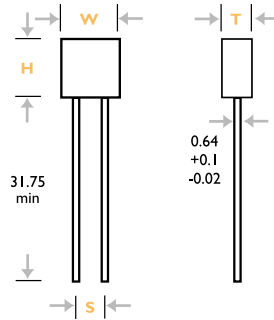
**ORDERING CODE** CK05 BX 103 K B R TR

Style \_\_\_\_\_  
 Temperature voltage characteristics \_\_\_\_\_  
 Capacitance according to EIA<sup>1</sup> \_\_\_\_\_  
 Tolerance according to EIA \_\_\_\_\_  
 Rated Voltage A=50/63V B=100V C=200V \_\_\_\_\_  
 Termination: R = RoHS compliant, blank = Tin/Lead alloy \_\_\_\_\_  
 Denotes customer special requirements \_\_\_\_\_  
 eg. packaging, marking, testing etc.

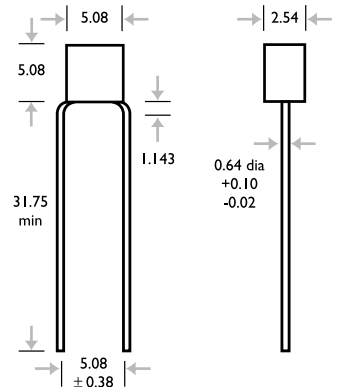
Capacitance values are in pF. The first two digits give the nominal value, the third digit the number of noughts, e.g. 103=10000pF.

**Dimensions mm**

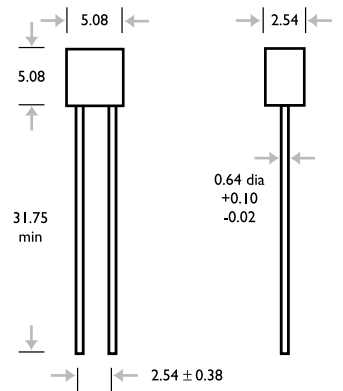
**Tolerances available:**  
 Standard  
 K = ±10% M = ±20%  
**Case:**  
 Plastic Case with  
 Epoxy Resin fill



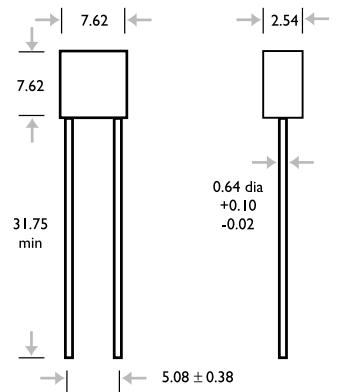
**Dimensions**  
**VK20 • CK05**



**VK21**

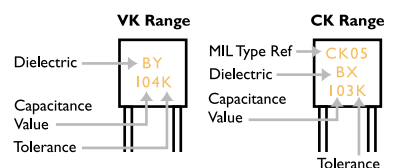


**VK30 • CK06**

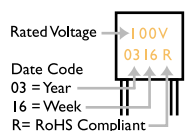


Style	CK05			CK06		
Max. Height H	5.08			7.62		
Max. Width W	5.08			7.62		
Max. Thickness T	2.54			2.54		
Lead Spacing S ± 0.38	5.08			5.08		
Rated Voltage V D.C.	50/63	100	200	50/63	100	200
Cap. (pF)	Minimum and Maximum Capacitance values available.					
EIA Code						
10	100					
12	120					
15	150					
18	180					
22	220					
27	270					
33	330					
39	390					
47	470					
56	560					
68	680					
82	820					
100	101					
120	121					
150	151					
180	181					
220	221					
270	271					
330	331					
390	391					
470	471					
560	561					
680	681					
820	821					
1,000	102					
1,200	122					
1,500	152					
1,800	182					
2,200	222					
2,700	272					
3,300	332					
3,900	392					
4,700	472					
5,600	562					
6,800	682					
8,200	822					
10,000	103					
12,000	123					
15,000	153					
18,000	183					
22,000	223					
27,000	273					
33,000	333					
39,000	393					
47,000	473					
56,000	563					
68,000	683					
82,000	823					
100,000	104					
120,000	124					
150,000	154					
180,000	184					
220,000	224					
270,000	274					
330,000	334					
470,000	474					
560,000	564					
680,000	684					
820,000	824					
1,000,000	105					

**Marking - Side 1**



**Marking - Side 2**



## Dielectric Characteristics

Dielectric	COG/NPO	X7R	BX
Dielectric Code	BA or A	BY or Y	BX or X
Capacitance Range	1pF to 56nF	10pF to 1μF	10pF to 1μF
Tolerance	<10pF ±0.25pF, ±0.5pF ≥10pF, ±1%, ±2%, ±5%, ±10%, ±20%	±5%, ±10%, ±20%	±5%, ±10%, ±20%
Rated Temperature Range	-55°C to +125°C	-55°C to +125°C	-55°C to +125°C
Temperature characteristics at Rated Temperature Range	≥50pF : 0±30 ppm/°C	±20% at 0V test voltage +20% -30% at rated voltage	±15% at 0V test voltage +15% -25% at rated voltage
Rated Voltage	50V to 500V	50V to 500V	50V to 200V
Dissipation Factor (Tan δ)	≥50pF : ≤15x10 <sup>-4</sup> <50pF : ≤1.5 ( <sup>150</sup> / <sub>C+7</sub> ) x10 <sup>-4</sup>	≤25x10 <sup>-3</sup>	≤25x10 <sup>-3</sup>
Insulation Resistance at Rated Voltage	at 25°C : 10 <sup>9</sup> MΩ or 1000ΩF } whichever is less at 125°C : 10 <sup>8</sup> MΩ or 100ΩF		
Environmental Classification (IEC 68)	55/125/56	55/125/56	55/125/56
Measurement Frequency for Capacitance and Tan δ	≤1000pF : 1MHz >1000pF : 1kHz @1Vrms	<100pF : 100kHz ≥100pF : 1kHz @1Vrms	1kHz@1Vrms
Proof Voltage	2.5 x rated voltage/5sec. 50m A max.		
Vibration	MIL-STD 202 Method 204 (20 'g') and BS 2011, Test Fc (10 'g')		
Shock/Bump	MIL-STD 202 Method 205 (50 'g') and BS 2011, Test Eb (40 'g', 400 (bumps))		
Solderability	MIL-STD 202 Method 208 and BS 2011, Test T (Solder Bath and Solder Globule Methods)		

## Dielectric Classification

Classification	IEC/CECC	CG	2C1
	EIA	COG/NPO	X7R
	MIL	BP	BX
	BS	1B	2C1/2F4
Dielectric Class (ε= Dielectric Constant)		CLASS 1 (ε<500)	CLASS 2 (ε>500)
General Performance		<ul style="list-style-type: none"> <li>• Almost linear capacitance/temperature function</li> <li>• No voltage dependency of capacitance and loss angle</li> <li>• No ageing</li> <li>• High insulation resistance</li> <li>• Very small dielectric loss</li> <li>• High dielectric strength</li> <li>• Normal capacitance tolerance ±1% to ±10%</li> </ul>	<ul style="list-style-type: none"> <li>• Non-linear capacitance/temperature function</li> <li>• Slight ageing of capacitance</li> <li>• High insulation resistance</li> <li>• Extremely high capacitance value per unit of volume</li> <li>• Normal capacitance tolerance ±5% to ±20%</li> </ul>
Typical Applications		<ul style="list-style-type: none"> <li>• Frequency control capacitors in oscillator circuits and filters</li> <li>• Temperature compensation</li> <li>• Coupling and by-pass in HF circuits</li> </ul>	<ul style="list-style-type: none"> <li>• Coupling</li> <li>• Decoupling</li> <li>• D.C. blocking</li> <li>• Spark suppression</li> </ul>