

HIGH VOLTAGE CERAMIC CAPACITOR



TC / HiK High Voltage Ceramic Capacitors

■FEATURES

- 1. Extremely small diameter to φ4.5mm.
- 2. Lead distance of 1kV and 2kV is 5mm, marking it well-suited to high density mounting.
- 3. Coated with flame-retardant epoxy resin (equivalent to UL94V-0 standards.)
- 4. Automatic insertion can be, and save costs.



■MARKING

Example	ltem
	①Temperature Characteristic [Identified by code for B and E (Rated voltage 3.15kV and under .)
	Omitted for maximum body diameter ϕ 9mm and under.]
① B B 332K 3	②Nominal Capacitance (Under 100pF : Actual value, 100pF and over : Identified by 3 figures code.)
4 1KV	③Capacitance Tolerance (Omitted for maximum body diameter φ6mm and under.)
⑤ <u> </u>	4Rated Voltage (For 3.15kV3kV, 6.3kV6kV)
	⑤Manufacter's Identification (Omitted for maximum body diameter φ9mm and under.)
	⑥Manufactured Date Code (Omitted for maximum body diameter φ9mm and under.)

■DIMENSION

•Bulk

Configuration	Straight Long		Straight Short		
Lead Code	No Code		-1		
Dimension (in mm)	D max. *1 T max. *1 OR *3 Non vertical crimped type : Apply to DE0405/DE0505/DE0507/ DE0607 and rated voltage of 6.3kV	T max. *1 *2 *2 *-\phi_0.6 \(^{\text{to.os}}_{-0.05}\) Vertical crimped type: Except for DE0405/DE0505/DE0507/ DE0607 and rated voltage of 6.3kV	3.0 max. *1 T max. *1 T max. *1 OR 3.0 max. *2		

- \cdot Please see "STANDARD LIST" on nominal body diameter (D) and lead spacing (F) .
- *1 Thickness of Body(T)

Rated Voltage	Thickness of Body		
(VDC)	T (mm)		
1k	4.0		
2k	5.0		
3.15k	6.0		
6.3k	7.0		

- *2 $\phi 0.5 \pm 0.05$ mm in case of nominal body diameter $\phi 5$ mm and under (Type : DE04 \Box ,DE05 \Box) .
- *3 Vertical crimped type : Up to the end of crimp.

■STANDARD LIST

Conventional High-Voltage

SL Characteristic

Nominal	Max.	Lead	Rated	Part Number	Lead Configuration / Lead Code Straight Long
Capacitance (pF) Body Dia. D(mm)		Spacing F(mm)	Voltage (kVDC)	(□ : means optional lead code shown on the right.)	
22				DE0910 SL 220 J 6K	
27				DE0910 SL 270 J 6K	
33	9			DE0910 SL 330 J 6K	
39				DE0910 SL 390 J 6K	
47				DE0910 □ SL 470 J 6K	
56	10	10.0	6.3	DE1010 SL 560 J 6K	No Code
68	12			DE1210 SL 680 J 6K	
82	12]		DE1210 □ SL 820 J 6K	
100	13]		DE1310 SL 101 J 6K	
120	14]		DE1410 SL 121 J 6K	
150	15			DE1510 SL 151 J 6K	

[•]Please contact us for details.

B Characteristic

					Lead Configuration / Lead Code				
				Straight	Straight				
	١			5	Long	Short		Taping	
Nominal	Max.	Lead	Rated	Part Number	Long	Onon			
Capacitance	Body		Voltage						
	Dia.			(□ : means optional lead code	()			I Matta	
(pF)	D(mm)	F(mm)	(kVDC)	shown on the right.)	M		NI N	FILOITA	
	_ ()						Lead spacing F: 5.0	Lead spacing F: 7.5	Lead spacing F: 7.5
							Pitch of component	Pitch of component	Pitch of component
					!!!		Pitch of component P: 12.7	Pitch of component P: 15.0	Pitch of component P: 30.0
100				DE0405 B 101 K 1 K					
150	4.5			DE0405 B 151 K 1 K					
220				DE0405 B 221 K 1 K					
330	_	-		DE0405 DB 331 K 1 K					
470 680	5	5.0		DE0505 B 471 K 1 K DE0605 B 681 K 1 K			-979	_	_
1000	6	3.0	1	DE0605 B 661 K 1 K					
1500	8	1		DE0805 B 152 K 1 K					
2200	9	1		DE0905 B 222 K 1 K					
3300	10			DE1005 B 332 K 1 K					
4700	12	7.5		DE1207 B 472 K 1 K			_	-486	
6800	15	7.0		DE1507 B 682 K 1 K					-477
100				DE0405 B 101 K 2 K					
150	4.5			DE0405 B 151 K 2 K					
220 330	5	-		DE0405 □ B 221 K 2 K DE0505 □ B 331 K 2 K					
470	6	1		DE0605 B 471 K 2 K		_1	-979	_	
680	7	5.0	2	DE0705 B 681 K 2 K		'	-919		_
1000	8	1		DE0805 B 102 K 2 K					
1500	9	1		DE0905 B 152 K 2 K					
2200	10	1		DE1005 B 222 K 2 K	No Code				
3300	12	7.5		DE1207 B 332 K 2 K				-486	
4700	15	7.5		DE1507 B 472 K 2 K					-477
100				DE0507 B 101 K 3 K					
150	5			DE0507 B 151 K 3 K					
220 330	6	1		DE0507 D B 221 K 3 K					
470	6 7	1		DE0607 □ B 331 K 3 K DE0707 □ B 471 K 3 K					
680	8	7.5	3.15	DE0807 B 681 K 3 K				-486	-
1000	9	1		DE0907 B 102 K 3 K					
1500	11	1		DE1107 B 152 K 3 K			_		
2200	13	1		DE1307 B 222 K 3 K					
3300	15			DE1507 B 332 K 3 K]		-477
100				DE0910 B 101 K 6 K					
150	9			DE0910 B 151 K 6 K					
220		10.0	62	DE0910 B 221 K 6 K					
330 470	10	10.0	6.3	DE0910 □ B 331 K 6 K DE1010 □ B 471 K 6 K		_		_	-
680	11	1		DE1110 B 681 K 6 K					
1000	13	1		DE1310 B 800 K 6 K					
1000	10			DE 1010 LD 102 K 0 K		I.		1	

[•]Please see page 13 for SL char (1 to 3.15kV) .

E Characteristic

					Lead Configuration / Lead Code										
	Max.			Straight	laping										
Nominal			Rated	Part Number	Long	Short	, 3								
Capacitance (pF)	Body Dia. D(mm)	Lead Spacing F(mm)	Voltage (kVDC)	(□ : means optional lead code shown on the right.)					0000						
	5(11111)			Shown on the right.)			Lead spacing F: 5.0	Lead spacing F: 7.5	Lead spacing F: 7.5						
							Pitch of component P: 12.7	Pitch of component P: 15.0	Pitch of component P: 30.0						
1000	5			DE0505 □ E 102 Z 1 K											
2200	7	5.0	1	DE0705 □ E 222 Z 1 K			-979	_							
4700 10000	9 13	7.5		DE0905 □ E 472 Z 1 K DE1307 □ E 103 Z 1 K			_	-486	_						
1000	6	7.5		DE0605 E 103 Z 1 K DE0605 E 102 Z 2 K				400							
2200	8	5.0	ا ۾ ا	DE0805 E 222 Z 2 K		-1	-979								
4700	11		1		2	2	2	2	2	DE1105 □ E 472 Z 2 K	No Code			_	
10000	16	7.5		DE1607 □ E 103 Z 2 K					-477						
1000	7			DE0707 □ E 102 Z 3 K											
2200	10	7.5	3.15	DE1007 □ E 222 Z 3 K			_	-486							
4700	13			DE1307 □ E 472 Z 3 K					-						
1000 2200	11 15	10.0	6.3	DE1110 E 102 Z 6 K DE1510 E 222 Z 6 K		_		_							

F Characteristic

					Lead Configuration / Lead Code									
	Max.			- 1	gVoltage	Voltage				Part Number	Straight Long	Straight Short	Taping	
Nominal Capacitance (pF)	Body Dia. D(mm)	Lead Spacing F(mm)	e						Lead spacing F: 5.0 Pitch of component P: 12.7	Lead spacing F: 7.5 Pitch of component P: 15.0				
2200 4700 10000	6 7 10	5.0	1	DE0605 ☐ F 222 Z 1K DE0705 ☐ F 472 Z 1K DE1005 ☐ F 103 Z 1K			– 979	_						
1000 2200 4700	5 7 9	5.0	2	DE0505 ☐ F 102 Z 2K DE0705 ☐ F 222 Z 2K DE0905 ☐ F 472 Z 2K	No Code	- 1	370							
10000	12	7.5		DE1207 □ F 103 Z 2K			_	-486						

Please contact us for details.

■SPECIFICATION AND TEST METHOD

	Item		Specification Temp. Compensating	High Dielectric Constant	Testing Method	
1	Operating Temperature Range		-25 to +85℃	-25 to +85℃		
2	Capacitance	nature range	Within the specified tolerance.	Within the specified tolerance.	The capacitance shall be measured at 20°C with 1±0.2kHz	
	Capacitance		within the specified tolerance.	within the specified tolerance.	(SL:1±0.2MHz) and 5Vrms max.	
3	·	Q Factor (D. F.)	SL	B, E D. F.≦2.5% F D. F.≦5.0%	Same condition as capacitance.	
4	Insulation Resistance (I. R.)	Between Lead wires	10000MΩ min.	10000MΩ min.	The insulation resistance shall be measured with 500±50VDC within 60±5 sec. of charging.	
		Between Lead wires No failure.		No failure.	The capacitors shall not be damage when DC voltage of 200% of the rated voltage are applied between the lead wires for 1 to 5 sec. (Charge/discharge current≦50mA) The capacitor is placed in the	
5	Dielectric Strength	Body Insulation	No failure.	No failure.	container with metal balls of diameter 1mm so that each lead wire, shortcircuited, is kept approximately 2mm off the balls as shown in the figure, and DC voltages of 1.3kV is applied for 1 to 5 sec. between capacitor lead wires and small metals. (Charge / discharge current≤50mA)	
6	Temperature Cha	proctoriotio	T. C. Temp. Coefficient	T.C. Cap. Change B within±10%	The capacitance measurement shall be made at each step specified in table. Capacitance change from the value of step 3 shall not exceed the limit specified. Step 1 2 3 4 5 Step 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
6	Temperature Cha	iracteristic	SL +350 to −1000pm/°C (Temp. Range : +20 to +85°C)	E within = 20% F within = 30%	20 ± 2 °C -25 ± 3 °C 20 ± 2 °C 85 ± 2 °C 20 ± 2 °C Pre-treatment : Capacitor shall be stored at 85 ± 2 °C for 1	
			(Temp. Kange : T20 to T65 C)		hour, then placed at ²⁾ room condition for 24±2 hours before initial measurements. (B,E,F)	
		Appearance	No marked defect.	No marked defect.	The capacitor shall firmly be soldered to the supporting les wire and vibration which is 10 to 55Hz in the vibration	
7	Vibration	Capacitance	Within the specified tolerance.	Within the specified tolerance.	frequency range, 1.5mm in total amplitude, and about 1	
	Resistance	Q. D. F.	SL C≥30pF : Q≥1000 C<30pF : Q≥400+20C ¹⁾	B, E D. F.≦2.5% F D. F.≦5.0%	minute in the rate of vibration change from 10Hz to 55Hz and back to 10Hz is applied for a total of 6 hours; 2 hours	
		Appearance	No marked defect.	No marked defect.	each in 3 mutually perpendicular directions. The lead wire shall be immersed into the melted solder of	
				B within±5%	350±10℃ (Body of ¢5 and under : 270±5℃) up to about 1.5	
		Capacitance	SL within±2.5%	E within±15%	to 2mm from the main body for 3.5 ± 0.5 sec. (Body of $\phi 5$ and under : 5 ± 0.5 sec.) .	
	Coldorina	Change		F within±20%	Pre-treatment : Capacitor shall be stored at 85±2℃ for 1	
8	Soldering Effect	Dielectric Strength			hour, then placed at ²⁾ room condition for 24±2 hours before initial measurements. (B,E,F)	
		(Between lead wires)	Pass the item No. 5.	Pass the item No. 5.	Post-treatment : Capacitor shall be stored for 1 to 2 hours a ²) room condition. (SL) Post-treatment : Capacitor shall be stored for 24±2 hours at ²) room condition. (B,E,F)	
		Appearance	No marked defect.	No marked defect.	Set the capacitor for 500 ⁺²⁴ ₋₀ hours at 40±2℃ in 90 to 95%	
		Capacitance	01th in 150/	B within±10%	humidity. Pre-treatment : Capacitor shall be stored at 85±2℃ for 1	
9	Humidity (Under Steady	Change Q.	SL within±5%	E within±20% F within±30%	hour, then placed at ²⁾ room condition for 24±2 hours before initial measurements.	
Э	State)		C≥30pF : Q≥350	B, E D. F.≦5.0%	(B,E,F)	
		D. F.	SL C<30pF : Q≥275+ ½ C1)	F D. F. \(\frac{1}{2} \). 5.75%	Post-treatment : Capacitor shall be stored for 1 to 2 hours a	
		I. R.		1000MΩ min.		
		Appearance	No marked defect.	No marked defect.	Apply the rated voltage for $500_{-0}^{\pm 24}$ hours at $40\pm2^{\circ}$ C in 90 to 95% humidity.	
		Capacitance		B within±10%	(Charge / discharge current≦50mA)	
10	Humidity	Change	SL within±7.5%	E within±20% F within±30%	Pre-treatment: Capacitor shall be stored at 85±2°C for 1 hour, then placed at ²⁾ room condition for 24±2 hours before initial measurements.	
	Loading	Q D. F.	SL C≥30pF: Q≥200 C<30pF: Q≥100+ \(\frac{10}{3}\)C1)	B, E D. F.≤5.0% F D. F.≤7.5%	(B,E,F) Post-treatment: Capacitor shall be stored for 1 to 2 hours a 2) room condition. (SL) Post-treatment: Capacitor shall be stored at 85±2°c for 1	
		I. R.	500MΩ min.	500MΩ min.	hour, then placed at ²⁾ room condition for 24±2 hours. (B.E.F)	
		Appearance	No marked defect.	No marked defect.	Apply a DC voltage of 150% of the rated voltage for 1000 $^{+48}_{-0}$	
				B within±10%	hours at 85±2°C. (Charge/discharge current≦50mA)	
		Capacitance Change	SL within±3%	E within±20%	Pre-treatment : Capacitor shall be stored at 85±2℃ for 1	
		Change		F within±30%	hour, then placed at ²⁾ room condition for 24±2 hours before initial measurements.	
11	Life	Q D. F.	SL C≥30pF : Q≥350 C<30pF : Q≥275+ ½ C¹)	B E D. F.≦4.0% F D. F.≦7.5%	(B,E,F) Pos-treatment : Capacitor shall be stored for 1 to 2 hours at 2) room condition. (SL)	
					Pos-treatment: Capacitor shall be stored at 85±2°C for 1 hour, then placed at 21 room condition for 24±2 hours. (B,E,F)	
		I. R.	2000M $Ω$ min.	2000MΩ min.		
	Strength	Pull	Lead wire shall not co	ut off.	As a figure, fix the body of capacitor,apply a tensile weight gradually to each lead wire in the radial direction of capacitor up to 10N (1.0kgf) 5N (0.51kgf) for Lead diameter \$\phi\$ (0.5), and keep it for 10±1 sec.	
12	of Lead	Bending	Capacitor shall not be		Each lead wire shall be subjected to 5N (0.51kgf) 2.5N (0.25kgf) for Lead diameter ϕ 0.5) weight and then a 90° bend, at the point of egress, in one direction, return to original position, and then a 90° bend in the opposite direction at the rate of one bend in 2 to 3 seconds.	
13	Solderbility of Lea	ads	Lead wire shall be soldered with uniformly coated on th circumferential direction.	e axial direction over $\frac{3}{4}$ of the	The lead wire of a capacitor shall be dipped into a methanol solution of 25vt% rosin and then into molten solder of 235±5℃ for 2±0.5 seconds. In both cases the depth of dipping is up to about 1.5 to 2mm from the root of lead wires	

^{1) &}quot;C" expresses nominal capacitance value (pF) .
2) "room condition" temperature : 15 to 35°C, humidity : 45 to 75%, atmospheric pressure : 86 to 106kPa