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1.Ceramic Capacitors 瓷片電容器

The ceramic is a dielectric whose main material is Titanium Oxide , Barium Titanate or Strontium.it becomes ceramic capacitor after aprocess called silver coating and is widely applied in various kind of electronic equipment

用氧化鈦'鈦酸鋇等材料經鍍銀等過程制成瓷片並以此作為介質制成的電容器稱為陶瓷電容器'這種電容器廣泛用於各種電子設備

2. Classification 瓷介電容器的分類

Basically'ceramic capacitor can be classified 3 classes'according to distinct application features.

Class 1: Temperature Compensation Type Capacitor(T.C.)

種類 1:溫度補償電容器

Temperature compensation capacitor mainly consist of Titanium.

They have the characteristics of low constant' low losses(high quality factor)'high stability and linear temperature relationship.All these features suited its capability for temperature compensating mainly use in resonant circuits or in other circuits for which high Q and high temperature-base stability of circuit constant are required.

溫度補償電容器主要由氧化鈦組成'具有較低的介電常數'低損耗'高穩定性'電容量隨溫度變化近似線性'這種電容器主要使用於諧振迴路或其它高值和高穩定性的電路。

Class 2: High-Dielectric Constant Type Capacitor(HI-K)

種類 2:高介電質常數電容器

High-dielectric are mainly consist of Barium Titanate.It is known as Hi-k because of its high power factor.

These capacitors which have the characteristics of high capacitance value'small internal impedance and excellent power factors are widely used in electronic circuits such as coupling'decoupling and by pass purposes.

高介電質電容器主要成份以鈦酸鉍為主而製成'因具有甚高的功率因數故稱"Hi-K"'此類電容器容量大.內部阻抗小.低損耗'在電路中常作直流.旁路耦合之用。

Class 3: Semi-Conductive Type Capacitor(S.C.)

種類 3: 半導體電容器

These disc type semiconductive capacitors are reformed smaller size with larger capacitance than usual Hi-K type ceramic capacitors.These capacitors are widely used in electronics circuits such as constant determination'coupling and by-pass purposes.

圓片形半導體電容器具有較高介電常數'電容體積更小'電容量更大'在電路中常作耦合.旁路之用。

MAIN SPECIFICATION OF CERAMIC CAPACITOR

電容器主要規格

TYPE OF CERAMIC CAPACITOR 陶瓷電容器 類型	TEMPERATURE CHARACTERISTICS 溫度特性	CAPACITANCE RANGE 容差範圍 (PF)	TOLERANCE 誤差	RATED VOLTAGE 額定電壓 (VCD)	QorDF 品質因數 或介質損失 角正切	INSULATION RESISTANCE 絕緣電阻
CLASS 1: (T.C) TEMPERATURE COMPENSATING TYPE 溫度補償型	溫度系數: PPM/°C NPO (CH:0+/-60) N150 (PH:-150+/-60) N220(RH:-220+/-60) N330(SH:-330+/-60) N470(TH:-470+/-60) N750(UJ:-750+/-60) SL (SL:+350~-1000)	1~470 4~220 4~240 4~270 5~300 5~390 1~820	1) 1~5PF: +0.25PF +0.5PF 2) 1~9PF: +0.5PF 3) 10PF 以上 10PF or more +5% +10%	50~6KV 50 50 50 50 50 50~6KV	1) more than 30PF 30PF 以上 Q ≥ 1000 2) 30PF or less 30PF 以下 Q ≥ 400+20*°C	≥ 10000MΩ
CLASS 2: (Hi-K) HIGH DIELECTRIC CONSTANT TYPE 高介電質常數型	Capacitance Change (%) (靜電容量變化率) B: Y5P (+/-10%) E: Z5U (+22%/-56%) F: Z5V (+22%/-82%)	100~10000 1000~22000 1000~50000	±10% ±20% +80-20%	50~5KV 50~5KV 50~5KV	1) B'E CHARACTERISTIC B'E 特性 DF ≤ 2.5% 2) F CHARACTERISTIC F 特性 DF ≤ 5.0%	1) 0.02uf 以下 ≥ 10000MΩ 2) 0.02uf < C < 0.1uf ≥ 7500MΩ
CLASS 3 (S.C.) SEMICONDUCTIVE 半導體型	Capacitance Change (%) (靜電容量變化率) B: Y5P (+/-10%) Y5R (+/-15%)	1000~10000 0	±10% ±20%	16~50 16~50	1) 16V: DF < 7% 2) 25V: 50V: DF < 5%	1) 16V: > 100MΩ 2) 25V: 50V > 1000MΩ

TYPE	E:Y5U(+22%/-56%)	10000~2200	+80-20%	16~100		
半導體型	F:Y5V(+22%/-82%)	00				
		20000~2200				
		00				

Note 1 Testing condition:Capacitance Testing Temperature is 25°C ±2°C

Note 2 operating Temperature Range: Y class:25°C±2°C Z class: +10°C~+85°C

(註 1)測試條件:容量測試溫度規定為 25°C +/-2°C

(註 2)使用溫度範圍:Y 級:-25°C~+85°C Z 級:+10°C~+85°C

MAX.BODY DIAMETER 最大主體外徑

Temperature compensating Type 溫度補償型 CH(NPO)

容量範圍 (PF) CAPACITANCE	W.V. MAX BODY CODE	50V	500V	1KV	2KV	3KV	4KV	5KV	6KV
	5.5 φ	1~50	0.5~39	0.5~27	1~10				
	6.5 φ	51~82	47~56	30~39	11~20	0.5~18	0.5~10	0.5~10	0.5~10
	7.5 φ	100~120	65~82	47~68	22~39	20~33	20~22	12~18	12~15
	8.5 φ	150~180	91~100	82	47~56	36~39	30~39	20~22	18~20
	9.5 φ	200~220		100~120	68	47	47~50	30~39	22~27
	10.5 φ	250~270		150	82	56		47~50	30~33
	11.5 φ	300~330		180~200	100	68			47~50
	12.5 φ	360~380		220		82			
	13.5 φ	390							
	14.5 φ	470				100			

SL(SL)

容量範圍 (PF) CAPACITANCE	W.V. MAX BODY CODE	50V	500V	1KV	2KV	3KV	4KV	5KV	6KV
	5.5 φ	23~180	23~180	23~47	10~20				
	6.5 φ	200~270	200~270	50~82	22~68	22~47	10~22	10~15	

	7.5 ϕ	300~330		~100	82~100	50~82	22~33	18~22	20~22
	8.5 ϕ	390~470	300~330	120~180	120		47~50	30~47	30~47
	9.5 ϕ	500~560	300~330						
	10.5 ϕ	680~820	390~470						
	11.5 ϕ		500~560						
	12.5 ϕ	1000	680~820						
	13.5 ϕ								
	14.5 ϕ		1000						

MAX.BODY DIAMETER 最大主體外徑

High Dielectric Constant Type 高電介質常數型(B CHARACTERISTIC)B 特性

容量範圍 (PF) CAPACITANCE	W.V.	50V	500V	1KV	2KV	3KV	4KV	5KV	6KV
	MAX BODY CODE								
	5.5 ϕ	100~2200	100~680	100~680	100~470	100~470	100~150		
	6.5 ϕ	2700~3300	680~1200	680~1000	220~1000	560~680	220~470	100	
	7.5 ϕ	3900~4700	1500~1800	1500~1800	1200~1500	1000	560~680	220	100
	8.5 ϕ	5600~6800	2000~2700	2000~2900	1500~1800	1200~1500		470	
	9.5 ϕ	8200~10000	3300~3900	3000~3900	1500~2200				
	10.5 ϕ		4700~5600	4700	1800~2200				
	11.5 ϕ		5600~6800	5600~6800	2700~3000				
	12.5 ϕ		8200~10000						
	13.5 ϕ								
	14.5 ϕ			10000					

High Dielectric Constant Type 高電介質常數型(E CHARACTERISTIC)E 特性

容量範圍 (PF) CAPACITANCE	W.V.	50V	500V	1KV	2KV	3KV	4KV	5KV	6KV
	MAX BODY CODE								
	5.5 ϕ	1000~4700	1000~2200	1000	1000	1000			
	6.5 ϕ	5600~10000	2700~3300	2000~2200	2200	1000	1000		

	7.5 ϕ		3900~4700	3000~4700			1000	1000	
	8.5 ϕ	15000	5600~10000	5000	3300				1000
	9.5 ϕ	22000	10000	10000	4700				
	10.5 ϕ			10000	10000				
	11.5 ϕ		15000						
	12.5 ϕ		20000						
	13.5 ϕ		22000		20000				
	14.5 ϕ				22000	10000			

High Dielectric Constant Type 高電介質常數型(F CHARACTERISTIC)F 特性

容量範圍 (PF) CAPACITANCE	W.V. MAX BODY CODE	50V	500V	1KV	2KV	3KV	4KV	5KV	6KV
	5.5 ϕ	1000~10000	1000~1800	1000	1000	1000			
	6.5 ϕ	15000~22000	2000~4700	1500~2200	1000~1800	1000			
	7.5 ϕ	22000	5600~6800	2200~4700	2200~2700	2200	1000		
	8.5 ϕ	27000~30000	8200~10000	5600~6800	3000~4700		2200	1000	
	9.5 ϕ	33000~47000	15000	8200~10000	5600~6800			2200	1000
	10.5 ϕ	47000~50000	22000		10000	4700	3300		
	11.5 ϕ								
	12.5 ϕ			15000		10000			
	13.5 ϕ			22000					
	14.5 ϕ				22000				

MAX.BODY DIAMETER 最大主體外徑

Semi-Conductive Type 半導體型(B CHARACTERISTIC)B 特性

容量範圍 (PF) CAPACITANCE	W.V. MAX BODY CODE	16V	25V	50V					
	5.5 ϕ	1000~12000	1000~12000	1000~10000					
	6.5 ϕ	15000~22000	15000~22000	12000~15000					
	7.5 ϕ	27000~47000	27000~33000	18000~22000					
	8.5 ϕ	56000~68000	39000~47000	27000~33000					
	9.5 ϕ	68000~82000	56000~68000						
	10.5 ϕ	82000~100000	82000~100000	39000~100000					
	11.5 ϕ								
	12.5 ϕ								
	13.5 ϕ								
	14.5 ϕ								

(E CHARACTERISTIC)E 特性

容量範圍 (PF) CAPACITANCE	W.V. MAX BODY CODE	16V	25V	50V					
	5.5 ϕ	10000	10000	10000					
	6.5 ϕ	15000~47000	15000~33000	15000~47000					
	7.5 ϕ	56000~68000	47000	56000~68000					
	8.5 ϕ	100000	56000~68000	100000					
	9.5 ϕ		100000	100000					
	10.5 ϕ	220000		220000					
	11.5 ϕ		220000						
	12.5 ϕ								
	13.5 ϕ								
	14.5 ϕ								

(F CHARACTERISTIC)F 特性

容量範圍 (PF) CAPACITANCE	W.V. MAX BODY CODE	16V	25V	50V					
	5.5 ϕ	20000~100000	20000~100000	20000~100000					
	6.5 ϕ			100000					
	7.5 ϕ			100000					

	8.5 ϕ			150000					
	9.5 ϕ			220000					
	10.5 ϕ								
	11.5 ϕ								
	12.5 ϕ								
	13.5 ϕ								
	14.5 ϕ								