Let's do this.

TEC DIA

Single Layer Parallel Plate Chip Capacitors

for 21st Century Applications

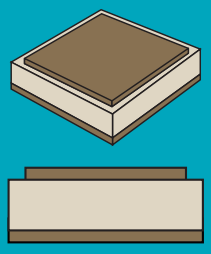
Catalogue of Standard Sizes, Values, and Configurations
for Class 1 and 2 Ceramic Dielectrics

Table of Contents

CONVENTIONAL FIXED VALUE SINGLE LAYER CERAMIC CAPACITORS

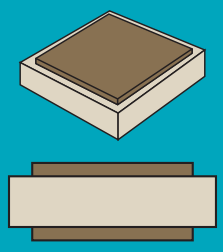
with Thin Film Metallized Electrodes

1 DESIGN STYLES



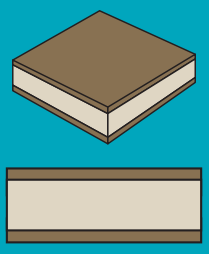
Type A Red label

Top Face	Border Electrode
Bottom Face	Fully Metallized



Type B Blue label

Top Face	Border Electrode
Bottom Face	Border Electrode



Type C Yellow label

Top Face	Fully Metallized
Bottom Face	Fully Metallized

Border Electrodes	Electrode Metallization Scheme TiW/ Au (100µ" min) TaN/ TiW/ Au (100µ" min)
No Border Electrodes	TiW/ Pt/ Au (100µ" min) TaN/ TiW/ Pt/ Au (100µ" min)

2 General Features

Ceramic Dielectric

Tecdia produces most of the ceramic wafers used to manufacture its capacitors, using fine ceramic powders consisting of proprietary titanate (primarily with barium) formulations. A variety of dielectrics are produced from these formulations, covering a range of dielectric constant (K) values, temperature characteristics, and other properties. The products included in this catalog fall within the industry standard dielectric classes 1 & 2. Tecdia also produces EIA class 4 single layer ceramic chip capacitors using grain boundry barrier layer (GBBL) technology, which are covered in our Altas product catalog.

Electrode Metallization

The sintered wafers are ground and polished to produce smooth, flat surfaces that are then coated with metal using dry (sputtering) metallization processes to produce electrodes with ultra low losses at microwave frequencies, and easy compression attachment of gold wires. Titanium Tungsten (TiW) is used as the base metallization layer because of its strong adhesion to the ceramic, and it has good barrier properties to prevent gold diffusion into the ceramic, providing solid stability at very high die attachment temperatures.

The top or surface layer of the electrode is Gold (Au) to provide an excellent contact surface for connections, as well as having good electrical properties. For electrode designs that do not require metallization etching, Tecdia uses Platinum (Pt) between the TiW and the Au layers to improve soldering attachment if the gold leaches into solder.

Soldering and High Temperature Die Attachment

TiW/Pt/Au electrodes withstand die attach temperatures up to 400°C, 20 min max., and are suitable for soldering with Sn60, Sn62, and similar materials, as well as high temperature eutectic solders.

Designs

Tecdia Chip Capacitors are normally constructed as nearly square chips for single values and binary arrays, and in rectangular shapes for capacitor row arrays and custom designs. They have straight, perpendicular sides and 90° corners. Tecdia uses variations in chip thickness (by grinding), as well as electrode size and dielectric constant to construct capacitors. This permits very tight capacitance tolerances to be produced in a wide scope of sizes and designs.

Electrodes with Borders (Safety Margins)

Tecdia has a long history of manufacturing capacitors with bare ceramic safety margins around the electrodes, and has the expertise to produce them in its full range of sizes and values, with tight tolerances. The borders help prevent short circuits (arcing at the chip edges) after die attachment, especially with conductive epoxy. The design also reduces handling damage from tweezers, and facilitates automated pick and place assembly processes.

Binary, Gap and other Array Chip Capacitors

Standard binary capacitors are available in arrays of 3, 4 and 5 electrodes that share a common opposing electrode, offering convenient circuit tuneability. Twin capacitors constructed on a single rectangular chip, with the array electrodes separated an industry standard space to bridge the gap between a circuit trace provides a series connection when mounted array side down, eliminating bonding wire inductance. These gap capacitors are ideal for coupling and DC blocking applications. Tecdia also custom designs multi-pad arrays to meet a wide variety of applications. Multi-pad arrays can reduce per capacitor costs, as well as installation costs.

ENVIRONMENTAL COMMITMENT

Tecdia's environmental policy is published on our website: www.tecdia.com. Our manufacturing facilites are ISO 14001 certified. All our capacitors are RoHS compliant and lead free.

3 Part Number Explanation

Example

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
A	M	S	101	K	2	K-	X	C	K	-□□□

(1) **Capacitor Type**
See page 1 for capacitor selection

(2) **M: MIC capacitors with Thin Film Metallization**

(3) **Capacitor Electrode Pattern**
- **S:** Single
- **G:** Gap
- **B:** Binary
- **M:** Multiple

(4) **Industry standard code for nominal Capacitance Value**

CODE	Capacitance
1R0:	1.0 pF
100:	10 pF
101:	100 pF
102:	1000 pF

(5) **Industry standard code for Capacitance Tolerance**

CODE	Tolerance
A	+/- 0.05 pF
B	+/- 0.10 pF
C	+/- 0.25 pF
J	+/- 5%
K	+/- 10%
M	+/- 20%
V	-0/ +100%
Z	-20%/ +80%
S	Special

(6) **EIA Dielectric Class**
See page 3

(7) **Physical Configuration (1-2 characters) for standard parts.**
See page 4

Note: suffixes 8, 9 & 10 only apply to custom parts;
(11) can be added to any p/n without changing the design specifications represented by (1) through (10).

(8) **Custom Dimension**
- **X:** Special thickness (t) tolerance
- **Y:** Special size (W x L) tolerance

(9)* **Dielectric Material Code**
See page 3

(10)* **Measuring Frequency**
- **K:** @ 1 kHz
- **M:** @ 1 MHz

(11) **Special Requirement**
Packaging, Screening, etc.
(Does not affect p/n design specifications)

*If (8) is used, (9) & (10) are added even if there is no change from the standard.

4 Screening

Tecdia's capacitors are designed and manufactured for a wide range of applications from high volume commercial communication systems to stringent requirements for flight and space programs. The same production processes are used for all our capacitors, whether used for "High Reliability", industrial or commercial applications. However, selection and screening criteria will vary based on procurement requirements.

The screening of capacitors falls within three categories: Standard Grade, Commercial Grade, and Custom. Every wafer lot of capacitors is sample checked for mechanical and electrical properties, and each capacitor is visually inspected for acceptability. As a minimum, terminations must be capable of passing testing per MIL-STD-883, method 2019 for die attachment strength, and method 2011 for wire bond strength.

Standard Grade capacitors undergo 100% six-sided microscopic visual inspection with full capability to comply with examinations per MIL-STD-883, Method 2032, and the workmanship requirements of specifications listed in 4.2 below.

Commercial Grade capacitors undergo 100% four-sided microscopic visual inspection with acceptance criteria less stringent than applicable for Standard Grade, but sufficient to provide high quality, economical parts. This level screening can be requested for any capacitor part number by adding a special suffix designator, e.g. -W01, at the end of the part number.

Custom screening is performed based on procurement requirements.

4 1. Regular Scheduled Screening

Characteristic		Each Capacitor	Each Wafer Lot	Each Production Lot
Visual	Standard	6 sides		AQL1%
	Commercial	4 sides		AQL1%
Electrical	Capacitance			AQL1%
	DF			AQL1%
	IR		10(0)	
	DWV		10(0)	
Terminal Strength	Bond Pull		3(0)	
	Die Shear		3(0)	
High Temp (400C) Resistance			5(0)	
Dimension Check	Length & Thickness		3(0)	

4 2. Custom Screening Testing (as applicable to Single Layer Capacitors)

MIL-C-49464/ MIL-PRF-49464/ MIL-C-55681
MIL-PRF-38534, Table C-III, Level H & K
MIL-PRF-123
Customer Specifications

4 3. Test Lab Capabilities

Parameter	Test Condition
Temperature Cycling	MIL-STD-883/ Method 1010 Cond.A/B/C
Thermal Shock	MIL-STD-202/ Method 107 Cond.A/B/F
Voltage Conditioning	MIL-STD-883/Method 1015 Cond.A/B/C/F
Capacitance & DF	MIL-STD-202/ Method 305
IR	MIL-STD-202/ Method 302
DWV	MIL-STD-202/ Method 301
Bond Pull	MIL-STD-883/ Method 2011 Cond.D
Die Shear	MIL-STD-883/ Method 2019 less than 3kg
Temperature coefficient limits	EIA-198/ Method 105
Immersion	MIL-STD-202/ Method 104
Resistance to Solder Heat	MIL-STD-202/ Method 210 Cond.A/B/C/D
Moisture Resistance	MIL-STD-202/ Method 106
Life	MIL-STD-202/ Method 108 less than or equal 150℃
Humidity (Steady State)	MIL-STD-202/ Method 103
Constant Acceleration	MIL-STD-883/ Method 2001 Cond.A/B/C/D/E/F/G/H, Y1
Vibration	MIL-STD-202/ Method 201
Vibration, High Frequency	MIL-STD-202/ Method 204 Cond. A/B/C/D
Vibration, Variable Frequency	MIL-STD-883/ Method 2007 Cond.A

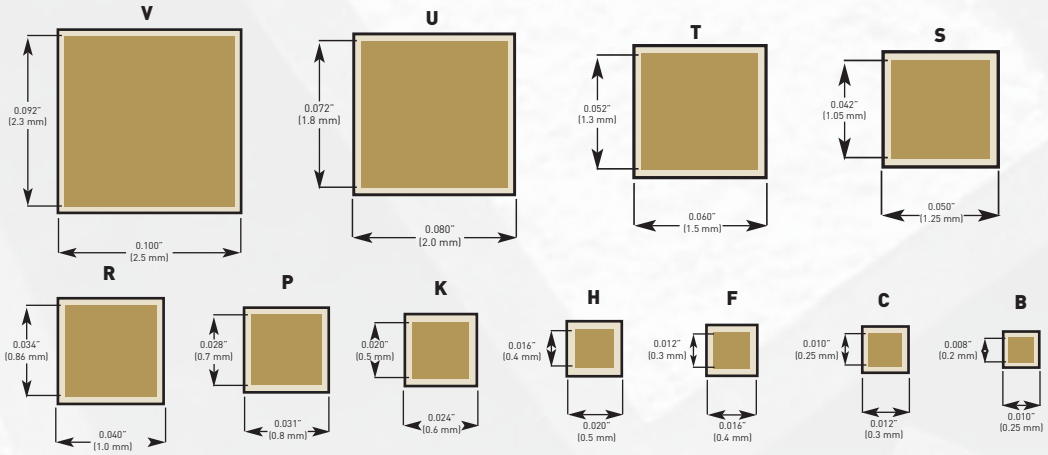
5 Dielectric Specifications

EIA Class	Tecdia Dielectric Material Code	K (Nominal)	DF @ 25°C	IR @ 25°C	TC	Temperature Range	EIA TC Code *4
1	P	40	< 0.15% @1 MHz	10^6 MΩ	0 ± 30 ppm/ °C	-55°C to +125°C	C0G
1	4	90	< 0.25% @1 MHz	10^6 MΩ	-330 ± 60 ppm/°C	-55°C to +125°C	S2H
1	5	140	< 0.25% @1 MHz	10^6 MΩ	-750 ± 120 ppm/°C	-55°C to +125°C	U2J
1	6	180	< 0.25% @1 MHz	10^6 MΩ	-750 ± 120 ppm/°C	-55°C to +125°C	U2J
1	7	280	< 0.25% @1 MHz	10^5 MΩ *1	-1000 ± 250 ppm/°C	-55°C to +125°C	M3K
2	A	700	< 2.5% @1 kHz	10^5 MΩ	+/- 10%	-55°C to +125°C	X7P
2	F	1,600	< 2.5% @1 kHz	10^5 MΩ	+/- 15%	-55°C to +125°C	X7R
2	C	2,800	< 2.5% @1 kHz	10^5 MΩ	+/- 15%	-55°C to +125°C	X7R
2	G	3,400	< 2.5% @1 kHz	10^5 MΩ	+/- 22%	-30°C to +105°C	Y6S
3 *2	D	4,500	< 4.0% @1 kHz	10^5 MΩ	+22%/ -56%	-30°C to +85°C	Y5U
3 *2	E	10,000	< 4.0% @1 kHz	10^5 MΩ	+22%/ -82%	-30°C to +85°C	Y5V
4 *3	10	16,000	< 2.5% @1 kHz	10^4 MΩ	+/- 22%	-55°C to +125°C	X7S
4 *3	11	30,000	< 2.5% @1 kHz	10^4 MΩ	+/- 15%	-55°C to +125°C	X7R

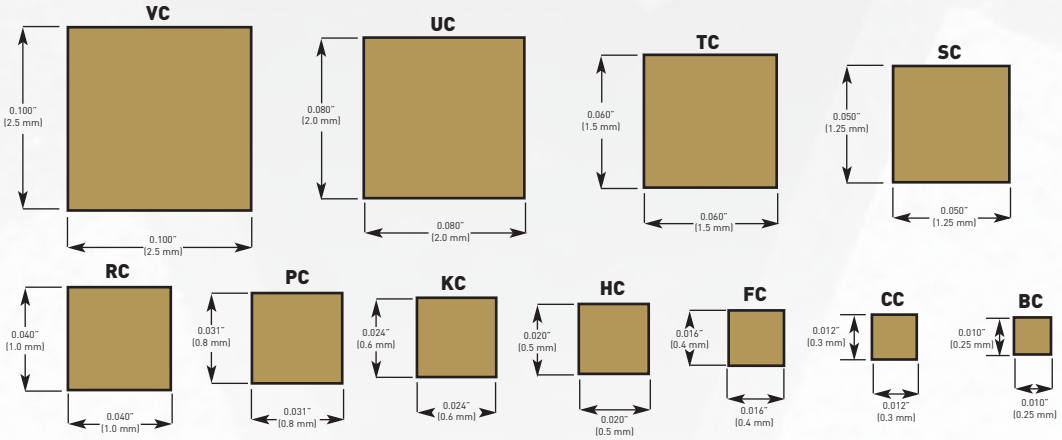
Note 1: Minimum 10^6MΩ @ 25°C is available by special order.
Note 2: Class 3 Dielectrics are only available for custom designs.
Note 3: See ALTAS ULTRA Hi-K SLC brochure for Class 4 Dielectric Material products.
Note 4: EIA-198-1-F

6 Physical Configurations

Single Value Type A and B Chip Codes (border side displayed)

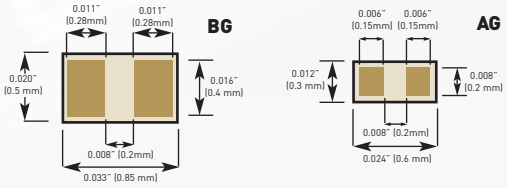


Single Value Type C Chip Codes

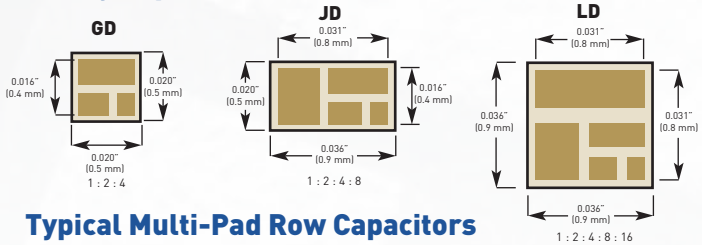


Chip Codes (Array side displayed. A & B options available for common bottom electrode)

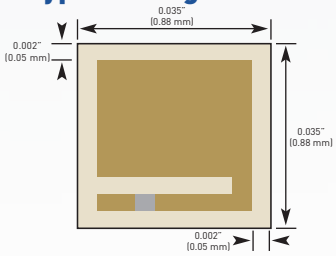
Gap Capacitors



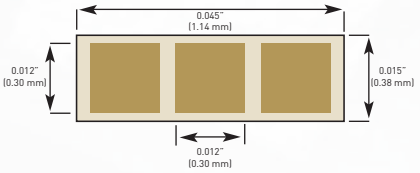
Binary Capacitors



Typical Integrated Resistor-Capacitor



Typical Multi-Pad Row Capacitors



Note 1: Electrode dimensions are typical only. All drawings are not drawn to scale.
Note 2: Chip codes for Integrated Resistor-Capacitor and Row Capacitor are available upon request.
Note 3: For further details, please contact Tecdia worldwide sales offices.

Type A

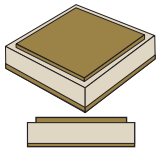
High Q (Class 1) Single Capacitors (P/N prefix AMS)

Capacitance, Dielectric & Dimension Combinations

**Please add suffix-4M for part numbers.

Capacitance (pF) @1MHz	EIA Code in P/N	Case Code / Size in mils										
		B	C	F	H	K	P	R	S	T	U	V
		10x10	12x12	16x16	20x20	24x24	31x31	40x40	50x50	60x60	80x80	100x100
0.1	0R1											
0.2	0R2										Dielectric Color Index	
0.3	0R3										K= 40	
0.4	0R4										K= 90	
0.5	0R5										K=140	
0.6	0R6										K=180	
0.8	0R8				**						K=280	
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									**		
10.0	100											
12.0	120											
15.0	150										**	
18.0	180										**	
22.0	220											**
27.0	270											**
33.0	330											
39.0	390											
47.0	470											
50.0	500											
56.0	560											
68.0	680											
82.0	820											
100.0	101											
120.0	121											
150.0	151											

Type A



- Safety Margin around top
- Top: TiW/ Au, TaN/ TiW/ Au
  Bottom: TiW/ Pt/ Au, TaN/ TiW/ Pt/ Au
- Color Code: RED

Part Number Example

A M S 500 J 1 T

- A: Capacitor Type:A (page 1)
- M: Electrode Metallization: MIC (page 2)
- S: Capacitor Pattern Selection: Single Value (page 2)
- 500: Capacitance Value Designation: 500 = 50 pF (page 2)
- J: Capacitance Tolerance: +/-5% (page 2)
- 1: Dielectric Class: 1 (page 3)
- T: Chip Configuration: T: 0.060" x 0.060" (page 4)

Type A

High K (Class 2) Single Capacitors (P/N prefix AMS)

Capacitance, Dielectric & Dimension Combinations

*Please add suffix-FK for part numbers.

Capacitance (pF) @1kHz	EIA Code in P/N	Case Code / Size in mils										
		B	C	F	H	K	P	R	S	T	U	V
		10x10	12x12	16x16	20x20	24x24	31x31	40x40	50x50	60x60	80x80	100x100
2.2	2R2											
2.7	2R7										Dielectric Color Index	
3.3	3R3										K= 700	
3.9	3R9										*K=1600	
4.7	4R7										K=2800	
5.6	5R6											
6.8	6R8											
8.2	8R2											
10.0	100											
12.0	120											
15.0	150											
18.0	180											
22.0	220											
27.0	270											
33.0	330											
39.0	390											
47.0	470											
50.0	500											
56.0	560											
68.0	680											
82.0	820											
100.0	101											
120.0	121											
150.0	151											
180.0	181											
220.0	221											
270.0	271											
330.0	331											
390.0	391											
470.0	471											
510.0	511											
560.0	561											
680.0	681											
820.0	821											
1000.0	102											
1200.0	122											
1500.0	152											

Binary Capacitors (Type A) P/N prefix AMB

Capacitance (pF)*1@1MHz Nominal values per array pad	EIA Code in P/N	Case Code/ Size in mils		
		GD	JD	LD
		20x20	20x36	36x36
0.7/0.35/0.18	0R7	*2		
1.5/0.75/0.38	1R5	*2		
1.5 / 0.75 / 0.38 / 0.19	1R5		*2	
3.0 / 1.5 / 0.75 / 0.38	3R0		*2	
3.0 / 1.5 / 0.75 / 0.38 / 0.19	3R0			*2
6.0 / 3.0 / 1.5 / 0.75 / 0.38	6R0			*2

Note 1: The Capacitance Values are for reference only. Binary relationship is based on the relative sizes (surface area) of the electrodes within the array instead of the actual electrical values for the individual capacitors. Screening Acceptance Procedures are based on measurements of the largest electrode pad only.

Note 2: Please refer to Dielectric Color Index on page 5.

Gap Capacitors (Type A) P/N prefix AMG

Capacitance (pF) Each array pad	EIA Code in P/N	Frequency	Case Code/ Size in mils	
			AG	BG
			12x24	20x33
0.5 x 2	0R5	@1MHz	*2	
5.0 x 2	5R0	@1kHz		
15.0 x 2	150	@1kHz		
25.0 x 2	250	@1kHz		

Note: Gap between array electrodes is industry standard 8 mils. When mounted in series the combined capacitance value is equal to C1*C2/ (C1+C2).

Type B

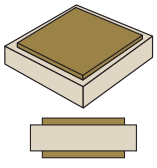
High Q (Class 1) Single Capacitors (P/N prefix BMS)

Capacitance, Dielectric & Dimension Combinations

**Please add suffix-4M for part numbers.

Capacitance (pF) @1MHz	EIA Code in P/N	Case Code / Size in mils										
		B	C	F	H	K	P	R	S	T	U	V
		10x10	12x12	16x16	20x20	24x24	31x31	40x40	50x50	60x60	80x80	100x100
0.1	BMS0R1											
0.2	BMS0R2										Dielectric Color Index	
0.3	BMS0R3										K= 40	
0.4	BMS0R4										K= 90	
0.5	BMS0R5										K=140	
0.6	BMS0R6										K=180	
0.8	BMS0R8				**						K=280	
1.0	BMS1R0					**						
1.2	BMS1R2					**						
1.5	BMS1R5											
1.8	BMS1R8						**					
2.2	BMS2R2						**					
2.7	BMS2R7											
3.3	BMS3R3							**				
3.9	BMS3R9											
4.7	BMS4R7								**			
5.6	BMS5R6											
6.8	BMS6R8									**		
8.2	BMS8R2									**		
10.0	BMS100											
12.0	BMS120											
15.0	BMS150										**	
18.0	BMS180											
22.0	BMS220											**
27.0	BMS270											
33.0	BMS330											
39.0	BMS390											
47.0	BMS470											
50.0	BMS500											
56.0	BMS560											
68.0	BMS680											
82.0	BMS820											
100.0	BMS101											
120.0	BMS121											
150.0	BMS151											

Type B



- Safety Margin around top & bottom
- Top: TiW/ Au, TaN/ TiW/ Au
  Bottom: TiW/ Au, TaN/ TiW/ Au
- Color Code: BLUE

Part Number Example

B M B 0R7 B 1 GD

- B — Capacitor Type:B (page 1)
- M — Electrode Metallization: MIC (page 2)
- B — Capacitor Pattern Selection: Binary (page 2)
- 0R7 — LargestPad Capacitance Value Designation: 0R7 = 0.7 pF (page 2)
- B — Capacitance Tolerance: +/-0.1 pF (page 2)
- 1 — Dielectric Class: 1 (page 3)
- GD — Chip Configuration: GD: 0.020" x 0.020" (page 4)

Type B

High K (Class 2) Single Capacitors (P/N prefix BMS)

Capacitance, Dielectric & Dimension Combinations

*Please add suffix-FK for part numbers.

Capacitance (pF) @1kHz	EIA Code in P/N	Case Code / Size in mils										
		B	C	F	H	K	P	R	S	T	U	V
		10x10	12x12	16x16	20x20	24x24	31x31	40x40	50x50	60x60	80x80	100x100
2.2	BMS2R2											
2.7	BMS2R7										Dielectric Color Index	
3.3	BMS3R3										K= 700	
3.9	BMS3R9										*K=1600	
4.7	BMS4R7										K=2800	
5.6	BMS5R6											
6.8	BMS6R8											
8.2	BMS8R2											
10.0	BMS100											
12.0	BMS120											
15.0	BMS150											
18.0	BMS180											
22.0	BMS220											
27.0	BMS270											
33.0	BMS330											
39.0	BMS390											
47.0	BMS470											
50.0	BMS500											
56.0	BMS560											
68.0	BMS680											
82.0	BMS820											
100.0	BMS101											
120.0	BMS121											
150.0	BMS151											
180.0	BMS181											
220.0	BMS221											
270.0	BMS271											
330.0	BMS331											
390.0	BMS391											
470.0	BMS471											
510.0	BMS511											
560.0	BMS561											
680.0	BMS681											
820.0	BMS821											
1000.0	BMS102											
1200.0	BMS122											
1500.0	BMS152											

Binary Capacitors (Type B) P/N prefix BMB

Capacitance (pF) *1@1MHz Nominal values per array pad	EIA Code in P/N	Case Code/ Size in mils		
		GD	JD	LD
		20x20	20x36	36x36
0.7 / 0.35 / 0.18	0R7	*2		
1.5 / 0.75 / 0.38	1R5	*2		
1.5 / 0.75 / 0.38 / 0.19	1R5		*2	
3.0 / 1.5 / 0.75 / 0.38	3R0		*2	
3.0 / 1.5 / 0.75 / 0.38 / 0.19	3R0			*2
6.0 / 3.0 / 1.5 / 0.75 / 0.38	6R0			*2

Note 1: The Capacitance Values are for reference only. Binary relationship is based on the relative sizes (surface area) of the electrodes within the array instead of the actual electrical values for the individual capacitors. Screening Acceptance Procedures are based on measurements of the largest electrode pad only.

Note 2: Please refer to Dielectric Color Index on page 7.

Gap Capacitors (Type B) P/N prefix BMG

Capacitance (pF) Each array pad	EIA Code in P/N	Frequency	Case Code/ Size in mils	
			AG	BG
			12x24	20x33
0.5 x 2	0R5	@1MHz	*2	
5.0 x 2	5R0	@1kHz		
15.0 x 2	150	@1kHz		
25.0 x 2	250	@1kHz		

Note: Gap between array electrodes is industry standard 8 mils. When mounted in series the combined capacitance value is equal to C1*C2/ (C1+C2).

Type C

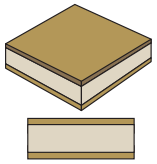
High Q (Class 1) Single Capacitors (P/N prefix CMS)

Capacitance, Dielectric & Dimension Combinations

**Please add suffix-4M for part numbers.

Capacitance (pF) @1MHz	EIA Code in P/N	Case Code / Size in mils										
		BC	CC	FC	HC	KC	PC	RC	SC	TC	UC	VC
		10x10	12x12	16x16	20x20	24x24	31x31	40x40	50x50	60x60	80x80	100x100
0.1	CMS0R1											
0.2	CMS0R2										Dielectric Color Index	
0.3	CMS0R3	**									K= 40	
0.4	CMS0R4										K= 90	
0.5	CMS0R5										K=140	
0.6	CMS0R6										K=180	
0.8	CMS0R8				**						K=280	
1.0	CMS1R0				**							
1.2	CMS1R2					**						
1.5	CMS1R5					**						
1.8	CMS1R8											
2.2	CMS2R2						**					
2.7	CMS2R7											
3.3	CMS3R3							**				
3.9	CMS3R9							**				
4.7	CMS4R7											
5.6	CMS5R6								**			
6.8	CMS6R8									**		
8.2	CMS8R2									**		
10.0	CMS100											
12.0	CMS120										**	
15.0	CMS150										**	
18.0	CMS180											**
22.0	CMS220											**
27.0	CMS270											
33.0	CMS330											
39.0	CMS390											
47.0	CMS470											
50.0	CMS500											
56.0	CMS560											
68.0	CMS680											
82.0	CMS820											
100.0	CMS101											
120.0	CMS121											
150.0	CMS151											
180.0	CMS181											

Type C



- Suitable for Soldering with materials like Sn60, Sn62, etc..
- Top: TiW/ Pt/ Au, TaN/ TiW/ Pt/ Au
  Bottom: TiW/ Pt/ Au, TaN/ TiW/ Pt /Au
- Color Code:YELLOW

Part Number Example

C M S 152 K 2 VC

- C — Capacitor Type:C (page 1)
- M — Electrode Metallization: MIC (page 2)
- S — Capacitor Pattern Selection: Single value (page 2)
- 152 — Capacitance Value; Designation: 152=1500pF (page 2)
- K — Capacitance Tolerance: +/-10 % (page 2)
- 2 — Dielectric Class: 2 (page 3)
- VC — Chip Configuration: VC: 0.100" x 0.100" (page 4)

Type C

High K (Class 2) Single Capacitors (P/N prefix CMS)

Capacitance, Dielectric & Dimension Combinations

*Please add suffix-FK for part numbers.

Capacitance (pF) @1kHz	EIA Code in P/N	Case Code / Size in mils										
		BC	CC	FC	HC	KC	PC	RC	SC	TC	UC	VC
		10x10	12x12	16x16	20x20	24x24	31x31	40x40	50x50	60x60	80x80	100x100
2.2	CMS2R2											
2.7	CMS2R7											
3.3	CMS3R3											
3.9	CMS3R9											
4.7	CMS4R7											
5.6	CMS5R6											
6.8	CMS6R8											
8.2	CMS8R2											
10.0	CMS100											
12.0	CMS120											
15.0	CMS150											
18.0	CMS180											
22.0	CMS220											
27.0	CMS270											
33.0	CMS330											
39.0	CMS390											
47.0	CMS470											
50.0	CMS500											
56.0	CMS560											
68.0	CMS680											
82.0	CMS820											
100.0	CMS101											
120.0	CMS121											
150.0	CMS151											
180.0	CMS181											
220.0	CMS221											
270.0	CMS271											
330.0	CMS331											
390.0	CMS391											
470.0	CMS471											
510.0	CMS511											
560.0	CMS561											
680.0	CMS681											
820.0	CMS821											
1000.0	CMS102											
1200.0	CMS122											
1500.0	CMS152											

Dielectric Color Index

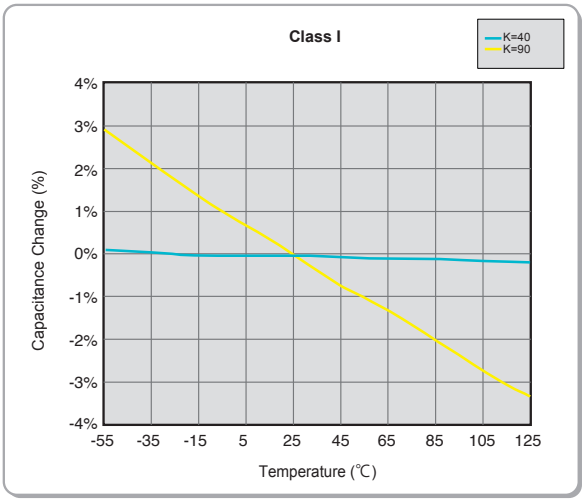
K= 700

*K=1600

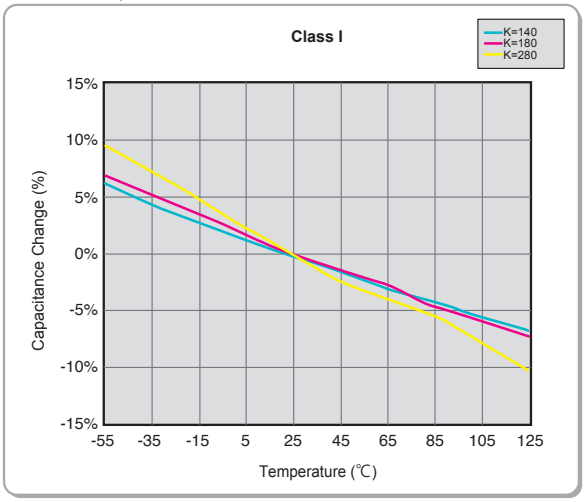
K=2800

8 Typical Temperature / Aging Characteristic Graphs

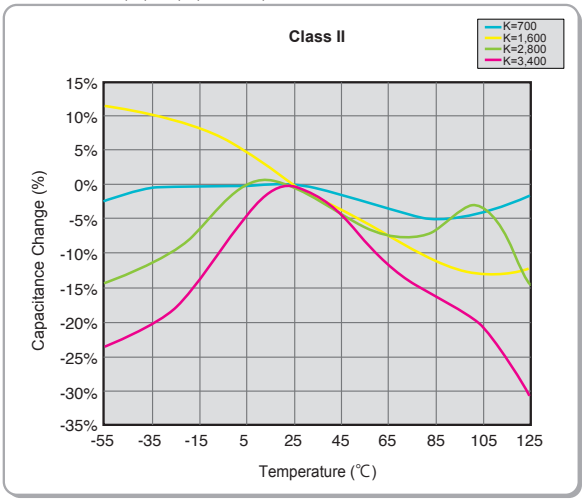
Class I (K=40 & 90)



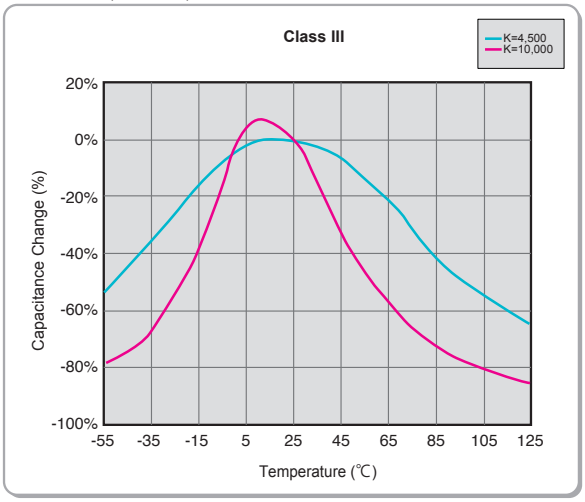
Class I (K=140, 180 & 280)



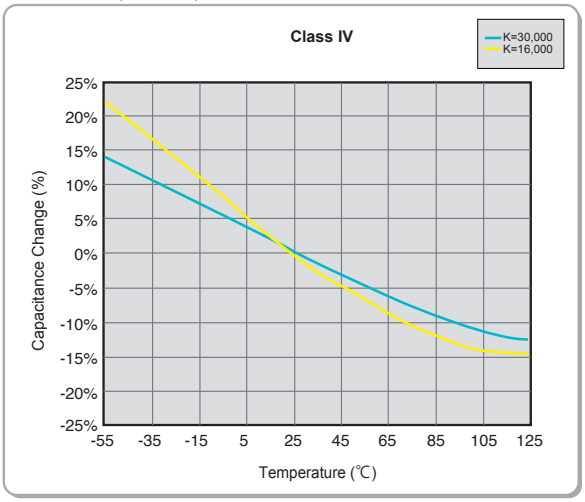
Class II (K=700, 1,600, 2,800 & 3,400)



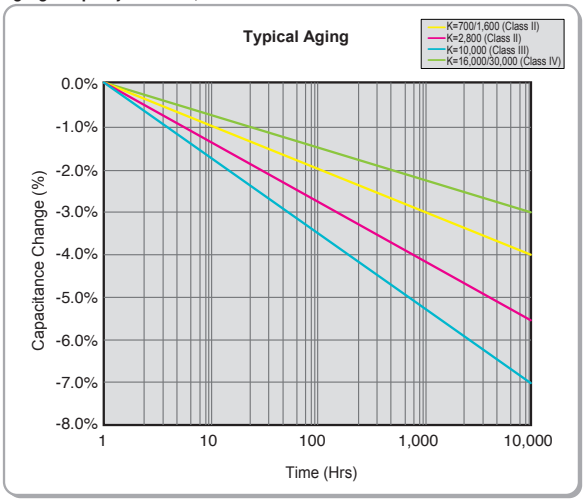
Class III (K=4,500 & 10,000)



Class IV (K=16,000 & 30,000)



Aging Property (Class II, III & IV)



Let's do this.

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