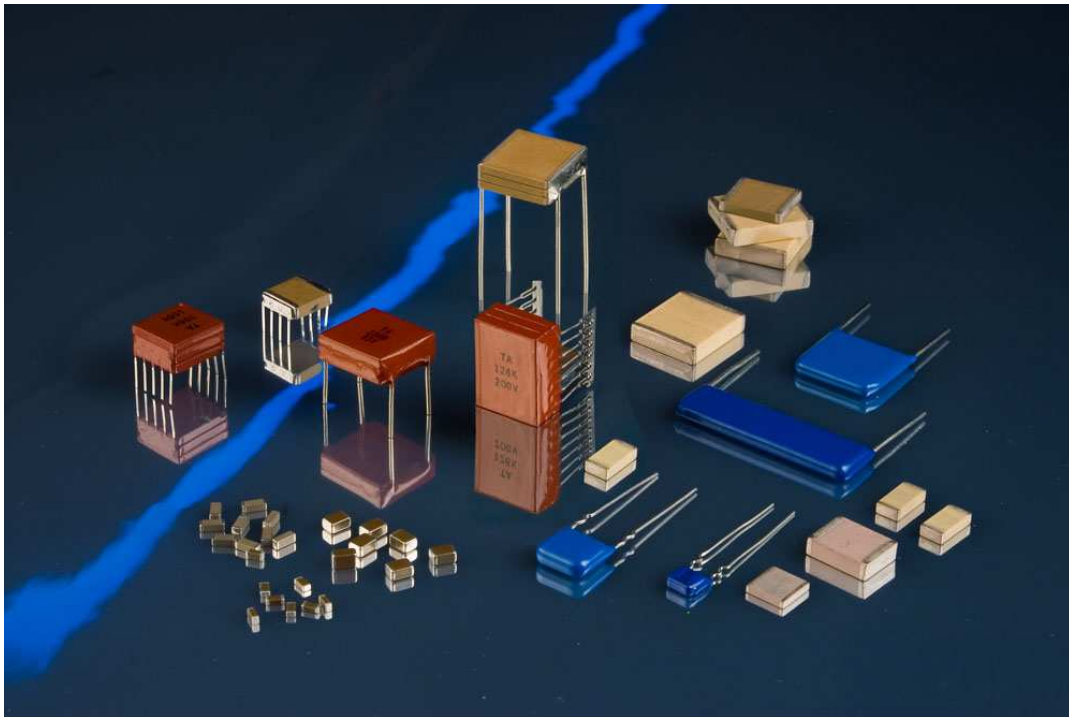


TEMEX-CERAMICS

High Capacitance Multilayer Ceramic Capacitors



TEMEX CERAMICS reserves the right to modify herein specifications and information at any time when necessary to provide optimum performance and cost.



HIGH CAPACITANCE MULTILAYER CERAMIC CAPACITORS

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HIGH CAPACITANCE MULTILAYER CERAMIC CAPACITORS

I. Foreword

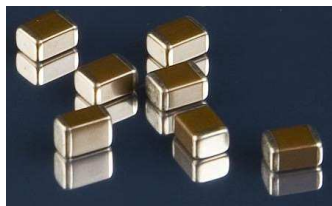
These capacitors have been developed in response to demand from switched mode power supply (S.M.P.S.) and DC-DC converters manufacturers. They are particularly suitable for filtering, smoothing and decoupling purpose in Hi-Rel equipments. The capacitors utilize advanced ceramic technology to achieve Hi-Rel long operating life and small size. They are designed for hybrid assemblies and low profile printed circuit applications.

Customized assemblies may be achieved with standard bare chip sizes mentioned in the following chapters.

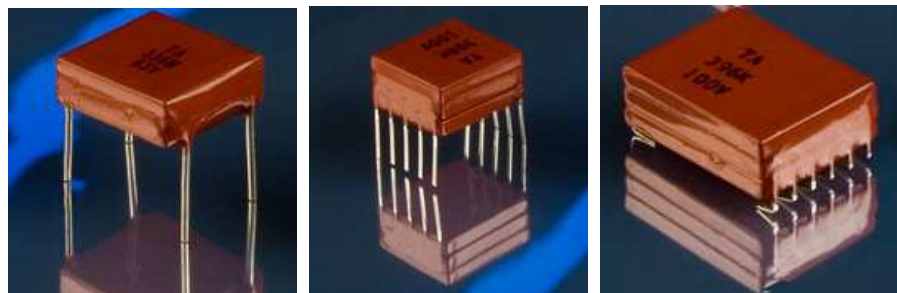
II. General description

The capacitors here mentioned concern the voltage equal or higher than 50V, in bare chips or leaded devices. Two dielectrics are proposed in X7R Class: the "X" series and the "T" series. Each of them has its own characteristics in between the "X7R" Class limitations.

Bare chips (SMD):



Leaded devices on assemblies (examples):



HIGH CAPACITANCE MULTILAYER CERAMIC CAPACITORS

III Chips

III-1 Features

The SMD or chips components are the basis capacitors of all the leaded assemblies. Generally not used as chips especially for the sizes above 2229 for soldering reasons (cf the soldering recommendation), the tables hereunder are given for the capacitance range and the thickness of these basis capacitors.

III-2 Capacitance range

Cr Code	Cr (μF)	2229				3033				3740				5440			
		50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V
104	0.10			1.8	3.0 2.3				2.5 2.6								
124	0.12			1.8	3.0 2.3				2.5 2.6								
154	0.15			2.0	2.3				2.5 2.6								
184	0.18			2.0	2.6				3.2 2.6				3.0 2.6				
224	0.22			2.5	2.8				3.2 2.6				3.0 2.6				3.0 2.7
274	0.27			2.5 2.3	3.1			2.0	3.5 2.6				3.0 2.6				3.0 2.7
334	0.33	1.8	1.8	3.0 2.3				2.0	2.8			2.0	3.3 2.6			2.5	3.5 2.7
394	0.39	1.8	1.8	3.0 2.3				2.0	3.1			2.0	3.5 2.6			2.5	3.5 2.7
474	0.47	1.8	1.8	2.3				2.0 2.3	3.5			2.0	4.0 2.6			2.5	3.5 2.7
564	0.56	2.0	2.0	2.5				2.5 2.3				2.0	2.9	2.0	2.0	2.5 2.6	3.8 2.7
684	0.68	2.0 2.3	2.0 2.3	2.8		2.0	2.0	3.0 2.3				2.5	3.4	2.0	2.0	2.5 2.6	4.0 2.7
824	0.82	2.0 2.3	2.0 2.3			2.0	2.0	3.5 2.4				2.5 2.3	3.8	2.0	2.0	3.0 2.6	4.2 2.7
105	1.0	2.2 2.3	2.2 2.3			2.5	2.5	2.6		2.0	2.0	3.0 2.3		2.0	2.0	3.0 2.6	2.7
125	1.2	2.5 2.3	2.5 2.3			2.5	2.5	2.9		2.0	2.0	3.5 2.3		2.0	2.0	3.5 2.6	3.3
155	1.5	3.0 2.3	3.0 2.3			2.8 2.3	2.8 2.3	3.4		2.0 2.3	2.0 2.3	4.0 2.6		2.0	2.0	3.5 2.6	3.9
185	1.8	2.3	2.3			2.8 2.3	2.8 2.3			2.5 2.3	2.5 2.3	2.8		2.0	2.0	4.0 2.6	
225	2.2	2.6	2.6			2.8 2.3	2.8 2.3			2.5 2.3	2.5 2.3	3.2		2.5 2.6	2.5 2.6	4.0 2.6	
275	2.7	2.9	2.9			3.3 2.4	3.3 2.4			2.8 2.3	2.8 2.3	3.6		2.5 2.6	2.5 2.6	2.6	
335	3.3					3.8 2.5	3.8 2.5			2.8 2.3	2.8 2.3			3.0 2.6	3.0 2.6	3.3	
395	3.9					2.8	2.8			3.3 2.3	3.3 2.3			3.0 2.6	3.0 2.6	3.7	
475	4.7					3.1	3.1			3.5 2.3	3.5 2.3			3.0 2.6	3.0 2.6		
565	5.6									2.6	2.6			3.5 2.6	3.5 2.6		
685	6.8									3.0	3.0			3.5 2.6	3.5 2.6		
825	8.2									3.6	3.6			3.8 2.6	3.8 2.6		
106	10													2.8	2.8		
126	12													3.2	3.2		
156	15																
186	18																
226	22																
276	27																

"X" series in green cells
 "T" series in blue cells
 The thickness (Tmax in mm) is indicated in the cells.

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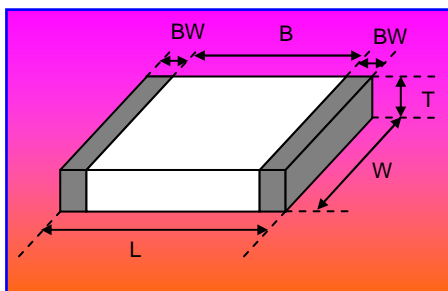
HIGH CAPACITANCE MULTILAYER CERAMIC CAPACITORS

Cr Code	Cr (μF)	5550				6560				6080/8060				45107				
		50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	
104	0.10																	
124	0.12																	
154	0.15																	
184	0.18																	
224	0.22																	
274	0.27				2.5 2.6							2.5 2.6						
334	0.33				2.5 2.6							2.5 2.6						
394	0.39				2.5 2.6							2.5 2.6						
474	0.47				3.0 2.6							2.5 2.6						
564	0.56				3.0 2.6			2.0				2.5 2.6						
684	0.68				3.0 2.6			2.0				2.5 2.6			3.0 2.6			
824	0.82			3.0	3.5 2.6			2.0				3.0 2.6				3.0 3.0 3.5 3.1		
105	1.0			3.0	4.2 2.8	2.0	2.0	2.0 2.6 3.0 2.6				3.0 2.6 3.0	3.0	3.0	3.0 3.0 3.8 3.1			
125	1.2			3.0 2.6	3.3	2.0	2.0	2.0 2.6 3.5 2.6				3.5 2.6 3.0	3.0	3.0	3.0 3.0 3.8 3.1			
155	1.5			3.0 2.6	3.6	2.0	2.0	2.5 2.6 4.0 3.0				3.0	4.0 2.6 3.0 3.0	3.0 3.0	3.0 3.0 3.1			
185	1.8	2.5	2.5	3.0 2.6	4.1	2.0	2.0	2.5 2.6 4.5 3.0				3.0	4.5 2.6 3.0 3.0	3.0 3.0	3.0 3.0 3.1			
225	2.2	2.5	2.5	3.0 2.6		2.0	2.0	2.5 2.6 3.3				3.0 2.6	2.6 3.0 3.0	3.0 3.0 3.5 3.0	3.1			
275	2.7	2.5	2.5	3.5 2.6		2.0 2.6 2.0 2.6	3.0 2.6	3.8				3.0 2.6	3.3 3.0 3.0	3.0 3.0 3.8 3.0	3.1			
335	3.3	2.5 2.6 2.5 2.6	4.0 2.8		2.0 2.6 2.0 2.6	3.0 2.6	4.3					3.0 2.6	3.9 3.0 3.0	3.0 3.0 4.0 3.0				
395	3.9	2.5 2.6 2.5 2.6	3.1		2.0 2.6 2.0 2.6	3.5 2.6					3.0	3.0	3.5 2.6	4.4 3.0 3.0	3.0 3.0	3.0		
475	4.7	3.0 2.6 3.0 2.6	3.5		2.0 2.6 2.0 2.6	4.0 2.6					3.0	3.0	4.0 2.6	3.0 3.0 3.0 3.0	3.0			
565	5.6	3.0 2.6 3.0 2.6			2.5 2.6 2.5 2.6	2.9					3.0	3.0	2.6	3.0 3.0 3.0 3.0	3.0			
685	6.8	3.0 2.6 3.0 2.6			2.5 2.6 2.5 2.6	3.3					3.0 2.6 3.0 2.6	3.0	3.0	3.0 3.0				
825	8.2	3.5 2.6 3.5 2.6			3.0 2.6 3.0 2.6	3.8					3.0 2.6 3.0 2.6	3.6	3.0 3.0 3.0 3.0					
106	10	3.5 2.6 3.5 2.6			3.0 2.6 3.0 2.6						3.5 2.6 3.5 2.6		3.5 3.0 3.5 3.0					
126	12	2.8	2.8		3.5 2.6 3.5 2.6						3.5 2.6 3.5 2.6		3.5 3.0 3.5 3.0					
156	15	3.2	3.2		4.0 2.6 4.0 2.6						3.5 2.6 3.5 2.6		3.0 3.0					
186	18				2.6	2.6					2.6	2.6		3.0 3.0				
226	22				3.0	3.0					2.8	2.8		3.0 3.0				
276	27				3.6	3.6					3.3	3.3		3.3 3.3				

■ "X" series in green cells
 ■ "T" series in blue cells

The thickness (Tmax in mm) is indicated in the cells.

III-3 Dimensions



The thickness is indicated in the capacitance range tables

All dimensions in mm

Size	L	Tol	W	Tol	BW	BW
	±		±		(min)	(max)
2229	5.7	0.4	7.0	0.4	0.25	1.4
3033	7.4	0.5	8.0	0.5	0.5	2.0
3740	9.6	0.5	9.8	0.5	0.5	2.0
5440	13.7	0.5	10.2	0.5	0.5	2.0
5550	13.7	0.5	12.3	0.5	0.5	2.0
6080	15	0.8	19.8	0.8	0.5	2.0
6560	16.9	0.8	15.5	0.8	0.5	2.0
8060	19.8	0.8	14.9	0.8	0.5	2.0
45107	10.8	0.5	27.5 max		0.5	2.0

HIGH CAPACITANCE MULTILAYER CERAMIC CAPACITORS

IV Radial leaded capacitors

IV-1 Features

Connected by 2 wires, these components have only one basis chips. This 2 wires termination makes the parts perfectly suitable to any design capable to withstand severe environmental conditions (chocks, bumps, vibrations...). An epoxy coating is applied to protect the parts, the parts are marked.

IV-2 Capacitance range

Cr Code	Cr (μF)	R2229				R3033				R3740				R5440							
		50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V				
104	0.10			3.1	4.3	3.5			3.8	3.9											
124	0.12			3.1	4.3	3.5			3.8	3.9											
154	0.15			3.3	4.5	3.7			3.8	3.9											
184	0.18			3.3		3.9			4.5	3.9		4.3	3.9								
224	0.22			3.8		4.2			4.5	3.9		4.3	3.9			4.3	4.0				
274	0.27			3.8	3.5	4.6			4.2	3.9		4.3	3.9			4.3	4.0				
334	0.33	3.1	3.1	3.8	3.5			3.3	4.1		3.3	4.6	3.9		3.8	4.8	4.0				
394	0.39	3.1	3.1	4.3	3.5			3.3	4.4		3.3	4.8	3.9		3.8	4.8	4.0				
474	0.47	3.1	3.1		3.7			3.3	3.6	4.8		3.3	5.3	3.9	3.8	4.8	4.0				
564	0.56	3.3	3.3		3.9			3.8	3.6		3.3	4.2	3.3	3.3	3.8	3.9	5.1	4.0			
684	0.68	3.3	3.5	3.3	3.5	3.3	3.3	4.3	3.6		3.8	4.7	3.3	3.3	3.8	3.9	5.3	4.0			
824	0.82	3.3	3.5	3.3	3.5	3.3	3.3	4.8	3.7		3.8	3.6	5.1	3.3	3.3	4.3	3.9	5.6	4.0		
105	1.0	3.5	3.5	3.5	3.5	3.8	3.8		3.9	3.3	3.3	4.3	3.6	3.3	3.3	4.3	3.9	4.0			
125	1.2	3.8	3.5	3.8	3.5	3.8	3.8		4.2	3.3	3.3	4.8	3.6	3.3	3.3	4.8	3.9	4.6			
155	1.5	3.8	3.5	4.3	3.5	4.1	3.6	4.3	3.6	4.7	3.3	3.6	3.3	3.6	5.3	3.9	3.3	5.2			
185	1.8	4.3	3.5	4.3	3.5	4.1	3.6	4.3	3.6		3.8	3.6	3.8	3.6	4.1	3.3	3.3	5.3	3.9		
225	2.2		4.0	4.0		4.1	3.6	4.3	3.6		3.8	3.6	3.8	3.6	4.5	3.8	3.9	3.8	3.9	5.3	3.9
275	2.7		4.3	4.3		4.6	3.7	4.6	3.7		4.1	3.6	4.1	3.6	4.9	3.8	3.9	3.8	3.9		3.9
335	3.3					5.1	3.8	5.1	3.8		4.1	3.6	4.1	3.6		4.3	3.9	4.3	3.9		4.6
395	3.9						4.1	4.1			4.8	3.6	4.6	3.6		4.3	3.9	4.3	3.9		5.0
475	4.7						4.4	4.4			4.8	3.6	4.8	3.6		4.3	3.9	4.3	3.9		
565	5.6										3.9	3.9				4.8	3.9	4.8	3.9		
685	6.8										4.3	4.3				4.8	3.9	4.8	3.9		
825	8.2										4.9	4.9				5.1	3.9	5.1	3.9		
106	10															4.1	4.1				
126	12															4.5	4.5				
156	15																				
186	18																				
226	22																				
276	27																				

■ "X" series in green cells
 ■ "T" series in blue cells
 The thickness (Tmax in mm) is indicated in the cells.

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HIGH CAPACITANCE MULTILAYER CERAMIC CAPACITORS

Cr Code	Cr (µF)	R5550				R6560				R6080/R8060			
		50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V
104	0.10												
124	0.12												
154	0.15												
184	0.18												
224	0.22												
274	0.27				3.8 3.9					3.8 3.9			
334	0.33				3.8 3.9					3.8 3.9			
394	0.39				3.8 3.9					3.8 3.9			
474	0.47				4.3 3.9					3.8 3.9			
564	0.56				4.3 3.9			3.3		3.8 3.9			
684	0.68				4.3 3.9			3.3		3.8 3.9			4.3 3.9
824	0.82			4.3	4.3 3.9			3.3		4.3 3.9			4.3 3.9
105	1.0			4.3	5.5 4.1	3.3		3.3	3.9	4.3 3.9			4.3 3.9
125	1.2			4.3 3.9	4.6 3.3	3.3		3.3	3.9	4.8 3.9			4.8 3.9
155	1.5			4.3 3.9	4.9 3.3	3.3		3.8 3.9	5.3 4.3			4.3	5.3 3.9
185	1.8	3.8 3.9	3.8 3.9	4.3 3.9	5.4 3.3	3.3		3.8 3.9	5.8 4.3			4.3	5.8 3.9
225	2.2	3.8 3.9	3.8 3.9	4.3 3.9		3.3		3.8 3.9	4.6			4.3 3.9	3.9
275	2.7	3.8 3.9	3.8 3.9	4.8 3.9		3.3 3.9	3.3 3.9	4.3 3.9	5.1			4.3 3.9	4.6
335	3.3	3.8 3.9	3.8 3.9	5.3 4.1		3.3 3.9	3.3 3.9	4.3 3.9	5.6			4.3 3.9	5.2
395	3.9	3.8 3.9	3.8 3.9	4.4		3.3 3.9	3.3 3.9	4.8 3.9		4.3		4.3	4.8 3.9
475	4.7	4.3 3.9	4.3 3.9	4.8		3.3 3.9	3.3 3.9	5.3 3.9		4.3		4.3	5.3 3.9
565	5.6	4.3 3.9	4.3 3.9			3.8 3.9	3.8 3.9	2.9		4.3		4.3	3.9
685	6.8	4.3 3.9	4.3 3.9			3.8 3.9	3.8 3.9	4.6		4.3 3.9		4.3 3.9	4.3
825	8.2	4.8 3.9	4.8 3.9			4.3 3.9	4.3 3.9	5.1		4.3 3.9		4.3 3.9	4.9
106	10	5.1 3.9	5.1 3.9			4.3 3.9	4.3 3.9			4.8 3.9		4.8 3.9	
126	12		4.1	4.1		4.8 3.9	4.8 3.9			4.8 3.9		4.8 3.9	
156	15		4.5	4.5		5.3 3.9	5.3 3.9			4.8 3.9		4.8 3.9	
186	18							3.9		3.9			3.9
226	22							4.3		4.3			4.1
276	27							4.9		4.9			4.6

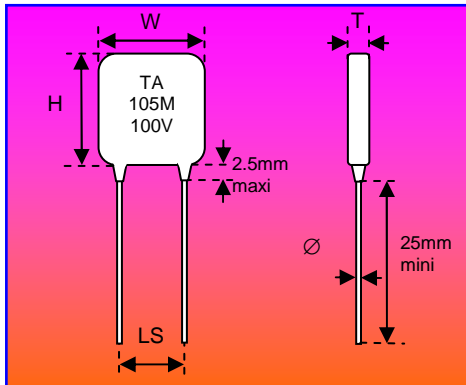
"X" series in green cells
 "T" series in blue cells
 The thickness (Tmax in mm) is indicated in the cells.

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HIGH CAPACITANCE MULTILAYER CERAMIC CAPACITORS

IV-3 Dimensions

All dimensions in mm



Size	W max	H max	LS ±0.5	D ±12%
2229	7.6	9.8	5.08	0.5
3033	11.0	11.0	5.08	0.5
3740	12.7	12.3	10.2	0.6
5440	17.2	12.7	15.2	0.9
5550	17.2	14.8	15.2	0.9
6080	18.8	22.6	15.2	0.9
6560	20.3	18.3	17.8	0.9
8060	23.6	17.7	20.3	0.9

The thickness is indicated in the capacitance range tables

IV-4 Marking

Size	Marking codes	Example
≤ 2229	Cap Code + Tolerance Code Rated voltage value	105M 100V
> 2229	« TA » logo Cap Code + Tolerance Code Rated voltage value	TA 105M 100V

HIGH CAPACITANCE MULTILAYER CERAMIC CAPACITORS

V “CNC” Series

V-1 Features

These products are derived from the standard R5440 and R6560 basis chips. This series has the same performance than the radial lead components series. Other capacitances versus rated voltages are completing the range of the radial lead components series. Also connected with 2 wires, the coating and the marking are applied. The “X” dielectric only is available at the moment.

IV-2 Capacitance range

Cr Code	Cr (μF)	CHIPS								RADIAL LEADED DEVICES								
		CNC5440				CNC6560				CNC5440				CNC6560				
		63V	100V	250V	400V	63V	100V	250V	400V	63V	100V	250V	400V	63V	100V	250V	400V	
104	0.10																	
124	0.12																	
154	0.15																	
184	0.18																	
224	0.22				2.5							3.8						
274	0.27				2.5			2.0				3.8				3.3		
334	0.33			2.5	2.5			2.0			3.8	3.8				3.3		
394	0.39			2.5	3.0			2.0			3.8	4.3				3.3		
474	0.47			2.5	3.0			2.0			3.8	4.3				3.3		
564	0.56		2.0	2.5	3.0			2.0	2.0		3.3	3.8	4.3			3.3	3.3	
684	0.68		2.0	3.0	3.5			2.0	2.5		3.3	4.3	4.8			3.3	3.8	
824	0.82		2.0	3.0	4.0			2.0	3.0		3.3	4.3	5.3			3.3	4.3	
105	1.0		2.0	3.0	4.4		2.0	2.0	3.0		3.3	4.3	5.7			3.3	3.3	4.3
125	1.2		2.0	3.5			2.0	2.0	3.5		3.3	4.8				3.3	3.3	4.8
155	1.5	2.0	2.0	3.5		2.0	2.0	2.5	4.0	3.3	3.3	4.8		3.3	3.3	3.8	5.3	
185	1.8	2.5	2.5	4.0		2.0	2.0	2.5	5.0	3.3	3.8	5.3		3.3	3.3	3.8	6.3	
225	2.2	2.5	2.5	4.0		2.0	2.0	2.5		3.8	3.8	5.3		3.3	3.3	3.8		
275	2.7	2.5	2.5			2.0	2.0	3.0		3.8	3.8			3.3	3.3	4.3		
335	3.3	3.0	3.0			2.0	2.0	3.0		4.3	4.3			3.3	3.3	4.3		
395	3.9	3.0	3.0			2.0	2.0	3.5		4.3	4.3			3.3	3.3	4.8		
475	4.7	3.0	3.0			2.0	2.0			4.3	4.3			3.3	3.3			
565	5.6	3.5	3.5			2.5	2.5			4.8	4.8			3.8	3.8			
685	6.8	3.5	3.5			2.5	2.5			4.8	4.8			3.8	3.8			
825	8.2	3.8	3.8			3.0	3.0			5.1	5.1			4.3	4.3			
106	10					3.0	3.0							4.3	4.3			
126	12					3.5	3.5							4.8	4.8			
156	15					4.0	4.0							5.3	5.3			

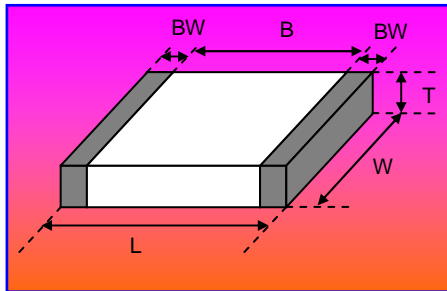
“X” series in green cells

The thickness (Tmax in mm) is indicated in the cells.

TEMEX CERAMICS reserves the right to modify herein specifications and information at any time when necessary to provide optimum performance and cost.

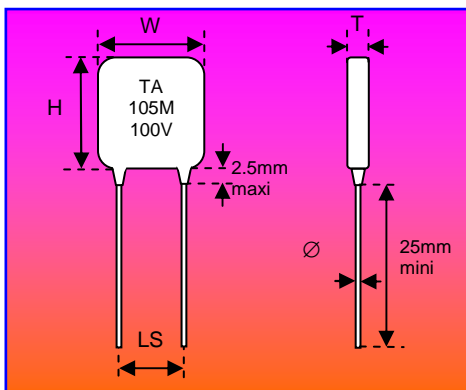
HIGH CAPACITANCE MULTILAYER CERAMIC CAPACITORS

V-3 Dimensions



All dimensions in mm

Size	L	Tol	W	Tol	BW	BW
		±		±	(min)	(max)
CNC5440	13.7	0.5	10.2	0.5	0.5	2.0
CNC6560	16.9	0.8	15.5	0.8	0.5	2.0



All dimensions in mm

Size	W max	H max	LS ±0.5	D ±12%
CNC5440	17.2	12.7	15.24	0.9
CNC6560	20.3	18.3	17.8	0.9

Note: products in 100V can also be order under "R5440" or "R6560" case codes since there is no technical differences between both designations

V-4 Marking

Size	Marking codes	Example	
CNC5440 CNC6560	« TA » logo Cap Code + Tolerance Code Rated voltage value	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>TA 105M 100V</td> </tr> </table>	TA 105M 100V
TA 105M 100V			

HIGH CAPACITANCE MULTILAYER CERAMIC CAPACITORS

VI “SC” and “SV” Series

VI-1 Features

The « SV » Series looks like the radial 2 wires components Series except the assemblies are made with 2 to 4 basis chips. This allows extending the 2 wires terminations.

The “SC” Series offer 4 wires (W4), Dual In Line (DIL) or ribbons terminations making them perfectly suitable to any design (ceramic substrate, epoxy board...) capable to withstand severe environmental conditions (shocks, bumps, vibrations...) as the “SV” Series.

VI-2 Capacitance range

Cr Code	Cr (µF)	SC00 (2229)				SC01/SV01 (3033)				SC02/SV02 (3740)				SC03/SV03 (5440)			
		50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V
104	0.10			2.0	3.2												
124	0.12			2.0	3.2			2.7	2.8								
154	0.15			2.2	6.4			2.7	2.8								
184	0.18			2.2	6.4			3.4	2.8								
224	0.22			2.7	6.4			3.4	2.8			3.2	2.8				
274	0.27			2.7	9.6		2.2	5.4	2.8			3.2	2.8				
334	0.33	2.2	2.2	4.4	9.6		2.2	6.1	3			2.2	3.5	2.8		2.7	2.9
394	0.39	2.2	2.2	4.4	13		2.2	6.1	3.3			2.2	3.7	2.8		2.7	3.2
474	0.47	2.2	2.2	5.4	12.8			2.2	2.5	6.9	3.7		2.2	6.4	2.8		3.2
564	0.56	2.2	2.2	5.4	13.6			2.7	2.5	10.5	5.6		2.2	6.7	3.1	2.2	2.7
684	0.68	2.2	2.2	8.1		2.2	2.2	4.4	2.5	10.5	6.3		2.7	7.0	3.6	2.2	3.2
824	0.82	2.2	2.2	8.1		2.2	2.2	4.4	2.6	13.9	6.8		2.7	2.5	9.9	4.0	2.2
105	1.0	2.4	2.4	10.8		2.7	2.7	4.4	2.8	14.8	7.4	2.2	2.2	3.2	2.5	10.3	5.9
125	1.2	2.7	2.7	10.8		2.7	2.7	5.4	3.1	9.9	2.2	2.2	2.2	3.2	2.5	14.0	6.2
155	1.5	2.7	2.7	12.8		3.0	2.5	3.2	2.5	6.6	3.6	11.1	2.2	2.5	2.2	2.5	5.4
185	1.8	4.8	4.8			3.0	2.5	3.2	2.5	8.8	6.5	14.8	2.7	2.5	2.7	2.5	5.9
225	2.2	4.8	4.8			3.0	2.5	3.2	2.5	10.8	5.9		2.7	2.5	2.7	2.5	6.4
275	2.7	5.4	5.4			3.5	2.6	3.5	2.6	14.0	6.5		3.0	2.5	3.0	2.5	6.4
335	3.3	5.4	5.4			4	2.7	4	2.7	15	9.3		3	2.5	3	2.5	9.6
395	3.9	8.1	8.1			6	3	6.2	3	10.2			3.5	2.5	3.5	2.5	9.6
475	4.7	8.1	8.1			6.0	3.3	6.4	3.3	12.4			3.7	2.5	3.7	2.5	12.8
565	5.6	10.8	10.8			7.0	5.2	7.2	5.2	13.6			6.0	2.8	6.0	2.8	16.0
685	6.8	12.8	12.8			8.0	5.4	8.2	5.4				6.0	3.2	6.0	3.2	10.6
825	8.2					11.0	6.0	11.2	6.0				7.2	3.8	9.0	3.8	11.4
106	10					12.0	8.1	12.2	8.1				7.4	5.0	9.0	5.0	14.8
126	12					14.0	9.0	14.4	9.0				10.5	5.6	12.0	5.6	
156	15					12.0		12.0					11.1	7.8	12.6	7.8	
186	18					13.2		13.2					14.8	8.8	15.0	8.8	
226	22												10.2		10.2		
276	27												11.2		11.2		
336	33												15.2		15.2		
396	39																
476	47																
566	56																
686	68																
826	82																
107	100																

■ “X” series in green cells ■ “T” series in blue cells

The thickness (Tmax in mm) for SC Series or the Height (Hmax in mm) for the SV Series is indicated in the cells.

TEMEX CERAMICS reserves the right to modify herein specifications and information at any time when necessary to provide optimum performance and cost.

HIGH CAPACITANCE MULTILAYER CERAMIC CAPACITORS

Cr Code	Cr (µF)	SC04/SV04 (5550)				SC05/SV05 (6560)				SC06/SC07 SV06/SV07 (6080/8060)				SC10 (45107)			
		50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V
104	0.10																
124	0.12																
154	0.15																
184	0.18																
224	0.22																
274	0.27				2.7 2.8							2.2 2.8					
334	0.33				2.7 2.8							2.2 2.8					
394	0.39				2.7 2.8							2.2 2.8					
474	0.47				3.2 2.8							2.2 2.8					
564	0.56				3.2 2.8							2.2 2.8					
684	0.68				3.2 2.8							2.2 2.8					
824	0.82			3.2	5.9 2.8							2.2 2.8				2.2	3.2
105	1.0			3.2	6.4 3.0	2.2	2.2	2.2 2.8	3.2 2.8			3.2 2.8			2.2	2.2	3.2
125	1.2			3.2 2.8	6.4 3.5	2.2	2.2	2.2 2.8	3.7 2.8			3.7 2.8	2.2	2.2	2.2	2.2	3.7
155	1.5			3.2 2.8	9.6 3.8	2.2	2.2	2.7 2.8	4.2 3.2			3.2	4.2 2.8	2.2	2.2	2.7	6.4
185	1.8	2.7	2.7	3.2 2.8	9.6 4.3	2.2	2.2	2.7 2.8	5.2 3.2			3.2	6.4 2.8	2.2	2.2	2.7	6.4
225	2.2	2.7	2.7	5.9 2.8	9.6 6.5	2.2	2.2	2.7 2.8	6.9 3.5			3.2 2.8	6.9 2.8	2.2	2.2	2.7	6.4
275	2.7	2.7	2.7	6.4 2.8	12.8 7.3	2.2 2.8	2.2 2.8	3.2 2.8	7.9 4.0			3.2 2.8	9.6 3.5	2.2	2.2	3.2	7.4
335	3.3	2.7 2.8	2.7 2.8	6.4 3.0	14.8 8.1	2.2 2.8	2.2 2.8	3.2 2.8	8.4 4.5			3.2 2.8	10.1 4.1	2.2	2.2	3.2	9.6
395	3.9	2.7 2.8	2.7 2.8	6.4 3.3	16.8 11.1	2.2 2.8	2.2 2.8	3.7 2.8	11.1 6.7	3.2	3.2	6.4 2.8	12.8 4.6	2.2	2.2	6.4	12.8
475	4.7	3.2 2.8	3.2 2.8	9.6 3.7	11.4	2.2 2.8	2.2 2.8	5.4 2.8	12.6 7.5	3.2	3.2	6.4 2.8	14.8 6.9	2.2	2.2	6.4	14.8
565	5.6	3.2 2.8	3.2 2.8	9.6 5.6	14.9	2.7 2.8	2.7 2.8	5.9 3.1	16.8 8.5	3.2	3.2	6.4 2.8	14.8 7.0	2.7	2.7	6.4	14.8
685	6.8	3.2 2.8	3.2 2.8	11.0 6.0	16.7	2.7 2.8	2.7 2.8	6.4 3.5	20.8 9.0	3.2 2.8	3.2 2.8	6.4 3.2	16.8 8.1	2.7	2.7	8.1	16.8
825	8.2	3.7 2.8	3.7 2.8	11.1 6.4		3.2 2.8	3.2 2.8	9.1 4.0	12.0	3.2 2.8	3.2 2.8	9.6 3.8	9.8 3.2	3.2	3.2	9.6	
106	10	4.0 2.8	5.4 2.8	12.6 9.4		3.2 2.8	3.2 2.8	9.6 5.9	13.5	3.7 2.8	3.7 2.8	9.6 5.6	12.3 3.2	3.2	3.2	9.6	
126	12	6.4 3.0	6.4 3.0	16.0 9.9		3.7 2.8	3.7 2.8	12.8 6.6	17.5	3.7 2.8	3.7 2.8	12.8 6.0	15.1 3.7	3.7	3.7	12.8	
156	15	7.2 3.4	8.1 3.4	13.2		4.2 2.8	5.9 2.8	14.8 7.5		3.7 2.8	3.7 2.8	12.8 7.0	18.4 6.4	6.4	6.4	12.8	
186	18	7.7 5.6	10.8 5.6	14.4		6.4 2.8	6.4 2.8	10.1		3.7 2.8	3.7 2.8	16.0 8.8		6.4	6.4	16.8	
226	22	8.0 5.8	12.8 5.8			6.4 3.2	6.4 3.2	11.0		6.4 3.0	7.4 3.0	9.2		9.6	9.6		
276	27	11.7 6.2	12.8 6.2			7.9 3.8	9.6 3.8	14.0		6.4 3.5	8.2 3.5	12.8		9.6	9.6		
336	33	12.0 8.6	14.8 8.6			8.4 5.6	9.6 5.6	16.0		7.1 5.6	10.5 5.6	15.2		12.8	12.8		
396	39	16.0 9.4	16.8 9.4			11.6 6.0	12.8 6.0			9.6 5.8	11.2 5.8			12.8	12.8		
476	47	12.0	12.0			12.6 7.0	12.8 7.0			9.6 6.5	11.8 6.5			16.0	16.0		
566	56	13.6	13.6			16.8 8.8	17.0 8.8			11.6 8.8	12.0 8.8						
686	68					9.6	9.6			14.8 9.0	15.0 9.0						
826	82					12.8	12.8			11.8	11.8						
107	100					14.6	14.6			13.5	13.5						

"X" series in green cells
 "T" series in blue cells

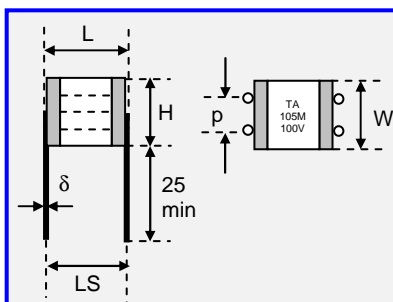
The thickness (Tmax in mm) for SC Series or the Height (Hmax in mm) for the SV Series is indicated in the cells.

HIGH CAPACITANCE MULTILAYER CERAMIC CAPACITORS

VI-3 Dimensions

SC Series

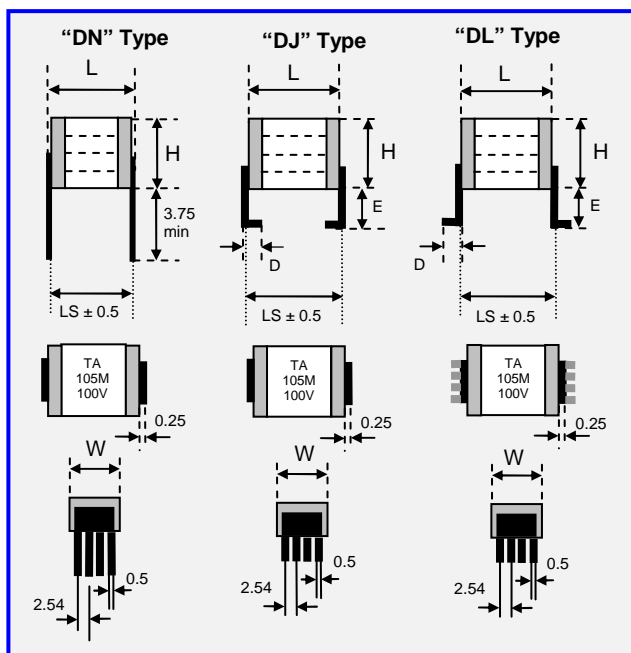
4 wires « W4 » terminations



All dimensions in mm

Size	L	W	LS	p	δ	H
	max	max	± 0,5	± 0,5	± 12%	max
SC02	11,9	11,4	10,20	7,62	0,6	Please, consult the tables of capacitance range
SC03	17,0	12,0	15,24	10,16	0,9	
SC04	16,5	14,0	15,24	10,16	0,9	
SC05	20,0	16,6	17,80	10,16	0,9	
SC06	17,8	21,6	15,24	10,16	0,9	
SC07	22,7	16,6	20,32	10,16	0,9	

Dual In Line « DIL » termination



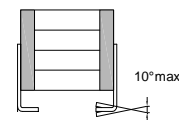
Note: the marking shown here is just given as an example

All dimensions in mm

Size	L	W	LS	E	D	Nb	H
	max	max	± 0,5*	± 0,3	± 0,5	pins**	max
SC00	7,4	8,5	6,35	2,0	2,0	3	Please, consult the tables of capacitance range
SC01	10,2	9,6	7,62	1,5	2,5	3	
SC02	11,9	11,4	10,16	1,5	2,5	4	
SC03	15,5	11,5	14,00	1,5	2,5	4	
SC04	16,5	14,0	13,70	1,5	2,5	5	
SC05	18,5	17,0	17,78	1,5	2,5	6	
SC06	17,8	21,6	15,24	1,5	2,5	7	
SC07	22,7	16,6	20,32	1,5	2,5	6	
SC10	13,2	27,5	11,50	2,1	2,6	10	

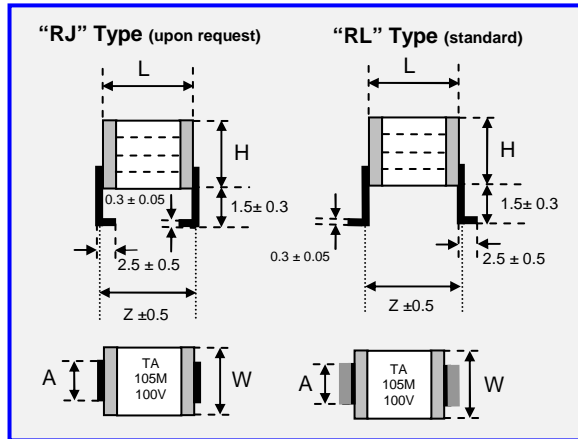
* Except for the SC07, tolerance = ± 0.8 mm
 ** Number de pins per side

Wires bending: 10° max



HIGH CAPACITANCE MULTILAYER CERAMIC CAPACITORS

Ribbons "R" terminations

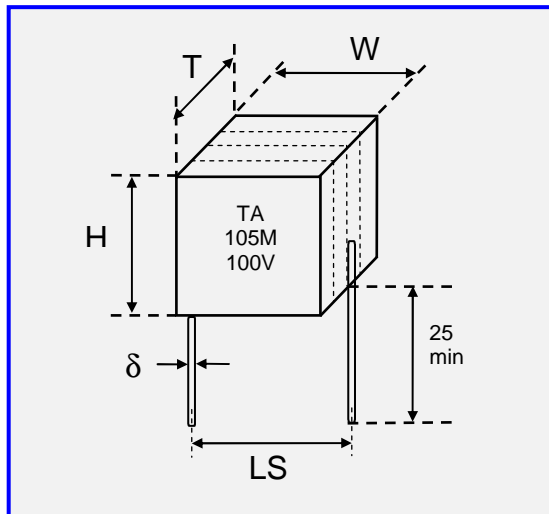


Note: the marking shown here is just given as an example. For the 'RJ' version, please consult us.

All dimensions in mm

Size	L	W	A	H
	max	max	± 0,2	max
SC01	10,2	9,6	8,0	Please, consult the tables of capacitance range
SC02	11,9	11,4	8,0	
SC03	15,5	11,5	8,0	
SC04	16,5	14,0	8,0	
SC05	18,5	17,0	15,0	
SC06	17,8	21,6	15,0	
SC07	22,7	16,6	15,0	

SV Series



All dimensions in mm

Size	W	H	LS	δ	T
	max	max	±0.5	±12%	max
SV01	10,2	9,6	10,16	0,6	Please, consult the tables of capacitance range
SV02	11,9	11,4	10,16	0,6	
SV03	17,0	12,0	15,24	0,9	
SV04	16,5	14,0	15,24	0,9	
SV05	20,0	16,6	17,80	0,9	
SV06	17,8	21,6	15,24	0,9	
SV07	22,7	16,6	20,32	0,9	

VI-4 Marking

Size	Marking codes	Example	
All sizes	« TA » logo Cap Code + Tolerance Code Rated voltage value	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>TA 105M 100V</td> </tr> </table>	TA 105M 100V
TA 105M 100V			

HIGH CAPACITANCE MULTILAYER CERAMIC CAPACITORS

VII “TB” Series

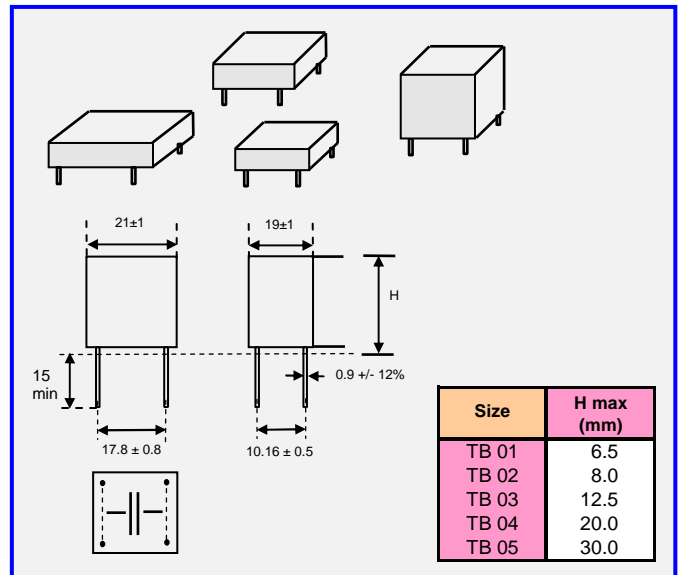
VII-1 Features

This series features have the same electrical parameters than the “SC” series with only 4 wires variants, the capacitor being molded in a plastic housing making it perfectly impervious to all external agents.

VII-2 Capacitance range and dimensions

Cr Code	Cr (μF)	TB Series			
		63V	100V	250V	400V
684	0.68			TB01	TB01
824	0.82			TB01	TB01
105	1.0			TB01	TB01
125	1.2			TB01	TB01
155	1.5			TB01	TB02
185	1.8			TB01	TB02
225	2.2		TB01	TB01	TB03
275	2.7		TB01	TB01	TB03
335	3.3		TB01	TB01	TB03
395	3.9		TB01	TB02	TB03
475	4.7		TB01	TB02	TB04
565	5.6	TB01	TB01	TB02	TB04
685	6.8	TB01	TB01	TB03	TB04
825	8.2	TB01	TB01	TB03	
106	10	TB01	TB01	TB03	
126	12	TB01	TB01	TB03	
156	15	TB01	TB01		
186	18	TB02	TB02		
226	22	TB02	TB02		
276	27	TB03	TB03		
336	33	TB03	TB03		
396	39	TB04	TB04		
476	47	TB04	TB04		
566	56	TB04	TB04		
686	68	TB05			
826	82	TB05			

“X” series in green cells



VII-3 Marking

Size	Marking codes	Example			
All sizes	« TA » logo Cap Code + Tolerance Code Rated voltage value	<table border="1"> <tr><td>TA</td></tr> <tr><td>105M</td></tr> <tr><td>100V</td></tr> </table>	TA	105M	100V
TA					
105M					
100V					

The marking is applied on the top of the TB capacitors

HIGH CAPACITANCE MULTILAYER CERAMIC CAPACITORS

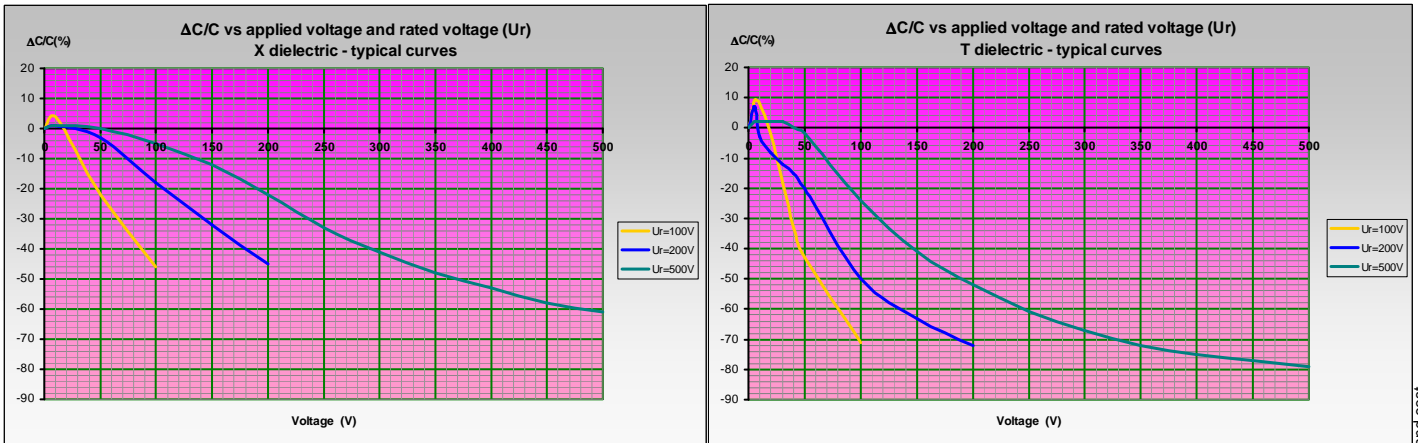
VII Dielectric characteristics

Description	“X” Series (class 2)	“T” Series (class 2)
CECC	2R1	2R1
EIA	X7R	X7R
Temex Ceramics Code	X	T
Operating temperature range	-55°C / +125°C	-55°C / +125°C
Storage temperature range	-55°C / +125°C	-55°C / +125°C
Maximum $\Delta C/C$ over Temperature range without voltage applied	$\pm 15\%$	$\pm 15\%$
Ageing	$\leq 2.5\%$ per decade hour	$\leq 2.5\%$ per decade hour
Dissipation Factor (D.F.)	$\leq 2.5\%$	$\leq 2.5\%$
Voltage proof	All Series except TB $U_r \leq 200V$: 2.5 x U_r $U_r > 200V$: 2.0 x U_r TB Series $U_r \geq 50V$: 2.0 x U_r	$U_r \leq 200V$: 2.5 x U_r $U_r > 200V$: 2.0 x U_r
Insulation Resistance (IR) @ 25°C (Under U_r)	100G Ω or 1000 $\Omega.F^*$	100G Ω or 1000 $\Omega.F^*$
Insulation Resistance (IR) @ 125°C (Under U_r)	10G Ω or 100 $\Omega.F^*$	10G Ω or 100 $\Omega.F^*$
Measurement Conditions for C and D.F. @ 20°C	$\leq 100pF$: 1MHz / 1Vrms (no bias) $> 100pF$: 1KHz / 1Vrms (no bias)	$\leq 100pF$: 1MHz / 1Vrms (no bias) $> 100pF$: 1KHz / 1Vrms (no bias)
Capacitance versus applied Voltage and Temperature	Cf the following page	Cf the following page

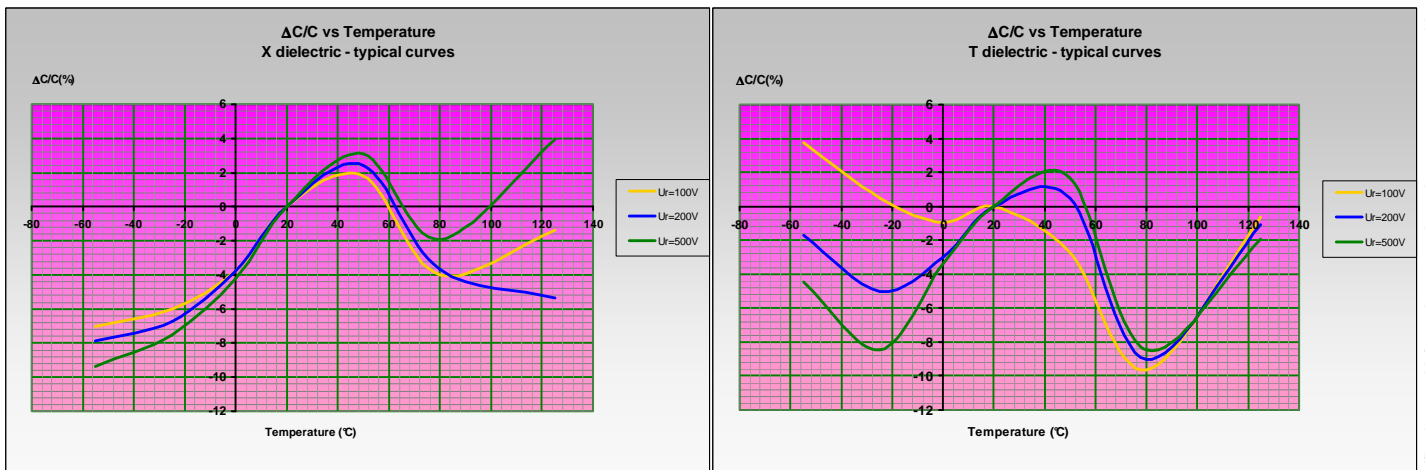
(*): whichever is the less.

HIGH CAPACITANCE MULTILAYER CERAMIC CAPACITORS

Curves of capacitance behaviour versus applied voltage @25°C (for all sizes)



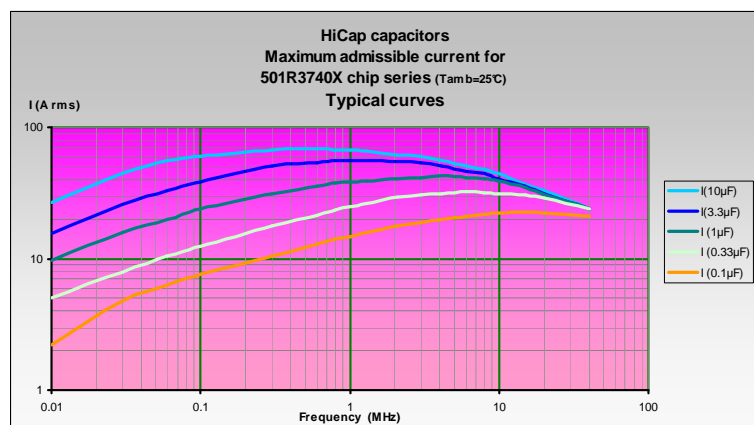
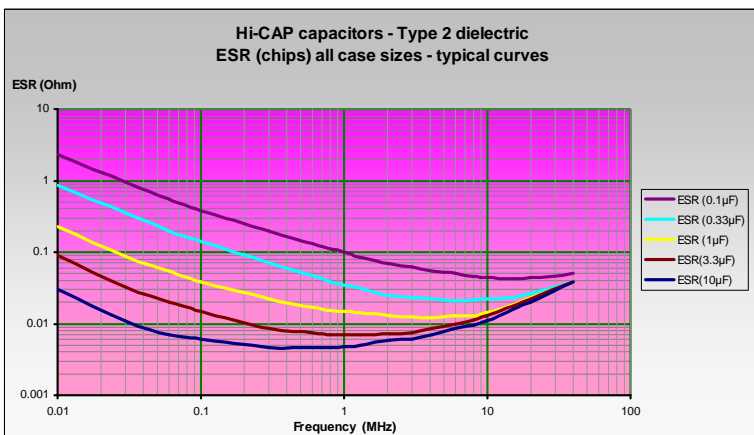
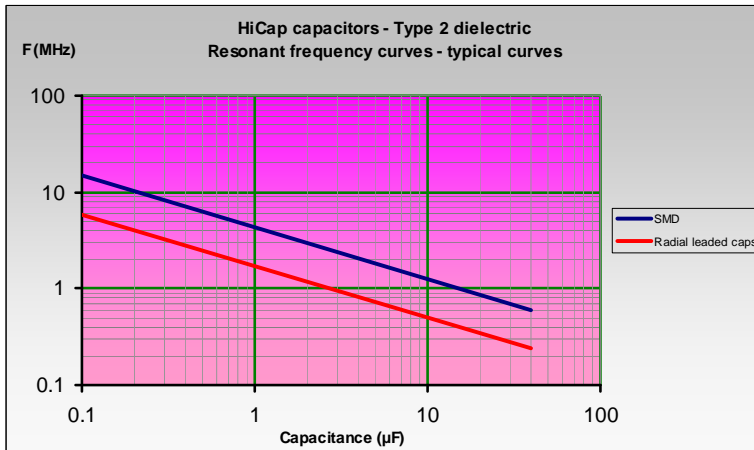
Curves of capacitance behaviour versus temperature (for all sizes), without voltage



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V Electrical characteristics



The ESR (Equivalent Serial Resistance) curves are given here for SMD (chips) capacitors. Regarding the curves for the leaded capacitors, they are rather the same.

Indeed, due to the resistivity of the raw material used and the wire diameters, the resistance of the wires is much lower than the ESR of the chips. So, in a first approach, their influence can be considered as negligible.

These typical curves are an example of admissible currents for one family of chip capacitors. For other curves and products or for further information, please contact us.

Note: for the calculations, we have considered that the terminations are directly connected to an infinite heat sink. In other words, the thermal resistance of the circuit itself which depends of its type and design has not been taken into account. Moreover, the ambient temperature taken is 25°C.

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VII Termination types

Description	P (RoHS)	T (non RoHS)	R / W2 / W4 (RoHS)	R / W2 / W4 (non RoHS)	DIL (RoHS)	DIL (non RoHS)
Chip (SMD)	✓	✓	-	-	-	-
Leaded caps	-	-	✓	✓	✓	✓
Materials	All sizes: Ag 100%	P termination with SnPbAg solder dipping	100% tinned Copper	Sn(70%) Pb(30%) plated Copper	100% tinned phosphor bronze	Sn(60%) Pb(40%) plated phosphor bronze
Magnetic status	Non magnetic	Non magnetic	Non magnetic	Non magnetic	Non magnetic	Non magnetic
Lead status (% of Pb)	0%	36%	0%	30% of the plated layer	0%	40% of the plated layer

VIII Special products

As standard products can't meet all the specificities of all applications, special applications may require special features (higher voltage, burn-in, dimensions, coating, leading, marking...) not described in this catalogue.



Based on the "state of the Art", and our knowledge of the technology, our Engineers may study at your request all special components to meet your application. Please, consult us for more information.

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IX How to order

501	R	6560	X	105	K	P		-RoHS
Rated Voltage 1st two digits are significant; third digit denotes number of zeros Examples: 500 = 50V 101 = 100V 201 = 200V 501 = 500V	Series R CNC Series SC SV Series TB	Size 2229 3033 3740 5440 5550 6560 6080 8060 45107 Size 00 (SC only) 01 02 03 04 05 06 07 10 (SC only) Size 01 02 03 04 05	Dielectric N = NP0 X = X7R T = X7R	Capacitance 1st two digits are significant; third digit denotes number of zeros Examples: 101=100pF 472= 4.7nF 683 = 68nF 104 = 0.1µF	Tolerance K (±10%) M (±20%)	Termination P: chip T: chip R: radial 2 wires Termination SC Series DN: DIL 'N' type DJ: DIL 'J' type DL: DIL 'L' type RL: ribbon 'L' type RJ: ribbon 'J' type W4: radial 4 wires SV Series W2: radial 2 wires Termination W4: 4 wires	Coating Not applicable for chips and radial leaded Coating If left blank Uncoated and No marking U Uncoated and marked C Coated and marked Coating Not applicable for TB caps	RoHS Compliance (**) If left blank non-RoHS compliant

(): For leaded capacitors, both RoHS and non-RoHS versions exist. This is due to the wishes of some customers who still need non-RoHS components in their applications. This suffix must be required for RoHS compliancy.**

For "P" terminations, only the RoHS version exists. The RoHS suffix can be added for information.

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X Packaging

"Blister" Boxes (SMD and leaded components):

For all products, special "blister" boxes are used to optimise the protection of the parts during the carriage and the storage. Depending upon the termination (with or without connection) and the size, the number of the parts in each box is defined. Please, consult us for more details.