

Flexible Termination System (FT-CAP), X7R Dielectric, 6.3 – 100 VDC, VW 80808 Specification

Overview

KEMET's Flexible Termination (FT-CAP) multilayer ceramic capacitor in X7R dielectric incorporates a unique, flexible termination system that is integrated with KEMET's standard termination materials. A conductive silver epoxy is utilized between the base metal and nickel barrier layers of KEMET's standard termination system in order to establish pliability while maintaining terminal strength, solderability and electrical performance. This technology was developed in order to address the primary failure mode of MLCCs— flex cracks, which are typically the result of excessive tensile and shear stresses produced during board flexure and thermal cycling. Flexible termination technology inhibits the transfer of board stress to the rigid ceramic body, therefore mitigating flex cracks which can result in low IR or short circuit failures.

Although this technology does not eliminate the potential for mechanical damage that may propagate during extreme environmental and handling conditions, it does provide superior flex performance over standard termination systems.

Combined with the stability of an X7R dielectric, these flex-robust devices are RoHS Compliant, offer a 5 mm minimum of flex-bend and exhibit a predictable change in capacitance with respect to time and voltage. Capacitance change with reference to ambient temperature is limited to $\pm 15\%$ from -55°C to $+125^{\circ}\text{C}$.

In addition of these devices meeting the Automotive Electronics Council's AEC-Q200 qualification requirements, the VW80808 (VW/AUDI) Specification approval is also part of this robust product offering



Ordering Information

C	1206	X	106	K	4	R	A	C	3316
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish	Packaging/Grade (C-Spec) ¹
	0603 0805 1206 1210	X = Flexible Termination	Two significant digits + number of zeros	J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$	9 = 6.3 8 = 10 4 = 16 3 = 25 5 = 50 1 = 100	R = X7R	A = N/A	C = 100% Matte Sn	3316 = 7" Reel Unmarked 3317 = 13" Reel Unmarked

¹ Additional reeling or packaging options may be available. Contact KEMET for details.

Table 1 – Capacitance Range/Selection Waterfall (0603 – 1210 Case Sizes)

Capacitance Code	0603					0805					1206					1210				
	6.3V 10V 16V	25V	50V	100V	6.3V 10V	16V	25V	50V	100V	6.3V 10V	16V	25V	50V	100V	6.3V 10V	16V	25V	50V	100V	
Product Availability and Chip Thickness Codes – See Table 2 for Chip Thickness Dimensions																				
100	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
110	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
120	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
130	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
150	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
160	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
180	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
200	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
220	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
240	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
270	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
300	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
330	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
360	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
390	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
430	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
470	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
510	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
560	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
620	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
680	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
750	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
820	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
910	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
101	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
111	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
121	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
131	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
151	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
181	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
221	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
271	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
331	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
391	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
471	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
561	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
681	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
821	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
102	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
122	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
152	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
182	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
222	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
272	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
332	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
392	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
472	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
562	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
682	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
822	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
103	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
123	CD	CD	CD	CD	DR	DR	DR	DR	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
153	CD	CD	CD	CD	DR	DR	DR	DD	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
183	CD	CD	CD	CD	DR	DR	DR	DD	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
223	CD	CD	CD	CD	DR	DR	DR	DD	DR	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
273	CD	CD	CD		DR	DR	DR	DD	DS	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
333	CD	CD	CD		DR	DR	DR	DD	DS	EQ	EQ	EQ	EQ	EQ	FN	FN	FN	FN	FN	
393	CD	CD	CD		DR	DR	DR	DD	DS	EQ	EQ	EQ	EQ	ER	FN	FN	FN	FN	FN	
Cap Code	6.3V 10V 16V	25V	50V	100V	6.3V 10V	16V	25V	50V	100V	6.3V 10V	16V	25V	50V	100V	6.3V 10V	16V	25V	50V	100V	
	0603				0805					1206					1210					

Table 1 – Capacitance Range/Selection Waterfall (0603 – 1210 Case Sizes) cont'd

Capacitance Code	0603					0805					1206					1210				
	6.3 V 10 V 16 V	25 V	50 V	100 V	6.3 V 10 V	16 V	25 V	50 V	100 V	6.3 V 10 V	16 V	25 V	50 V	100 V	6.3 V 10 V	16 V	25 V	50 V	100 V	
Product Availability and Chip Thickness Codes – See Table 2 for Chip Thickness Dimensions																				
473	CD	CD	CD		DR	DR	DR	DS	DG	EQ	EQ	EQ	ER	ES	FN	FN	FN	FN	FQ	
563	CD	CD			DD	DD	DD	DS		EQ	EQ	EQ	EQ	ES	FN	FN	FN	FN	FQ	
683	CD	CD			DD	DD	DD	DS		EQ	EQ	EQ	EQ	ES	FN	FN	FN	FN	FQ	
823					DD	DD	DD	DS		EQ	EQ	EQ	EQ	ES	FN	FN	FN	FQ	FA	
104					DR	DR	DR	DS		EQ	EQ	EQ	EQ	EM	FN	FN	FN	FX	FZ	
124					DD	DD	DD	DG		ER	ER	ER	ER	EU	FN	FN	FN	FX	FU	
154					DD	DD	DD	DG		ER	ER	ER	ER	EU	FQ	FQ	FQ	FX	FM	
184					DD	DD	DD			ER	ER	ER	ER	ER	FQ	FQ	FQ	FX	FK	
224					DD	DD	DD			ER	ER	ER	ER		FQ	FQ	FQ	FX	FK	
274					DD	DD	DD			ER	ER	ER	EM		FQ	FQ	FQ	FX	FX	
334					DD	DD	DD			ER	ER	ER	ER	EU	FX	FX	FX	FX		
394					DS	DS	DS			ER	ER	ER			FX	FX	FX	FX		
474					DS	DS	DS			ER	ER	ER			FX	FX	FX	FX		
564					DH	DH	DH			ER	ER	ER			FX	FX	FX	FA		
684					DH	DH	DH			ES	ES	ES			FX	FX	FX	FZ		
824										ES	ES	ES			FA	FA	FA	FL		
105										ES	ES	ES			FU	FU	FU	FM		
125										EH	EH	EH			FZ	FZ	FZ	FZ		
155										EH	EH	EH			FZ	FZ	FZ	FZ		
185										EH	EH	EH			FZ	FZ	FZ	FZ		
225										EH	EH	EH			FZ	FZ	FZ	FZ		
275															FZ	FZ	FZ	FZ		
335															FM	FM	FM			
Cap Code	6.3 V 10 V 16 V	25 V	50 V	100 V	6.3 V 10 V	16 V	25 V	50 V	100 V	6.3 V 10 V	16 V	25 V	50 V	100 V	6.3 V 10 V	16 V	25 V	50 V	100 V	
	0603				0805					1206					1210					

Table 2 – Chip Thickness/Tape & Reel Packaging Quantities

Thickness Code	Case Size	Thickness ± Range (mm)	Paper Quantity ¹		Plastic Quantity	
			7" Reel	13" Reel	7" Reel	13" Reel
AA	1005		15000			
AB	0201		15000			
BB	0402		15000			
BC	0402		15000			
PA	0508	0.80 ± 0.10			4000	10000
CB	0603	0.80 ± 0.07	4000	10000		
CF	0603	0.80 ± 0.07*	4000	15000		
CC	0603	0.80 ± 0.10	4000	10000		
CG	0603	0.80 ± 0.10*	4000	15000		
CD	0603	0.80 ± 0.15	4000	10000		
CJ	0603	0.80 ± 0.15*	4000	15000		
CH	0603	0.85 ± 0.07	4000	10000		
MA	0612	0.80 ± 0.10			4000	10000
DB	0805	0.60 ± 0.10			4000	10000
DC	0805	0.78 ± 0.10			4000	10000
DR	0805	0.78 ± 0.20			4000	10000
DK	0805	0.80 ± 0.10			4000	10000
DD	0805	0.90 ± 0.10			4000	10000
DL	0805	0.95 ± 0.10			4000	10000
DE	0805	1.00 ± 0.10			2500	10000
DS	0805	1.00 ± 0.20			2500	10000
DF	0805	1.10 ± 0.10			2500	10000
DG	0805	1.25 ± 0.15			2500	10000
DH	0805	1.25 ± 0.20			2500	10000
EB	1206	0.78 ± 0.10	4000	10000	4000	10000
EQ	1206	0.78 ± 0.20	4000	10000	4000	10000
EK	1206	0.80 ± 0.10			2000	8000
EC	1206	0.90 ± 0.10			4000	10000
ER	1206	0.90 ± 0.20			4000	10000
EN	1206	0.95 ± 0.10			4000	10000
ED	1206	1.00 ± 0.10			2500	10000
ES	1206	1.00 ± 0.20			2500	10000
EE	1206	1.10 ± 0.10			2500	10000
ET	1206	1.10 ± 0.20			2500	10000
EF	1206	1.20 ± 0.15			2500	10000
EP	1206	1.20 ± 0.20			2500	10000
EM	1206	1.25 ± 0.15			2500	10000
EL	1206	1.25 ± 0.20			2500	10000
EG	1206	1.60 ± 0.15			2000	8000
EH	1206	1.60 ± 0.20			2000	8000
EU	1206	1.60 ± 0.25			2000	8000
EJ	1206	1.70 ± 0.20			2000	8000
FB	1210	0.78 ± 0.10			4000	10000
FN	1210	0.78 ± 0.20			4000	10000
FC	1210	0.90 ± 0.10			4000	10000
FQ	1210	0.90 ± 0.20			4000	10000
FD	1210	0.95 ± 0.10			4000	10000
Thickness Code	Case Size	Thickness ± Range (mm)	7" Reel	13" Reel	7" Reel	13" Reel
			Paper Quantity ¹		Plastic Quantity	

Table 2 – Chip Thickness/Tape & Reel Packaging Quantities cont'd

Thickness Code	Case Size	Thickness ± Range (mm)	Paper Quantity ¹		Plastic Quantity	
			7" Reel	13" Reel	7" Reel	13" Reel
FX	1210	0.95 ± 0.20			4000	10000
FE	1210	1.00 ± 0.10			2500	10000
FF	1210	1.10 ± 0.10			2500	10000
FA	1210	1.10 ± 0.15			2500	10000
FG	1210	1.25 ± 0.15			2500	10000
FZ	1210	1.25 ± 0.20			2500	10000
FL	1210	1.40 ± 0.15			2000	8000
FO	1210	1.50 ± 0.20			2000	8000
FH	1210	1.55 ± 0.15			2000	8000
FU	1210	1.55 ± 0.20			2000	8000
FP	1210	1.60 ± 0.20			2000	8000
FM	1210	1.70 ± 0.20			2000	8000
FJ	1210	1.85 ± 0.20			2000	8000
FT	1210	1.90 ± 0.20			1500	4000
FY	1210	2.00 ± 0.20			2000	8000
FK	1210	2.10 ± 0.20			2000	8000
FR	1210	2.25 ± 0.20			2000	8000
FS	1210	2.50 ± 0.30			1000	4000
FV	1210	3.35 ± 0.10			600	2000
FW	1210	6.15 ± 0.15			300	1000
Thickness Code	Case Size	Thickness ± Range (mm)	7" Reel	13" Reel	7" Reel	13" Reel
			Paper Quantity ¹		Plastic Quantity	

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