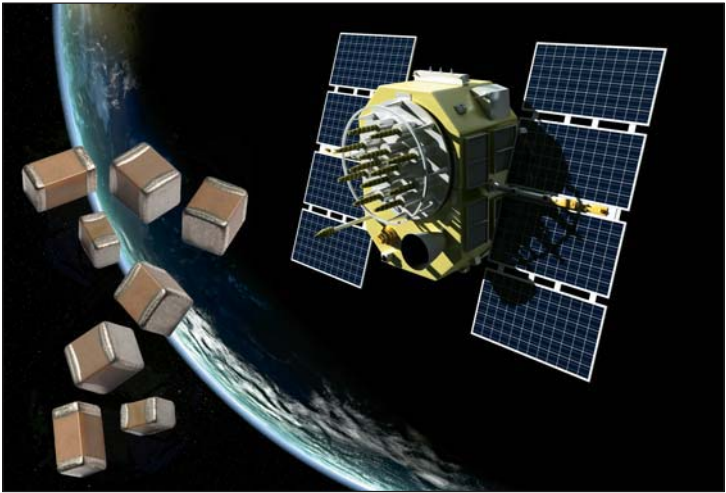


# Space Level BME X7R MLCC



ESCC QPL 3009/041 Approved



The AVX Space BME (Base Metal Electrode) X7R surface mount MLCC utilises leading edge technology in MLCC construction and material processing. The BME technology delivers a superior capacitance voltage capability compared to conventional PME (Precious Metal Electrode) technologies with the reliability levels demanded by the space industry. The availability of higher capacitance values in smaller case sizes not only reduces the amount of board space required by the engineer but also the weight of the complete PCB. These surface mount components also incorporate Flexitem<sup>®</sup>, which greatly improves the resistance to the mechanical stress experienced by MLCCs

## FEATURES

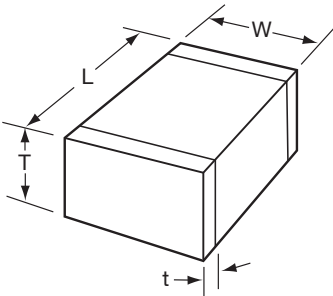
- Higher CV capability than PME capacitors resulting in reduced weight of components and reduction in PCB space required.
- Use of Flexitem<sup>®</sup> technology for enhanced mechanical stress resistance.
- Capacitance values up to 8.2uF available.

## HOW TO ORDER

3009041	06	225	J	E
<b>Detailed Spec</b> 3009041	<b>Component Variant</b> 02 (0603) 03 (0805) 04 (1206) 05 (1210) 06 (1812)	<b>Capacitance Code</b> 2 significant digits + number of zeros e.g. 103 = 10nF 225 = 2.2uF	<b>Capacitance Tolerance</b> J = 5% K = 10% M = 20%	<b>Voltage</b> X = 16V A = 25V C = 50V E = 100V

Please note all parts are terminated with a minimum 10% Pb plating. All parts packed in waffles.  
Lot Validation Testing (LVT) can be ordered separately, LVT Groups 3, 2b, 2a, 1.

## DIMENSIONS



mm (inches)

Size	0603		0805		1206		1210		1812	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
(L) Length	1.45 (0.057)	1.75 (0.069)	1.80 (0.071)	2.20 (0.087)	3.00 (0.118)	3.40 (0.134)	3.00 (0.118)	3.40 (0.124)	4.20 (0.165)	4.80 (0.189)
(W) Width	0.65 (0.026)	0.95 (0.037)	1.05 (0.041)	1.45 (0.057)	1.40 (0.055)	1.80 (0.071)	2.30 (0.091)	2.70 (0.106)	3.00 (0.118)	3.40 (0.124)
(T) Thickness	1.00 (0.039) Max.		1.52 (0.060) Max.		1.80 (0.071) Max.		2.80 (0.110) Max.		2.80 (0.110) Max.	
(t) terminal	0.20 (0.008)	0.50 (0.020)	0.25 (0.010)	0.75 (0.030)	0.25 (0.010)	0.75 (0.030)	0.25 (0.010)	0.75 (0.030)	0.25 (0.010)	0.95 (0.037)



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## PREFERRED SIZES ARE SHADED

Case Size		0603				0805				1206				1210				1812			
Code	Value	16V	25V	50V	100V	16V	25V	50V	100V	16V	25V	50V	100V	16V	25V	50V	100V	16V	25V	50V	100V
222	2.2 (nF)																				
272	2.7																				
332	3.3																				
392	3.9																				
472	4.7																				
562	5.6																				
682	6.8																				
822	8.2																				
103	10																				
123	12																				
153	15																				
183	18																				
223	22																				
273	27																				
333	33																				
393	39																				
473	47																				
563	56																				
683	68																				
823	82																				
104	100																				
124	120																				
154	150																				
184	180																				
224	220																				
274	270																				
334	330																				
394	390																				
474	470																				
564	560																				
684	680																				
824	820																				
105	1 (μF)																				
125	1.2																				
155	1.5																				
185	1.8																				
225	2.2																				
275	2.7																				
335	3.3																				
395	3.9																				
475	4.7																				
565	5.6																				
685	6.8																				
825	8.2																				
106	10																				

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## ELECTRICAL MEASUREMENTS AT ROOM TEMPERATURE

The measurements shall be performed at  $T_{amb} = +22 \pm 3^{\circ}\text{C}$ .

Charateristics	Symbol	Test Method and Conditions	Tolerance ( $\pm$ %)	Limits		Unit
				Min.	Max.	
Capacitance (Note 1)	$C_A$	ESCC No. 3009	5 10 20	$0.95C_n$ $0.9C_n$ $0.8C_n$	$1.05C_n$ $1.1C_n$ $1.2C_n$	pF
Tangent of Loss Angle	$\text{tg}\delta$	ESCC No. 3009 For $U_R = 50\text{V}, 100\text{V}$ : For $U_R = 16\text{V}, 25\text{V}$ :	All	– –	$250 \times 10^{-4}$ $300 \times 10^{-4}$	– –
Insulation Resistance	$R_i$	ESCC No. 3009 For $C_n \leq 10000\text{pF}$ : For $C_n > 10000\text{pF}$ :	All	100 1000	– –	$\text{G}\Omega$ $\text{G}\Omega \text{ nF}$
Voltage Proof	VP	ESCC No. 3009	All	$2.5U_R$	–	V

NOTE: 1. 300 max for 16 volt and 25 volt rated components

## ELECTRICAL MEASUREMENTS AT HIGH AND LOW TEMPERATURE

Charateristics	Symbol	Test Method and Conditions (Note 1)	Limits		Unit
			Min.	Max.	
Insulation Resistance	$R_i$	ESCC No. 3009 For $C_n \leq 10000\text{pF}$ : For $C_n > 10000\text{pF}$ :	10 100	–	$\text{G}\Omega$ $\text{G}\Omega \text{ nF}$
Temperature Characteristic	TC	ESCC No. 3009 $T_{amb} = -55 \pm 2^{\circ}\text{C}, +20 \pm 2^{\circ}\text{C}, +125 \pm 2^{\circ}\text{C}$ (Note 2 and 3) For VT = no voltage applied:	–15	+15	%

NOTE: 1. Single Sample, Inspection Level S3, AQL = 2.5%  
2. If 1 failure out of 5 parts, then test 100%. 1.0% rejects maximum allowed in case of 100% testing.  
3. X7R dielectric: Delta C/C at  $U_R$  is typically -10% to -70% dependant on capacitance value. (See curves on next page)

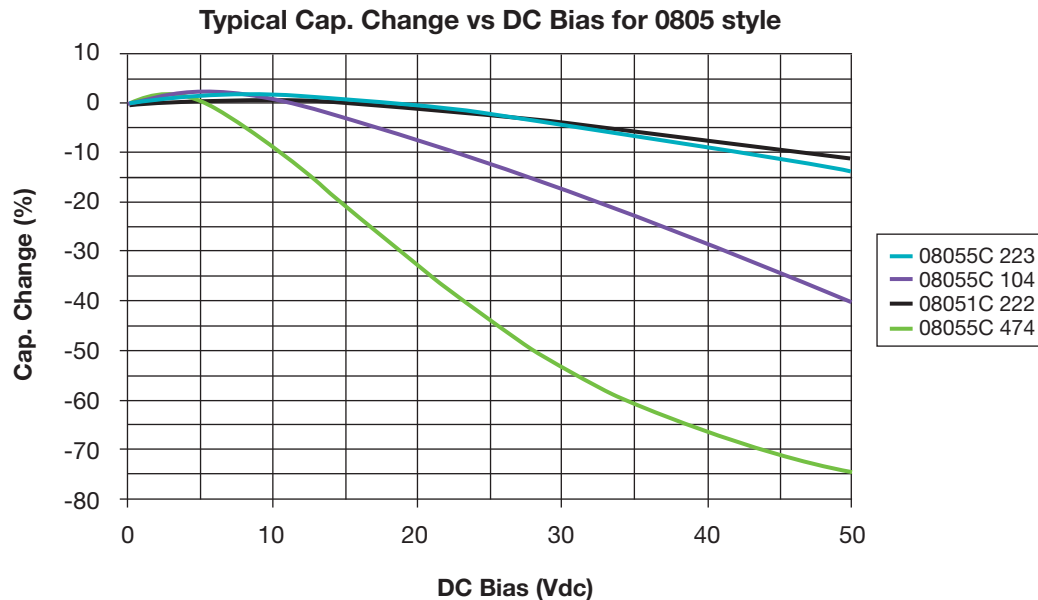
## LVT 3009041 TEST DETAIL

L V T Group Test Number	LVT 3009041 Test Detail, Parametric Data Recorded	Min No. Of Pcs for Test
3	Solderability	3
2b	PCB Mounting, Capacitance Temperature Characteristics and Robustness of Termination	3
2a	PCB Mounting, Life testing for 1000 hours, 2 x RV @ $125^{\circ}\text{C}$	10
1	PCB Mounting, Rapid Change of Temperature , Steady state humidity testing, (1.5 Volts DC @ $85^{\circ}\text{C}$ / 85% Hum) 1000 hours, external visual inspection	20

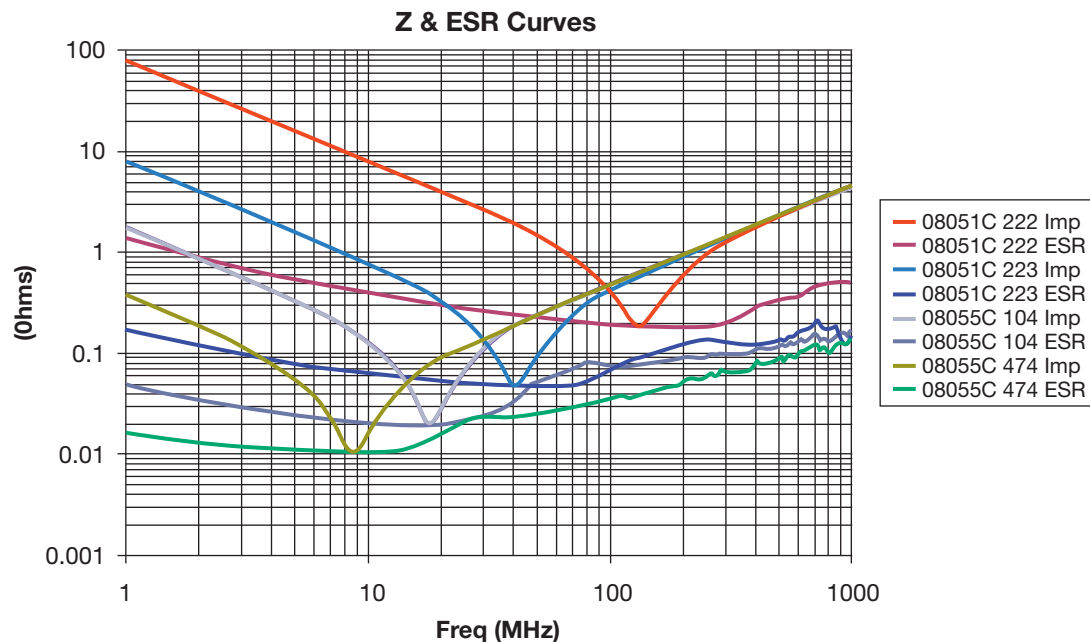


### TYPICAL ELECTRICAL CHARACTERISTICS FOR ESCC BME SURFACE MOUNT

### CAPACITANCE TEMPERATURE CHARACTERISTICS FOR 0805 STYLE (WITH DC BIAS)



### IMPEDANCE WITH ESR CHARACTERISTICS FOR 0805 CAPACITANCE RANGE



If required AVX will produce a data sheet for each part number with the following information:

- Impedance/ESR Frequency Sweep
- Capacitance Change with Temperature from -55°C to +125°C
- Capacitance Change with DC Voltage up to the rated voltage of the component
- Temperature Change with AC Current applied for higher capacitance values.