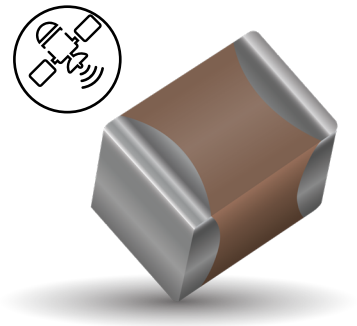
Space Level BME X7R MLCC

ESCC QPL 3009/041 Approved



The KYOCERA AVX Space , 3009041, BME (Base Metal Electrode) X7R surface mount MLCC QPL approved since 2015. The technology utilizes the leading edge technology in MLCC construction and processing. This technology delivers high reliability with a superior capacitance voltage capability compared values in the smaller case sizes not only reduces the amount of board space used but also the weight of components. The surface mount components also incorporate Flexiterm®, which greatly improves the resistance to the mechanical stress experienced by MLCCs either during assembly or during the product life time. Flexiterm® technology provides greater protection against board flexure and promotes an open circuit failure mode under PCB bend testing.

BENEFITS

- Space BME enables customers to down size MLCCs and save PCB space.
- The Space BME range provides a high CV range 16 – 100 volts, 2.2 n F – 22 u F
- The range comes with Flexiterm® termination which protection against board flexure either during assembly or product lifetime.

HOW TO ORDER

3009041	07	226	J	E
Detailed Spec 3009041	**Component Variant** 01 (0402) 02 (0603) 03 (0805) 04 (1206) 05 (1210) 06 (1812) 07 (2220)	**Capacitance Code** 2 significant digits + number of zeros e.g. 103 = 10nF 225 = 2.2µF 226 = 22µF	**Capacitance Tolerance** J = 5% K = 10% M = 20%	**Voltage** X = 16V A = 25V C = 50V E = 100V

Packaging, Waffle as standard, for Tape and Reel add \TR to end of the part number, e.g. 300904107226KA\TR

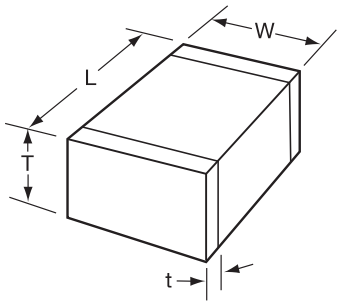
Please note all parts are terminated with a minimum 10% Pb plating.

Lot Validation Testing (LVT) can be ordered separately, LVT Groups 3, 2b, 2a, 1.

DIMENSIONS

mm (inches)

Size	0402		0603		0805		1206		1210		1812		2220	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
(L) Length	0.90 (0.035)	1.15 (0.045)	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 (0.134)	4.20 0.165)	4.80 (0.189)	5.3 (0.208)	6.1 (0.24)
(W) Width	0.41 (0.016)	0.61 (0.024)	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)	4.60 (0.18)	5.41 (0.213)
(T) Thickness	0.61 Max. (0.024)		1.00 Max. (0.039)		1.52 Max. (0.060)		1.80 Max. (0.071)		2.80 Max. (0.110)		2.80 Max. (0.110)		2.80 Max. (0.110)	
(t) terminal	0.1 (0.004)	0.40 (0.015)	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)	0.25 (0.009)	1.03 (0.041)



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PREFERRED SIZES ARE SHADED

Case Sizes		0402			0603			0805			1206			1210			1812			2220		
Code	Value	16/25V	50V	100V	16/25V	50V	100V	16/25V	50V	100V	16/25V	50V	100V	16/25V	50V	100V	16/25V	50V	100V	16/25V	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																			■	■	
126	12																			■		
156	15																			■		
186	18																			■		
226	22																			■		

ELECTRICAL MEASUREMENTS AT ROOM TEMPERATURE

The measurements shall be performed at Tamb = +22 ±3°C.

Charateristics	Symbol	Test Method and Conditions	Tolerance (± %)	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	tgδ	ESCC No. 3009 For U_R = 50V, 100V: For U_R = 16V, 25V:	All	– –	250×10^{-4} 300×10^{-4}	– –
Insulation Resistance	R_I	ESCC No. 3009 For Cn ≤ 10000pF: For Cn > 10000pF:	All	100 1000	– –	GΩ GΩ 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 Cn ≤ 10000pF: For Cn > 10000pF:	100 1000	–	GΩ GΩ nF
Temperature Characteristic	TC	ESCC No. 3009 T_{amb} = -55 ±2°C, +20 ±2°C, +125 ±2°C (Note 2 and 3) For VT = no voltage applied:	-15	+15	%

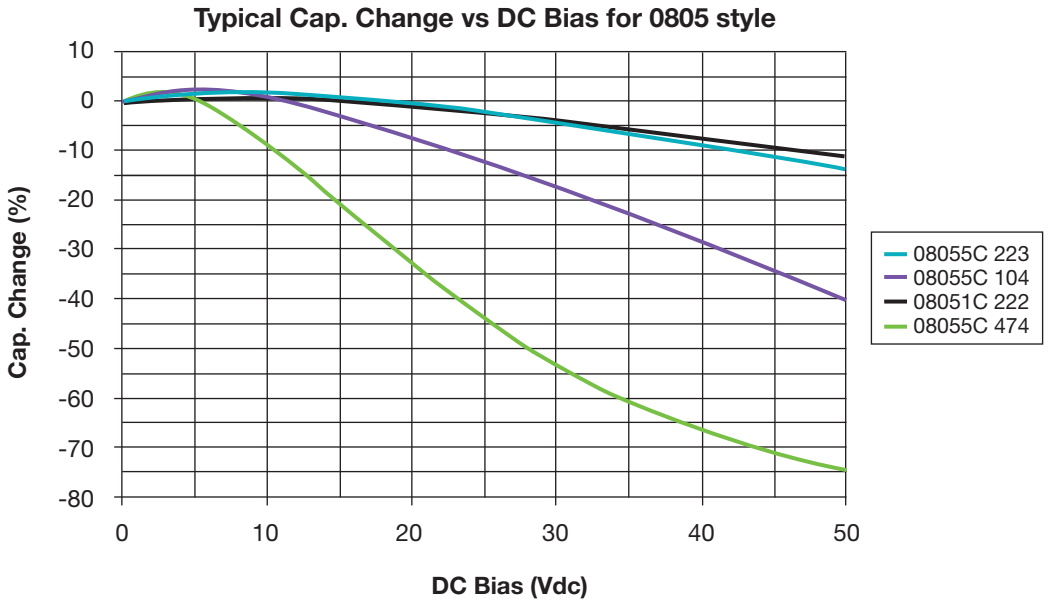
NOTE: 1. Single Sample, Inspection Level S3, AQL = 2.5%
2. If 1 failure out of 5 parts, then test 100%. 1.0% rejects maximum allowed in case of 100% testing.
3. X7R dielectric: Delta C/C at U_R is typically -10% to -70% dependant on capacitance value. (See curves on next page)

LVT 3009041 TEST DETAIL

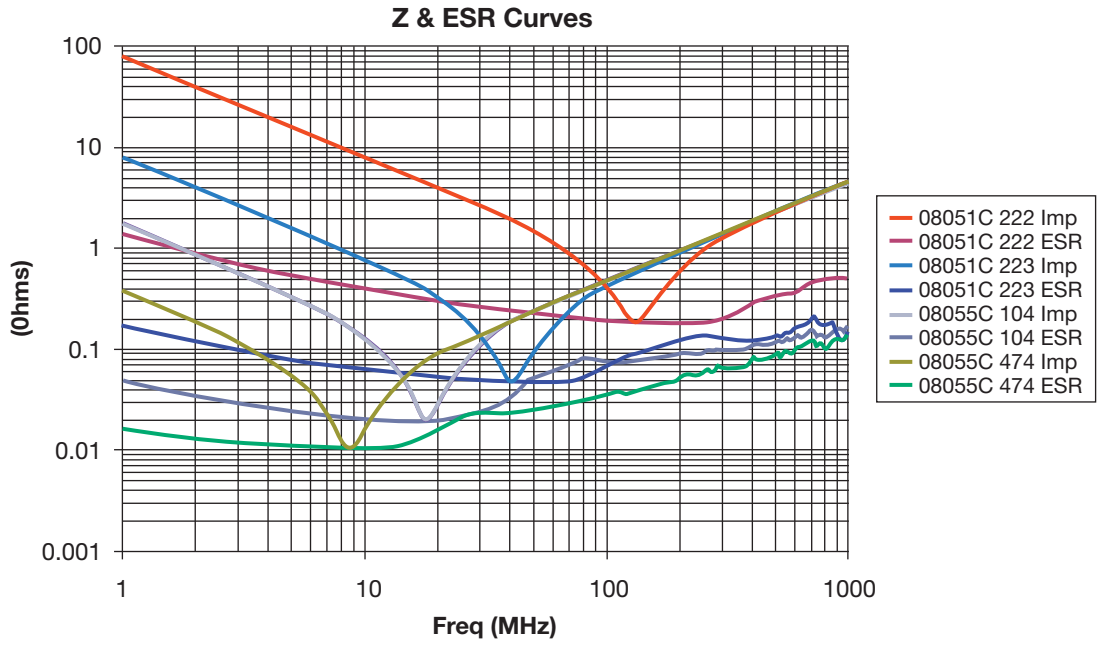
L V T Group Test Number	LVT 3009041 Test Detail, Parametric Data Recorded	Min No. Of Pcs for Test
3	Solderability	3
2b	PCB Mounting, Capacitance Temperature Characteristics and Robustness of Termination	3
2a	PCB Mounting, Life testing for 1000 hours, 2 x RV @ 125°C	10
1	PCB Mounting, Rapid Change of Temperature, Steady state humidity testing, (1.5 Volts DC @ 85°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 KYOCERA AVX will produce a data sheet for each part number with the following information:

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