KEMET Ceramic MLCC Surface Mount Capacitors

High Temperature Product Qualification Test Plan and Results Summary

High Temperature 200ºC C0G 0805 22nF 50V

			KEMET Part Number ==>	**C0805H223K5GAC**	
			KEMET Lot Number ==>	7241240201	
			Piece Counts ==>	SS	#Fail
RELIABILITY/ ENVIRONMENTAL TESTS					
High Temperature Life	MIL-STD-202, Mthd 108	200°C, Rated Voltage, 2000 Hours		77	0
Load Humidity	MIL-STD-202, Mthd 103	85°C /85%RH, Rated Voltage, 1000 Hours		77	0
Low Voltage Humidity	MIL-STD-202, Mthd 103	85°C /85%RH, 1.5V, 1000 Hours		77	0
Temperature Cycling	JESD22 Method JA-104	-55°C to +200°C, 50 Cycles		77	0
Thermal Shock	MIL-STD-202, Mthd 107	-55°C to +150°C, 20s transfer, 15 min dwell, 300 Cycles		30	0
Moisture Resistance	MIL-STD-202, Mthd 106	Cycled Temp / RH. 0V, 10 cycles @ 24 Hrs each		77	0
PHYSICAL, MECHANICAL & PROCESS TESTS					
External Visual	MIL-STD-883, Mthd 2009	Evaluate physical external characteristics of all parts submitted for test		All pieces tested	0
Physical Dimensions	JESD22 Method JB-100	Length, width, and thickness		30	0
Resistance to Solvents	MIL-STD-202, Method 215	Include Aqueous wash chemical - OKEM Clean or equivalent		5	0
Solderability	ANSI / J-STD-002	a) Method B, 4 hrs @ 155°C dry heat @ 235°C		15	0
		b) Method B, category 3, 8 hr steam age @ 220 / 260°C dips		30	0
		c) Method D, category 3, Leaching @260°C dip		15	0
Mechanical Shock and Vibration	MIL-STD-202 Mthd 213/214	Method 213: Figure 1, Condition F Method 204: 5 gs for 20 min, 12 cycles		30	0
Restistance to Soldering Heat	MIL-STD-202, Mthd 210	Condition B, no pre-heat of samples, Single Wave Solder		30	0
Terminal Strength	JIS-C-6429	Force of 1.8 kg for 60 seconds		30	0
Board Flex	JIS-C-6429	2mm minimum for all except 3 mm min for Class I			
Electrical Characterization	KEMET Custom Test	Parametrically test, show statistics at room as well as min and max operating temperatures		30	0
QUALIFICATION STATUS				**APPROVED**	
				660	**0**

KEMET Ceramic SMD Product

High Temperature 200ºC C0G 0805 22nF 50 Volt Product

High Temperature Qualification Test Results

Lot Number	Results	Test Point	Capacitance, nF				Delta Cap, %				DF, 1 KHz, %				IR, 25°C, Gohm			
			AVG	STD	Max	Min	AVG	STD	Max	Min	AVG	STD	Max	Min	AVG	STD	Max	Min
High Temperature Life, 200°C, Rated Voltage, 2000 Hours																		
		Pre Test Limits			24.2	19.8			N/A	N/A			0.1	N/A			N/A	45.5
C0805H223K5GAC		Post Test Limits			---	---			0.3	-0.3			0.5	N/A			N/A	4.55
7241240202	0/77	0 hours	21.48	0.18	21.78	21.00	-	-	-	-	0.009	0.001	0.010	0.007	275	1.20	389	206
	0/77	1000 hours	21.47	0.18	21.77	21.00	0.023	0.002	0.027	0.019	0.011	0.001	0.013	0.010	239	1.22	347	149
Storage Life, 150°C, 0 Volts, 1000 Hours																		
		Pre Test Limits			24.2	19.8			N/A	N/A			0.1	N/A			N/A	45.5
C0805H223K5GAC		Post Test Limits			---	---			0.3	-0.3			0.5	N/A			N/A	4.55
7143143305	0/77	0 hours	23.50	0.28	24.00	22.90	-	-	-	-	0.001	0.000	0.002	0.001	1900	3.400	50000	6700
	0/77	1000 hours	23.50	0.30	24.00	22.90	-0.002	0.024	0.000	-0.241	0.002	0.000	0.002	0.001	1230	2.250	8080	252

Lot Number	Results	Test Point	Capacitance, nF				Delta Cap, %				DF, 1 KHz, %				IR, 25°C, Gohm			
			AVG	STD	Max	Min	AVG	STD	Max	Min	AVG	STD	Max	Min	AVG	STD	Max	Min
Load Humidity, 85°C, Rated Voltage, 1000 Hours																		
		Pre Test Limits			24.2	19.8			N/A	N/A			0.1	N/A			N/A	45.5
C0805H223K5GAC		Post Test Limits			---	---			0.3	-0.3			0.5	N/A			N/A	4.55
7143143305	0/77	0 hours	23.50	0.29	24.00	22.90	-	-	-	-	0.004	0.000	0.004	0.003	3880	1.510	8830	483
	0/77	1000 hours	23.50	0.20	24.00	22.90	-0.007	0.034	0.000	-0.212	0.004	0.001	0.008	0.003	1160	2.380	4980	19
Low Volt Humidity, 85°C, 1.5 Volts, 1000 Hours																		
		Pre Test Limits			24.2	19.8			N/A	N/A			0.1	N/A			N/A	45.5
C0805H223K5GAC		Post Test Limits			---	---			0.3	-0.3			0.5	N/A			N/A	4.55
7143143305	0/77	0 hours	23.50	0.30	24.10	22.80	-	-	-	-	0.004	0.000	0.004	0.003	3790	2.950	50000	240
	0/77	1000 hours	23.50	0.30	24.10	22.80	-0.007	0.040	0.000	-0.255	0.004	0.000	0.004	0.003	520	3.220	1500	7

Lot Number	Results	Test Point	Capacitance, nF				Delta Cap, %				DF, 1 KHz, %				IR, 25°C, Gohm			
			AVG	STD	Max	Min	AVG	STD	Max	Min	AVG	STD	Max	Min	AVG	STD	Max	Min
Temperature Cycle, 50 Cycles																		
		Pre Test Limits			24.2	19.8			N/A	N/A			0.1	N/A			N/A	45.45
C0805H223K5GAC		Post Test Limits			---	---			0.3	-0.3			0.5	N/A			N/A	45.45
7241240202	0/77	Initial	21.44	0.24	21.80	21.00	- - -	- - -	- - -	- - -	0.010	0.001	0.012	0.008	273	1.21	391	163
	0/77	50 Cycles	21.44	0.24	21.80	21.00	-0.001	0.003	0.004	-0.008	0.010	0.001	0.012	0.009	175	1.19	375	209
Thermal Shock, 300 Cycles																		
		Pre Test Limits			24.2	19.8			N/A	N/A			0.1	N/A			N/A	45.45
C0805H223K5GAC		Post Test Limits			---	---			0.3	-0.3			0.5	N/A			N/A	45.45
8023022210	0/30	Initial	21.28	0.18	21.60	21.00	- - -	- - -	- - -	- - -	0.005	0.000	0.006	0.005	5600	2.200	50000	486
	0/30	300 Cycles	21.28	0.18	21.60	0.21	0.000	0.000	0.000	0.000	0.004	0.000	0.005	0.004	6870	1.710	25500	1570
Moisture Resistance, 0 V DC, 10 Cycles																		
		Pre Test Limits			24.2	19.8			N/A	N/A			0.1	N/A			N/A	45.5
C0805H223K5GAC		Post Test Limits			---	---			0.3	-0.3			0.5	N/A			N/A	4.54
7143143305	0/77	Initial	95.06	1.49	98.30	91.60	- - -	- - -	- - -	- - -	0.001	0.000	0.002	0.001	1275	2.099	38304	397
	0/77	300 Cycles	95.06	1.49	98.30	91.60	0.000	0.000	0.001	0.000	0.002	0.000	0.002	0.001	653	2.150	16805	152

KEMET Ceramic SMD Product

High Temperature 200ºC C0G 0805 22nF 50 Volt Product

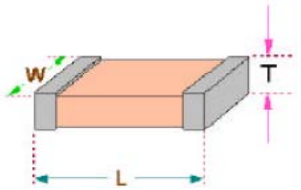
High Temperature Qualification Test Results

Lot Number	Results	Test Point	Capacitance, nF				Delta Cap, %				DF, 1 KHz, %				IR, 25°C, Gohm			
			AVG	STD	Max	Min	AVG	STD	Max	Min	AVG	STD	Max	Min	AVG	STD	Max	Min
Mechanical Shock and Vibration																		
		Pre Test Limits			24.2	19.8			N/A	N/A			0.1	N/A			N/A	45.45
C0805H223K5GAC		Post Test Limits			- - -	- - -			0.3	-0.3			0.5	N/A			N/A	45.45
7143143305	0/30	Initial	23.5	0.33	24	22.9	- - -	- - -	- - -	- - -	0.011	0.000	0.011	0.01	9970.0	1.650	50000	5150
	0/30	Post	23.5	0.33	24	22.9	-0.002	0.002	0.000	-0.004	0.011	0.000	0.012	0.011	9310.0	1.370	20000	5790
Resistance to Soldering Heat																		
		Pre Test Limits			24.2	19.8			N/A	N/A			0.1	N/A			N/A	45.45
C0805H223K5GAC		Post Test Limits			- - -	- - -			0.3	-0.3			0.5	N/A			N/A	45.45
7143143305	0/30	Initial	23.60	0.20	24.00	23.30	- - -	- - -	- - -	- - -	0.010	0.000	0.011	0.009	8450.0	1.53	22200	4690
	0/30	Post	23.60	0.20	24.00	23.30	0.000	0.019	0.103	-0.004	0.010	0.000	0.011	0.010	3760.0	2.70	43900	982

Electrical Characterization			-55°C Delta Cap, PPM/°C				Reference Capacitance @ 25°C, nF				+ 200°C Delta Cap, PPM/°C				IR, 200°C, Gohm			
		Post Test Limits	AVG	STD	Max	Min	AVG	STD	Max	Min	AVG	STD	Max	Min	AVG	STD	Max	Min
C0805H223K5GAC																		
8023022209	0/30	± 30 PPM/°C	-11.23	0.10	-11.35	-11.11	21.05	0.13	21.18	20.87	18.19	1.23	19.54	17.16	13.93	1.06	18.80	11.14

Physical Dimension

Dimension	*Results*	*Limits, mm*	AVG	STD	Max	Min
Length (L)	0/30	1.8 - 2.2	1.95	0.014	1.98	1.92
Thickness (T)	0/30	1.05 - 1.45	1.25	0.008	1.26	1.23
Width (T)	0/30	1.05 - 1.45	1.13	0.012	1.16	1.12



Other Mechanical / Performance Results

	Limits Reference	C0805H223K5GAC AVG	STD	Max	Min
ESD	per AEC-Q200-002	Classification 6			
Beam Load	per AEC-Q200-003	455	89	571	337