

Material Composition Declaration

Multilayer Ceramic Capacitors

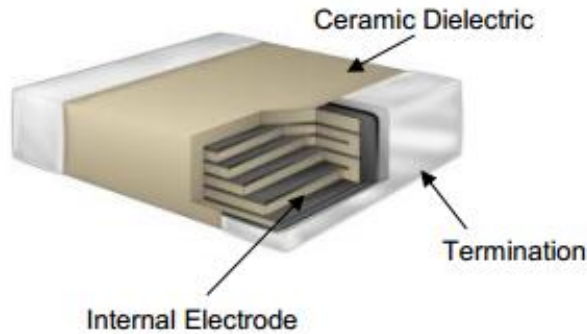


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Material Declaration

X7R, X5R, Y5V, Z5U Surface Mount Ceramic Capacitor



Environmental Compliance	
Pb Free	YES
RoHS Compliant	YES
Halogen Free	YES

Homogeneous Level	Construction Element	Substance	Weight	Common Name	CAS #	SGS Report No.
Ceramic Body	Ceramic Dielectric	Barium Titanium Oxide	See Annex 1	BaTiO ₃	12047-27-7	ETR24C04697
	Electrode paste	Nickel		Ni	7440-02-0	ETR24C04699
Termination	Base Metal	Copper		Cu	7440-50-8	ETR24C04701
	Under layer	Nickel		Ni	7440-02-0	ETR24C04706
	Finish plating	Tin		Sn	7440-31-5	ETR24C04707

Annex 1

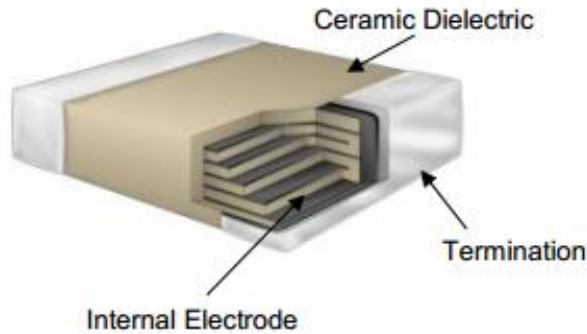
Material Declaration

X7R, X5R, Y5V, Z5U Surface Mount Ceramic Capacitor

Series				X7R, X5R, Y5V, Z5U				
Case Size				0402	0603	0805	1206	1210
Homogeneous Level	Material	Substance	CAS No.	weight [mg]	weight [mg]	weight [mg]	weight [mg]	weight [mg]
Ceramic Dielectric	Barium Titanium Oxide	BaTiO3	12047-27-7	1.17	4.55	14.44	39.67	72.49
	Miscellaneous		-	0.02	0.04	0.14	0.42	0.77
Homogeneous Level Weight				1.19	4.59	14.58	40.09	73.26
Internal Electrode	Electrode paste	Ni	7440-02-0	0.08	0.73	1.48	4.47	6.31
Homogeneous Level Weight				0.08	0.73	1.48	4.47	6.31
Termination	Base Metal	Cu	7440-50-8	0.06	0.32	2.13	1.93	1.77
		Miscellaneous	-	0.00	0.02	0.22	0.21	0.19
	Under layer	Ni	7440-02-0	0.02	0.08	0.14	0.20	0.46
	Finish plating	Sn	7440-31-5	0.07	0.26	0.43	0.63	1.41
Homogeneous Level Weight				0.15	0.68	2.92	2.97	3.83
Total Weight				1.42	6.00	18.98	47.53	83.40

Material Declaration

X7R Surface Mount Ceramic Capacitor – Flexible Termination



Environmental Compliance	
Pb Free	YES
RoHS Compliant	YES
Halogen Free	YES

Homogeneous Level	Construction Element	Substance	Weight	Common Name	CAS #	SGS Report No.
Ceramic Body	Ceramic Dielectric	Barium Titanium Oxide	See Annex 2	BaTiO ₃	12047-27-7	ETR24C04697
	Electrode paste	Nickel		Ni	7440-02-0	ETR24C04699
Termination	Base Metal	Copper		Cu	7440-50-8	ETR24C04701
	Silver Epoxy	Silver		Ag	7440-22-4	ETR24C04703
	Under layer	Nickel		Ni	7440-02-0	ETR24C04706
	Finish plating	Tin		Sn	7440-31-5	ETR24C04707

Annex 2

Material Declaration

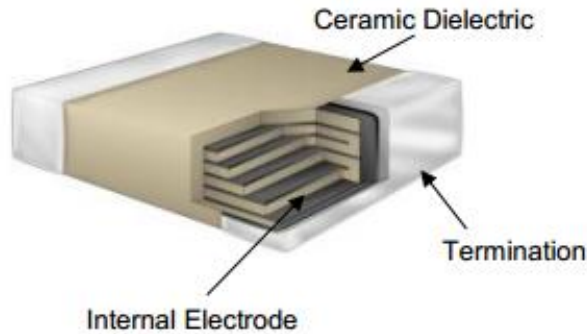
X7R Surface Mount Ceramic Capacitor – Flexible Termination



Series				X7R Flexible Termination			
Case Size				0603	0805	1206	1210
Homogeneous Level	Material	Substance	CAS No.	weight [mg]	weight [mg]	weight [mg]	weight [mg]
Ceramic Dielectric	Barium Titanium Oxide	BaTiO3	12047-27-7	4.94	15.88	37.15	70.05
	Miscellaneous		-	0.05	0.17	0.39	0.75
Homogeneous Level Weight				4.99	16.05	37.54	70.80
Internal Electrode	Electrode paste	Ni	7440-02-0	0.30	0.98	4.40	6.53
Homogeneous Level Weight				0.30	0.98	4.40	6.53
Termination	Base Metal	Cu	7440-50-8	0.21	0.67	0.90	1.76
	Silver Epoxy	Ag	7440-22-4	0.14	0.45	0.61	1.18
		Miscellaneous	-	0.05	0.16	0.22	0.42
	Under layer	Ni	7440-02-0	0.05	0.16	0.25	0.24
	Finish plating	Sn	7440-31-5	0.15	0.50	0.77	0.74
Homogeneous Level Weight				0.60	1.94	2.75	4.34
Total Weight				5.89	18.97	44.69	81.67

Material Declaration

COG Surface Mount Ceramic Capacitor



Environmental Compliance	
Pb Free	YES
RoHS Compliant	YES
Halogen Free	YES

Homogeneous Level	Construction Element	Substance	Weight	Common Name	CAS #	SGS Report No.
Ceramic Body	Ceramic Dielectric	Calcium Zirconate	See Annex 3	CaZrO ₃	12013-47-7	ETR24C04698
	Electrode paste	Nickel		Ni	7440-02-0	ETR24C04700
Termination	Base Metal	Copper		Cu	7440-50-8	ETR24C04702
	Under layer	Nickel		Ni	7440-02-0	ETR24C04708
	Finish plating	Tin		Sn	7440-31-5	ETR24C04709

Annex 3

Material Declaration

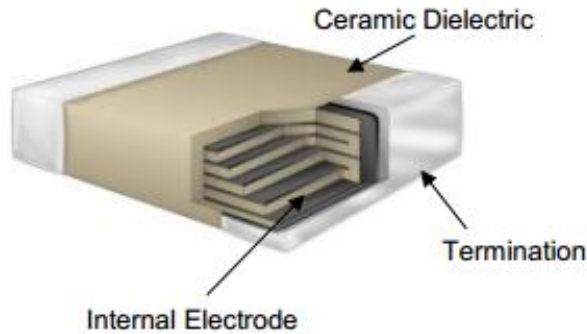
COG Surface Mount Ceramic Capacitor



Series				COG					
Case Size				0201	0402	0603	0805	1206	1210
Homogeneous Level	Material	Substance	CAS No.	weight [mg]	weight [mg]	weight [mg]	weight [mg]	weight [mg]	weight [mg]
Ceramic Dielectric	Calcium Zirconate	CaZrO3	12013-47-7	0.268	0.89	3.06	6.62	15.21	31.17
	Miscellaneous		-	0.01	0.16	0.55	1.20	2.75	5.63
Homogeneous Level Weight				0.278	1.05	3.61	7.82	17.96	36.80
Internal Electrode	Electrode paste	Ni	7440-02-0	0.02	0.06	0.41	1.32	2.41	4.24
Homogeneous Level Weight				0.02	0.06	0.41	1.32	2.41	4.24
Termination	Base Metal	Cu	7440-50-8	0.002	0.01	0.28	0.65	0.82	2.04
	Under layer	Ni	7440-02-0	0.01	0.03	0.08	0.18	0.27	0.50
	Finish plating	Sn	7440-31-5	0.01	0.05	0.12	0.26	0.40	0.72
Homogeneous Level Weight				0.022	0.09	0.48	1.09	1.49	3.26
Total Weight				0.32	1.20	4.50	10.23	21.86	44.30

Material Declaration

COG Surface Mount Ceramic Capacitor – Flexible Termination



Environmental Compliance	
Pb Free	YES
RoHS Compliant	YES
Halogen Free	YES

Homogeneous Level	Construction Element	Substance	Weight	Common Name	CAS #	SGS Report No.
Ceramic Body	Ceramic Dielectric	Calcium Zirconate	See Annex 4	CaZrO ₃	12013-47-7	ETR24C04698
	Electrode paste	Nickel		Ni	7440-02-0	ETR24C04700
Termination	Base Metal	Copper		Cu	7440-50-8	ETR24C04702
	Silver Epoxy	Silver		Ag	7440-22-4	ETR24C04703
	Under layer	Nickel		Ni	7440-02-0	ETR24C04708
	Finish plating	Tin		Sn	7440-31-5	ETR24C04709

Annex 4

Material Declaration

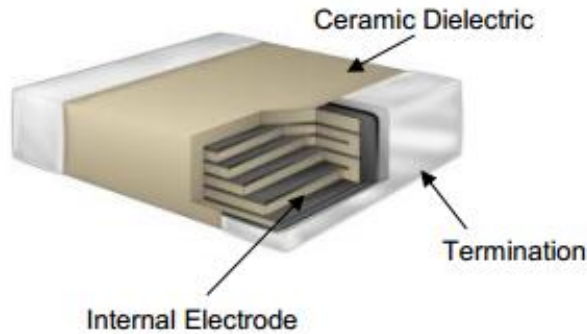
COG Surface Mount Ceramic Capacitor – Flexible Termination



Series				COG Flexible Termination	COG Flexible Termination
Case Size				0603	1206
Homogeneous Level	Material	Substance	CAS No.	weight [mg]	weight [mg]
Ceramic Dielectric	Calcium Zirconate	CaZrO3	12013-47-7	3.616	13.60
	Miscellaneous		-	0.060	0.23
Homogeneous Level Weight				3.676	13.83
Internal Electrode	Electrode paste	Ni	7440-02-0	0.417	0.43
Homogeneous Level Weight				0.417	0.43
Termination	Base Metal	Cu	7440-50-8	0.103	0.49
	Silver Epoxy	Ag	7440-22-4	0.069	0.33
		Miscellaneous	-	0.025	0.12
	Under layer	Ni	7440-02-0	0.087	0.05
	Finish plating	Sn	7440-31-5	0.135	0.07
Homogeneous Level Weight				0.419	1.06
Total Weight				4.512	15.32

Material Declaration

X8L Surface Mount Ceramic Capacitor



Environmental Compliance	
Pb Free	YES
RoHS Compliant	YES
Halogen Free	YES

Homogeneous Level	Construction Element	Substance	Weight	Common Name	CAS #	SGS Report No.
Ceramic Body	Ceramic Dielectric	Barium Titanium Oxide	See Annex 5	BaTiO ₃	12047-27-7	ETR24C04697
	Electrode paste	Nickel		Ni	7440-02-0	ETR24C04699
Termination	Base Metal	Copper		Cu	7440-50-8	ETR24C04701
	Under layer	Nickel		Ni	7440-02-0	ETR24C04706
	Finish plating	Tin		Sn	7440-31-5	ETR24C04707

Annex 5

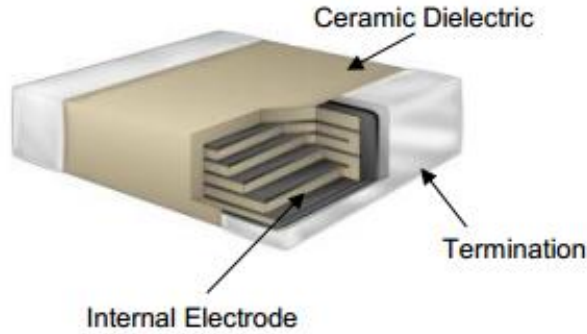
Material Declaration

X8L Surface Mount Ceramic Capacitor

Series				X8L				
Case Size				0402	0603	0805	1206	1210
Homogeneous Level	Material	Substance	CAS No.	weight [mg]	weight [mg]	weight [mg]	weight [mg]	weight [mg]
Ceramic Dielectric	Barium Titanium Oxide	BaTiO3	12047-27-7	1.17	4.55	14.44	39.67	72.49
	Miscellaneous		-	0.02	0.04	0.14	0.42	0.77
Homogeneous Level Weight				1.19	4.59	14.58	40.09	73.26
Internal Electrode	Electrode paste	Ni	7440-02-0	0.08	0.73	1.48	4.47	6.31
Homogeneous Level Weight				0.08	0.73	1.48	4.47	6.31
Termination	Base Metal	Cu	7440-50-8	0.06	0.32	2.13	1.93	1.77
		Miscellaneous	-	0.00	0.02	0.22	0.21	0.19
	Under layer	Ni	7440-02-0	0.02	0.08	0.14	0.20	0.46
	Finish plating	Sn	7440-31-5	0.07	0.26	0.43	0.63	1.41
Homogeneous Level Weight				0.15	0.68	2.92	2.97	3.83
Total Weight				1.42	6.00	18.98	47.53	83.40

Material Declaration

X8R Surface Mount Ceramic Capacitor



Environmental Compliance	
Pb Free	YES
RoHS Compliant	YES
Halogen Free	YES

Homogeneous Level	Construction Element	Substance	Weight	Common Name	CAS #	SGS Report No.
Ceramic Body	Ceramic Dielectric	Calcium Zirconate	See Annex 6	CaZrO ₃	12013-47-7	ETR24C04698
	Electrode paste	Nickel		Ni	7440-02-0	ETR24C04700
Termination	Base Metal	Copper		Cu	7440-50-8	ETR24C04702
	Under layer	Nickel		Ni	7440-02-0	ETR24C04708
	Finish plating	Tin		Sn	7440-31-5	ETR24C04709

Annex 6

Material Declaration

X8R Surface Mount Ceramic Capacitor



Series				X8R				
Case Size				0402	0603	0805	1206	1210
Homogeneous Level	Material	Substance	CAS No.	weight [mg]	weight [mg]	weight [mg]	weight [mg]	weight [mg]
Ceramic Dielectric	Calcium Zirconate	CaZrO3	12013-47-7	0.89	3.06	6.62	15.21	31.17
	Miscellaneous		-	0.16	0.55	1.20	2.75	5.63
Homogeneous Level Weight				1.05	3.61	7.82	17.96	36.79
Internal Electrode	Electrode paste	Ni	7440-02-0	0.06	0.41	1.32	2.41	4.24
Homogeneous Level Weight				0.06	0.41	1.32	2.41	4.24
Termination	Base Metal	Cu	7440-50-8	0.01	0.28	0.65	0.82	2.04
	Under layer	Ni	7440-02-0	0.03	0.08	0.18	0.27	0.50
	Finish plating	Sn	7440-31-5	0.05	0.12	0.26	0.40	0.72
Homogeneous Level Weight				0.09	0.48	1.09	1.49	3.26
Total Weight				1.20	4.50	10.23	21.86	44.29