

Material Composition Declaration

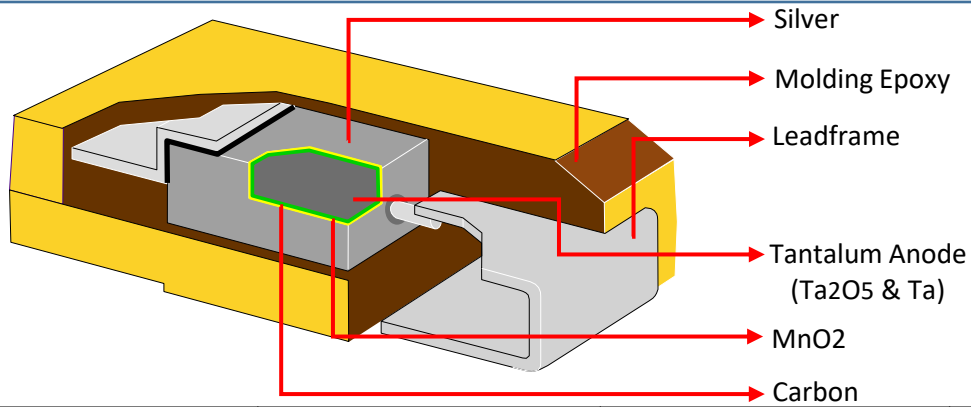
Tantalum Capacitors

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Material Declaration

Tantalum MnO₂ Surface Mount Capacitor (T49X series)



Environmental Compliance	
Pb Free	YES
RoHS Compliant	YES
Halogen Free	YES

Homogeneous Level	Construction Element	Substance	Weight	Common Name	CAS #	SGS Report No.
Anode	Tantalum Anode	Tantalum	See Annex 1	Ta	7440-25-7	ETR24B04753 ETR24903182
		Tantalum pentoxide		Ta ₂ O ₅	1314-61-0	
	Manganese dioxide	Manganese dioxide		MnO ₂	1313-13-9	ETR24903175
	Carbon	Carbon		C	7440-44-0	ETR24903176
	Silver	Silver		Ag	7440-22-4	ETR24903178
Leadframe	Leadframe	Alloy		Cu	7440-50-8	ETR24903148
				Fe	7439-89-6	
				Zn	7440-66-6	
				Ni	7440-02-0	
				Sn	7440-31-5	
			Ag	7440-22-4		
Molding Epoxy	Molding Epoxy	Epoxy				ETR24903180

Annex 1

Material Declaration

Tantalum MnO₂ Surface Mount Capacitor(T49X series)

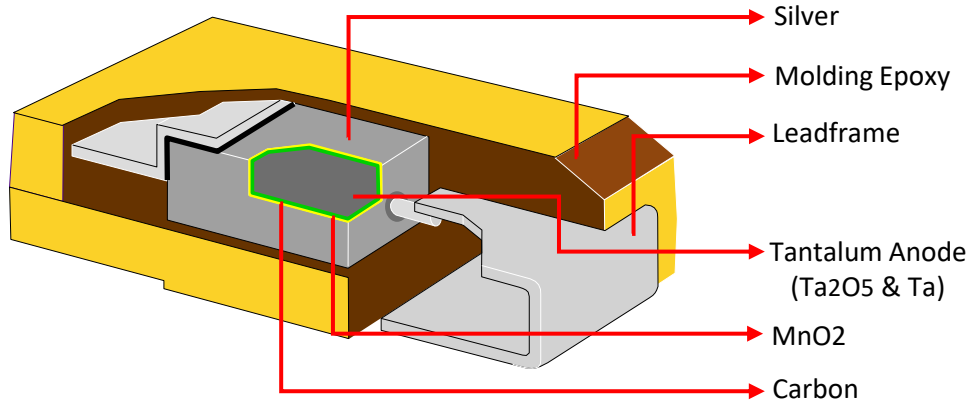


Series				T49X					
Case code				A(3216-18)	B(3528-21)	C(6032-28)	D(7343-31)	X(7343-43)	V(7343-20)
Homogeneous Level	Material	Substance	CAS No.	weight [mg]	weight [mg]	weight [mg]	weight [mg]	weight [mg]	weight [mg]
Anode	Tantalum	Ta	7440-25-7	9.17	22.02	56.00	109.01	180.24	61.38
	Manganese dioxide	MnO ₂	1313-13-9	7.81	14.45	28.23	44.64	65.89	36.80
	Carbon	C	7440-44-0	0.10	0.07	0.14	0.29	0.48	0.19
	Silver	Ag	7440-22-4	1.41	2.60	5.07	8.00	11.90	6.61
	Fluorine	F	7782-41-4	0.23	0.06	0.11	0.38	0.20	0.15
	Miscellaneous		-	0.01	0.02	0.05	0.07	0.30	0.04
Homogeneous Level Weight				18.73	39.22	89.60	162.39	259.01	105.17
Leadframe	Base metal	Cu	7440-50-8	7.85	7.85	7.85	19.32	19.32	19.32
		Fe	7439-89-6	0.03	0.03	0.03	0.08	0.08	0.08
		Zn	7440-66-6	2.09	2.09	2.09	5.13	5.13	5.13
		Miscellaneous	-	0.09	0.09	0.09	0.23	0.24	0.23
	Under layer	Ni	7440-02-0	2.33	2.33	2.33	5.74	5.74	5.74
	Finish plating	Sn	7440-31-5	1.22	1.22	1.22	3.01	3.01	3.01
	Conductive Adhesive*	Ag	7440-22-4	4.90	4.90	4.90	12.05	12.05	12.05
		C	7440-44-0	1.21	1.21	1.21	2.97	2.97	2.97
Homogeneous Level Weight				19.72	19.72	19.72	48.53	48.54	48.53
Molding Epoxy	Molding Epoxy	SiO ₂	7631-86-9	15.58	32.92	87.23	152.93	211.06	93.82
		Carbon	7440-44-0	4.10	8.67	22.98	40.28	55.59	24.71
		Iron	7439-89-6	0.15	0.33	0.86	1.51	2.08	0.93
		Miscellaneous	-	0.69	1.44	3.81	6.69	9.22	4.10
Homogeneous Level Weight				20.52	43.36	114.88	201.41	277.95	123.56
Total Weight				58.97	102.30	224.20	412.33	585.50	277.26

* This was tested as part of the Leadframe Finish Plating.

Material Declaration

Tantalum MnO₂ Surface Mount Capacitor(T51X series)



Environmental Compliance	
Pb Free	YES
RoHS Compliant	YES
Halogen Free	YES

Homogeneous Level	Construction Element	Substance	Weight	Common Name	CAS #	SGS Report No.
Anode	Tantalum Anode	Tantalum	See Annex 2	Ta	7440-25-7	ETR24B04753 ETR24903182
		Tantalum pentoxide		Ta ₂ O ₅	1314-61-0	
	Manganese dioxide	Manganese dioxide		MnO ₂	1313-13-9	ETR24903175
	Carbon	Carbon		C	7440-44-0	ETR24903176
	Silver	Silver		Ag	7440-22-4	ETR24903178
Leadframe	Leadframe	Alloy		Cu	7440-50-8	ETR24903148
				Zn	7440-66-6	
				Ni	7440-02-0	
				Sn	7440-31-5	
				Ag	7440-22-4	
Molding Epoxy	Molding Epoxy	Epoxy				ETR24903183

Annex 2

Material Declaration

Tantalum MnO₂ Surface Mount Capacitor(T51X series)

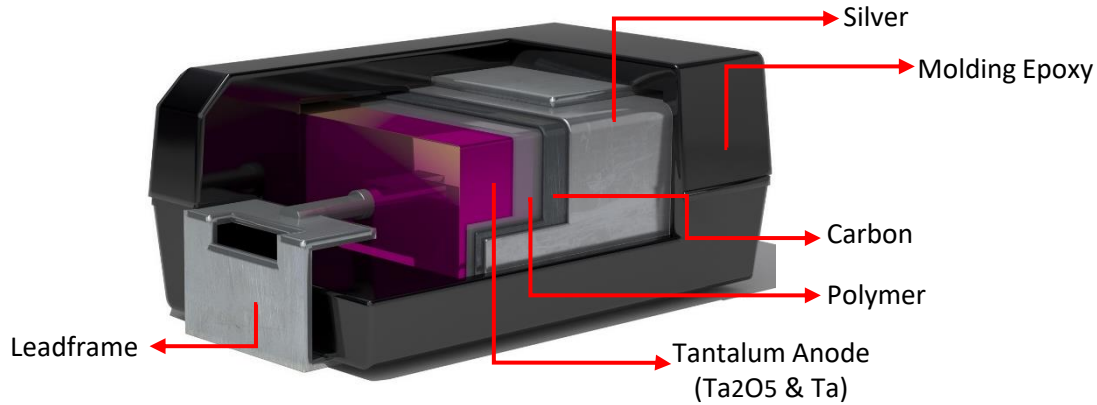


Series				T51X	
Case code				E (7360-38)	X (7343-43)
Homogeneous Level	Material	Substance	CAS No.	weight [mg]	weight [mg]
Anode	Tantalum	Ta	7440-25-7	67.66	67.66
	Manganese dioxide	MnO ₂	1313-13-9	39.21	39.21
	Carbon	C	7440-44-0	0.22	0.20
	Silver	Ag	7440-22-4	7.05	7.05
	Miscellaneous	-	-	0.29	0.21
Homogeneous Level Weight				114.43	114.33
Leadframe	Base metal	Cu	7440-50-8	19.32	19.32
		Zn	7440-66-6	5.13	5.12
		Miscellaneous	-	0.31	0.28
	Under layer	Ni	7440-02-0	5.74	5.74
	Finish plating	Sn	7440-31-5	3.01	3.01
	Conductive Adhesive*	Ag	7440-22-4	12.05	3.14
C		7440-44-0	2.97	0.77	
Homogeneous Level Weight				48.53	37.38
Molding Epoxy	Molding Epoxy	SiO ₂	7631-86-9	256.48	211.35
		Carbon	7440-44-0	67.56	55.67
		Iron	7439-89-6	2.53	2.09
		Miscellaneous	-	11.21	9.23
Homogeneous Level Weight				337.78	278.34
Total Weight				500.74	430.05

* This was tested as part of the Leadframe Finish Plating.

Material Declaration

Tantalum Polymer Surface Mount Capacitor(T52X series)



Environmental Compliance	
Pb Free	YES
RoHS Compliant	YES
Halogen Free	YES

Homogeneous Level	Construction Element	Substance	Weight	Common Name	CAS #	SGS Report No.
Anode	Tantalum Anode	Tantalum Pentoxide	See Annex 3	Ta2O5	1314-61-0	ETR24B04753 ETR24903182
	Polymer	Polymer		-	-	ETR24903139
	Carbon	Carbon		C	7440-44-0	ETR24903140
	Silver	Silver		Ag	7440-22-4	ETR24903143
Leadframe	Leadframe	Alloy		Cu	7440-50-8	ETR24903146
				Fe	7439-89-6	
				Zn	7440-66-6	
				Sn	7440-31-5	
				Ag	7440-22-4	
Molding Epoxy	Molding Epoxy	Epoxy		-	-	ETR24903154

Annex 3

Material Declaration

Tantalum Polymer Surface Mount Capacitor(T52X series)

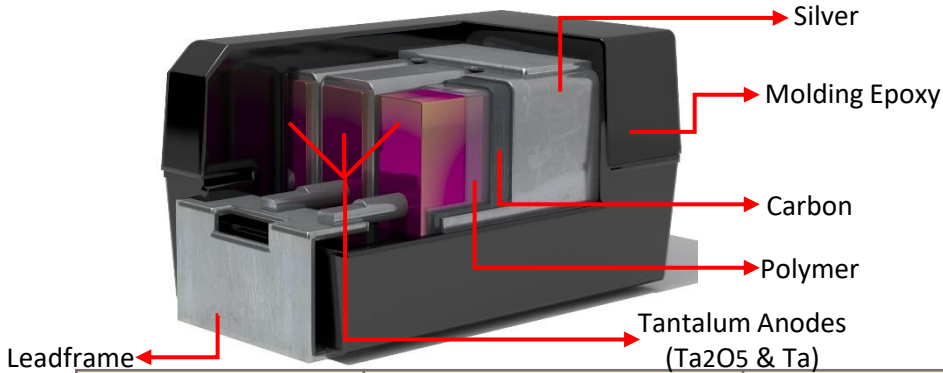


Series				T52x									
Case code				A (3216-18)	B (3528-21)	C (6032-28)	D (7343-31)	U (6032-15)	V (7343-19)	W (7343-15)	X (7343-43)	Y (7343-40)	
Homogeneous Level	Material	Substance	CAS No.	weight [mg]	weight [mg]	weight [mg]	weight [mg]	weight [mg]	weight [mg]	weight [mg]	Weight [mg]	Weight [mg]	
Anode	Tantalum	Ta ₂ O ₅	1314-61-0	9.50	25.99	39.99	129.75	28.19	69.27	61.48	203.01	153.44	
	Polymer	-	-	0.47	0.92	1.46	3.08	1.24	2.43	2.46	3.82	3.08	
	Carbon	C	7440-44-0	0.44	0.85	1.36	5.59	2.39	4.41	4.76	3.54	5.59	
	Silver	Ag	7440-22-4	1.45	2.81	4.47	10.71	3.79	8.45	7.55	11.69	10.71	
	Fluorine	F	7782-41-4	0.61	1.20	1.90	0.00	0.38	0.00	0.75	4.99	0.00	
	Miscellaneous		-	-	0.01	0.01	0.02	0.06	0.01	0.04	0.03	0.09	0.06
Homogenous Level Weight				12.48	31.78	49.20	149.19	36.00	84.60	77.03	227.14	172.88	
Lead frame	Base metal	Cu	7440-50-8	11.92	11.92	11.92	29.34	11.92	29.34	29.34	29.34	29.34	
		Zn	7440-66-6	0.02	0.02	0.02	0.05	0.02	0.05	0.05	0.05	0.05	
		Fe	7439-89-6	0.29	0.29	0.29	0.71	0.29	0.71	0.71	0.71	0.71	
		Miscellaneous	-	-	0.03	0.03	0.03	0.06	0.03	0.06	0.06	0.06	0.06
	Under layer	Cu	7440-50-8	0.12	0.12	0.12	0.30	0.12	0.30	0.30	0.30	0.30	
	Finish plating	Sn	7440-31-5	1.23	1.23	1.23	3.01	1.23	3.01	3.01	3.01	3.01	
	Conductive Adhesive*	Ag	7440-22-4	4.90	4.90	4.90	12.05	4.90	12.05	12.05	12.05	12.05	12.05
		C	7440-44-0	1.21	1.21	1.21	2.97	1.21	2.97	2.97	2.97	2.97	2.97
Homogenous Level Weight				19.72	19.72	19.72	48.53	19.72	48.53	48.53	48.53	48.53	
Molding Epoxy	Molding Epoxy	SiO ₂	7631-86-9	15.97	33.73	89.68	156.45	47.98	96.06	75.81	216.63	202.49	
		C	7440-44-0	2.22	4.69	12.47	21.75	6.67	13.35	10.54	30.11	28.15	
		Magnesium	7439-95-4	1.86	3.92	10.42	18.17	5.57	11.16	8.80	25.16	23.52	
		Miscellaneous	-	-	0.47	1.00	2.65	4.62	1.42	2.84	2.24	6.40	5.98
Homogenous Level Weight				20.52	43.34	115.22	200.99	61.64	123.41	97.39	278.30	260.14	
Total				52.72	94.84	184.14	398.71	117.36	256.54	222.95	553.97	481.55	

* This was tested as part of the Leadframe Finish Plating.

Material Declaration

Tantalum Polymer Surface Mount Capacitor(T53X series)



Environmental Compliance	
Pb Free	YES
RoHS Compliant	YES
Halogen Free	YES

Homogeneous Level	Construction Element	Substance	Weight	Common Name	CAS #	SGS Report No.
Anode	Tantalum Anode	Tantalum Pentoxide	See Annex 4	Ta ₂ O ₅	1314-61-0	ETR24B04753 ETR24903182
	Polymer	Polymer		-	-	ETR24903138
	Carbon	Carbon		C	7440-44-0	ETR24903140
	Silver	Silver		Ag	7440-22-4	ETR24903143
Leadframe	Leadframe	Alloy		Cu	7440-50-8	ETR24903146
				Fe	7439-89-6	
				Zn	7440-66-6	
				Pd	7440-05-3	
				Sn	7440-31-5	
Molding Epoxy	Molding Epoxy	Epoxy		Ag	7440-22-4	ETR24903154
			-	-		

Annex 4

Material Declaration

Tantalum Polymer Surface Mount Capacitor (T53X series)



Series				T53X		
Case code				D (7343-31)	X (7343-43)	Y (7343-40)
Homogeneous Level	Material	Substance	CAS No.	Weight [mg]	Weight [mg]	Weight [mg]
Anode	Tantalum	Ta ₂ O ₅	7440-25-7	59.28	78.77	66.87
	Polymer	-	-	1.77	2.41	2.41
	Carbon	C	7440-44-0	1.64	2.23	2.23
	Silver	Ag	7440-22-4	5.41	7.37	7.37
	Fluorine	F	7782-41-4	2.30	3.15	3.15
	Miscellaneous		-	-	0.03	0.03
Homogenous Level Weight				70.43	93.96	82.06
Leadframe	Base Metal	Cu	7440-50-8	29.34	29.34	29.34
		Fe	7439-89-6	0.71	0.71	0.71
		Zn	7440-66-6	0.05	0.05	0.05
		Miscellaneous	-	0.04	0.06	0.06
	Under layer	Pd	7440-05-3	0.30	0.30	0.30
	Finish plating	Sn	7440-31-5	3.02	3.01	3.01
	Conductive Adhesive*	Ag	7440-22-4	1.66	3.14	3.14
C		7440-44-0	0.41	0.77	0.77	
Homogenous Level Weight				35.53	37.38	37.38
Molding Epoxy	Molding Epoxy	SiO ₂	7631-86-9	156.88	216.66	201.31
		C	7440-44-0	21.81	30.12	27.98
		Magnesium	7439-95-4	18.22	25.16	23.38
		Miscellaneous	-	4.64	6.40	5.95
Homogenous Level Weight				201.55	278.34	258.62
Total				307.51	409.68	378.06

* This was tested as part of the Leadframe Finish Plating.