

Material Composition Declaration

Tantalum Capacitors

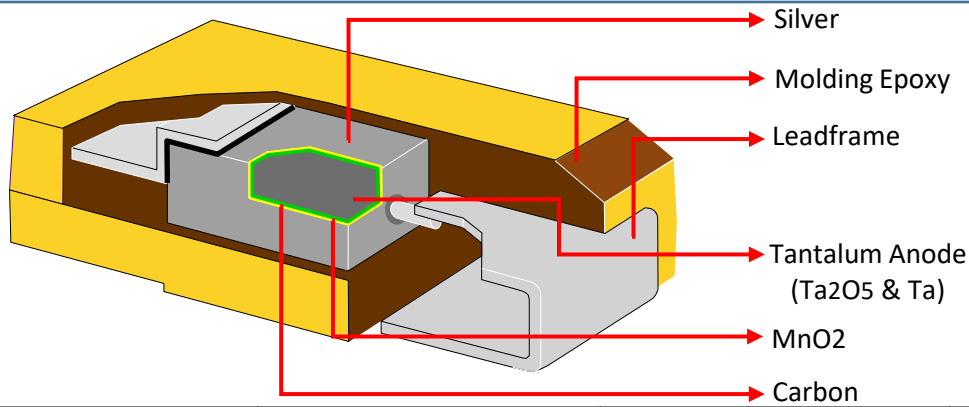


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Material Declaration

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	SHAEC22002629301
		Tantalum pentoxide		Ta ₂ O ₅	1314-61-0	SHAEC22002636818
	Manganese dioxide	Manganese dioxide		MnO ₂	1313-13-9	SHAEC22002636813
	Carbon	Carbon		C	7440-44-0	SHAEC22002636814
	Silver	Silver		Ag	7440-22-4	SHAEC22002874501
Leadframe	Leadframe	Alloy		Cu	7440-50-8	SHAEC22002629336
				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			SHAEC22002636815	

Annex 1

Material Declaration

Tantalum MnO₂ Surface Mount Capacitor(T49X series)

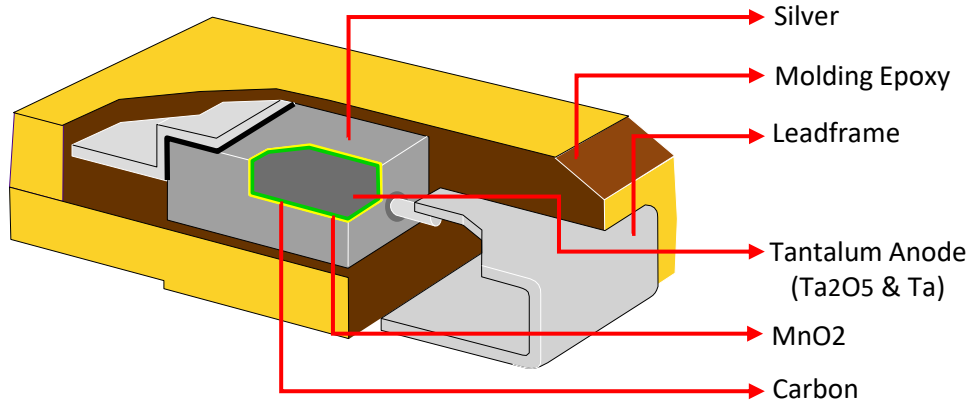


Series				T49X					
Case code				A(3216-18)	B(3528-21)	C(6032-28)	D(7343-31)	X(7343-43)	V(7343-20)
Homogeneous Level	Material	Substance	CAS No.	weight [mg]	weight [mg]	weight [mg]	weight [mg]	weight [mg]	weight [mg]
Anode	Tantalum	Ta	7440-25-7	9.17	22.02	56.00	109.01	180.24	61.38
	Manganese dioxide	MnO 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	SHAEC22002629301
		Tantalum pentoxide		Ta ₂ O ₅	1314-61-0	SHAEC22002636818
	Manganese dioxide	Manganese dioxide		MnO ₂	1313-13-9	SHAEC22002636813
	Carbon	Carbon		C	7440-44-0	SHAEC22002636814
	Silver	Silver		Ag	7440-22-4	SHAEC22002874501
Leadframe	Leadframe	Alloy		Cu	7440-50-8	SHAEC22002629336
				Zn	7440-66-6	
				Ni	7440-02-0	
				Sn	7440-31-5	
				Ag	7440-22-4	
Molding Epoxy	Molding Epoxy	Epoxy				SHAEC22002636819

Annex 2

Material Declaration

Tantalum MnO2 Surface Mount Capacitor(T51X series)

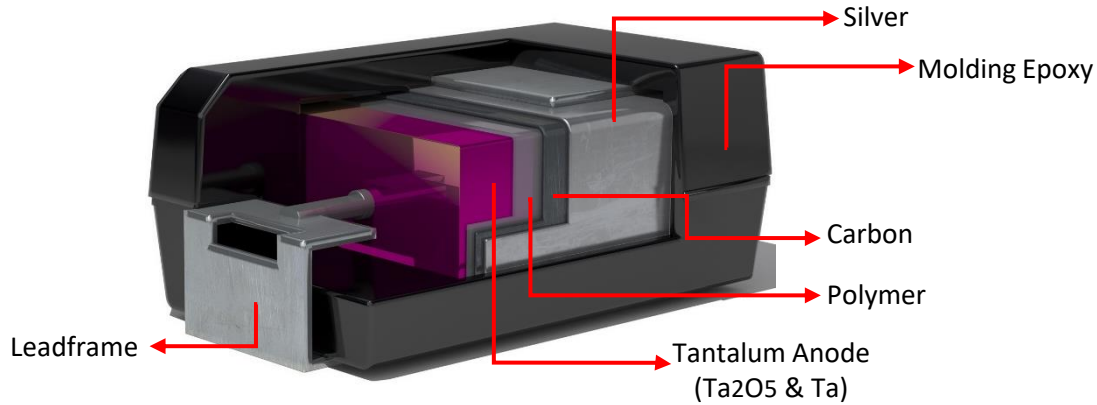


Series				T51X	
Case code				E (7360-38)	X (7343-43)
Homogeneous Level	Material	Substance	CAS No.	weight [mg]	weight [mg]
Anode	Tantalum	Ta	7440-25-7	67.66	67.66
	Manganese dioxide	MnO2	1313-13-9	39.21	39.21
	Carbon	C	7440-44-0	0.22	0.20
	Silver	Ag	7440-22-4	7.05	7.05
	Miscellaneous	-	-	0.29	0.21
Homogeneous 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	See Annex 3	Ta	7440-25-7	SHAEC22002629301 SHAEC22002636818
		Tantalum Pentoxide		Ta ₂ O ₅	1314-61-0	
	Polymer	Polymer				SHAEC22002629304
	Carbon	Carbon		C	7440-44-0	SHAEC22002629305
	Silver	Silver		Ag	7440-22-4	SHAEC22002629311
Leadframe	Leadframe	Alloy		Cu	7440-50-8	SHAEC22002629334
				Fe	7439-89-6	
				Zn	7440-66-6	
				Sn	7440-31-5	
				Ag	7440-22-4	
Molding Epoxy	Molding Epoxy	Epoxy				SHAEC22002629318

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	7440-25-7	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
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
		C	7440-44-0	1.21	1.21	1.21	2.97	1.21	2.97	2.97	2.97	2.97
Homogenous Level Weight				19.72	19.72	19.72	48.49	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	398.67	117.36	256.54	222.95	553.97	481.55

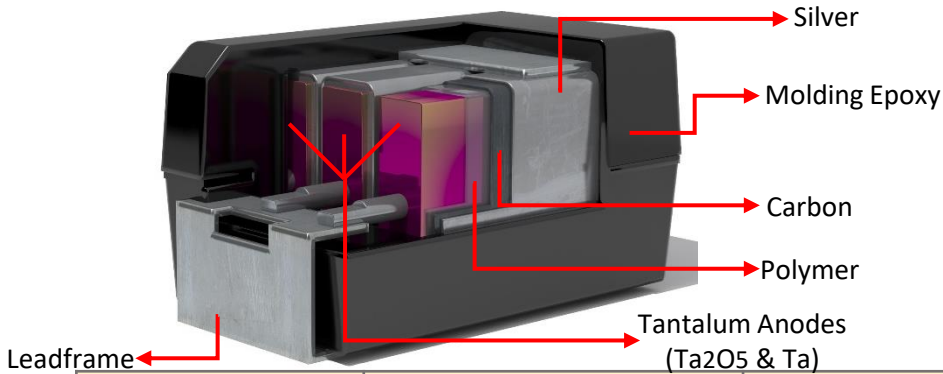
* This was tested as part of the Leadframe Finish Plating.

Material Declaration

Tantalum Polymer Surface Mount Capacitor(T53X series)



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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 4	Ta	7440-25-7	SHAEC22002629301
		Tantalum Pentoxide		Ta2O5	1314-61-0	SHAEC22002636818
	Polymer	Polymer				SHAEC22002629303
	Carbon	Carbon		C	7440-44-0	SHAEC22002629305
	Silver	Silver		Ag	7440-22-4	SHAEC22002629311
Leadframe	Leadframe	Alloy		Cu	7440-50-8	SHAEC22002629334
				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	SHAEC22002629318	

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	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.