

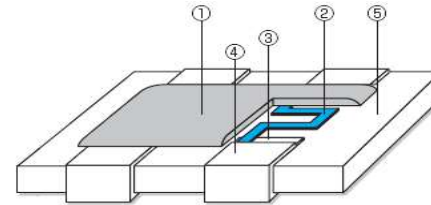
RESISTOR Material Composition - CTN Series

The contents of this specification may change without notice 5/02/2014



This statement pertains to the following directive 2011/65/EU of the European Parliament and of the Council of the European Union on the restriction of the use of certain hazardous substances in electrical and electronic equipment. The definition of LEAD-FREE products is external terminal meet Lead Free.

RoHS exemption 7 (c)-1, Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronics devices, or in a glass or ceramic matrix compound (2011/65/EU)



1. Epoxy Protective Film
2. Ni-Cr Resistive Element
3. Cu Electrode
4. Ni Plating and Tin Plating

CAS no.	Material	Substance	CTN1A		CTN1D		CTN2D		CTN6D		CTNS6D		CTN8U/CTN8D		CTNS8D		CTNW8U		CTNM16U		CTN16U	
			Mass mg	%	Mass mg	%	Mass mg	%	Mass mg	%	Mass mg	%	Mass mg	%	Mass mg	%	Mass mg	%	Mass mg	%	Mass mg	%
1344-28-1	Ceramic Substrate	Al2O3	7.4778	87.54%	7.4778	87.54%	3.6667	86.04%	9.0731	86.71%	9.0731	86.71%	39.9311	86.81%	7.4778	87.54%	64.9066	86.64%	82.1554	86.14%	128.2179	86.69%
7631-86-9		SiO2	0.3116	3.65%	0.3116	3.65%	0.1528	3.58%	0.3780	3.61%	0.3780	3.61%	1.6638	3.62%	0.3116	3.65%	2.7044	3.61%	3.4231	3.59%	5.3424	3.61%
7440-22-4	Conductor Layer (Bottom)	Ag	0.0266	0.31%	0.0266	0.31%	0.0233	0.55%	0.0388	0.37%	0.0388	0.37%	0.1042	0.23%	0.0266	0.31%	0.1550	0.21%	0.2495	0.26%	0.2980	0.20%
65997-17-3		Glass	0.0014	0.02%	0.0014	0.02%	0.0012	0.03%	0.0020	0.02%	0.0020	0.02%	0.0055	0.01%	0.0014	0.02%	0.0082	0.01%	0.0131	0.01%	0.0157	0.01%
7440-22-4	Conductor Layer (Top)	Ag	0.0919	1.08%	0.0919	1.08%	0.0456	1.07%	0.1171	1.12%	0.1171	1.12%	0.4335	0.94%	0.0919	1.08%	0.6833	0.91%	0.9390	0.98%	1.3413	0.91%
7440-05-03		Pd	0.0012	0.01%	0.0012	0.01%	0.0006	0.01%	0.0015	0.01%	0.0015	0.01%	0.0055	0.01%	0.0012	0.01%	0.0086	0.01%	0.0119	0.01%	0.0170	0.01%
65997-17-3		Glass	0.0233	0.27%	0.0233	0.27%	0.0116	0.27%	0.0296	0.28%	0.0296	0.28%	0.1097	0.24%	0.0233	0.27%	0.1730	0.23%	0.2377	0.25%	0.3396	0.23%
7440-02-0	Resistive Element	Ni	0.0109	0.13%	0.0109	0.13%	0.0049	0.11%	0.0142	0.14%	0.0142	0.14%	0.0762	0.17%	0.0109	0.13%	0.1306	0.17%	0.1632	0.17%	0.2580	0.17%
7440-47-3		Cr	0.0174	0.20%	0.0174	0.20%	0.0078	0.18%	0.0227	0.22%	0.0227	0.22%	0.1219	0.26%	0.0174	0.20%	0.2090	0.28%	0.2611	0.27%	0.4127	0.28%
65997-17-3		Glass	0.0152	0.18%	0.0152	0.18%	0.0068	0.16%	0.0196	0.19%	0.0198	0.19%	0.1066	0.23%	0.0152	0.18%	0.1829	0.24%	0.2285	0.24%	0.3612	0.24%
25068-38-6	Over-Coating	Epoxy	0.1121	1.31%	0.1121	1.31%	0.0665	1.56%	0.1425	1.36%	0.1425	1.36%	0.7686	1.67%	0.1121	1.31%	1.3129	1.75%	1.6141	1.69%	2.5954	1.75%
25068-38-6	Marking	Epoxy	0.0115	0.13%	0.0115	0.13%	0.0036	0.08%	0.0146	0.14%	0.0146	0.14%	0.0536	0.12%	0.0115	0.13%	0.0842	0.11%	0.1051	0.11%	0.1652	0.11%
7440-02-0	End Terminal	Ni	0.0038	0.04%	0.0038	0.04%	0.0027	0.06%	0.0058	0.06%	0.0058	0.06%	0.0134	0.03%	0.0038	0.04%	0.0191	0.03%	0.0325	0.03%	0.0361	0.02%
7440-47-3		Cr	0.0010	0.01%	0.0010	0.01%	0.0007	0.02%	0.0015	0.01%	0.0015	0.01%	0.0033	0.01%	0.0010	0.01%	0.0048	0.01%	0.0081	0.01%	0.0090	0.01%
7440-02-0	Ni Plating	Ni	0.2310	2.70%	0.2310	2.70%	0.1411	3.31%	0.3187	3.05%	0.3187	3.05%	1.3757	2.99%	0.2310	2.70%	2.2895	3.06%	3.1362	3.29%	4.4912	3.04%
7440-31-5	Sn Plating	Sn	0.2060	2.41%	0.2060	2.41%	0.1259	2.95%	0.2843	2.72%	0.2843	2.72%	1.2273	2.67%	0.2060	2.41%	2.0425	2.73%	2.7979	2.93%	4.0068	2.71%
All of the above are approximate values by the component parts of the material			8.5426	100%	8.5426	100%	4.2616	100%	10.4640	100%	10.4642	100%	45.9998	100%	8.5426	100%	74.9145	100%	95.3765	100%	147.9074	100%

