



Product / Package Information	
Package	CSP_BGA
Body Size	10X10X1.28
Lead Count	196
Terminal Finish	96.5Sn_3.0Ag_0.5Cu

Environmental Information	
RoHS Compliant	Yes with exemption
High Temperature Compliant	
Halogen Free Compliant	Yes
REACH SVHC Compliant	Yes

Materials Declaration

Substrate							
Description	Substance	CAS#	Weight (g)	Homogeneous Material Level		Component Level	
				Percentage (%)	PPM	Percentage (%)	PPM
Thermosets	Epoxy Resin	85954-11-6	1.85E-02	25.00	250000	6.22	62152
Thermosets	Acrylic Resin	Proprietary	1.85E-02	25.00	250000	6.22	62152
Other inorganic materials	Barium Sulfate	7727-43-7	3.33E-02	45.00	450000	11.19	111874
Other inorganic materials	Talc	14807-96-6	3.70E-03	5.00	50000	1.24	12430
	Solder Mask Subtotal		7.41E-02	100.00	1000000	24.86	248610
Other inorganic materials	BT Resin Cured Thermosetting Resin	Proprietary	1.41E-02	60.00	600000	4.72	47224
Other inorganic materials	Continuous Filament Glass fiber	65997-17-3	9.38E-03	40.00	400000	3.15	31483
	Laminate Core Subtotal		2.34E-02	100.00	1000000	7.87	78707
Precious Metals	Gold	7440-57-5	8.44E-05	100.00	1000000	0.03	283
	Au Plating Subtotal		8.44E-05	100.00	1000000	0.03	283
Precious Metals	Nickel	7440-02-0	1.35E-05	100.00	1000000	0.00	45
	Ni Plating Subtotal		1.35E-05	100.00	1000000	0.00	45
Precious Metals	Palladium	7440-05-3	5.25E-05	100.00	1000000	0.02	176
	Pd Plating Subtotal		5.25E-05	100.00	1000000	0.02	176
Subtotal			9.77E-02			32.78	327821

Die1							
Description	Substance	CAS#	Weight (g)	Homogeneous Material Level		Component Level	
				Percentage (%)	PPM	Percentage (%)	PPM
Other inorganic materials	Doped Silicon	7440-21-3	1.04E-03	100.00	1000000	0.35	3479
Subtotal			1.04E-03	100.00	1000000	0.35	3479

Die Attach1							
Description	Substance	CAS#	Weight (g)	Homogeneous Material Level		Component Level	
				Percentage (%)	PPM	Percentage (%)	PPM
Thermosets	Epoxy Resin	85954-11-6	3.12E-05	39.50	395000	0.01	105
Other inorganic materials	Fused Silica	60676-86-0	4.79E-05	60.50	605000	0.02	161
Subtotal			7.91E-05	100.00	1000000	0.03	266

Die2							
Description	Substance	CAS#	Weight (g)	Homogeneous Material Level		Component Level	
				Percentage (%)	PPM	Percentage (%)	PPM
Other inorganic materials	Doped Silicon	7440-21-3	5.45E-04	100.00	1000000	0.18	1829
Subtotal			5.45E-04	100.00	1000000	0.18	1829

Die Attach2							
Description	Substance	CAS#	Weight (g)	Homogeneous Material Level		Component Level	
				Percentage (%)	PPM	Percentage (%)	PPM
Thermosets	Epoxy Resin	85954-11-6	3.12E-05	39.50	395000	0.01	105
Other inorganic materials	Fused Silica	60676-86-0	4.79E-05	60.50	605000	0.02	161
Subtotal			7.91E-05	100.00	1000000	0.03	266

Die3							
Description	Substance	CAS#	Weight (g)	Homogeneous Material Level		Component Level	
				Percentage (%)	PPM	Percentage (%)	PPM
Other inorganic materials	Doped Silicon	7440-21-3	1.04E-03	100.00	1000000	0.35	3479
Subtotal			1.04E-03	100.00	1000000	0.35	3479

Die Attach3							
Description	Substance	CAS#	Weight (g)	Homogeneous Material Level		Component Level	
				Percentage (%)	PPM	Percentage (%)	PPM
Thermosets	Epoxy Resin	85954-11-6	1.64E-05	39.50	395000	0.01	55
Other inorganic materials	Fused Silica	60676-86-0	2.52E-05	60.50	605000	0.01	84
Subtotal			4.16E-05	100.00	1000000	0.01	140

Die4							
Description	Substance	CAS#	Weight (g)	Homogeneous Material Level		Component Level	
				Percentage (%)	PPM	Percentage (%)	PPM
Other inorganic materials	Doped Silicon	7440-21-3	5.45E-04	100.00	1000000	0.18	1829
Subtotal			5.45E-04	100.00	1000000	0.18	1829

Die Attach4							
Description	Substance	CAS#	Weight (g)	Homogeneous Material Level		Component Level	
				Percentage (%)	PPM	Percentage (%)	PPM
Thermosets	Epoxy Resin	85954-11-6	1.64E-05	39.50	395000	0.01	55
Other inorganic materials	Fused Silica	60676-86-0	2.52E-05	60.50	605000	0.01	84
Subtotal			4.16E-05	100.00	1000000	0.01	140

Solder Paste							
Description	Substance	CAS#	Weight (g)	Homogeneous Material Level		Component Level	
				Percentage (%)	PPM	Percentage (%)	PPM
Precious Metals	Tin	7440-31-5	7.19E-03	96.50	965000	2.41	24117
Precious Metals	Silver	7440-22-4	2.23E-04	3.00	30000	0.07	750
Precious Metals	Copper	7440-50-8	3.72E-05	0.50	5000	0.01	125
Subtotal			7.45E-03	100.00	1000000	2.50	24992

Wire							
Description	Substance	CAS#	Weight (g)	Homogeneous Material Level		Component Level	
				Percentage (%)	PPM	Percentage (%)	PPM
Precious Metals	Gold	7440-57-5	5.85E-04	99.05	990480	0.20	1963
Precious Metals	Palladium	7440-05-3	5.61E-06	0.95	9500	0.00	19
Other inorganic materials	Calcium	7440-70-2	1.18E-08	0.00	20	0.00	0
Subtotal			5.90E-04	100.00	1000000	0.20	1982

Mold Compound

Description	Substance	CAS#	Weight (g)	Homogeneous Material Level		Component Level	
				Percentage (%)	PPM	Percentage (%)	PPM
Thermosets	Epoxy Resin	85954-11-6	1.69E-02	14.45	144500	5.69	56891
Other inorganic materials	Fused Silica	60676-86-0	7.62E-02	65.00	650000	25.59	255910
Other inorganic materials	Fused Silica	7361-86-9	2.35E-02	20.00	200000	7.87	78742
Other organic materials	Carbon Black	1333-86-4	6.45E-04	0.55	5500	0.22	2165
Subtotal			1.17E-01	100.00	1000000	39.37	393708

Solder Ball							
Description	Substance	CAS#	Weight (g)	Homogeneous Material Level		Component Level	
				Percentage (%)	PPM	Percentage (%)	PPM
Precious Metals	Tin	7440-31-5	4.69E-02	96.50	965000	15.74	157424
Precious Metals	Silver	7440-22-4	1.46E-03	3.00	30000	0.49	4694
Precious Metals	Copper	7440-50-8	2.43E-04	0.50	5000	0.08	816
Subtotal			4.86E-02	100.00	1000000	16.31	163134

Capacitor (C1,C4,C6,C11,C13,C14,C17,C19,C24,C26)							
Description	Substance	CAS#	Weight (g)	Homogeneous Material Level		Component Level	
				Percentage (%)	PPM	Percentage (%)	PPM
Other inorganic materials	Barium Titanium Trioxide	12047-27-7	2.60E-03	100.00	1000000	0.87	8727
	Ceramic Subtotal		2.60E-03	100.00	1000000	0.87	8727
Precious Metals	Tin	7440-31-5	8.00E-05	33.33	333333	0.03	269
Precious Metals	Nickel	7440-02-0	8.00E-05	33.33	333333	0.03	269
Precious Metals	Copper	7440-50-8	8.00E-05	33.33	333333	0.03	269
	Electrode Subtotal		2.40E-04	100.00	1000000	0.08	806
Precious Metals	Nickel	7440-02-0	3.80E-04	100.00	1000000	0.12	1208
	Internal/External Electrode Subtotal		3.80E-04	100.00	1000000	0.12	1208
Subtotal			3.20E-03			1.07	10741

Capacitor (C2,C3,C15,C16)							
Description	Substance	CAS#	Weight (g)	Homogeneous Material Level		Component Level	
				Percentage (%)	PPM	Percentage (%)	PPM
Other inorganic materials	Barium Titanium Trioxide	12047-27-7	4.88E-03	100.00	1000000	1.64	16393
	Ceramic Subtotal		4.88E-03	100.00	1000000	1.64	16393
Precious Metals	Tin	7440-31-5	7.20E-05	39.13	391304	0.02	242
Precious Metals	Nickel	7440-02-0	5.60E-05	30.43	304348	0.02	188
Precious Metals	Copper	7440-50-8	5.60E-05	30.43	304348	0.02	188
	Electrode Subtotal		1.84E-04	100.00	1000000	0.06	618
Precious Metals	Nickel	7440-02-0	6.12E-04	100.00	1000000	0.21	2054
	Internal/External Electrode Subtotal		6.12E-04	100.00	1000000	0.21	2054
Subtotal			5.68E-03			1.91	19065

Capacitor (C5, C7-C10, C12, C18, C20-C23, C25, C31, C32, C36, C39)							
Description	Substance	CAS#	Weight (g)	Homogeneous Material Level		Component Level	
				Percentage (%)	PPM	Percentage (%)	PPM
Other inorganic materials	Barium oxide, obtained by calcining witherite	1304-28-5	2.11E-03	60.00	600000	0.71	7089
Other inorganic materials	Titanium Dioxide	13463-67-7	1.06E-03	30.00	300000	0.35	3544
Other inorganic materials	Misc	Proprietary	3.52E-04	10.00	100000	0.12	1181
	Ceramic element Subtotal		3.52E-03	100.00	1000000	1.18	11815
Precious Metals	Copper	7440-50-8	1.09E-03	90.00	900000	0.37	3673
Other inorganic materials	Diboron trioxide; Boric oxide	1303-86-2	2.43E-05	2.00	20000	0.01	82
Other inorganic materials	Silicon Dioxide	7631-86-9	9.73E-05	8.00	80000	0.03	327
	Outer electrode Subtotal		1.22E-03	100.00	1000000	0.41	4081
Precious Metals	Nickel	7440-02-0	1.12E-04	100.00	1000000	0.04	376
	Nickel Plating Subtotal		1.12E-04	100.00	1000000	0.04	376
Precious Metals	Nickel	7440-02-0	1.28E-04	100.00	1000000	0.04	430
	Inner electrode Subtotal		1.28E-04	100.00	1000000	0.04	430
Precious Metals	Tin	7440-31-5	3.04E-04	100.00	1.00E+06	0.10	1020
	Tin Plating Layer Subtotal		3.04E-04	100.00	1000000	0.10	1020
Subtotal			5.28E-03			1.77	17722

Capacitor (C27, C34)							
Description	Substance	CAS#	Weight (g)	Homogeneous Material Level		Component Level	
				Percentage (%)	PPM	Percentage (%)	PPM
Other inorganic materials	Barium Titanium Trioxide	12047-27-7	2.86E-04	51.00	510000	0.10	962
Other inorganic materials	Bismuth Borosilicate Glass	Proprietary	1.69E-05	3.00	30001	0.01	57
Other inorganic materials	Dibismuth Trioxide	1304-76-3	8.99E-05	16.00	160001	0.03	302
Other inorganic materials	Neodymium Oxide	1313-97-9	5.62E-05	10.00	100000	0.02	189
Other inorganic materials	Praseodymium (III,IV) Oxide	12037-29-5	1.01E-04	18.00	180000	0.03	339
Other inorganic materials	Tin Dioxide	18282-10-5	1.12E-05	2.00	19999	0.00	38
	Ceramic Powder Subtotal		5.62E-04	100.00	1000000	0.19	1885
Precious Metals	Palladium	7440-05-3	1.86E-06	10.00	100000	0.00	0
Precious Metals	Silver	7440-22-4	1.67E-05	90.00	900000	0.01	56
	Inner Electrode Subtotal		1.86E-05	100.00	1000000	0.01	62
Precious Metals	Nickel	7440-02-0	1.24E-06	50.00	500000	0.00	4
Tin		7440-31-5	1.24E-06	50.00	500000	0.00	4
	Plating Subtotal		2.48E-06	100.00	1000000	0.00	8
Precious Metals	Silver	7440-22-4	3.72E-05	100.00	1000000	0.01	125
	Terminal Electrode Subtotal		3.72E-05	100.00	1000000	0.01	125
Subtotal			6.20E-04			0.21	2061

Capacitor (C28,C35)							
Description	Substance	CAS#	Weight (g)	Homogeneous Material Level		Component Level	
				Percentage (%)	PPM	Percentage (%)	PPM
Other inorganic materials	Calcium Zirconium Trioxide	12013-47-7	4.04E-04	100.00	1000000	0.14	1357
	Ceramic Subtotal		4.04E-04	100.00	1000000	0.14	1357
Precious Metals	Nickel	7440-02-0	3.48E-05	100.00	1000000	0.01	117
	Inner Electrode Subtotal		3.48E-05	100.00	1000000	0.01	117
Precious Metals	Tin	7440-31-5	3.38E-05	100.00	1000000	0.01	113
	Surface Plating Subtotal		3.38E-05	100.00	1000000	0.01	113
Precious Metals	Copper	7440-50-8	1.16E-04	100.00	1000000	0.04	389
	Termination Subtotal		1.16E-04	100.00	1000000	0.04	389
Precious Metals	Nickel	7440-02-0	1.12E-05	100.00	1000000	0.00	38
	Under Plating Subtotal		1.12E-05	100.00	1000000	0.00	38
Subtotal			6.00E-04			0.20	2014

Capacitor (C29,C30,C36,C37)							
Description	Substance	CAS#	Weight (g)	Homogeneous Material Level		Component Level	
				Percentage (%)	PPM	Percentage (%)	PPM
Other inorganic materials	Calcium Zirconium Trioxide	12013-47-7	8.09E-04	100.00	1000000	0.27	2715
	Ceramic Substrate Subtotal		8.09E-04	100.00	1000000	0.27	2715
Precious Metals	Nickel	7440-02-0	6.95E-05	100.00	1000000	0.02	233
	Inner Electrode Subtotal		6.95E-05	100.00	1000000	0.02	233
Precious Metals	Tin	7440-31-5	6.76E-05	100.00	1000000	0.02	227
	Surface Plating Subtotal		6.76E-05	100.00	1000000	0.02	227
Precious Metals	Copper	7440-50-8	2.32E-04	100.00	1000000	0.08	777
	Termination Subtotal		2.32E-04	100.00	1000000	0.08	777
Precious Metals	Nickel	7440-02-0	2.26E-05	100.00	1000000	0.01	76
	Under Plating Subtotal		2.26E-05	100.00	1000000	0.01	76
Subtotal			1.20E-03			0.40	4028

Capacitor (C33,C40)							
Description	Substance	CAS#	Weight (g)	Homogeneous Material Level		Component Level	
				Percentage (%)	PPM	Percentage (%)	PPM

Description	Substance	CAS#	Weight (g)	Percentage (%)	PPM	Percentage (%)	PPM
Other inorganic materials	Barium Titanium Trioxide	12047-27-7	1.30E-03	97.01	970149	0.44	4363
Other inorganic materials	Other	Proprietary	4.00E-05	2.99	29851	0.01	134
	Dielectric Subtotal		1.34E-03	100.00	1000000	0.45	4498
Precious Metals	Nickel	7440-02-0	6.00E-05	50.00	500000	0.02	201
Precious Metals	Tin	7440-31-5	6.00E-05	50.00	500000	0.02	201
	Electro Plating Subtotal		1.20E-04	100.00	1000000	0.04	403
Precious Metals	Nickel	7440-02-0	2.40E-04	100.00	1000000	0.08	806
	Inner Electrode Subtotal		2.40E-04	100.00	1000000	0.08	806
Precious Metals	Copper	7440-50-8	8.00E-04	100.00	1000000	0.27	2685
	Terminal Electrode Subtotal		8.00E-04	100.00	1000000	0.27	2685
Subtotal			2.50E-03			0.84	8391

Resistor (R1,R4,R13,R16)							
Description	Substance	CAS#	Weight (g)	Homogeneous Material Level		Component Level	
				Percentage (%)	PPM	Percentage (%)	PPM
Precious Metals	Palladium	7440-05-3	1.60E-07	0.63	6270	0.00	1
Precious Metals	Silver	7440-22-4	1.03E-05	40.28	402821	0.00	35
Precious Metals	Silver	7440-22-4	1.51E-05	59.09	590909	0.01	51
	Inner Electrode Subtotal		2.55E-05	100.00	1000000	0.01	86
Other inorganic materials	4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane	25068-38-6	1.16E-05	100.00	1000000	0.00	39
	Over Coat 2 Subtotal		1.16E-05	100.00	1000000	0.00	39
Other inorganic materials	Glass, Oxide, Chemicals	65997-17-3	6.84E-06	100.00	1000000	0.00	23
	Primary Glass Subtotal		6.84E-06	100.00	1000000	0.00	23
Other inorganic materials	Frits, Chemicals	65997-18-4	1.40E-06	17.86	178571	0.00	5
Other inorganic materials	Ruthenium (IV) Oxide	12036-10-1	5.64E-06	71.94	719388	0.00	19
Precious Metals	Silver	7440-22-4	8.00E-07	10.20	102041	0.00	3
	Resistive Layer Subtotal		7.84E-06	100.00	1000000	0.00	26
Other inorganic materials	Aluminium Oxide	1344-28-1	5.11E-04	96.01	960054	0.17	1717
Other inorganic materials	Magnesium Oxide	1309-48-4	1.06E-05	2.00	19973	0.00	36
Other inorganic materials	Quartz	14808-60-7	1.06E-05	2.00	19973	0.00	36
	Substrate Subtotal		5.33E-04	100.00	1000000	0.18	1788
Precious Metals	Nickel	7440-02-0	5.48E-05	65.66	656566	0.02	183
Precious Metals	Tin	7440-31-5	2.86E-05	34.34	343434	0.01	96
	Termination Subtotal		8.32E-05	100.00	1000000	0.03	279
Subtotal			6.68E-04			0.22	2241

Resistor (R2,R3,R14,R15)							
Description	Substance	CAS#	Weight (g)	Homogeneous Material Level		Component Level	
				Percentage (%)	PPM	Percentage (%)	PPM
Other inorganic materials	Aluminium Oxide	1344-28-1	3.07E-04	96.00	960035	0.10	1029
Other inorganic materials	Magnesium Oxide	1309-48-4	3.20E-06	1.00	10023	0.00	11
Other inorganic materials	Silicon Dioxide	7631-86-9	9.56E-06	2.99	29942	0.00	32
	Ceramic Substrate Subtotal		3.19E-04	100.00	1000000	0.11	1072
Other inorganic materials	Copper Oxide	1317-38-0	9.60E-07	7.19	71856	0.00	3
Other inorganic materials	DiBismuth Trioxide	1304-76-3	1.68E-06	12.57	125749	0.00	6
Precious Metals	Nickel	7440-02-0	9.60E-07	7.19	71856	0.00	3
Precious Metals	Silver	7440-22-4	9.76E-06	73.05	730539	0.00	33
	Electrical Contact Alloy Subtotal		1.34E-05	100.00	1000000	0.00	45
Other inorganic materials	4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane	25068-38-6	1.12E-05	83.04	830357	0.00	37
Other inorganic materials	Silicon Dioxide	7631-86-9	2.28E-06	16.96	169643	0.00	8
	EP-QD 20 Subtotal		1.34E-05	100.00	1000000	0.00	45
Other inorganic materials	Lead(2+) Silicate	10099-76-0	1.11E-05	69.95	699495	0.00	37
Other inorganic materials	Ruthenium (IV) Oxide	12036-10-1	4.76E-06	30.05	300505	0.00	16
	Glass Electrical Contact Subtotal		1.58E-05	100.00	1000000	0.01	53
Other inorganic materials	Glass, Oxide, Chemicals	65997-17-3	8.31E-06	99.90	999038	0.00	28
Other inorganic materials	Miscellaneous	Proprietary	8.00E-09	0.10	962	0.00	0
	Glass Enamel Subtotal		8.32E-06	100.00	1000000	0.00	28
Precious Metals	Chromium	7440-47-3	8.20E-06	20.02	200195	0.00	28
Precious Metals	Nickel	7440-02-0	3.28E-05	79.98	799805	0.01	110
	Nickel Chromium Alloy Subtotal		4.10E-05	100.00	1000000	0.01	137
Other inorganic materials	Miscellaneous	Proprietary	6.80E-08	0.10	979	0.00	0
Precious Metals	Nickel	7440-02-0	6.94E-05	99.90	999021	0.02	233
	Nickel Plating Subtotal		6.94E-05	100.00	1000000	0.02	233
Other inorganic materials	Miscellaneous	Proprietary	6.80E-08	0.10	979	0.00	0
Precious Metals	Tin	7440-31-5	6.94E-05	99.90	999021	0.02	233
	Plating Subtotal		6.94E-05	100.00	1000000	0.02	233
Other inorganic materials	Miscellaneous	Proprietary	2.00E-08	0.09	907	0.00	0
Precious Metals	Silver	7440-22-4	2.20E-05	99.91	999093	0.01	74
	Silver Layer Subtotal		2.20E-05	100.00	1000000	0.01	74
Subtotal			5.72E-04			0.19	1920

Resistor (R5,R9,R17,R21)							
Description	Substance	CAS#	Weight (g)	Homogeneous Material Level		Component Level	
				Percentage (%)	PPM	Percentage (%)	PPM
Precious Metals	Palladium	7440-05-3	1.60E-07	0.63	6270	0.00	1
Precious Metals	Silver	7440-22-4	1.03E-05	40.28	402821	0.00	35
Precious Metals	Silver	7440-22-4	1.51E-05	59.09	590909	0.01	51
	Inner Electrode Subtotal		2.55E-05	100.00	1000000	0.01	86
Other inorganic materials	4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane	25068-38-6	1.16E-05	100.00	1000000	0.00	39
	Over Coat 2 Subtotal		1.16E-05	100.00	1000000	0.00	39
Other inorganic materials	Glass, Oxide, Chemicals	65997-17-3	6.84E-06	100.00	1000000	0.00	23
	Primary Glass Subtotal		6.84E-06	100.00	1000000	0.00	23
Other inorganic materials	Frits, Chemicals	65997-18-4	1.40E-06	17.86	178571	0.00	5
Other inorganic materials	Ruthenium (IV) Oxide	12036-10-1	5.64E-06	71.94	719388	0.00	19
Precious Metals	Silver	7440-22-4	8.00E-07	10.20	102041	0.00	3
	Resistive Layer Subtotal		7.84E-06	100.00	1000000	0.00	26
Other inorganic materials	Aluminium Oxide	1344-28-1	5.11E-04	96.01	960054	0.17	1717
Other inorganic materials	Magnesium Oxide	1309-48-4	1.06E-05	2.00	19973	0.00	36
Other inorganic materials	Quartz	14808-60-7	1.06E-05	2.00	19973	0.00	36
	Substrate Subtotal		5.33E-04	100.00	1000000	0.18	1788
Precious Metals	Nickel	7440-02-0	5.48E-05	65.66	656566	0.02	183
Precious Metals	Tin	7440-31-5	2.86E-05	34.34	343434	0.01	96
	Termination Subtotal		8.32E-05	100.00	1000000	0.03	279
Subtotal			6.68E-04			0.22	2241

Resistor (R6,R10,R18,R22)							
Description	Substance	CAS#	Weight (g)	Homogeneous Material Level		Component Level	
				Percentage (%)	PPM	Percentage (%)	PPM
Other inorganic materials	Aluminium Oxide	1344-28-1	4.66E-04	96.04	960396	0.16	1563
Other inorganic materials	Calcium Oxide	1305-78-8	2.00E-06	0.41	4125	0.00	7
Other inorganic materials	Magnesium Oxide	1309-48-4	7.60E-06	1.57	15677	0.00	26
Other inorganic materials	Quartz	14808-60-7	9.60E-06	1.98	19802	0.00	32
	Ceramic Substrate Subtotal		4.85E-04	100.00	1000000	0.16	1627
Other inorganic materials	2-(4-Methylcyclohex-3-en-1-yl)propan-2-ol	10482-56-1	4.80E-06	20.00	200000	0.00	16
Other inorganic materials	Cellulose, Ethyl Ether	9004-57-3	8.00E-07	3.33	33333	0.00	3
Precious Metals	Palladium	7440-05-3	1.20E-06	5.00	50000	0.00	4
Precious Metals	Silver	7440-22-4	1.72E-05	71.67	716667	0.01	58
	Inner Termination Subtotal		2.40E-05	100.00	1000000	0.01	81
Precious Metals	Nickel	7440-02-0	1.20E-05	100.00	1000000	0.00	40
	Middle Termination Subtotal		1.20E-05	100.00	1000000	0.00	40

Precious Metals	Tin	7440-31-5	1.20E-05	100.00	1000000	0.00	40
Outer Termination Subtotal			1.20E-05	100.00	1000000	0.00	40
Other inorganic materials	2-(2-Butoxyethoxy)ethanol	112-34-5	4.40E-06	19.30	192982	0.00	15
Other inorganic materials	Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2,2'-[[1-methylethylidene]bis(4,1-phenyleneoxymethylene)]bis[oxirane]	25036-25-3	6.80E-06	29.82	298246	0.00	23
Other inorganic materials	Quartz	14808-60-7	6.80E-06	29.82	298246	0.00	23
Other inorganic materials	Talc	14807-96-6	2.40E-06	10.53	105263	0.00	8
Other inorganic materials	Titanium Dioxide	13463-67-7	2.40E-06	10.53	105263	0.00	8
Overcoat Subtotal			2.28E-05	100.00	1000000	0.01	77
Other inorganic materials	2-(2-Butoxyethoxy)ethyl acetate	124-17-4	8.00E-07	4.44	44444	0.00	3
Other inorganic materials	Cellulose, Ethyl Ether	9004-57-3	8.00E-07	4.44	44444	0.00	3
Other inorganic materials	Chromium (III) Oxide	1308-38-9	4.00E-07	2.22	22222	0.00	1
Other inorganic materials	Dibutyl Sebacate	109-43-3	2.40E-06	13.33	133333	0.00	8
Other inorganic materials	Frits, Chemicals	65997-18-4	1.04E-05	57.78	577778	0.00	35
Other inorganic materials	Terpineol	8000-41-7	3.20E-06	17.78	177778	0.00	11
Pre - Coat Subtotal			1.80E-05	100.00	1000000	0.01	60
Other inorganic materials	Copper Oxide	1317-38-0	1.20E-07	0.50	5000	0.00	0
Other inorganic materials	Dibutyl Sebacate	109-43-3	1.20E-06	5.00	50000	0.00	4
Other inorganic materials	Ditantalum Pentaoxide	1314-61-0	4.00E-07	1.67	16667	0.00	1
Other inorganic materials	Lead Borosilicate Glass	Proprietary	8.00E-06	33.33	333333	0.00	27
Precious Metals	Palladium	7440-05-3	2.40E-06	10.00	100000	0.00	8
Other inorganic materials	Ruthenium (IV) Oxide	12036-10-1	3.60E-06	15.00	150000	0.00	12
Precious Metals	Silver	7440-22-4	4.28E-06	17.83	178333	0.00	14
Other inorganic materials	Terpineol	8000-41-7	3.60E-06	15.00	150000	0.00	12
Other inorganic materials	Trimanganese Tetraoxide	1317-35-7	4.00E-07	1.67	16667	0.00	1
Resistive Element Subtotal			2.40E-05	100.00	1000000	0.01	81
Precious Metals	Chromium	7440-47-3	4.00E-07	33.33	333333	0.00	1
Precious Metals	Nickel	7440-02-0	8.00E-07	66.67	666667	0.00	3
Side Termination Subtotal			1.20E-06	100.00	1000000	0.00	4
Subtotal			5.99E-04			0.20	2010

Resistor (R7,R11,R19,R23)

Description	Substance	CAS#	Weight (g)	Homogeneous Material Level		Component Level	
				Percentage (%)	PPM	Percentage (%)	PPM
Precious Metals	Palladium	7440-05-3	1.60E-07	0.63	6270	0.00	1
Precious Metals	Silver	7440-22-4	1.03E-05	40.28	402821	0.00	35
Precious Metals	Silver	7440-22-4	1.51E-05	59.09	590909	0.01	51
Inner Electrode Subtotal			2.55E-05	100.00	1000000	0.01	86
Other inorganic materials	4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane	25068-38-6	1.16E-05	100.00	1000000	0.00	39
Over Coat 2 Subtotal			1.16E-05	100.00	1000000	0.00	39
Other inorganic materials	Glass, Oxide, Chemicals	65997-17-3	6.84E-06	100.00	1000000	0.00	23
Primary Glass Subtotal			6.84E-06	100.00	1000000	0.00	23
Other inorganic materials	Frits, Chemicals	65997-18-4	1.40E-06	17.86	178571	0.00	5
Other inorganic materials	Ruthenium (IV) Oxide	12036-10-1	5.64E-06	71.94	719388	0.00	19
Precious Metals	Silver	7440-22-4	8.00E-07	10.20	102041	0.00	3
Resistive Layer Subtotal			7.84E-06	100.00	1000000	0.00	26
Other inorganic materials	Aluminium Oxide	1344-28-1	5.11E-04	96.01	960054	0.17	1717
Other inorganic materials	Magnesium Oxide	1309-48-4	1.06E-05	2.00	19973	0.00	36
Other inorganic materials	Quartz	14808-60-7	1.06E-05	2.00	19973	0.00	36
Substrate Subtotal			5.33E-04	100.00	1000000	0.18	1788
Precious Metals	Nickel	7440-02-0	5.46E-05	65.66	656566	0.02	183
Precious Metals	Tin	7440-31-5	2.86E-05	34.34	343434	0.01	96
Termination Subtotal			8.32E-05	100.00	1000000	0.03	279
Subtotal			6.68E-04			0.22	2241

Resistor (R8, R12, R20, R24)

Description	Substance	CAS#	Weight (g)	Homogeneous Material Level		Component Level	
				Percentage (%)	PPM	Percentage (%)	PPM
Precious Metals	Palladium	7440-05-3	1.60E-07	0.63	6270	0.00	1
Precious Metals	Silver	7440-22-4	1.03E-05	40.28	402821	0.00	35
Precious Metals	Silver	7440-22-4	1.51E-05	59.09	590909	0.01	51
Inner Electrode Subtotal			2.55E-05	100.00	1000000	0.01	86
Other inorganic materials	4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane	25068-38-6	1.16E-05	100.00	1000000	0.00	39
Over Coat 2 Subtotal			1.16E-05	100.00	1000000	0.00	39
Other inorganic materials	Glass, Oxide, Chemicals	65997-17-3	6.84E-06	100.00	1000000	0.00	23
Primary Glass Subtotal			6.84E-06	100.00	1000000	0.00	23
Other inorganic materials	Frits, Chemicals	65997-18-4	1.40E-06	17.86	178571	0.00	5
Other inorganic materials	Ruthenium (IV) Oxide	12036-10-1	5.64E-06	71.94	719388	0.00	19
Precious Metals	Silver	7440-22-4	8.00E-07	10.20	102041	0.00	3
Resistive Layer Subtotal			7.84E-06	100.00	1000000	0.00	26
Other inorganic materials	Aluminium Oxide	1344-28-1	5.11E-04	96.01	960054	0.17	1717
Other inorganic materials	Magnesium Oxide	1309-48-4	1.06E-05	2.00	19973	0.00	36
Other inorganic materials	Quartz	14808-60-7	1.06E-05	2.00	19973	0.00	36
Substrate Subtotal			5.33E-04	100.00	1000000	0.18	1788
Precious Metals	Nickel	7440-02-0	5.46E-05	65.66	656566	0.02	183
Precious Metals	Tin	7440-31-5	2.86E-05	34.34	343434	0.01	96
Termination Subtotal			8.32E-05	100.00	1000000	0.03	279
Subtotal			6.68E-04			0.22	2241

Package Totals			Weight (g)	Percentage (%)		PPM
			2.98E-01	100.00		1000000

Control ID:MS014647DP006873
Note: The information provided in this declaration are true to the best of ADI's knowledge.
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