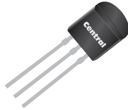
Material Composition Specification

TO-92 Case



Eutectic Die Attach

Device average mass . . . . . . 206 mg (+/-10%)

Component	Material	Material		Substance	CAS No.	Substance		
		(%wt)	(mg)			(%wt)	(mg)	(ppm)
active device	doped Si	0.034%	0.07	Si	7440-21-3	0.034%	0.07	340
bond wire	gold or copper	0.016%	0.032	Au	7440-57-5	0.016%	0.032	155
				Cu	7440-50-8			
leadframe	Cu alloy w/ silver plating	44.824%	92.338	Cu	7440-50-8	44.641%	91.96	446,408
				Fe	7439-89-6	0.045%	0.092	447
				P	7723-14-0	0.016%	0.032	155
				Ag	7440-22-4	0.123%	0.254	1,233
encapsulation*	EMC	52.286%	107.71	silica	7631-86-9	40.694%	83.83	406,942
				epoxy resin	29690-82-2	5.267%	10.85	52,670
				phenol resin	9003-35-4	4.748%	9.78	47,476
				carbon black	1333-86-4	0.149%	0.306	1,485
				Sb_2O_3	1309-64-4	1.146%	2.36	11,456
				TBBA	79-94-7	0.283%	0.584	2,835
	EMC GREEN	52.286%	107.71	silica	7631-86-9	38.816%	79.96	388,155
				epoxy resin	29690-82-2	5.024%	10.35	50,243
				phenol resin	9003-35-4	4.529%	9.33	45,291
				carbon black	1333-86-4	0.568%	1.17	5,680
				metal hydroxide	1309-42-8	3.35%	6.9	33,495
plating**	tin/lead process	2.84%	5.85	Sn	7440-31-5	2.282%	4.7	22,816
				Pb	7439-92-1	0.558%	1.15	5,583
	matte tin	2.84%	5.85	Sn	7440-31-5	2.84%	5.85	28,398

Epoxy Die Attach

Device average mass . . . . . . 206 mg (+/-10%)

Component	Material	Material		Substance	CAS No.	Substance		
		(%wt)	(mg)			(%wt)	(mg)	(ppm)
active device	doped Si	0.035%	0.07	Si	7440-21-3	0.035%	0.073	354
bond wire	gold or copper	0.016%	0.032	Au	7440-57-5	0.016%	0.032	155
				Cu	7440-50-8			
leadframe	Cu alloy w/ silver plating	44.82%	92.34	Cu	7440-50-8	44.64%	91.96	446,408
				Fe	7439-89-6	0.045%	0.092	447
				P	7723-14-0	0.016%	0.032	155
				Ag	7440-22-4	0.123%	0.254	1,233
die attach	silver epoxy	0.121%	0.25	Pb	7439-92-1	0.113%	0.232	1,126
				Sn	7440-31-5	0.006%	0.012	58
				Ag	7440-22-4	0.003%	0.006	29
encapsulation*	EMC	52.16%	107.46	silica	7631-86-9	40.6%	83.64	406,019
				epoxy resin	29690-82-2	5.25%	10.82	52,524
				phenol resin	9003-35-4	4.74%	9.76	47,379
				carbon black	1333-86-4	0.148%	0.305	1,481
				Sb_2O_3	1309-64-4	1.14%	2.35	11,408
				TBBA	79-94-7	0.283%	0.582	2,825
	EMC GREEN	52.16%	107.46	silica	7631-86-9	38.72%	79.77	387,233
				epoxy resin	29690-82-2	5.015%	10.33	50,146
				phenol resin	9003-35-4	4.519%	9.31	45,194
				carbon black	1333-86-4	0.567%	1.167	5,665
				metal hydroxide	1309-42-8	3.34%	6.88	33,398
plating**	tin/lead process	2.84%	5.85	Sn	7440-31-5	2.282%	4.7	22,816
				Pb	7439-92-1	0.558%	1.15	5,583
	matte tin	2.84%	5.85	Sn	7440-31-5	2.84%	5.85	28,398

*EMC GREEN molding compound is Halogen-Free.

**For Lead Free plating, add suffix “PB FREE” to part number.
For Tin/Lead plating, add suffix “TIN/LEAD” to part number.
No suffix designation allows for the supply of either lead-free or tin/lead plated product depending on availability.

Disclaimer

The information provided in this Material Composition data sheet is, to the best of our knowledge, correct. However, there is no guarantee to completeness or accuracy, as some information is derived from data sources outside the company.

R7 (27-February 2020)