

Chemicals contained in products

Package-type

Epson Package name; **TQFP15-128PIN**

JEITA Package name; **P-TQFP128-1414-0.40**

Lead frame plating; **Lead(Pb) Free**

Weight; **0.52 [g]** *Note1

Part	Subpart	Subpart weight [mg]	Substance name	CAS No.	Content *Note2		Application
					[mg]	[ppm]	
IC Die	IC Die	15	Silicon	7440-21-3	14.5	999894	Base material
			Boron	7440-42-8	0.00003	2	Dopant
			Phosphorus	7723-14-0	0.0001	5	Dopant
			Aluminum	7429-90-5	0.0003	20	Metalization
			Arsenic *Note3	7440-38-2	0.0001	5	Dopant
			Fluorine *Note3	7782-41-4	0.00003	2	Dopant
			Titanium *Note3	7440-32-6	0.0003	20	Metalization
			Molybdenum *Note3	7439-98-7	0.0003	20	Metalization
			Tungsten *Note3	7440-33-7	0.0004	30	Metalization
			Cobalt *Note3	7440-48-4	0.00003	2	Metalization
	Stress buffer coat	0.3	Polyimide	-	0.29	1000000	Stress buffer coat *Note4
Package	Die Bonding material	3.0	Silver	7440-22-4	1.9	640000	Base material
			Epoxy resin	-	0.62	205000	Adhesive
			Phenol resin	-	0.24	80000	Adhesive
			Inorganic powder	-	0.14	48000	Additive
			Bismuth compound	-	0.08	27000	Ion trap
	Lead Frame Plating	12.2	Tin	7440-31-5	11.9	980000	Solder
			Bismuth	7440-69-9	0.25	20000	Solder
	Lead Frame	157	Copper	7440-50-8	149	945000	Conductor
			Silver	7440-22-4	0.79	5000	Inner lead plating
			Others *Note5	-	7.9	50000	Additive
	Bonding Wire	2.8	Gold	7440-57-5	2.8	1000000	Conductor
	Mold resin	330	Epoxy resin	-	36.3	110000	Base material
			Antimony trioxide	1309-64-4	4.6	14000	Flame retardant
			Halogenated compound(Brominations epoxy)	-	2.3	7000	Flame retardant
			Silica	60676-86-0/-	246	744000	Filler
Carbon black			1333-86-4	3.3	10000	Coloring agent	
Hardening chemical(ex:Phenol resin)			-	36.3	110000	Base material	
	Organic phosphorous compound	-	1.60	5000	Hardening accelerator		

Regarding the information of chemical substances

*Note1 The weight might be somewhat different depending on an individual built-in IC-chip specification like the size etc.

*Note2 Content data are estimated values based on supplier information and intended levels of content in product.

Actual measurements may vary from these values somewhat.

*Note3 Use or not-use of these substances depends on individual built-in IC-chip specification.

*Note4 The stress buffer coat may not be used depending on the individual model.

*Note5 The nickel, zinc, tin, silicon, iron, and the zinc oxide are included for the Cu type. And the carbon, silicon, and manganese are included for 42alloy type.