

# Chemicals contained in products

## Package-type

Epson Package name; **TQFP15-128PIN / Halogen free**

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	4.9	Silicon	7440-21-3	4.9	999914	Base material
			Boron	7440-42-8	0.00001	2	Dopant
			Phosphorus	7723-14-0	0.0000	5	Dopant
			Aluminum	7429-90-5	0.0001	20	Metalization
			Arsenic *Note3	7440-38-2	0.0000	5	Dopant
			Fluorine *Note3	7782-41-4	0.00001	2	Dopant
			Titanium *Note3	7440-32-6	0.0001	20	Metalization
			Tungsten *Note3	7440-33-7	0.000	30	Metalization
			Cobalt *Note3	7440-48-4	0.00001	2	Metalization
	Stress buffer coat	0.10	Polyimide	-	0.10	1000000	Stress buffer coat *Note4
Package	Die Bonding material	1.00	Silver	7440-22-4	0.91	910000	Base material
			Acrylic resin	-	0.07	70000	Adhesive
			Epoxy resin	-	0.02	20000	Adhesive
	Lead Frame Plating	3.16	Tin	7440-31-5	3.16	1000000	Solder
	Lead Frame	182.52	Copper	7440-50-8	172.48	945000	Conductor
			Silver	7440-22-4	0.91	5000	Inner lead plating
			Others *Note5	-	9.1	50000	Additive
	Bonding Wire	2.51	Gold	7440-57-5	2.51	1000000	Conductor
	Mold resin	325.82	Epoxy resin	-	16.29	50000	Base material
			Phenol resin	-	16.29	50000	Base material
Silica			60676-86-0/-	292.26	897000	Filler	
Carbon black			1333-86-4	0.98	3000	Coloring agent	

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.