



Date: 9-Apr-08
Revision: 2.0
Product Total Mass [mg]: 815.48 mg

Requestor: VLSI Solution Oy
Hermiankatu 8G, 33270 Tampere, Finland
Email: quality@vlsi.fi
www.vlsi.fi

Product Name: VS1011E, SOIC28 300MILS

Device name: VS1011E-S/LSR-ROHS

Marking on device: VS1011E R

XXXXXXXXXXXX YYWW where YYWW = assembly Year and Week > 0904

References of "Threshold level" columns:

1) Report the **biggest content rate** (ppm) of the substance at the **homogeneous material level**. **Optionally** also the total **weight** of the substance in the product.

Weight = total weight of the substance in the product.

Content rate [ppm] = Content rate of the substance in the homogeneous material that has the biggest ppm content of the substance.

Example: Lead (Pb) content in lead frame plating [ppm] = weight of lead (Pb) in leadframe [10^{-9} g] / weight of the leadframe [mg]

2) Report the total **weight** of the substance **in the product**. **Optionally** also **content rate** (ppm) of the substance at the product.

Weight = total weight of the substance in the product.

Content rate [ppm] = Content rate of the substance in the product.

Example: Bismuth weight = Sum of Bismuth weights in each homogeneous material.

3) Any content = Not contain obviously OR under quantitation limit of accurate analytical method.

NA) Not Applicable.

cust.A = Customer from Japan **cust.B** = Customer from USA

JIG-101A, Level A Material and Substance Declaration: Detailed Chemical list with CAS-numbers and other details of JIG-101A: <http://www.jedec.org/download/>

Substance	Threshold Level – JIG	Threshold Level – cust.A	Threshold Level – cust.B	Above threshold level ?			If yes (Y), detailed information of contained substances		
				Level JIG (Y/N)	Level cust.A (Y/N)	Level cust.B (Y/N)	Weight [mg]	Content rate [ppm]	Additional information on material composition of products
Asbestos	Any content (2 and 3)	Any content (1 and 3)	Any content (3)	N	N	N			Also asbestos CAS# 132207-32-0, 132207-33-1.
Certain azocolourants and azodyes (which form certain aromatic amines)	Intentionally Added or 30 ppm (1)			N	N	N			Must be reported only if it is used for leather/fabric products and those parts where they are likely to result in prolong skin contact. 30 ppm in finished textile or leather articles
Cadmium/Cadmium compounds	75 ppm or Intentionally Added (1)	20 ppm (resin paint, ink pigment and dyeing) (1)	5 ppm (1)	N ⁽³⁾	N	N ⁽³⁾			
		20 ppm lead free soldering (1)			N ⁽³⁾				
		75 ppm metals except for lead free soldering (1)			N				
		Other materials: Any content (1 and 3)			N				
Hexavalent Chromium / Hexavalent Chromium Compounds	1000 ppm or Intentionally Added (1)	100 ppm Chromate plating (1)		N	N	N			
		Other materials: Any content (1 and 3)		N	N	N			

Substance	Threshold Level – JIG	Threshold Level – cust.A	Threshold Level – cust.B	Above threshold level ?			If yes (Y), detailed information of contained substances			
				Level JIG (Y/N)	Level cust.A (Y/N)	Level cust.B (Y/N)	Weight [mg]	Content rate [ppm]	Additional information on material composition of products	
Category Name	Threshold Level – JIG	Threshold Level – cust.A	Threshold Level – cust.B	Level JIG (Y/N)	Level cust.A (Y/N)	Level cust.B (Y/N)	Weight [mg]	Content rate [ppm]	Additional information on material composition of products	
Lead/Lead Compounds	1000 ppm or Intentionally Added (1)	100 ppm (resin paint, ink pigment and dying) (1)	500 ppm solder (1)	N ⁽³⁾	N	N ⁽³⁾				
	300 ppm PVC cables and wires only (1)	1000 ppm for soldering parts of purchasing pwd and components (1) 500 ppm lead free soldering except for above (1) 500 ppm other metal materials (1) 800 ppm electroless nickel plating (1) Other materials: Any content (1 and 3)	100 ppm other materials (1)	N	N	N ⁽³⁾				
					N ⁽³⁾					
					N					
					N					
					N					
Lead/Lead Compounds RoHS exemption items		3500 ppm alloying element of steel (1)		N	N	N				
		4000 ppm Aluminium (1)		N	N	N				
		40000 ppm Copper alloy (1)		N	N	N				
Mercury / Mercury compounds	1000 ppm or Intentionally Added (1)			N	N	N				
Ozone Depleting Substances – Class I (CFCs, HBFCs, etc.)	Any content (2 and 3)	Any content (1 and 3)	Any content (3)	N	N	N				
Ozone Depleting Substances – Class II (HCFCs)	Any content (2 and 3)	1000 ppm (1)	Any content (3)	N	N	N				
Polybrominated Biphenyls (PBBs)	1000 ppm or Intentionally Added (1)	Any content (1 and 3)	Any content (3)	N	N	N			Also monobromodiphenyl (C12 H9 Br) included.	
Polybrominated Diphenylethers (PBDEs)	1000 ppm or Intentionally Added (1)	Any content (1 and 3)	Any content (3)	N	N	N			JIG Level A includes DeccaBDE CAS# 1163-19-5	
Polychlorinated Biphenyls (PCBs)	Intentionally Added (2)	Any content (1 and 3)	Any content (3)	N	N	N				
Polychlorinated Terphenyls (PCTs)	Intentionally Added (2)	NA	Any content (3)	N	N	N				
Polychlorinated Naphthalenes (> 3 chlorine atoms)	Intentionally Added (2)	Any content (1 and 3)	Any content (3)	N	N	N				
Radioactive Substances	Intentionally Added (2)	1000 ppm (1)	Any content (3)	N	N	N				
Certain Shortchain Chlorinated Paraffins (C10 – C13) SCCP	1000 ppm or Intentionally Added (1)	Any content (1 and 3)	Any content (3)	N	N	N				
Certain Tributyl Tin (TBT) and Triphenyl Tin (TPT) compounds	Intentionally Added (2)	Any content (1 and 3)	Any content (3)	N	N	N			Also Tributyl tin bromide (CAS# 1461-23-0), Triphenyl tin (CAS# 668-34-8), Triphenyl tin bromide (C6 H5)3 Sn Br and Mixture of tributyl tin cyclopentanecarboxylate and its analogs (Tributyl tin naphthenate, CAS# 85409-17-12).	
Tributyl Tin Oxide (TBTO)	Intentionally Added (2)	Any content (1 and 3)	NA	N	N	N				

JIG-101A, Level B Material and Substance Declaration: Detailed Chemical list with CAS-numbers and other details of JIG-101A: <http://www.jedec.org/download/>

Substance	Threshold Level – JIG	Threshold Level – cust.A	Threshold Level – cust.B	Above threshold level ?			If yes (Y), detailed information of contained substances		
				Level JIG (Y/N)	Level cust.A (Y/N)	Level cust.B (Y/N)	Weight [mg]	Content rate [ppm]	Additional information on material composition of products
Antimony/Antimony Compounds	1000 ppm (2)	1000 ppm (1)	NA	N ⁽³⁾	N ⁽³⁾	NA			
Arsenic/Arsenic Compounds	1000 ppm (2)	1000 ppm (1)	Any content (3)	N	N	N			
Beryllium/Beryllium Compounds	1000 ppm (2)	1000 ppm (1)	Any content (3)	N	N	N			
Bismuth/Bismuth Compounds	1000 ppm (2)	1000 ppm (1)	NA	N ⁽³⁾	N ⁽³⁾	NA			
Brominated Flame Retardants (other than PBBs or PBDEs)	1000 ppm (2)	1000 ppm (1)	1000 ppm (1)	N	N	N			cust.B: TBBP-A-bis, included to JIG-101A, Level B
Nickel / Nickel Compounds	0.5 ug/sq cm/week, if nickel is likely to result in prolonged skin exposure.	1000 ppm (1)	NA	N	N	NA			Release of nickel not to exceed 0.5 micrograms/sq cm/week when tested to DIN EN 1811 Use of nickel or nickel in components and parts designed to be located inside the outer enclosure of a product need not be reported.
Certain Phthalates	1000 ppm (2)	1000 ppm (1)	Any content (3)	N	N	N			Also CAS# 68515-49-1 and 68515-48-0 and DNHP CAS# 84-75-3
Selenium/Selenium Compounds	1000 ppm (2)	1000 ppm (1)	NA	N	N	N			
Polyvinyl Chloride (PVC)	1000 ppm (2)	1000 ppm (1)	Any content (3)	N	N	N			

Additional Material and Substance Declarations:

Substance	Threshold Level	Threshold Level – cust.B	Above threshold level ?		If yes (Y), detailed information of contained substances		
			Level (Y/N)	Level cust.B (Y/N)	Weight [mg]	Content rate [ppm]	Additional information on material composition of products
Formaldehyde CAS#50-0-0 (wooden materials and furniture)	Aerial concentration: 0.1 ml/m3 (1)	Select 1 of following: concentration in the air OR perforator method OR Desiccators method.	N	N			DE ChemVerbotsV, AT BGBl. Nr. 194/1990, SE KIFS 1998:8 (9, 20-27 §§) cust.B: Select 1 of following: concentration in the air: 0.1 ppm (EN 717-1:2004), or perforator method: 6.5 mg/100g particleboard, 7.0 mg/100g fiberboard (both average value during 6 months), 8.0 mg particle/fiberboard one time measurement based EN 120:1992. or Desiccators method: average content 0.5 mg/l, Maximum content 0.7 mg/l (use N = 2, JIS A 5905 (Fiberboards, JIS A 5908 Particleboards)
Perfluorooctanesulfonic acid (PFOS, see references in the end of this document)	1 micrograms/m2 in textiles or coated materials. 0.1 weight% (1000ppm) in semi-finished products or articles. 0.005% (50ppm) as substance or constituent of preparations (1)	0.1 wt%, textile or other coated materials 1 micrograms/m ² of coated materials. (1)	N	N			EU 76/769/EEC, 30. amendment, Annex I, No. 52 Exemptions of use: a) photoresists or anti reflective coatings for photolithography processes b) photographic coatings applied to films, papers, or printing plates, c) mist suppressants for non-decorative hard chromium (VI) plating and wetting agents for use in controlled electroplating systems.
Cobalt Chloride	0.01 weight% (100 ppm) (1)	NA	N	N			As for the service parts, the professional products, and the transportation parts, when the content exceeds 100ppm to less than 10000ppm display the text "Restricted to professional user" to the cobalt chloride inclusion quality wrapping. Directives of EU: 2003/34/EC, 98/98/EC and 2004/73/EC.
Phthalate esters	1000 ppm (1)	Any content (3)	N	N			See also "Certain Phthalates" in JIG Level B.
Mirex (Perchlordecone)	Intentionally added (1)	Any content (3)	N	N			CAS# 2385-85-5. Prohibition of Certain Toxic Substances Regulations, 2005 (SOR/SOR/2005-41. Published in Canada Gazette Part II, 2006-11-29 Vol. 140, No. 24
Hydrofluorocarbon (HFC), Perfluorocarbon (PFC)	Any content (3)	Any content (3)	N	N			
Halogen-Bromine (Br)		>900 ppm (1)	N	N			IEC 61249-2-21:2003
Halogen-Chlorine (Cl)		>900 ppm (1)	N	N			IEC 61249-2-21:2003
Total Halogen Br + Cl		>1500 ppm (1)	N	N			IEC 61249-2-21:2003
Halogenated aromatic substances		500 ppm for mono- or 50 ppm for poly-halogenated aromatic substances.	N	N			
Halogenated diphenyl methanes	Any content (3)	Any content (3)	N	N			JIG Level A (PCB+PCT) includes CAS# 76253-60-6, CAS# 99688-47-8 and Ugilec121, Ugilec 21.
Brominated dioxins/furans and Chlorinated dioxins/furans	10 ppb (1)	Any content (3)	N	N			ChemVerbotsV, information source "2008 GADSL Version 2.0"
Specific benzotriazole	Any content (3)	Any content (3)	N	N			Japan, Law Concerning the Examination and Regulation of Manufacture of Chemical Substances, Class I.
Organic tin compounds (excluding TBT, TPT, TBTO)	1000 ppm (1)	NA	N	N			See also TBT, TPT and TBTO in JIG Level A in end of table 2.
Certain Glycol Ethers see list in the end of this doc	use in manufacture of semiconductors, 1000 ppm (1)	5 ppm (1)	N	N			EU-D 67/548/EEC, information source "2008 GADSL Version 2.0"
Red phosphorous	Intentionally added (1)	1000 ppm (1)	N	N ⁽³⁾			Red phosphorous CAS 7723-14-0 should not be used to substitute Brominated Flame Retardants due to historical industry experience with reliability concerns.

PFOS substances:

List of PFOS substances, list may not include all variations:

US EPA Significant New Use Rule 1:

<http://www.epa.gov/EPA-TOX/2002/December/Day-09/t31011.htm>

US EPA Significant New Use Rule 2 (which also include some PFAS molecules):

<http://www.epa.gov/EPA-TOX/2007/October/Day-09/t19828.htm>

Semiconductor industry voluntary banned the use of certain ethylene glycol ethers in manufacture of semiconductors.

Certain Glycol Ethers	CAS Numbers
2-Ethoxyethanol (or Ethylene glycol monoethyl ether)	110-80-5
2-Ethoxyethyl acetate	111-15-9
2-Methoxyethanol (or Ethylene glycol monomethyl ether)	109-86-4
2-Methoxyethyl acetate	110-49-6
Diethylene glycol dimethyl ether	111-96-6

List of Substances of Very High Concern (SVHC)

http://echa.europa.eu/chem_data/candidate_list_table_en.asp

Substance	Threshold Level	Above threshold level ? Y / N	If yes (Y), detailed information of contained substances		
			Weight [mg]	Content rate [ppm]	Additional information on material composition of products
Triethyl arsenate	0.1 % Weight (2)	N			EC Number: 427-700-2, CAS Number: 15606-95-8. Article 57(a) of Regulation (EC) 1907/2006 (REACH).
Anthracene	0.1 % Weight (2)	N			EC Number: 204-371-1 CAS Number: 120-12-7. PBT substance according to Article 57 (d) of Regulation (EC) No 1907/2006 (REACH).
4,4'-Diaminodiphenylmethane (MDA)	0.1 % Weight (2)	N			EC Number: 202-974-4 CAS number: 101-77-9. Article 57(a) of Regulation (EC) 1907/2006 (REACH).
Dibutyl phthalate (DBP)	0.1 % Weight (2)	N			EC Number: 201-557-4 CAS number: 84-74-2. Article 57 (c) of Regulation (EC) 1907/2006 (REACH).
Cobalt dichloride	0.1 % Weight (2)	N			EC number: 231-589-4 CAS number: 7646-79-9. Article 57 (a) of Regulation (EC) No 1907/2006 (REACH).
Diarsenic Pentaoxide	0.1 % Weight (2)	N			EC Number: 215-116-9 CAS number: 1303-28-2. Article 57 (a) of Regulation (EC) No 1907/2006 (REACH).
Diarsenic Trioxide	0.1 % Weight (2)	N			EC Number: 215-481-4 CAS number: 1327-53-3. Article 57 (a) of Regulation (EC) No 1907/2006 (REACH).
Sodium dichromate	0.1 % Weight (2)	N			EC number: 234-190-3 CAS number: 10588-01-9 (anhydrous) 7789-12-0 (dihydrate). Article 57(a), (b) and (c) of Regulation (EC) 1907/2006 (REACH).
5-tert-butyl – 2,4,6 – trinitro-m-xylene (musk xylene)	0.1 % Weight (2)	N			EC Number: 201-329-4 CAS number: 81-15-2. Article 57(e) of Regulation (EC) No 1907/2006 (REACH).
Bis(2-ethylhexyl)phthalate (DEHP)	0.1 % Weight (2)	N			EC Number: 204-211-0 CAS number: 117-81-7. Article 57 (c) of Regulation (EC) 1907/2006 (REACH).
Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified	0.1 % Weight (2)	N			EC Number: 221-695-9, 247-148-4 CAS number: 3194-55-6, 25637-99-4 Names of the major diastereoisomers identified: alpha-hexabromocyclododecane CAS No 134237-50-6 beta-hexabromocyclododecane CAS No 134237-51-7 gamma-hexabromocyclododecane CAS No 134237-52-8. Article 57 (d) of Regulation (EC) No 1907/2006 (REACH).
Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins)	0.1 % Weight (2)	N			EC Number: 287-476-5 CAS number: 85535-84-8. Article 57 (d and e) of Regulation (EC) No 1907/2006 (REACH).
Bis(tributyltin) oxide (TBTO)	0.1 % Weight (2)	N			EC Number: 200-268-0 CAS number: 56-35-9. Article 57 (d) of Regulation (EC) No 1907/2006 (REACH).
Lead hydrogen arsenate	0.1 % Weight (2)	N			EC Number: 232-064-2 CAS number: 7784-40-9. Article 57 (a and c) of Regulation (EC) No 1907/2006 (REACH).
Benzyl butyl phthalate (BBP)	0.1 % Weight (2)	N			EC Number: 201-622-7 CAS number: 85-68-7. Article 57 (c) of Regulation (EC) 1907/2006 (REACH).