48L - TQFP
Pb-Free Package

PACKAGE MATERIAL DECLARATION DATASHEET

Cypress Package Code	AZ	**Body Size (mil/mm)**	7 X 7 mm
Package Weight – Site 1	B1 :177.9987 mg B2 :168.7510 mg B3 :180.0010 mg	**Package Weight – Site 2**	185.0323 mg

SUMMARY

The 48L-TQFP Pb-Free package is compliant to RoHS. Cypress Ordering Part Numbers containing an "X" (e.g. CY7C1328G-133A**X**I, CY2308S**X**C-1HT) meet the Directive 2002/95/EC (RoHS) requirement.

ASSEMBLY Site 1: Advanced Semiconductor Engineering Taiwan (ASET)
Package Qualification Report #s 034101, 072107, 123303 (Note 1)

I. DECLARATION OF PACKAGED UNITS

II. BANNED SUBSTANCES

Materials from Level A of the EIA/JIG/JGPSSI/EICTA Material Composition Declaration Guide and EU RoHS. Listed in the table below are materials that are neither contained nor intentionally added to this product.

Substances / Compounds	Weight by mg	PPM	Analysis Report (Note 2)
Cadmium and Cadmium Compounds	0	< 5.0	CoA-AZ48-ASET
Hexavalent Chromium and its Compounds	0	< 5.0	
Lead and Lead Compounds	0	< 5.0	
Mercury and Mercury Compounds	0	< 5.0	
Polybrominated Biphenyls (PBB)	0	< 5.0	
Polybrominated Diphenylethers (PBDE)	0	< 5.0	
Asbestos	0	0	As per MSDS
Azo colorants	0	0	As per MSDS
Ozone Depleting Substances	0	0	As per MSDS
Polychlorinated Biphenyls (PCBs)	0	0	As per MSDS
Polychlorinated Napthalenes	0	0	As per MSDS
Radioactive Substances	0	0	As per MSDS
Shortchain Chlorinated Paraffins	0	0	As per MSDS
Tributyl Tin (TBT) and Triphenyl Tin (TPT)	0	0	As per MSDS
Tributyl Tin Oxide (TBTO)	0	0	As per MSDS
Formaldehyde	0	0	As per MSDS

Note 1: Qualification reports are available at www.cypress.com. Access them by doing a Search on the Report #.
Note 2: Report available from Cypress Sales Offices or Distributors.
Note 3: Materials/substances not declared in Section I-A and I-B of this document are considered "non-existent in the product" or a natural impurity. In order to report exactly 100% material composition, some numbers were rounded to the nearest 0.01 percent. Cypress Semiconductor PMDD's are calculated using MSDS, Material Analysis Reports and Cypress Assembly site information.
Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data

B1. MATERIAL COMPOSITION (Note 3)

Using 8340 Epoxy

Material	Purpose of Use	Substance Composition	CAS Number	Weight by mg	% weight of substance per Homogenous material	PPM	% weight of substance per package
Leadframe	Base Material	Cu	7440-50-8	44.7612	91.4800%	251,428	25.1428%
		Ni	7440-02-0	1.3896	2.8400%	7,807	0.7807%
		Si	7440-21-3	0.2985	0.6100%	1,677	0.1677%
		Mg	7439-95-4	0.0685	0.1400%	385	0.0385%
		Ag	7440-22-4	2.4220	4.9500%	13,608	1.3608%
Leadfinish	External Plating	Sn	7440-31-5	7.2600	100.0000%	40,789	4.0789%
Die Attach	Adhesive	Ag	7440-22-4	0.9300	75.0000%	5,225	0.5225%
		Epoxy Resin		0.2500	20.1600%	1,404	0.1404%
		Copper	7440-50-8	0.0200	1.6100%	112	0.0112%
		Gamma-Butyrolactone	96-48-0	0.0200	1.6100%	112	0.0112%
		Aromatic-hydrocarbons	----------	0.0200	1.6100%	112	0.0112%
Die	Circuit	Si	7440-21-3	8.1000	100.0000%	45,508	4.5508%
Wire	Interconnect	Au	7440-57-5	1.4800	100.0000%	8,315	0.8315%
Mold Compound	Encapsulation	Epoxy Resin	85954-11-6	5.5495	5.0000%	31,179	3.1179%
		Phenol Resin	26834-02-6	4.4285	3.9900%	24,881	2.4881%
		SiO2	60676-86-0	98.2372	88.5100%	551,929	55.1929%
		Aromatic Phosphate	139189-30-3	1.6649	1.5000%	9,354	0.9354%
		Others	----------	1.0988	0.9900%	6,173	0.6173%
		Package Weight (mg):		**177.9987**		**% Total:**	**100.0000**

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Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data

B2. MATERIAL COMPOSITION (Note 3):

Using Ablestik 2288A Epoxy

Material	Purpose of Use	Substance Composition	CAS Number	Weight by mg	% weight of substance per Homogenous material	PPM	% weight of substance per package
Leadframe	Base Material	Cu	7440-50-8	45.9066	96.2000%	272,037	27.2037%
		Ni	7440-02-0	1.4316	3.0000%	8,483	0.8483%
		Si	7440-21-3	0.3102	0.6500%	1,838	0.1838%
		Mg	7439-95-4	0.0716	0.1500%	424	0.0424%
Lead Finish	External Plating	Sn	7440-31-5	4.4000	100.0000%	26,074	2.6074%
Die	Silicon	Silicon	7440-21-3	3.4200	100.0000%	20,267	2.0267%
Die Attach	Adhesive	Di-ester resin	Proprietary	0.2598	43.3000%	1,540	0.1540%
		Functionalized ester resin	Proprietary	0.0100	1.6700%	59	0.0059%
		Polymeric material	Proprietary	0.0100	1.6700%	59	0.0059%
		Metal oxide	Proprietary	0.0100	1.6700%	59	0.0059%
		Functionalized urethane	Proprietary	0.0100	1.6700%	59	0.0059%
		Epoxy resin	Proprietary	0.0100	1.6700%	59	0.0059%
		Cyclo-alipathic compound	Proprietary	0.0100	1.6700%	59	0.0059%
		Silver	7440-22-4	0.2800	46.6700%	1,659	0.1659%
Wire	Interconnect	Au	7440-57-5	0.5000	100.0000%	2,963	0.2963%
Mold Compound	Encapsulation	Epoxy Resin	85854-11-6	5.6050	5.0000%	33,215	3.3215%
		Phenol Resin	26834-02-6	4.4840	4.0000%	26,572	2.6572%
		Aromatic Phosphate	139189-30-3	1.6815	1.5000%	9,964	0.9964%
		Silica (SiO_2)	60676-86-0	99.2197	88.5100%	587,965	58.7965%
		Others	----	1.1210	1.0000%	6,643	0.6643%

Package Weight (mg): 168.7510 **% Total: 100.0000**

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Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data

B3. MATERIAL COMPOSITION (Note 3):

Using Copper-Palladium Wire

Material	Purpose of Use	Substance Composition	CAS Number	Weight by mg	% weight of substance per Homogenous material	PPM	% weight of substance per package
Leadframe	Base Material	Copper	7440-50-8	55.8000	90.0000%	309,998	30.9998%
		Silver	7440-22-4	3.6270	5.8500%	20,150	2.0150%
		Nickel	7440-02-0	1.8600	3.0000%	10,333	1.0333%
		Silicon	7440-21-3	0.6200	1.0000%	3,444	0.3444%
		Magnesium	7439-95-4	0.0930	0.1500%	517	0.0517%
Lead Finish	External Plating	Pure Sn	7440-31-5	4.4000	100.0000%	24,444	2.4444%
Die Attach	Adhesive	Silver	7440-22-4	0.5450	77.7462%	3,028	0.3028%
		Epoxy Resin A	9003-36-5	0.0290	4.1369%	161	0.0161%
		Epoxy Resin B	Trade Secret	0.0290	4.1369%	161	0.0161%
		Diluent A	Trade Secret	0.0290	4.1369%	161	0.0161%
		Diluent B	Trade Secret	0.0290	4.1369%	161	0.0161%
		Phenolic Hardener	Trade Secret	0.0390	5.5635%	217	0.0217%
		Dicyandiamide	461-58-5	0.0009	0.1284%	5	0.0005%
		Organic Peroxide	Trade Secret	0.0001	0.0143%	1	0.0001%
Die	Silicon	Si	7440-21-3	2.9000	100.0000%	16,111	1.6111%
Wire	Interconnect	Copper	7440-50-8	0.1998	99.9000%	1,110	0.1110%
		Palladium	7440-05-3	0.0002	0.1000%	1	0.0001%
Mold Compound	Encapsulation	Epoxy Resin A	Trade Secret	4.3920	4.0000%	24,400	2.4400%
		Epoxy Resin B	Trade Secret	4.3920	4.0000%	24,400	2.4400%
		Phenol Resin	Trade Secret	6.5880	6.0000%	36,600	3.6600%
		Carbon Black	1333-86-4	0.4392	0.4000%	2,440	0.2440%
		Silica Fused	60676-86-0	93.9888	85.6000%	522,157	52.2157%

Package Weight (mg): 180.0010 **% Total: 100.0000**

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Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data

II. DECLARATION OF PACKAGING / INDIRECT MATERIALS

Type	Material	Lead PPM	Cadmium PPM	Cr VI PPM	Mercury PPM	PBB PPM	PBDE PPM	Analysis Report (Note2)
Tape & Reel	Cover tape	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-COVT-R
	Carrier tape	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-CART-R
	Plastic Reel	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-PLRL-R
Tray	Tray	< 2.0	< 2.0	< 2.0	< 2.0	---------	---------	CoA-TRAY-R
Others	Shielding bag	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-SBAG –R
	Moisture Barrier bag	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-MBBG-R
	Protective Band	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-PROB-R
	Shipping and Inner Box	< 10.0	< 4.0	< 4.0	< 5.0	---------	----------	CoA-ABOX-R
	Dessicant	< 10.0	< 2.0	< 2.0	< 1.0	< 3.0	< 3.0	CoA-DESS-R
	Bubble Pack	< 2.0	< 2.0	< 2.0	< 2.0	< 100.0	< 90.0	CoA-BUBP-R

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Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data

ASSEMBLY Site 2: Taiwan IC Packaging (TICP)
Package Qualification Report # 121906 (Note 1)

I. DECLARATION OF PACKAGED UNITS

II. BANNED SUBSTANCES

Materials from Level A of the EIA/JIG/JGPSSI/EICTA Material Composition Declaration Guide and EU RoHS. Listed in the table below are materials that are neither contained nor intentionally added to this product.

Substances / Compounds	Weight by mg	PPM	Analysis Report (Note 2)
Cadmium and Cadmium Compounds	0	< 5.0	CoA-AZ48-TICP
Hexavalent Chromium and its Compounds	0	< 5.0	
Lead and Lead Compounds	0	< 5.0	
Mercury and Mercury Compounds	0	< 5.0	
Polybrominated Biphenyls (PBB)	0	< 5.0	
Polybrominated Diphenylethers (PBDE)	0	< 5.0	
Asbestos	0	0	As per MSDS
Azo colorants	0	0	As per MSDS
Ozone Depleting Substances	0	0	As per MSDS
Polychlorinated Biphenyls (PCBs)	0	0	As per MSDS
Polychlorinated Napthalenes	0	0	As per MSDS
Radioactive Substances	0	0	As per MSDS
Shortchain Chlorinated Paraffins	0	0	As per MSDS
Tributyl Tin (TBT) and Triphenyl Tin (TPT)	0	0	As per MSDS
Tributyl Tin Oxide (TBTO)	0	0	As per MSDS
Formaldehyde	0	0	As per MSDS

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Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data

B. MATERIAL COMPOSITION (Note 3) :

Material	Purpose of Use	Substance Composition	CAS Number	Weight by mg	% weight of substance per Homogenous material	PPM	% weight of substance per package
Leadframe	Base Material	Copper	7440-50-8	52.0563	94.3001%	281,336	28.1336%
		Silicon	7440-21-3	0.4002	0.7250%	2,163	0.2163%
		Magnesium	7723-14-0	0.0966	0.1750%	522	0.0522%
		Nickel	7440-02-0	1.7665	3.2000%	9,547	0.9547%
		Silver	7440-22-4	0.8832	1.5999%	4,773	0.4773%
Lead Finish	External Plating	Pure Sn	7440-31-5	3.7914	100.0000%	20,490	2.0490%
Die Attach	Adhesive	Silver	7440-22-4	0.3256	75.5102%	1,760	0.1760%
		Acrylic Resin	Proprietary	0.0625	14.4944%	338	0.0338%
		Acrylate A	Proprietary	0.0129	2.9917%	70	0.0070%
		Acrylate B	Proprietary	0.0216	5.0093%	117	0.0117%
		Organic Peroxide A	Proprietary	0.0043	0.9972%	23	0.0023%
		Organic Peroxide B	Proprietary	0.0043	0.9972%	23	0.0023%
Die	Silicon	Si	7440-21-3	2.3921	100.0000%	12,928	1.2928%
Wire	Interconnect	Au	7440-57-5	0.8722	99.9885%	4,714	0.4714%
		Ion Impurities	Proprietary	0.0001	0.0115%	1	0.0001%
Mold Compound	Encapsulation	Epoxy resin A	Proprietary	6.1132	5.0000%	33,039	3.3039%
		Epoxy, Cresol Novolac	29690-82-2	6.1132	5.0000%	33,039	3.3039%
		Phenol resin	Proprietary	6.1132	5.0000%	33,039	3.3039%
		Metal Hydroxide	Proprietary	6.1132	5.0000%	33,039	3.3039%
		Carbon Black	1333-86-4	0.3668	0.3000%	1,982	0.1982%
		Silica fused	60676-86-0	84.8511	69.4000%	458,575	45.8575%
		Silica fused	7631-86-9	12.2264	10.0000%	66,077	6.6077%
		Silica, cystalline	14808-60-7	0.3668	0.3000%	1,982	0.1982%
Ink	Ink	Titanium Dioxide	13463-67-7	0.0298	37.9135%	161	0.0161
		Epoxide Resin	Proprietary	0.0298	37.9135%	161	0.0161
		Epichlrohydrin-Epoxide	25068-38-6	0.0024	3.0534%	13	0.0013%
		Butyl Cellosolve Acetate	112-07-2	0.0059	7.5064%	32	0.0032%
		1-Methoxy-2-Propyl Acetate	108-65-6	0.0059	7.5064%	32	0.0032%
		Cyclohexanone	108-94-1	0.0024	3.0534%	13	0.0013%
		Solvent Naphtha	64742-94-5	0.0024	3.0534%	13	0.0013%

Package Weight (mg): 185.0323 **% Total: 100.0000**

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Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data

II. DECLARATION OF PACKAGING / INDIRECT MATERIALS

Type	Material	Lead PPM	Cadmium PPM	Cr VI PPM	Mercury PPM	PBB PPM	PBDE PPM	Analysis Report (Note2)
Tape & Reel	Cover tape	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-COVT-R
	Carrier tape	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-CART-R
	Plastic Reel	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-PLRL-R
Tray	Tray	< 2.0	< 2.0	< 2.0	< 2.0	---------	---------	CoA-TRAY-R
Others	Shielding bag	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-SBAG –R
	Moisture Barrier bag	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-MBBG-R
	Protective Band	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-PROB-R
	Shipping and Inner Box	< 10.0	< 4.0	< 4.0	< 5.0	---------	----------	CoA-ABOX-R
	Dessicant	< 10.0	< 2.0	< 2.0	< 1.0	< 3.0	< 3.0	CoA-DESS-R
	Bubble Pack	< 2.0	< 2.0	< 2.0	< 2.0	< 100.0	< 90.0	CoA-BUBP-R

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Note 3: Materials/substances not declared in Section I-A and I-B of this document are considered “non-existent in the product” or a natural impurity. In order to report exactly 100% material composition, some numbers were rounded to the nearest 0.01 percent. Cypress Semiconductor PMDD’s are calculated using MSDS, Material Analysis Reports and Cypress Assembly site information.
Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data

Document History Page

Document Title: 48L-TQFP PB-FREE PACKAGE MATERIAL DECLARATION DATASHEET
Document Number: 001-05906

Rev.	ECN No.	Orig. of Change	Description of Change
**	410066	GFJ	New document
*A	1169963	SSE/ HLR	Add Assembly site 2 in reference to QTP No. 072107. Changed Cypress Logo Added % weight of substance per Homogenous Material and % weight of substance per package on the Material Composition for Assembly Site 1. Completed the RoHS Substances namely; Lead Cadmium, Mercury, Chromium VI, PBB and PBDE on Declaration of Packaging Indirect Materials table for Assembly Site 1. Change analysis report from COA-EZ48-G2 to COA-EZ48-G1 on assembly site1.
*B	3040407	HLR Dcon	Changed the format of material composition for Assembly Site 1. Removed tube type on Indirect Material tables. Change CML to WEB in distribution.
*C	3285928	HLR	Changed the CAS number of Gold substance.
*D	3414374	HLR	Updated the material composition table to reflect 4 decimal places on values.
*E	3679859	JARG	Added Material composition for Assembly Site 3 using Copper Wire.
*F	3804967	JARG	Added Material composition for Assembly Site 4. Reference QTP 121906.
*G	4031242	YUM	Added Assembly Site Name in the Assembly heading. Changed Assembly code to Assembly site name. Consolidate material composition in site 2 and 3 to site 1 in one assembly site (ASET).

Distribution: WEB

Posting: None

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Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data