***PACKAGE MATERIAL DECLARATION DATASHEET (PMDD)

Cypress Package Code	ZZ	Body Size (mil/mm)	4.4 mm
Package Weight – Site 1	109 mg	Package Weight – Site 2	104 mg

SUMMARY

The 28L-TSSOP package is qualified at two assembly sites. Packages from different assembly sites are likely to have different materials composition. However, Cypress guarantees that product ordered with a part number containing an “X” (e.g. CY7C1328G-133A**X**I, CY2308S**X**C-1HT) meets all requirement of the EU RoHS directive.

ASSEMBLY Site 1 – Package Qualification Report # 042701 (Note 1)

I. DECLARATION OF PACKAGED UNITS

A. 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-ZZ28-R
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.

B. MATERIAL COMPOSITION (Note 3)

Material	Purpose of Use	Substance Composition	CAS Number	Weight by mg	PPM	%
Leadframe	Base Material	Cu	7440-50-8	41.93	384,600	38.46%
		Fe	7439-89-6	1.12	10,301	1.03%
		P	7723-14-0	0.06	600	0.06%
		Zn	7440-66-6	0.09	800	0.08%
Lead Finish	External Plating	Ni	7440-02-0	0.19	1,720	0.17%
		Pd	7440-05-3	0.01	87	0.01%
		Au	7440-57-5	0.00	28	0.00%
Die Attach	Adhesive	Ag	7440-22-4	0.18	1,700	0.17%
		Proprietary bismaleimide	---------------------	0.02	189	0.02%
		Proprietary polymer	---------------------	0.01	105	0.01%
		Methacrylate	---------------------	0.00	42	0.00%
		Acrylate ester		0.00	42	0.00%
		Organic peroxide	---------------------	0.00	42	0.00%
Die	Circuit	Si	7440-21-3	3.20	29,400	2.94%
Wire	Interconnect	Au	7440-57-5	1.31	12,033	1.20%
Mold Compound	Encapsulation	Epoxy resin	85954-11-6	3.04	28,000	2.80%
		Phenol resin	26834-02-6	3.04	28,000	2.80%
		Brominated epoxy resin	68541-56-0	0.61	5,600	0.56%
		Antimony trioxide	1309-64-4	0.30	2,800	0.28%
		Silica	60676-86-0	53.24	488,311	48.83%
		Others	---------------------	0.61	5,600	0.56%

Package Weight (mg): 109 % Total: 100

II. DECLARATION OF PACKAGING INDIRECT MATERIALS

Type	Material	Cadmium PPM	Mercury PPM	Analysis Report (Note2)
Tape & Reel	Cover tape	< 5.0	< 5.0	CoA-COVT-R
	Carrier tape	< 5.0	< 5.0	CoA-CART-R
	Plastic Reel	< 5.0	< 5.0	CoA-PLRL-R
Tray	Tray	N/A	N/A	N/A
Tube	Plastic Tube	< 5.0	< 5.0	CoA-PLTB –R
	End Plug	< 5.0	< 5.0	CoA-EPLG –R
	End Pin	< 5.0	TBD	CoA-EPIN –R
Others	Moisture Barrier bag	N/A	N/A	N/A
	Shielding bag	< 5.0	< 5.0	CoA-SBAG –R
	Protective Band	< 5.0	< 5.0	CoA-PROB-R
	Shipping and inner/ pizza box	< 5.0	< 5.0	CoA-ABOX-R
	Desiccant	< 5.0	< 5.0	CoA-DESS-R
	Bubble Pack	< 5.0	< 5.0	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.

ASSEMBLY Site 2 – Package Qualification Report # 024701 (Note 1)

I. DECLARATION OF PACKAGED UNITS

A. 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.

***

Pure Sn Lead Finish

Substances / Compounds	Weight by mg	PPM	Analysis Report (Note 2)
Cadmium and Cadmium Compounds	0	< 5.0	CoA-SP28-T
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.

B. MATERIAL COMPOSITION (Note 3)

Material	Purpose of Use	Substance Composition	CAS Number	Weight by mg	PPM	%
Leadframe	Base Material	Cu	7440-50-8	30.77	295,251	29.53%
		Si	7440-21-3	0.08	756	0.08%
		Ni	7440-02-0	0.70	6,653	0.67%
		Mg	7439-95-4	0.02	151	0.02%
		Ag	7440-22-4	0.05	454	0.05%
Lead Finish	External Plating	Sn	7440-31-5	2.30	22,073	2.21%
Die Attach	Adhesive	Epoxy resin	--------------------	0.02	230	0.02%
		Metal	--------------------	0.01	77	0.01%
		Ag	7440-22-4	0.12	1,152	0.12%
		Others	--------------------	0.01	77	0.01%
Die	Circuit	Si	7440-21-3	3.54	33,970	3.40%
Wire	Interconnect	Au	7440-57-5	0.80	7,677	0.77%
Mold Compound	Encapsulation	Epoxy resin	85954-11-6	2.63	25,259	2.53%
		Phenol resin	26834-02-6	2.63	25,259	2.53%
		Aromatic Phosphate	--------------------	0.66	6,315	0.63%
		Silica	60676-86-0	59.48	570,859	57.09%
		Carbon black	1333-86-4	0.13	1,263	0.13%
		Organic Phosphorus compound (Catalyst)	--------------------	0.14	1,389	0.14%
		Antimony and its compound	7440-36-0	0.06	568	0.06%
		Bromine organic compound	--------------------	0.06	568	0.06%

Package Weight (mg): 104 **% Total: 100**

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.

***

ASSEMBLY Site 2 – Package Qualification Report # 053006 (Note 1)

I. DECLARATION OF PACKAGED UNITS

A. 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.

NiPdAu Lead Finish

Substances / Compounds	Weight by mg	PPM	Analysis Report (Note 2)
Cadmium and Cadmium Compounds	0	< 5.0	CoA-ZZ28-T
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	PPM	%
Leadframe	Base Material	Cu	7440-50-8	30.78	296,000	29.60%
		Si	7440-21-3	0.24	2,264	0.23%
		Mg	7439-95-4	0.06	547	0.05%
		Polymide	---------------------	0.03	292	0.03%
		NBR	---------------------	0.01	49	0.00%
		Bismaleimide	---------------------	0.01	49	0.00%
		Phenol resin		0.00	42	0.00%
		Ag	7440-22-4	1.33	12,761	1.28%
Lead Finish	External Plating	Ni	7440-02-0	0.03	253	0.03%
		Pd	7440-05-3	0.00	44	0.00%
		Au	7440-57-5			
Die Attach	Adhesive	Acrylic resin	---------------------	0.02	215	0.02%
		Polybutadiene derivative	---------------------	0.01	139	0.01%
		Butadiene copolymer	---------------------	0.00	25	0.00%
		Epoxy Resin	---------------------	0.01	51	0.01%
		Acrylate	---------------------	0.01	101	0.01%
		Peroxide	---------------------	0.00	13	0.00%
		Additive	---------------------	0.00	38	0.00%
		Silver	7440-22-4	0.20	1,947	0.19%
Die	Circuit	Si	7440-21-3	3.56	34,225	3.42%
Wire	Interconnect	Au	7440-57-5	0.84	8,069	0.81%
Mold Compound	Encapsulation	Epoxy resin	85954-11-6	3.01	28,930	2.89%
		Phenol resin	26834-02-6	2.67	25,715	2.57%
		Aromatic Phosphate	--------------------	0.87	8,357	0.84%
		Silica	60676-86-0	0.13	1,286	0.13%
		Carbon black	1333-86-4	60.17	578,590	57.86%

Package Weight (mg): 104 % Total: 100

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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	Cadmium PPM	Mercury PPM	Analysis Report (Note2)
Tape & Reel	Cover tape	< 5.0	< 5.0	CoA-COVT-R / CoA-COVT-T
	Carrier tape	< 5.0	< 5.0	CoA-CART-R / CoA-CART-T
	Plastic Reel	< 5.0	< 5.0	CoA-PLRL-R / CoA-PLRL-T
Tray	Tray	N/A	N/A	N/A
Tube	Plastic Tube	< 5.0	< 5.0	CoA-PLTB-R / CoA-PLTB-T
	End Plug	< 5.0	< 5.0	CoA-EPLG-R / CoA-EPLG-T
	End Pin	< 5.0	TBD	CoA-EPIN-R
Others	Moisture Barrier bag	< 5.0	< 5.0	CoA-MBBG-R / CoA-MBBG-T
	Shielding bag	< 5.0	< 5.0	CoA-SBAG-R / CoA-SBAG-T/
	Protective Band	< 5.0	< 5.0	CoA-PROB-R
	Shipping and inner/ pizza box	< 5.0	< 5.0	CoA-ABOX-R / CoA-ABOX-T/
	Desiccant	< 5.0	< 5.0	CoA-DESS-R / CoA-DESS-T/
	Bubble Pack	< 5.0	< 5.0	CoA-BUBP-R / CoA-BUBP-T/

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

Document History Page

Document Title: 28L-TSSOP PB-FREE PMDD
Document Number: 001-04255

Rev.	ECN No.	Orig. of Change	Description of Change
**	390637	YXP	New document.
*A	401531	GFJ	Added PMDD on header. Added Pure Sn Lead Finish in Assembly Site 2 under section 1-A. Added natural impurity in note 3 and note 4. Added Assembly site 2 package information. Added qualified indirect materials applicable to assembly site 2 and updated analysis result.

Distribution: E-CML

Posting: None

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