CYPRESS
PERFORM

PACKAGE MATERIAL DECLARATION DATASHEET

Cypress Package Code	LQ	Body Size (mil/mm)	4.0x4.0 mm
Package Weight – Site 1	27.4300 mg	Package Weight – Site 2	B1: 30.0000 mg B2: 29.4899 mg
Package Weight – Site 3	29.7800 mg	Package Weight – Site 4	42.0500 mg
Package Weight – Site 5	B1: 30.0000 mg B2: 31.6054 mg B3: 31.5816mg	Package Weight – Site 6	N/A

SUMMARY

The QFN 24L 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: PT UNISEM Batam
Package Qualification Report # 071706 (See 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-LQ24-PT UNISEM
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	% weight of substance per Homogeneous material	PPM	% weight of substance per package
Leadframe	Base Material	Cu	7440-50-8	11.7528	97.0500%	428,464	42.8464%
		Fe	7439-89-6	0.3088	2.5500%	11,258	1.1258%
		P	7723-14-0	0.0194	0.1600%	706	0.0706%
		Zn	7440-66-6	0.0254	0.2100%	927	0.0927%
		Pb	7439-92-1	0.0036	0.0300%	132	0.0132%
Lead Finish	External Plating	Ni	7440-02-0	0.2239	93.2800%	8162	0.8162%
		Pd	7440-05-3	0.0101	4.2000%	367	0.0367%
		Au	7440-57-5	0.0060	2.5200%	220	0.0220%
Die Attach	Adhesive	Silver (Ag)	7440-22-4	0.8433	73.9700%	30,742	3.0742%
		Epoxy Resin	9003-36-5	0.1715	15.0400%	6,251	0.6251%
		t-Butyl phenyl_glycidyl ether	3101-60-8	0.0853	7.4800%	3,109	0.3109%
		Dicyadiamide	461-58-5	0.0060	0.5300%	220	0.0220%
		Hardener	Trade Secret	0.0340	2.9800%	1,238	0.1238%
Die	Circuit	Si	7440-21-3	1.7800	100.0000%	64,892	6.4892%
Wire	Interconnect	Au	7440-57-5	0.4000	100.0000%	14,583	1.4583%
Mold Compound	Encapsulation	Silica Fused	60676-86-0	11.0191	93.7000%	401,718	40.1718%
		Epoxy Resin	Trade Secret	0.3528	3.0000%	12,862	1.2862%
		Phenol Resin	Trade Secret	0.3528	3.0000%	12,862	1.2862%
		Carbon Black	1333-86-4	0.0353	0.3000%	1,286	0.1286%
			Package Weight (mg):	**27.4300**		**% Total:**	**100.0000**

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	<0.0005	<0.0005	CoA-PLRL-R
Tray	Tray	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-TRAY-R
Others	Shielding bag	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-SBAG –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: Cypress Manufacturing Limited (CML)
Package Qualification Report # 084602, 120207 (See 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-LQ24-CML
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 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 Gold Palladium Wire

Material	Purpose of Use	Substance Composition	CAS Number	Weight by mg	% weight of substance per Homogeneous material	PPM	% weight of substance per package
Lead frame	Base Material	Copper	7440-50-8	16.0200	96.2162%	534,001	53.4001%
		Silicon	7440-21-3	0.1100	0.6607%	3,667	0.3667%
		Magnesium	7439-95-4	0.0200	0.1201%	667	0.0667%
		Nickel	7440-02-0	0.5000	3.0030%	16,667	1.6667%
Lead Finish	External Plating	Nickel	7440-02-0	0.3378	96.5145%	11,261	1.1261%
		Palladium	7440-05-3	0.0061	1.7428%	203	0.0203%
		Gold	7440-57-5	0.0061	1.7428%	203	0.0203%
Die Attach	Adhesive	Silver	7440-22-4	0.1477	77.7614%	4,923	0.4923%
		Proprietary bismaleimide	Proprietary	0.0200	10.5296%	667	0.0667%
		Proprietary polymer	Proprietary	0.0100	5.2648%	333	0.0333%
		Methacrylate	Proprietary	0.0041	2.1480%	136	0.0136%
		Acrylate ester	Proprietary	0.0041	2.1480%	136	0.0136%
		Organic peroxide	Proprietary	0.0041	2.1480%	136	0.0136%
Die	Circuit	Silicon	7440-21-3	2.8500	100.0000%	95,000	9.5000%
Wire	Interconnect	Gold	7440-57-5	0.9900	99.0000%	33,000	3.3000%
		Palladium	7440-05-3	0.0100	1.0000%	333	0.0333%
Mold Compound	Encapsulation	SiO2	60676-86-0	7.9600	88.8393%	265,334	26.5334%
		Metal OH	- - - - - - - - -	0.3240	3.6161%	10,800	1.0800%
		Phenol Resin	Proprietary	0.2200	2.4554%	7,333	0.7333%
		Epoxy Resin	Proprietary	0.4000	4.4643%	13,333	1.3333%
		Carbon Black	1333-86-4	0.0200	0.2232%	667	0.0667%
		Others	- - - - - - - - -	0.0360	0.4018%	1,200	0.1200%
			Package Weight (mg):	**30.0000**		**% 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 Copper Wire

Material	Purpose of Use	Substance Composition	CAS Number	Weight by mg	% weight of substance per Homogeneous material	PPM	% weight of substance per package
Lead frame	Base Material	Copper	7440-50-8	16.0200	96.2162%	543,237	54.3237%
		Silicon	7440-21-3	0.1100	0.6607%	3,730	0.3730%
		Magnesium	7439-95-4	0.0200	0.1201%	678	0.0678%
		Nickel	7440-02-0	0.5000	3.0030%	16,955	1.6955%
Lead Finish	External Plating	Nickel	7440-02-0	0.3300	94.2857%	11,190	1.1190%
		Palladium	7440-05-3	0.0100	2.8571%	339	0.0339%
		Gold	7440-57-5	0.0100	2.8571%	339	0.0339%
Die Attach	Adhesive	Silver	7440-22-4	0.1600	79.1139%	5,426	0.5426%
		Proprietary bismaleimide	Proprietary	0.0200	9.8892%	678	0.0678%
		Proprietary polymer	Proprietary	0.0100	4.9446%	339	0.0339%
		Methacrylate	Proprietary	0.0041	2.0174%	138	0.0138%
		Acrylate ester	Proprietary	0.0041	2.0174%	138	0.0138%
		Organic peroxide	Proprietary	0.0041	2.0174%	138	0.0138%
Die	Circuit	Silicon	7440-21-3	2.8500	100.00%	96,643	9.6643%
Wire	Interconnect	Copper	7440-50-8	0.4617	100.00%	15,655	1.5655%
Mold Compound	Encapsulation	SiO2	60676-86-0	7.9600	88.6809%	269,923	26.9923%
		Metal OH	- - - - - - - - -	0.3400	3.7879%	11,529	1.1529%
		Phenol Resin	Proprietary	0.2200	2.4510%	7,460	0.7460%
		Epoxy Resin	Proprietary	0.4000	4.4563%	13,564	1.3564%
		Carbon Black	1333-86-4	0.0200	0.2228%	679	0.0679%
		Others	- - - - - - - - -	0.0360	0.4011%	1,221	0.1221%
			Package Weight (mg):	**29.4899**		**% Total:**	**100.00%**

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	<0.0005	<0.0005	CoA-PLRL-R
Tray	Tray	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-TRAY-R
Others	Shielding bag	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-SBAG –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 3: Amkor Technology Philippines (P1/P2)
Package Qualification Report #091203 **(See 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-LQ24-Amkor Philippines (P1/P2)
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 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	%weight of substance per Homogeneous material	PPM	% weight of substance per package
Leadframe	Base Material	Cu	7440-50-8	12.4868	96.2000%	419,300	41.9300%
		Ni	7440-02-0	0.3894	3.0000%	13,076	1.3076%
		Si	7440-21-3	0.0844	0.6500%	2,833	0.2833%
		Mg	7439-95-4	0.0195	0.1500%	654	0.0654%
Lead Finish	External Plating	Ni	7440-02-0	0.3610	97.5700%	12,123	1.2123%
		Pd	7440-05-3	0.0080	2.1600%	268	0.0268%
		Au	7440-57-5	0.0010	0.2700%	34	0.0034%
		Ag	7440-22-4				
Die Attach	Adhesive	Ag	7440-22-4	0.3034	82.0000%	10,188	1.0188%
		Bismaleimide	Proprietary	0.0111	3.0000%	373	0.0373%
		Methacrylate Ester	Proprietary	0.0111	3.0000%	373	0.0373%
		Polymer	Proprietary	0.0037	1.0000%	124	0.0124%
		Acrylate	Proprietary	0.0407	11.0000%	1,367	0.1367%
Die	Circuit	Silicon	7440-21-3	1.5300	100.0000%	51,377	5.1377%
Wire	Interconnect	Au	7440-57-5	0.1500	100.0000%	5,037	0.5037%
Mold Compound	Encapsulation	Phenol Resin	Proprietary	1.2942	9.0000%	43,459	4.3459%
		Epoxy Resin	Proprietary	1.2942	9.0000%	43,459	4.3459%
		Carbon Black	1333-86-4	0.0719	0.5000%	2,414	0.2414%
		Silica Fused	60676-86-0	9.3470	65.0000%	313,868	31.3868%
		Crystalline Silica	14808-60-7	0.2876	2.0000%	9,657	0.9657%
		Metal hydro oxide	proprietary	2.0851	14.5000%	70,017	7.0017%

Package Weight (mg): 29.7800 **% Total: 100.0000**

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	<0.0005	<0.0005	CoA-PLRL-R
Tray	Tray	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-TRAY-R
Others	Shielding bag	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-SBAG –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 4: CARSEM Malaysia
Package Qualification Report #081801 **(See 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-LQ24-CARSEM
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 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	%weight of substance per Homogeneous material	PPM	% weight of substance per package
Leadframe	Base Material	Cu	7440-50-8	14.2071	95.8000%	337,863	33.7863%
		Ni	7440-02-0	0.4746	3.2000%	11,286	1.1286%
		Si	7440-21-3	0.1186	0.8000%	2,821	0.2821%
		Mg	7439-95-4	0.0297	0.2000%	705	0.0705%
Lead Finish	External Plating	Ni	7440-02-0	0.1727	90.9000%	4,107	0.4107%
		Pd	7440-05-3	0.0150	7.9000%	357	0.0357%
		Au	7440-57-5	0.0023	1.2000%	54	0.0054%
Die Attach	Adhesive	Ag	7440-22-4	0.0994	71.0000%	2,364	0.2364%
		Bismaleimide resin	Proprietary	0.0042	3.0000%	100	0.0100%
		Carbocyclic Acrylate	Proprietary	0.0280	20.0000%	666	0.0666%
		Additive	Proprietary	0.0042	3.0000%	99.88109	0.0100%
		Acrylate ester	Proprietary	0.0042	3.0000%	99.88109	0.0100%
Die	Circuit	Silicon	7440-21-3	1.8700	100.0000%	44,471	4.4471%
Wire	Interconnect	Au	7440-57-5	0.2500	100.0000%	5,945	0.5945%
Mold Compound	Encapsulation	Fused Silica	60676-86-0	23.2095	93.7000%	551,950	55.1950%
		Epoxy Resin	Proprietary	0.7431	3.0000%	17,672	1.7672%
		Phenol Resin	proprietary	0.7431	3.0000%	17,672	1.7672%
		Carbon Black	1333-86-4	0.0743	0.3000%	1,767	0.1767%

Package Weight (mg): 42.0500 **% Total: 100.0000**

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	<0.0005	<0.0005	CoA-PLRL-R
Tray	Tray	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-TRAY-R
Others	Shielding bag	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-SBAG –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 5: Advanced Semiconductor Engineering Taiwan (ASET)
Package Qualification Report # 112108, 114401 / 120604 (See 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-LQ24-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

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

B1. MATERIAL COMPOSITION (Note 3)
Using Gold Wire

Material	Purpose of Use	Substance Composition	CAS Number	Weight by mg	% Weight of substance per Homogeneous material	PPM	% weight of substance per package
Lead Frame	Base material	Copper	7440-50-8	14.2376	96.2000%	474,587	47.4587%
		Nickel	7440-02-0	0.4440	3.0000%	14,800	1.4800%
		Silicon	7440-21-3	0.0962	0.6500%	3,207	0.3207%
		Magnesium	7439-95-4	0.0222	0.1500%	740	0.0740%
Lead Finish	External Plating	Nickel	7440-02-0	0.1905	95.2500%	6,350	0.6350%
		Palladium	7440-05-3	0.0074	3.6800%	245	0.0245%
		Gold	7440-57-5	0.0021	1.0700%	71	0.0071%
Die Attach	Adhesive	Silver	7440-22-4	0.4830	70.0000%	16,100	1.6100%
		Acrylic Resin	------------------	0.0518	7.5000%	1,725	0.1725%
		Polybutadiene derivative	------------------	0.0638	9.2500%	2,128	0.2128%
		Butadiene copolymer	------------------	0.0242	3.5000%	805	0.0805%
		Acrylate	------------------	0.0518	7.5000%	1,725	0.1725%
		Peroxide	------------------	0.0069	1.0000%	230	0.0230%
		Additive	------------------	0.0086	1.2500%	288	0.0288%
Die	Circuit	Silicon	7440-21-3	1.1000	100.0000%	36,667	3.6667%
Wire	Interconnect	Gold	7440-57-5	0.2000	99.9900%	6,666	0.6666%
		Ion Impurities	------------------	0.0000	0.0100%	0.6667	0.0001%
Mold Compound	Encapsulation	Epoxy Resin A	------------------	0.5855	4.5000%	19,515	1.9515%
		Epoxy Resin B	------------------	0.3903	3.0000%	13,010	1.3010%
		Phenol Resin	------------------	0.8587	6.6000%	28,622	2.8622%
		Carbon Black	1333-86-4	0.0651	0.5000%	2,168	0.2168%
		Silica Fused	60676-86-0	11.1105	85.4000%	370,351	37.0351%
			Package Weight (mg):	**30.0000**		**% 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 Copper Palladium Wire

Material	Purpose of Use	Substance Composition	CAS Number	Weight by mg	% Weight of substance per Homogeneous material	PPM	% weight of substance per package
Lead Frame	Base material	Copper	7440-50-8	14.2352	96.2000	449,585	44.9585
		Nickel	7440-02-0	0.4439	3.0000	14,020	1.4020
		Silicon	7440-21-3	0.0962	0.6500	3,038	0.3038
		Magnesium	7439-95-4	0.0222	0.1500	701	0.0701
Lead Finish	External Plating	Nickel	7440-02-0	0.1929	95.2500	6,092	0.6092
		Palladium	7440-05-3	0.0075	3.6800	235	0.0235
		Gold	7440-57-5	0.0022	1.0700	68	0.0068
Die Attach	Adhesive	Silver	7440-22-4	0.2450	70.0000	7,738	0.7738
		Acrylic Resin	------------------	0.0263	7.5000	829	0.0829
		Polybutadiene derivative	------------------	0.0324	9.2500	1,022	0.1022
		Butadiene copolymer	------------------	0.0123	3.5000	387	0.0387
		Acrylate	------------------	0.0263	7.5000	829	0.0829
		Peroxide	------------------	0.0035	1.0000	111	0.0111
		Additive	------------------	0.0044	1.2500	138	0.0138
Die	Circuit	Silicon	7440-21-3	1.2050	100.0000	39,889	3.9889
Wire	Interconnect	Copper	7440-50-8	0.0487	97.3000	1,536	0.1536
		Palladium	7440-05-3	0.0014	2.7000	43	0.0043
Mold Compound	Encapsulation	Epoxy Resin A	------------------	0.6750	4.5000	21,318	2.1318
		Epoxy Resin B	------------------	0.4500	3.0000	14,212	1.4212
		Phenol Resin	------------------	0.9900	6.6000	31,267	3.1267
		Carbon Black	1333-86-4	0.0750	0.5000	2,369	0.2369
		Silica Fused	60676-86-0	12.8100	85.4000	404,573	40.4573
			Package Weight (mg):	**31.6054**		**% Total:**	**100.0000**

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B3. MATERIAL COMPOSITION (Note 3)

Using Copper Wire

Material	Purpose of Use	Substance Composition	CAS Number	Weight by mg	% Weight of substance per Homogeneous material	PPM	% weight of substance per package
Lead Frame	Base material	Copper	7440-50-8	14.2352	96.2000	452,198	45.2198
		Nickel	7440-02-0	0.4439	3.0000	14,102	1.4102
		Silicon	7440-21-3	0.0926	0.6500	3,055	0.3055
		Magnesium	7439-95-4	0.0222	0.1500	705	0.0705
Lead Finish	External Plating	Nickel	7440-02-0	0.1929	95.2500	6,127	0.6127
		Palladium	7440-05-3	0.0075	3.6800	237	0.0237
		Gold	7440-57-5	0.0022	1.0700	69	0.0069
Die Attach	Adhesive	Silver	7440-22-4	0.2310	70.0000	7,338	0.7338
		Acrylic Resin	-----------------	0.0248	7.5000	786	0.0786
		Polybutadiene derivative	-----------------	0.0305	9.2500	970	0.0970
		Butadiene copolymer	-----------------	0.0116	3.5000	367	0.0367
		Acrylate	-----------------	0.0248	7.5000	786	0.0786
		Peroxide	-----------------	0.0033	1.0000	105	0.0105
		Additive	-----------------	0.0041	1.2500	131	0.0131
Die	Circuit	Silicon	7440-21-3	1.2050	100.0000	34,943	3.4943
Wire	Interconnect	Copper	7440-50-8	0.0500	100.0000	1,588	0.1588
Mold Compound	Encapsulation	Epoxy Resin A	-----------------	0.6750	4.5000	21,442	2.1442
		Epoxy Resin B	-----------------	0.4500	3.0000	14,295	1.4295
		Phenol Resin	-----------------	0.9900	6.6000	31,449	3.1449
		Carbon Black	1333-86-4	0.0750	0.5000	2,382	0.2382
		Silica Fused	60676-86-0	12.8100	85.4000	406,925	40.6925
			Package Weight (mg):	**31.5816**		**% Total:**	**100.0000**

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	<0.0005	<0.0005	CoA-PLRL-R
Tray	Tray	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-TRAY-R
Others	Shielding bag	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-SBAG –R

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Document History Page

Document Title: 24L - QFN 4.0 X 4.0 MM (SAW VERSION) PB- FREE PACKAGE MATERIAL DECLARATION DATASHEET
Document Number: 001-15690

Rev.	ECN No.	Orig. of Change	Description of Change
**	1126686	JSO/ HLR	Initial spec release.
*A	2553825	MAHA	Changed reference QTP for Assembly Site 1 to 071706. Changed distribution from CML to WEB
*B	2558354	RZY	Refreshed field in the header on document history page. Correct spec number was entered but field failed to update. Removed extra “Rev.” and inserted required fields in the footers.
*C	2647572	MAHA	Added data for assembly site 2.
*D	2695138	DPT	Added Amkor Phil (P3) for additional site of 24QFN (LQ24A).
*E	2709113	DPT	Added Carsem Malaysia for additional site of 24QFN (LQ24A).
*F	2751654	MAHA	Revised the material composition table for assembly site 1.
*G	2934854	MAHA	Corrected the lead frame composition for assembly site 2.
*H	3264886	VFR	Added PMDD for Assembly Site 5. Reference QTP # 112108.
*I	3298119	HLR	Removed tube material on Declaration of Packaging for Indirect Material.
*J	3453554	VFR	Added PMDD for Assembly Site 6. Reference QTP # 114401 – ASEK Copper wire qualification.
*K	3602037	COPI VFR	Added PMDD for Assembly site 7. Reference QTP # 120207 – CML RA Copper Wire Qualification. Align PMDD of Assembly site 2 (CML-RA) to current MSDS report. Added Table B2 for Site 6 PMDD with reference QTP # 120604 – ASEK Pure Cu Wire qualification.

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Document Title: 24L - QFN 4.0 X 4.0 MM (SAW VERSION) PB- FREE PACKAGE MATERIAL DECLARATION DATASHEET

Document Number: 001-15690

Rev.	ECN No.	Orig. of Change	Description of Change
*L	4055135	YUM	Added assembly site name in the assembly heading in site 1, 2, 3, 4, 5 and 6. Changed Assembly code to assembly site name in site 1, 2, 3, 4, 5 and 6. Update material composition in site 1, site 2:B2, site 3, site 4 and site 5:B1 to reflect 4 decimal values. Consolidate material composition in one assembly site: 1. CML 2. ASET

Distribution: WEB

Posting: None

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