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PRODUCT CHANGE NOTIFICATION

PCN: PCN135246

Date: September 14, 2013

Subject: Qualification of Cypress Minnesota Inc. as an alternative wafer fabrication site and Copper Palladium as an alternative wire bond option for select PSoC Capsense Controller Product families.

To: PCN ADMINISTRATOR
CYPRESS PCN ADMIN
pcn_admin@cypress.com

Change Type: Major

Description of Change:

Cypress announces the qualification of an alternate wafer fabrication site, Cypress's in-house wafer manufacturing facility, Cypress Minnesota Inc. (CMI), for select PSoC Capsense Controller Product families (CY8C20xx7 & CY8C20055).

This product will run on SONOS8 process technology, which has been previously qualified at CMI to support production quantities. The SONOS8 technology is also qualified at Cypress's subcontractor site Grace Semiconductor Manufacturing Corporation (GSMC).

Effective 90 days from the date of this notification, shipments may be sourced from any qualified manufacturing site, i.e., CMI and GSMC.

Cypress also announces the qualification of Copper Palladium (CuPd) as an alternate wire bond option to Gold (Au) in 16QFN package for select PSoC Capsense Controller Product families.

Effective 90 days from the date of this notification, shipments may be sourced from any qualified assembly site, i.e., Advanced Semiconductor Engineering (ASE) and Cypress Manufacturing Ltd. (CML).

Benefit of Change:

Cypress will have the added capability to meet varying market demand, and to ensure consistent and reliable delivery performance to customers.

Affected Part Numbers:

Affected Parts: 105

See part number list in the attachment.

Customer Part Numbers Affected:

Affected Parts: N/A

Qualification Status:

The alternate wafer fabrication site has been qualified through a series of tests identified in the Qualification Test Plan (QTP) Report #130702. The alternate wire bond option has been qualified through a series of tests identified in QTP Reports #132703 and #132901. The QTP report can be found in the attachment to this notification or by visiting www.cypress.com, typing the QTP number in the search window, and clicking on the magnifying glass icon.

Sample Status:

Qualification samples are not built ahead of time for all part numbers affected by this change. Please review the attached table for a list of affected part numbers with their associated sample ordering part numbers. If you require qualification samples, please contact your sales representative as soon as possible, but within 30 days of the date of this PCN.

Qualification sample orders received after 30 days from the date of this PCN and qualification sample orders for parts which do not have a listed sample ordering part number in the table above will be subject to lead times.

Approximate Implementation Date:

This change will be implemented 90 days from the date of this notification. Effective 90 days from the date of this notification, all shipments of the affected part numbers will be fabricated at either CMI or GSMC and with either CuPd or Au wire bonds.

Anticipated Impact:

Products manufactured are completely compatible with existing product from a functional, parametric, and quality performance perspective.

Cypress also recommends that customers take this opportunity to review these changes against current application notes, system design considerations and customer environment conditions to assess impact (if any) to their application.

Method of Identification:

Cypress maintains traceability of product to wafer level, including wafer fabrication location, through the lot number marked on the package.

Response Required:

No response is required.

For additional information regarding this change, contact your local sales representative or contact the PCN Administrator at pcn_adm@cypress.com.

Sincerely,

Cypress PCN Administration

Item	Marketing Part Number	Sample Ordering Part Number
1	CY8C20045-24LKXI	CY8C200454-24LKXIIKA
		CY8C200454-24LKXIIKG
		CY8C200455-24LKXIIKA
		CY8C200455-24LKXIIKG
2	CY8C20045-24LKXIT	CY8C200454-24LKXIIKA
		CY8C200454-24LKXIIKG
		CY8C200455-24LKXIIKA
		CY8C200455-24LKXIIKG
3	CY8C20055-24LKXI	CY8C200554-24LKXIIKA
		CY8C200554-24LKXIIKG
		CY8C200555-24LKXIIKA
		CY8C200555-24LKXIIKG
4	CY8C20055-24LKXIT	CY8C200554-24LKXIIKA
		CY8C200554-24LKXIIKG
		CY8C200555-24LKXIIKA
		CY8C200555-24LKXIIKG
5	CY8C20055-24SXI	CY8C200554-24SXIIKO
6	CY8C20055-24SXIT	CY8C200554-24SXIIKO
7	CY8C20065-24LKXI	CY8C200654-24LKXIIKA
		CY8C200654-24LKXIIKG
		CY8C200655-24LKXIIKA
		CY8C200655-24LKXIIKG
8	CY8C20065-24LKXIT	CY8C200654-24LKXIIKA
		CY8C200654-24LKXIIKG
		CY8C200655-24LKXIIKA
		CY8C200655-24LKXIIKG
9	CY8C20110-LDX2I	CY8C201104-LDX2IIKG
10	CY8C20110-LDX2IT	CY8C201104-LDX2IIKG
11	CY8C20140-LDX2I	Available to order; subject to lead time
12	CY8C20140-LDX2IT	Available to order; subject to lead time
13	CY8C20160-LDX2I	Available to order; subject to lead time
14	CY8C20160-LDX2IT	Available to order; subject to lead time
15	CY8C20180-LDX2I	Available to order; subject to lead time
16	CY8C20180-LDX2IT	Available to order; subject to lead time
17	CY8C201A0-LDX2I	Available to order; subject to lead time
18	CY8C201A0-LDX2IT	Available to order; subject to lead time
19	CY8C20224-12LKXI	Available to order; subject to lead time
20	CY8C20224-12LKXIT	Available to order; subject to lead time
21	CY8C20234-12LKXI	Available to order; subject to lead time
22	CY8C20234-12LKXIT	Available to order; subject to lead time
23	CY8C20236A-24LKXI	CY8C20236A4-24LKXIIKG
24	CY8C20236A-24LKXIT	CY8C20236A4-24LKXIIKG
25	CY8C20237-24LKXI	CY8C202374-24LKXIIKG
26	CY8C20237-24LKXIT	CY8C202374-24LKXIIKG
27	CY8C20237-24SXI	Available to order; subject to lead time
28	CY8C20246A-24LKXI	Available to order; subject to lead time
29	CY8C20246A-24LKXIT	Available to order; subject to lead time
30	CY8C20246AS-24LKXI	Available to order; subject to lead time
31	CY8C20247-24LKXI	CY8C202474-24LKXIIKG
32	CY8C20247-24LKXIT	CY8C202474-24LKXIIKG
33	CY8C20247-24SXI	Available to order; subject to lead time
34	CY8C20247S-24LKXI	Available to order; subject to lead time
35	CY8C20247S-24LKXIT	Available to order; subject to lead time
36	CY8C20337-24LQXI	Available to order; subject to lead time

37	CY8C20337-24LQXIT	Available to order; subject to lead time
38	CY8C20347-24LQXI	Available to order; subject to lead time
39	CY8C20347-24LQXIT	Available to order; subject to lead time
40	CY8C20347S-24LQXI	CY8C20347S4-24LQXIKG
41	CY8C20347S-24LQXIT	CY8C20347S4-24LQXIKG
42	CY8C20437-24LQXI	CY8C204374-24LQXIKG
43	CY8C20437-24LQXIT	CY8C204374-24LQXIKG
44	CY8C20447-24LQXI	Available to order; subject to lead time
45	CY8C20447-24LQXIT	Available to order; subject to lead time
46	CY8C20447S-24LQXI	Available to order; subject to lead time
47	CY8C20447S-24LQXIT	Available to order; subject to lead time
48	CY8C20467-24LQXI	Available to order; subject to lead time
49	CY8C20467-24LQXIT	Available to order; subject to lead time
50	CY8C20467S-24LQXI	Available to order; subject to lead time
51	CY8C20467S-24LQXIT	Available to order; subject to lead time
52	CY8C20637-24LQXI	CY8C206374-24LQXIKG
53	CY8C20637-24LQXIT	CY8C206374-24LQXIKG
54	CY8C20647-24LQXI	Available to order; subject to lead time
55	CY8C20647-24LQXIT	Available to order; subject to lead time
56	CY8C20647S-24LQXI	Available to order; subject to lead time
57	CY8C20647S-24LQXIT	Available to order; subject to lead time
58	CY8C20667-24LQXI	Available to order; subject to lead time
59	CY8C20667-24LQXIT	Available to order; subject to lead time
60	CY8C20667S-24LQXI	Available to order; subject to lead time
61	CY8C20667S-24LQXIT	Available to order; subject to lead time
62	CY8C21223-24LGXI	CY8C212235-24LGXIKG
63	CY8C21223-24LGXIT	CY8C212235-24LGXIKG
64	CY8CMBR2044-24LKXI	CY8CMBR20444-24LKXIKG
65	CY8CMBR2044-24LKXIT	CY8CMBR20444-24LKXIKG
66	CY8CTST200A-16LGXI	Available to order; subject to lead time
67	CY8CTST200A-16LGXIT	Available to order; subject to lead time
68	CY7C60413-16LKXC	Available to order; subject to lead time
69	CY7C60413-16LKXCT	Available to order; subject to lead time
70	CY7C64315-16LKXC	CY7C643154-16LKXCKG
71	CY7C64315-16LKXCT	CY7C643154-16LKXCKG
72	CY7C64316-16LKXC	Available to order; subject to lead time
73	CY7C64316-16LKXCT	Available to order; subject to lead time
74	CG7216AM	CG7216KGA
75	CG7216AMT	CG7216KGA
76	CG7246AM	CG7246KGA
77	CG7246AMT	CG7246KGA
78	CG7432AF	Available to order; subject to lead time
79	CG7432AFT	Available to order; subject to lead time
80	CG7465AF	Available to order; subject to lead time
81	CG7465AFT	Available to order; subject to lead time
82	CG7471AM	Available to order; subject to lead time
83	CG7471AMT	Available to order; subject to lead time
84	CG7602AA	Available to order; subject to lead time
85	CG7602AAT	Available to order; subject to lead time
86	CG7635AM	Available to order; subject to lead time
87	CG7635AMT	Available to order; subject to lead time
88	CG7776AM	Available to order; subject to lead time
89	CG7776AMT	Available to order; subject to lead time
90	CP7417AT	CP7417KGA
91	CP7417ATT	CP7417KGA

92	CP7660AT	Available to order; subject to lead time
93	CP7660ATT	Available to order; subject to lead time
94	CP7664AT	Available to order; subject to lead time
95	CP7664ATT	Available to order; subject to lead time
96	CP7665AT	Available to order; subject to lead time
97	CP7665ATT	Available to order; subject to lead time
98	CP7701AT	Available to order; subject to lead time
99	CP7701ATT	Available to order; subject to lead time
100	CP7861AT	Available to order; subject to lead time
101	CP7861ATT	Available to order; subject to lead time
102	CS7141AM	Available to order; subject to lead time
103	CS7141AMT	Available to order; subject to lead time
104	CS7148AT	Available to order; subject to lead time
105	CS7148ATT	Available to order; subject to lead time

Not Applicable	24 QFN
Not Applicable	24 QFN
Not Applicable	24 QFN
CMI+ASE+Cu	24 QFN
CMI+ASE+Cu	24 QFN
CMI+ASE+Cu	32 QFN
CMI+ASE+Cu	32 QFN
Not Applicable	32 QFN
CMI+ASE+Cu	48 QFN
CMI+ASE+Cu	48 QFN
Not Applicable	48 QFN
GSMC+ASE+CuPd	16 QFN
GSMC+ASE+CuPd	16 QFN
CMI+ASE+CuPd	16 QFN
CMI+ASE+CuPd	16 QFN
Not Applicable	16 QFN
CMI+ASE+CuPd	16 QFN
CMI+ASE+CuPd	16 QFN
Not Applicable	16 QFN
Not Applicable	16 QFN
CMI+ASE+CuPd	16 QFN
Not Applicable	16 QFN
GSMC+ASE+CuPd	16 QFN
GSMC+ASE+CuPd	16 QFN



PACKAGE MATERIAL DECLARATION DATASHEET

Cypress Package Code	LG	Body Size (mil/mm)	3x3x0.6mm
Package Weight – Site 1	B1 : 13.9899 mg B2 : 15.1901 mg	Package Weight – Site 2	20.5801 mg
Package Weight – Site 3	16.7999 mg	Package Weight – Site 4	B1 : 13.8347 mg B2 : 13.0455 mg B3 : 19.7932 mg
Package Weight – Site 5	12.7001 mg		

SUMMARY

The QFN COL 16L Pb-Free package is compliant to RoHS. Cypress Ordering Part Numbers containing an “X” (e.g. CY7C1328G-133AXI, CY2308SXC-1HT) meet the Directive 2002/95/EC (RoHS) requirement.

**ASSEMBLY Site 1: Amkor Technology Philippines (P1/P2)
Package Qualification Report #063602, 104001 (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-LG16- 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

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.



**16L – QFN 3x3x0.6mm
Chip On Leads (Saw Version)
Pb-Free Package**

B. MATERIAL COMPOSITION (Note 3)

B1 : NiPdAu with Hitachi Mold Compound

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	5.9079	98.6300%	422,297	42.2297%
		Si	7440-21-3	0.0401	0.6700%	2,869	0.2869%
		Mg	7439-95-4	0.0090	0.1500%	642	0.0642%
	Frame Plating	Ag	7440-22-4	0.0329	0.5500%	2,355	0.2355%
Lead Finish	External Plating	Ni	7440-02-0	0.1867	98.2400%	13,342	1.3342%
		Pd	7440-05-3	0.0031	1.6300%	221	0.0221%
		Au	7440-57-5	0.0002	0.1300%	18	0.0018%
Die Attach	Adhesive	Specific Epoxy Resin	(Trade secret)	0.0210	15.0000%	1,501	0.1501%
		Bisphenol A Glycidylether	25068-38-6	0.0070	5.0000%	500	0.0500%
		Fused Silica	60676-86-0	0.0980	70.0000%	7,005	0.7005%
		Additive	-----	0.0140	10.0000%	1,001	0.1001%
Die	Circuit	Si	7440-21-3	1.1900	100.0000%	85,061	8.5061%
Wire	Interconnect	Au	7440-57-5	0.0600	100.0000%	4,289	0.4289%
Mold Compound	Encapsulation	Epoxy Resin-1	(Trade secret)	0.2568	4.0000%	18,356	1.8356%
		Epoxy Resin-2	(Trade secret)	0.1284	2.0000%	9,178	0.9178%
		Phenol resin	(Trade secret)	0.1926	3.0000%	13,767	1.3767%
		Silica Fused	60676-86-0	5.3158	82.8000%	379,969	37.9969%
		Carbon Black	1333-86-4	0.0128	0.2000%	918	0.0918%
		Metal Hydroxide	(Trade secret)	0.3210	5.0000%	22,945	2.2945%
		Others	-----	0.1926	3.0000%	13,767	1.3767%

Package Weight (mg): 13.9899

% Total: 100.0000

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.



**16L – QFN 3x3x0.6mm
Chip On Leads (Saw Version)
Pb-Free Package**

B2 : NiPdAu-Ag with Sumitomo Mold Compound

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	7.0996	96.2000%	467384	46.7384%
		Si	7440-21-3	0.0480	0.6500%	3158	0.3158%
		Ni	7440-02-0	0.2214	3.0000%	14575	1.4575%
		Mg	7439-95-4	0.0111	0.1500%	729	0.0729%
Lead Finish	External Plating	Ni	7440-02-0	0.0098	97.5400%	642	0.0642%
		Pd	7440-05-3	0.0002	2.0700%	14	0.0014%
		Au-Ag	7440-57-5 7440-22-4	0.0000	0.3900	3	0.0003%
Die Attach	Adhesive	Epoxy	Proprietary	0.0300	15.0000%	1975	0.1975%
		Silica	7631-86-9	0.1400	70.0000%	9217	0.9217%
		Bisphenol	Proprietary	0.0100	5.0000%	658	0.0658%
		Additive	Proprietary	0.0200	10.0000%	1317	0.1317%
Die	Circuit	Si	7440-21-3	0.4100	100.0000%	26991	2.6991%
Wire	Interconnect	Au	7440-57-5	0.0693	99.0400%	4564	0.4564%
		Others	-----	0.0007	0.9600%	44	0.0044%
Mold Compound	Encapsulation	Silica Fused	60676-86-0	6.1944	87.0000%	407795	40.7795%
		Epoxy Resin	(Trade secret)	0.5340	7.5000%	35155	3.5155%
		Phenol resin	(Trade secret)	0.3560	5.0000%	23436	2.3436%
		Carbon Black	1333-86-4	0.0356	0.5000%	2344	0.2344%

Package Weight (mg): 15.1901

% 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	<0.0005	<0.0005	CoA-COVT-R
	Carrier tape	< 2.0	< 2.0	< 2.0	< 2.0	<0.0005	<0.0005	CoA-CART-R
	Plastic Reel	< 5.0	< 5.0	< 5.0	< 10.0	<50.0	<45.0	CoA-PLRL-R
Tray	Tray	< 5.0	< 0.5	< 0.16	< 0.5	-----	-----	CoA-TRAY-R
Others	Shielding bag	<2.0	<2.0	<2.0	<2.0	<5.0	<5.0	CoA-SBAG –R CoA-SBAG –M

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.



**16L – QFN 3x3x0.6mm
Chip On Leads (Saw Version)
Pb-Free Package**

**ASSEMBLY Site 2 – CARSEM Malaysia
Package Qualification Report #100303 (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-LG16-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

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.



**16L – QFN 3x3x0.6mm
Chip On Leads (Saw Version)
Pb-Free Package**

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	9.2927	95.9000%	451,541	45.1541%
		Si	7440-21-3	0.0485	0.5000%	2,354	0.2354%
		Ni	7440-02-0	0.3392	3.5000%	16,480	1.6480%
		Mg	7439-95-4	0.0097	0.1000%	471	0.0471%
Lead Finish	External Plating	Ni	7440-02-0	0.1091	90.9100%	5,301	0.5301%
		Pd	7440-05-3	0.0095	7.9100%	461	0.0461%
		Au	7440-57-5	0.0014	1.1900%	69	0.0069%
Die Attach	Adhesive	Treated silica	Proprietary	0.0024	8.0000%	117	0.0117%
		Glycol ethers	Proprietary	0.0066	22.0000%	321	0.0321%
		Metal Oxide	Proprietary	0.0093	31.0000%	452	0.0452%
		Curing agent & hardener	Proprietary	0.0024	8.0000%	117	0.0117%
		Epoxy resin	-----	0.0093	31.0000%	452	0.0452%
Die	Circuit	Si	7440-21-3	0.4100	100.0000%	19,922	1.9922%
Wire	Interconnect	Au	7440-57-5	0.2000	100.0000%	9,718	0.9718%
Mold Compound	Encapsulation	Silica Fused	60676-86-0	9.4918	93.7000%	461,215	46.1215%
		Epoxy Resin	(Trade secret)	0.3039	3.0000%	14,767	1.4767%
		Phenol resin	(Trade secret)	0.3039	3.0000%	14,767	1.4767%
		Carbon Black	1333-86-4	0.0304	0.3000%	1,477	0.1477%

Package Weight (mg): 20.5801

% 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	<0.0005	<0.0005	CoA-COVT-R
	Carrier tape	< 2.0	< 2.0	< 2.0	< 2.0	<0.0005	<0.0005	CoA-CART-R
	Plastic Reel	< 5.0	< 5.0	< 5.0	< 10.0	<50.0	<45.0	CoA-PLRL-R
Tray	Tray	< 5.0	< 0.5	< 0.16	< 0.5	-----	-----	CoA-TRAY-R
Others	Shielding bag	<2.0	<2.0	<2.0	<2.0	<5.0	<5.0	CoA-SBAG –R CoA-SBAG –M

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.



**16L – QFN 3x3x0.6mm
Chip On Leads (Saw Version)
Pb-Free Package**

**ASSEMBLY Site 3: Amkor Technology Seoul Korea
Package Qualification Report 104205 (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-LG16-AMKOR Seoul
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.



**16L – QFN 3x3x0.6mm
Chip On Leads (Saw Version)
Pb-Free Package**

B. MATERIAL COMPOSITION (Note 3)

Material	Purpose	Substance Composition	CAS Number	Weight by mg	% weight of substance per Homogenous material	PPM	% weight of substance per package
Leadframe	Base material	Copper (Cu)	7440-50-8	7.0997	96.4900%	422603	42.2603%
		Nickel (Ni)	7440-02-0	0.2001	2.7200%	11913	1.1913%
		Silicon (Si)	7440-21-3	0.0478	0.6500%	2847	0.2847%
		Magnesium (Mg)	7439-95-4	0.0103	0.1400%	613	0.0613%
Leadfinish	External Plating	Nickel (Ni)	7440-02-0	0.2162	96.9400%	12868	1.2868%
		Palladium (Pd)	7440-05-3	0.0051	2.2800%	303	0.0303%
		Gold-Silver (Au-Ag)	7440-57-5 / 7440-22-4	0.0017	0.7800%	104	0.0104%
Die Attach	Adhesive	Epoxy resin	Proprietary	0.2058	98.0000%	12250	1.2250%
		Silica	Proprietary	0.0042	2.0000%	250	0.0250%
Die	Circuit	Silicon	7440-21-3	1.8600	100.0000%	110714	11.0714%
Wire	Interconnect	Gold (Au)	7440-57-5	0.0750	100.0000%	4464	0.4464%
Mold compound	Encapsulation	Epoxy resin	Proprietary	0.5298	7.4900%	31538	3.1538%
		Phenolic resin	Proprietary	0.3502	4.9500%	20843	2.0843%
		Silica, vitreous (SiO ₂)	60676-86-0	6.1600	87.0800%	366669	36.6669%
		Carbon black	1333-86-4	0.0198	0.2800%	1179	0.1179%
		Bismuth compounds	Proprietary	0.0071	0.1000%	421	0.0421%
		Organic phosphorous compounds	Proprietary	0.0071	0.1000%	421	0.0421%

Package Weight (mg): 16.7999

% 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	<0.0005	<0.0005	CoA-COVT-R
	Carrier tape	< 2.0	< 2.0	< 2.0	< 2.0	<0.0005	<0.0005	CoA-CART-R
	Plastic Reel	< 5.0	< 5.0	< 5.0	< 10.0	<50.0	<45.0	CoA-PLRL-R
Tray	Tray	< 5.0	< 0.5	< 0.16	< 0.5	-----	-----	CoA-TRAY-R
Others	Shielding bag	<2.0	<2.0	<2.0	<2.0	<5.0	<5.0	CoA-SBAG –R CoA-SBAG –M

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Note 2: Report available from Cypress Sales Offices or Distributors.

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



**ASSEMBLY Site 4: Advanced Semiconductor Engineering Taiwan (ASET)
Package Qualification Report # 112603, 114903, 132901 (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-LG16-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.



**16L – QFN 3x3x0.6mm
Chip On Leads (Saw Version)
Pb-Free Package**

B. MATERIAL COMPOSITION (Note 3)

B1: Gold Wire

Material	Purpose	Substance Composition	CAS Number	Weight by mg	% weight of substance per Homogenous material	PPM	% weight of substance per package
Leadframe	Base material	Nickel (Ni)	7440-02-0	0.1648	3.2000%	11,912	1.1912
		Silicon (Si)	7440-21-3	0.0386	0.7500%	2,792	0.2792
		Magnesium (Mg)	7439-95-4	0.0093	0.1800%	670	0.0670
		Copper (Cu)	7440-50-8	4.9378	95.8800%	356,911	35.6911
Leadfinish	External Plating	Nickel (Ni)	7440-02-0	0.1201	93.8500%	8,681	0.8681
		Palladium (Pd)	7440-05-3	0.0049	3.8400%	355	0.0355
		Gold-Silver (Au-Ag)	7440-57-5 7440-22-4	0.0030	2.3100%	214	0.0214
Die Attach	Adhesive	Epoxy Resin	64425-84-4	0.1638	12.0000%	11,843	1.1843
		Phenol Resin	Proprietary	0.1638	12.0000%	11,843	1.1843
		SiO2 Filler	Proprietary	0.0683	5.0000%	4,935	0.4935
		Acrylic copolymer	Proprietary	0.9694	71.0000%	70,072	7.0072
Die	Circuit	Silicon (Si)	7440-21-3	0.9000	100.0000%	65,053	6.5053
Wire	Interconnect	Gold (Au)	7440-57-5	0.0500	100.0000%	3,614	0.3614
Mold compound	Encapsulation	Epoxy Resin A	Proprietary	0.2808	4.5000%	20,300	2.0300
		Epoxy Resin B	Proprietary	0.1872	3.0000%	13,533	1.3533
		Phenol Resin	Proprietary	0.4119	6.6000%	29,773	2.9773
		Carbon Black	1333-86-4	0.0312	0.5000%	2,256	0.2256
		Silica Fused	60676-86-0	5.3298	85.4000%	385,244	38.5244

Package Weight (mg): **13.8347**

% Total: **100.0000**

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.



**16L – QFN 3x3x0.6mm
Chip On Leads (Saw Version)
Pb-Free Package**

B2: Copper Wire

Material	Purpose	Substance Composition	CAS Number	Weight by mg	% weight of substance per Homogenous material	PPM	% weight of substance per package
Leadframe	Base material	Nickel	7440-02-0	0.1648	3.1997%	12630	1.2630%
		Silicon	7440-21-3	0.0386	0.7499%	2960	0.2960%
		Magnesium	7439-95-4	0.0093	0.1800%	710	0.0710%
		Copper	7440-50-8	4.9369	95.8704%	378438	37.8438%
Leadfinish	External Plating	Gold-Silver	7440-57-5 7440-22-4	0.0030	2.3485%	230	0.0230%
		Palladium	7440-05-3	0.0050	3.9379%	386	0.0386%
		Nickel	7440-02-0	0.1198	93.7136%	9185	0.9185%
Die Attach	Adhesive	Epoxy Resin	64425-84-4	0.0468	12.0000%	3587	0.3587%
		Phenol Resin	Trade Secret	0.0468	12.0000%	3587	0.3587%
		SiO2 Filler	Trade Secret	0.0195	5.0000%	1495	0.1495%
		Acrylic Copolymer	Trade Secret	0.2769	71.0000%	21226	2.1226%
Die	Circuit	Si	7440-21-3	1.5280	100.0000%	117130	11.7130%
Wire	Interconnect	Copper	7440-50-8	0.0200	100.0000%	1533	0.1533%
Mold compound	Encapsulation	Epoxy Resin A	Trade secret	0.2624	4.5000%	20111	2.0111%
		Epoxy Resin B	Trade secret	0.1749	3.0000%	13407	1.3407%
		Phenol Resin	Trade secret	0.3848	6.6000%	29496	2.9496%
		Carbon Black	1333-86-4	0.0292	0.5000%	2235	0.2235%
		Silica Fused	60676-86-0	4.9788	85.4000%	381654	38.1654%

Package Weight (mg): 13.0455

% Total: 100.0000

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.



**16L – QFN 3x3x0.6mm
Chip On Leads (Saw Version)
Pb-Free Package**

B3: Copper-Palladium Wire

Material	Purpose	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	6.8302	96.2000	345,078	34.5078
		Nickel	7440-02-0	0.2130	3.0000	10,761	1.0761
		Silicon	7440-21-3	0.0462	0.6500	2,334	0.2334
		Magnesium	7439-95-4	0.0107	0.1500	541	0.0541
Leadfinish	External Plating	Sn	7440-57-5	1.9000	100.0000	95,993	9.5993
Die Attach	Adhesive	Phenol Resin	Trade Secret	0.0748	12.0000	3,779	0.3779
		Novolak Epoxy Resin	Trade Secret	0.0748	12.0000	3,779	0.3779
		Amorphous Silica	68611-44-9	0.0374	6.0000	1,890	0.1890
		Acrylic Copolymer	Trade Secret	0.4361	70.0000	22,033	2.2033
Die	Circuit	Si	7440-21-3	1.9200	100.0000	97,003	9.7003
Wire	Interconnect	Copper	7440-50-8	0.6099	99.9800	30,814	3.0814
		Palladium	7440-05-3	0.0001	0.0200	5	0.0005
Mold compound	Encapsulation	Epoxy Resin	Trade Secret	0.6112	8.0000	30,879	3.0879
		Phenol Resin	Trade Secret	0.4584	6.0000	23,159	2.3159
		Carbon Black	1333-86-4	0.0229	0.3000	1,157	0.1157
		Silica Fused	60676-86-0	6.5475	85.7000	330,795	33.0795
Package Weight (mg):				19.7932		% 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	<0.0005	<0.0005	CoA-COVT-R
	Carrier tape	< 2.0	< 2.0	< 2.0	< 2.0	<0.0005	<0.0005	CoA-CART-R
	Plastic Reel	< 5.0	< 5.0	< 5.0	< 10.0	<50.0	<45.0	CoA-PLRL-R
Tray	Tray	< 5.0	< 0.5	< 0.16	< 0.5	-----	-----	CoA-TRAY-R
Others	Shielding bag	<2.0	<2.0	<2.0	<2.0	<5.0	<5.0	CoA-SBAG –R CoA-SBAG –M

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



**16L – QFN 3x3x0.6mm
Chip On Leads (Saw Version)
Pb-Free Package**

**ASSEMBLY Site 5: Cypress Manufacturing Ltd. (CML)
Package Qualification Report # 132703 (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-LG16-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

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.



**16L – QFN 3x3x0.6mm
Chip On Leads (Saw Version)
Pb-Free Package**

**B. MATERIAL COMPOSITION (Note 3)
Copper-Palladium Wire**

Material	Purpose	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	2.9699	96.2000	233,853	23.3853
		Nickel	7440-02-0	0.0926	3.0000	7,293	0.7293
		Silicon	7440-21-3	0.0201	0.6500	1,580	0.1580
		Magnesium	7439-95-4	0.0046	0.1500	365	0.0365
Leadfinish	External Plating	Nickel	7440-02-0	0.0620	96.5204	4,883	0.4883
		Palladium	7440-05-3	0.0011	1.7370	88	0.0088
		Gold	7440-57-5	0.0006	0.8713	44	0.0044
		Silver	7440-22-4	0.0006	0.8713	44	0.0044
Die Attach	Adhesive	Fused Silica	60676-86-0	0.1823	70.0000	14,354	1.4354
		Epoxy Resin	Trade Secret	0.0391	15.0000	3,076	0.3076
		Bisphenol A Glycidylether	25068-38-6	0.0339	13.0000	2,666	0.2666
		Additive	Trade Secret	0.0052	2.0000	410	0.0410
Die	Circuit	Si	7440-21-3	3.6460	100.0000	287,089	28.7089
Wire	Interconnect	Copper	7440-50-8	0.2194	99.0000	17,272	1.7272
		Palladium	7440-05-3	0.0022	1.0000	174	0.0174
Mold compound	Encapsulation	SiO ₂	60676-86-0	4.7565	87.7500	374,524	37.4524
		Phenol Resin	Trade secret	0.2710	5.0000	21,340	2.1340
		Epoxy Resin	Trade secret	0.3794	7.0000	29,877	2.9877
		Carbon Black	1333-86-4	0.0136	0.2500	1,067	0.1067
Package Weight (mg):				12.7001	% 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	<0.0005	<0.0005	CoA-COVT-R
	Carrier tape	< 2.0	< 2.0	< 2.0	< 2.0	<0.0005	<0.0005	CoA-CART-R
	Plastic Reel	< 5.0	< 5.0	< 5.0	< 10.0	<50.0	<45.0	CoA-PLRL-R
Tray	Tray	< 5.0	< 0.5	< 0.16	< 0.5	-----	-----	CoA-TRAY-R
Others	Shielding bag	<2.0	<2.0	<2.0	<2.0	<5.0	<5.0	CoA-SBAG –R CoA-SBAG –M

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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: 16L - QFN 3X3X0.6MM CHIP ON LEADS (SAW VERSION) PB-FREE PACKAGE
 MATERIAL DECLARATION DATASHEET
 Document Number: 001-11888

Rev.	ECN No.	Orig. of Change	Description of Change
**	602896	EBZ	Initial spec release.
*A	2741730	MAHA Dcon	Corrected the package weight of assembly site 1 on page 1. Corrected the following data on the material composition table of assembly site 1: a. Weight by mg b. % weight of substance per Homogeneous material c. % weight of substance per package d. Package weight Change CML to WEB in distribution list.
*B	2889372	EBZ	Included additional assembly site Carsem Malaysia (CA) Corrected title in the document history page to match the title in the header.
*C	3072300	JSO	Included assembly site #3 Added B2
*D	3103478	NKZ	Corrected Material Composition in Assembly 3.
*E	3210958	MAHA	Corrected the QTP number of assembly site 2 from 0100303 to 100303.
*F	3260116	VFR	Added QTP # 104903 to Assembly Site 3
*G	3304831	VFR	Added PMDD for Site 4.
*H	3422772	HLR	Updated the material composition table for Assembly Sites 1 to 4 to reflect 4 decimal places on values.
*I	3464531	EBZ	Added QTP # 114903 to Assembly Site 4. Added package weight B2 for Site 4. Added B1 Gold Wire for Material Composition table for Site-4. Added Material Composition table B2 Copper Wire for Site-4
*J	4052625	YUM	Added assembly site name in the Assembly heading in site 1, 2, 3 and 4. Changed Assembly code to Assembly site name in site 1, 2, 3 and 4. Removed entire Tube row in the Indirect materials section.
*K	4113495	HLR	Added CuPd material composition for Assembly Site 4. Added Assembly Site 5 for CML – CuPd.

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



**16L – QFN 3x3x0.6mm
Chip On Leads (Saw Version)
Pb-Free Package**

Distribution: WEB

Posting: None

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.