



Cypress Semiconductor Corporation, 198 Champion Court, San Jose, CA 95134. Tel: (408) 943-2600

## PRODUCT CHANGE NOTIFICATION

**PCN:** PCN195103

**Date:** February 27, 2020

**Subject:** Qualification of ASE Kaohsiung (ASE-KH) as an Additional Assembly Site for Select 40-Lead QFN Pb-Free IoT Products

**To:** PCN Coordinator PCN Coordinator  
FUTURE  
PCN.System@Future.ca

**Change Type:** Major

### Description of Change:

Cypress announces the qualification of Advanced Semiconductor Engineering-Kaohsiung (ASE-KH, 26 Chin 3rd Road, Nantze Export Processing Zone, Kaohsiung, Taiwan 811, ROC) as an additional assembly site for select 40-Lead QFN Pb-Free IoT products.

The 40-Lead QFN Pb-Free package is assembled at ASE-KH using the following Bill of Materials:

Material	ASE-KH Bill of Materials	SPIL Taiwan Bill of Materials
Mold Compound	Sumitomo G700LA	Hitachi CEL-9240- HF-10
Leadframe	Shinko C7025	Shinko C7025
Leadfinish	Matte Sn	Matte Sn
Die Attach Material	Hitachi EN-4900F	Hitachi EN-4900GC
Bond Wire	Nippon 0.7mil CuPdAu	Nippon 0.7mil CuPdAu

### Benefit of Change:

Qualification of alternate manufacturing sites is part of the ongoing flexible manufacturing initiative announced by Cypress. The goal of the flexible manufacturing initiative is to provide the means for Cypress to continue to meet delivery commitments through dynamic, changing market conditions.

### Part Numbers Affected: 6

See the attached 'Affected Parts List' file for a list of all part numbers affected by this change. Note that any new parts that are introduced after the publication of this PCN will include all changes outlined in this PCN.

**Qualification Status:**

This assembly site has been qualified through a series of tests documented in the Qualification Test Plan QTP#194905. This qualification report can be found as an attachment to this PCN or by visiting [www.cypress.com](http://www.cypress.com) and typing the QTP number in the keyword search window.

**Sample Status:**

Qualification samples may not be built ahead of time for all part numbers affected by this change. Please review the attached 'Affected Parts List' file for a list of affected part numbers with their associated ASE-KH sample ordering part numbers. Samples are available now unless there is an indication that the sample ordering part numbers are subject to lead times. If you require qualification samples, please contact your local Cypress sales representative as soon as possible, preferably within 30 days of the date of this PCN, to place any sample orders.

**Approximate Implementation Date:**

Effective 90 days from the date of this notification or upon customer approval, whichever comes first, all shipments of Commercial, Industrial and Automotive non-PPAP part numbers in the attached file will be assembled at ASE-KH or other approved assembly sites.

**Anticipated Impact:**

Products assembled at the new site are completely compatible with existing products from form, fit, functional, parametric and quality performance perspectives.

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](mailto:pcn_adm@cypress.com).

Sincerely,

Cypress PCN Administration

Name of part		Material
LQ40D	Leadframe	C7025
	Epoxy	EN-4900F
	Wire	CuPdAu Wire
	Mold Compound	EME-G700LA (L-A)

Vendor	SDS	ICP (RoHS)	Expiry Date
SHINKO	 SDS_SHINKO_C7 025_Ag_202 20507_(Security	 SHI_C7025_Ag_ 20191227_( Security C).pdf	20191227
Hitachi	 SDS_HIT_EN490 0F_2022040 1_(Security	 HIT_EN4900F_2 0200730_( Security C).pdf	20200730
Nippon	 SDS_NIP_EX1P_ plus_20220 212_(Security	 NIP_EX1P_plus_2 0200218_( Security C).pdf	20200218
Sumitomo	 SDS_SUM_EME_ G700LA Type LA_2021	 SUM_G700LA series_2020 1016_(Security	20201016



### Material Composition Declaration

© Copyright 2005. IPC, Bannockburn, Illinois. All rights reserved under both international and Pan-American copyright conventions.

This document is a declaration of the substances within the manufacturer listed item. Note: if the item is an assembly with lower level parts, the declaration encompasses all lower level materials for which the manufacturer has engineering responsibility.

**Adobe Reader version 7.0.5 is required to complete this declaration.**

1752-2 1.1	IPC Web Site for Information on IPC-1752 Standard <a href="http://www.ipc.org/IPC-175x">http://www.ipc.org/IPC-175x</a>	Form Type * Distribute	Declaration Class * Class 6 - RoHS Yes/No, Homogeneous Materials and Mfg Informat
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#### Supplier Information

Company Name *	Company Unique ID	Unique ID Authority	Response Date *	Response Document ID				
Cypress Semiconductor Corp	CYPRESS		2019-11-04					
Contact Name *	Title - Contact	Phone - Contact *	Email - Contact *	Duplicate Contact -> Authorized Representative				
QA Customer Support	QA Customer Support	6328497500	qacs_team@cypress.com					
Authorized Representative *	Title - Representative	Phone - Representative *	Email - Representative *	Supplier Comments or URL for Additional Information				
Jeff Gary Balesca	Sr EHS Engr	6328497500	jgtb@cypress.com					
Requester Item Number	Mfr Item Number	Mfr Item Name	Effective Date	Version	Manufacturing Site	Weight *	UOM	Unit Type
QFN40	QFN 40 (LQ40D) -5x5x0.6mm	QFN 40 (LQ40D) -5x5x0.6mm	2019-11-04		ASE Taiwan	47.698	mg	Each
Alternate Recommendation				Alternate Item Comments	QTP No. 192004			

#### Manufacturing Process Information

Terminal Plating / Grid Array Material	Terminal Base Alloy	J-STD-020 MSL Rating	Peak Process Body Temperature	Max Time at Peak Temperature	Number of Reflow Cycles
Tin (Sn)	CU Alloy	3	260 C	30 seconds	3

Comments

**Direct Material Analysis Report - Mold (002-26415) , Die Attach (001-79592), Leadframe (001-80100), Bondwire (002-26275), Leadfinish (001-79867)**

\* Required Field

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Save the fields in this form to a file	<input type="button" value="Export Data"/>	Import fields from a file into this form	<input type="button" value="Import Data"/>	Clear all of the fields on this form	<input type="button" value="Reset Form"/>	Lock the fields on this form to prevent changes	<input type="button" value="Lock Supplier Fields"/>
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<b>RoHS Material Composition Declaration</b>	<b>Declaration Type *</b>	<input type="button" value="Detailed"/>
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<b>RoHS Directive 2002/95/EC</b>	<b>RoHS Definition:</b> Quantity limit of 0.1% by mass (1000 PPM) in homogeneous material for: Lead (Pb), Mercury, Hexavalent Chromium, Polybrominated Biphenyls (PBB), Polybrominated Diphenyl Ethers (PBDE) and quantity limit of 0.01% by mass (100 PPM) of homogeneous material for Cadmium
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Please indicate whether any homogeneous material (as defined by the RoHS Directive, EU 2002/95/EC and implemented by the laws of the European Union member states) of the part identified on this form contains lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls and/or polybrominated diphenyl ethers (each a "RoHS restricted substance") in excess of the applicable quantity limit identified above. If a homogeneous material within the part contains a RoHS restricted substance in excess of an applicable quantity limit, please indicate below which, if any, RoHS exemption you believe may apply. If the part is an assembly with lower level components, the declaration shall encompass all such components. Supplier certifies that it gathered the information it provides in this form using appropriate methods to ensure its accuracy and that such information is true and correct to the best of its knowledge and belief, as of the date that Supplier completes this form. Supplier acknowledges that Company will rely on this certification in determining the compliance of its products with European Union member state laws that implement the RoHS Directive. Company acknowledges that Supplier may have relied on information provided by others in completing this form, and that Supplier may not have independently verified such information. However, in situations where Supplier has not independently verified information provided by others, Supplier agrees that, at a minimum, its suppliers have provided certifications regarding their contributions to the part, and those certifications are at least as comprehensive as the certification in this paragraph. If the Company and the Supplier enter into a written agreement with respect to the identified part, the terms and conditions of that agreement, including any warranty rights and/or remedies provided as part of that agreement, will be the sole and exclusive source of the Supplier's liability and the Company's remedies for issues that arise regarding information the Supplier provides in this form. In the absence of such written agreement, the warranty rights and/or remedies of Supplier's Standard Terms and Conditions of Sale applicable to such part shall apply.

<b>RoHS Declaration *</b>	1 - Item(s) does not contain RoHS restricted substances per the definition above	<b>Supplier Acceptance *</b>	<input type="button" value="Accepted"/>
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**Exemptions:** If the declared item does not contain RoHS restricted substances per the definition above except for defined RoHS exemptions, then select the corresponding response in the RoHS Declaration above and choose all applicable exemptions.

<b>Declaration Signature</b>
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**Instructions:** Complete all of the required fields on all pages of this form. Select the "Accepted" on the Supplier Acceptance drop-down. This will display the signature area. Digitally sign the declaration (if required by the Requester) and click on Submit Form to have the form returned to the Requester.

Supplier Digital Signature	<b>Jeff Gary Ballesca</b>	Digitally signed by Jeff Gary Ballesca Date: 2019.11.04 12:06:49 -08'00'
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### Homogeneous Material Composition Declaration for Electronic Products

**Subitem Instructions:** The presence of any JIG Level A or B substances must be declared. [1] indicate the subpart in which the substance is located, [2] provide a description of the homogeneous material [3], enter the weight of the homogeneous material.

**Substance Instructions:** [A] select the Level (JIG A, JIG B, Requester or Supplier) [B] select the substance category (JIG or Requester) or enter a value (Supplier). [C] select the substance (JIG) or enter the substance and CAS (Other). [D] select a RoHS exemption, if applicable [E] enter the weight of the substance or the PPM concentration [F] Optionally enter the positive (+) and negative (-) tolerance in percent (Note: percent tolerance values are expected to cover a 3 sigma range of distribution unless otherwise noted).

**Line Functions:** +I Inserts a New Item /Subitem +M Inserts a new Material +C Inserts a new Substance Category +S Inserts a new Substance - Deletes the element line

+I	-I	Item/Subitem Name	+M	-M	Homogeneous Material	Weight	Unit of Measure	+C	-C	Level	Substance Category	+S	-S	Substance	CAS	Exempt	Weight	Unit of Measure	Tolerance		PPM
																			-	+	
		Base Material			Leadframe	20.098	mg			Supplier	Ni			Ni	7440-02-0		0.802	mg			16,814
										Supplier	Si			Si	7440-21-3		0.14	mg			2,935
										Supplier	Mg			Mg	7439-95-4		0.04	mg			838
										Supplier	Pd			Pd	7440-05-3		0.01	mg			210
										Supplier	Au			Au	7440-57-5		0.006	mg			126
										Supplier	Cu			Cu	7440-50-8		19.1	mg			400,42
		External Plating			Leadfinish	0.4	mg			Supplier	Tin			Tin	7440-31-5		0.4	mg			8,386
		Adhesive			Die Attach	1.9	mg			Supplier	Acrylic Resin			Acrylic Resin	Trade Sec		0.1425	mg			2,988
										Supplier	Polybutadiene deriv			Polybutadiene derivativ	Trade Sec		0.19	mg			3,983
										Supplier	Butadiene copolym			Butadiene copolymer	Trade Sec		0.0095	mg			199
										Supplier	Acrylate			Acrylate	Trade Sec		0.1425	mg			2,988
										Supplier	Peroxide			Peroxide	Trade Sec		0.0095	mg			199
										Supplier	Additive			Additive	Trade Sec		0.0285	mg			598
										Supplier	Silver			Silver	7440-22-4		1.3775	mg			28,880
		Circuit			Die	3.9	mg			Supplier	Silicon			Silicon	7440-21-3		3.9	mg			81,764
		Interconnect			Wire	0.2	mg			Supplier	Copper			Copper	7440-50-8		0.1931	mg			4,048
										Supplier	Palladium			Palladium	7440-05-3		0.0062	mg			130
										Supplier	Gold			Gold	7440-57-5		0.0007	mg			15
		Encapsulation			Mold Compound	21.2	mg			Supplier	Epoxy Resin			Epoxy Resin	Trade sec		1.696	mg			35,537
										Supplier	Phenol Resin			Phenol Resin	Trade sec		0.848	mg			17,779
										Supplier	Silica(Amorphous) A			Silica(Amorphous) A	60676-86-0		16.8328	mg			352,90
										Supplier	Silica(Amorphous) B			Silica(Amorphous) B	7631-86-9		1.696	mg			35,537
										Supplier	Carbon Black			Carbon Black	1333-86-4		0.1272	mg			2,667

\* Required Field

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# Cypress Semiconductor Reliability Qualification Report

QTP# 194905, 194905a Version \*\*

## CYW20721B1 / CYW20719B1

**Qualification of ASE Kaohsiung (ASE-KH) as an Additional Assembly  
Site for CYW20721B1 / CYW20719B1**

FOR ANY QUESTIONS ON THIS REPORT, PLEASE CONTACT  
[reliability@cypress.com](mailto:reliability@cypress.com) or via a CYLINK CRM CASE

**Prepared By:**  
BL Chan  
Reliability Engineer

**Reviewed By:**  
Yusaku Ohta  
Reliability Manager

**Approved By:**  
David Hoffman  
Reliability Director



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## I.A. Product and Package Information

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**Product Description:** CYW20721B1KUMLG      **Cypress Division:** IoT Division  
Enhanced Low Power, Bluetooth 5.0/BLE/2 Mbps LE/EDR/Integrated SOC

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**Package:** QFN      **QTP:** 194905  
**Description:** (5 x 5 x 0.6mm) 40 Lead, Quad Flat No Lead Package (QFN)      **Flammability: O2 Index:**  
**Assembly:** ASE Taiwan      **Molding Compound:** Sumitomo EME G700LA      UL-V0      >28  
**Electrical Test:** ASE Taiwan  
**Substrate/Leadframe:** Copper Leadframe      **Die Attachment:** Hitachi EN-4900F  
**Lead Finish:** 100% Matte Sn Plating  
**Comments:**

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**Est. Field Temperature:** 55 °C      **Life Test Temperature:** 125 °C  
**Est. DC Field Current:** 20 mA      **Life Test Dynamic Current:** 20 mA  
**Est. Field Voltage:** 1.2 V      **Life Test Voltage:** 1.38 V  
**Est. Field Power Dissipation:** 24 mWatts      **Est. Stress Power Dissipation:** 27.6 mWatts

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**Die:** 20739PB1DA      **Die Size:** 3.35 x 3.26 mm  
**Process:** 40NM LP      **Fab:** TSMC  
**Type:** QFN      **Density:** N/A

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## I.B. Product and Package Information

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**Product Description:** CYW20719B1KUMLG      **Cypress Division:** IoT Division  
Enhanced Low Power, Bluetooth 5.0/BLE/2 Mbps LE/EDR/Integrated SOC

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**Package:** QFN      **QTP:** 194905a  
**Description:** (5 x 5 x 0.6mm) 40 Lead, Quad Flat No Lead Package (QFN)      **Flammability: O2 Index:**  
**Assembly:** ASE Taiwan      **Molding Compound:** Sumitomo EME G700LA      UL-V0      >28  
**Electrical Test:** ASE Taiwan  
**Substrate/Leadframe:** Copper Leadframe      **Die Attachment:** Hitachi EN-4900F  
**Lead Finish:** 100% Matte Sn Plating  
**Comments:**

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**Est. Field Temperature:** 55 °C      **Life Test Temperature:** 125 °C  
**Est. DC Field Current:** 20 mA      **Life Test Dynamic Current:** 20 mA  
**Est. Field Voltage:** 1.2 V      **Life Test Voltage:** 1.38 V  
**Est. Field Power Dissipation:** 24 mWatts      **Est. Stress Power Dissipation:** 27.6 mWatts

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**Die:** 20739PB1DA      **Die Size:** 3.35 x 3.26 mm  
**Process:** 40NM LP      **Fab:** TSMC  
**Type:** QFN      **Density:** N/A

## II. 40nm GLL/LP/RF Life Test Failure Rate Calculation

### HTOL Stress Temperature - 125 °C

Failure Mechanism	Read Points / Test Results				Modeling Parameters @ 55 °C					Avg. Failure Rate FITS @ 55 °C, 60% Conf.	
	24 hrs	168 hrs	500 hrs	1000 hrs	Ea eV	TAF	VAF	OAF	MTTF (yrs)	PPM	FIT
<b>PLASTIC</b>											
Sample Size	2716	2519	1559	1559							
Zero fails, Process ave. Ea	0*	0	0	0	0.66	71	1	71			
<b>Totals</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>					<b>14269</b>	<b>0</b>	<b>8</b>

\* - Contributes to early life FITS

### III. Summary of Stress Test Results

Stress Test	Stress Condition	Package Type	Sample Size	Num. of Lots	Num. of Fails	Failure Rate %	Comments
<b>Generic Reference Data:</b>							
<b>High Temp Bake</b>	(175°C)	QFN <sup>1</sup>	45	1	0	0.00	500 Hours
<b>ESD CDM</b>	N/A	QFN <sup>1</sup>	3	1	0	0.00	Passed 1.0kV
<b>Preconditioning</b>	(PC2/260°C, +0°C/-5°C)	QFN <sup>1</sup>	383	3	Passed		
<b>Precon+Temp Cycle</b>	(PC2/260°C, -65°C/150°C)	QFN <sup>1</sup>	231	3	0	0.00	500 Cycles
<b>Precon+HAST</b>	(PC2/260°C, Biased, 130°C/85% RH)	QFN <sup>1</sup>	75	3	0	0.00	96 Hours
<b>Precon+uHAST</b>	(PC2/260°C, Unbiased, 130°C/85% RH)	QFN <sup>1</sup>	75	3	0	0.00	96 hours

**Notes / Justification:** 1) Results from Qual 192004, CYW20721B2KUMLG in 40 Lead QFN (5 x 5 x 0.6mm)

**Preconditioning Flows:** PC2 (JEDEC L3): Bake 125°C, 24hr => Soak @ 30°C/60%RH, 192hr => 3x Reflow

#### Reliability Tests Performed per Specification Requirements

Stress	Condition	Specification Reference
ESD CDM	N/A	JS002 / AEC-Q100-011
High Temp Bake	(175°C)	JESD22-A103
Precon+HAST	(PC2/260°C, Biased, 130°C/85% RH)	JESD22-A110
Precon+Temp Cycle	(PC2/260°C, -65°C/150°C)	JESD22-A104
Precon+uHAST	(PC2/260°C, Unbiased, 130°C/85% RH)	JESD22-A118
Preconditioning	(PC2/260°C, +0°C/-5°C)	J-STD-020

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## IV. Revision History

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**Document Number:** 002-29330**Document Title:** Qualification of ASE Kaohsiung (ASE-KH) as an Additional Assembly Site for CYW20721B1 / CYW20719B1

Rev.	Issue Date	ECN#	Originator	Description
**	12/19/2019	6756712	BAKC	Initial Release.

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<b>Marketing Part Number</b>	<b>Sample Order Part Number</b>	<b>Sample Availability</b>
CYW20719B1KUMLG	CYW20719B1KUMLGKG	Available
CYW20719B1KUMLGT	CYW20719B1KUMLGKG	Available
CYW20721B1KUMLG	CYW20721B1KUMLGKG	Available
CYW20721B1KUMLGT	CYW20721B1KUMLGKG	Available
CG9124AM	CG9124ZM	Available
CG9124AMT	CG9124ZM	Available