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

PRODUCT CHANGE NOTIFICATION

PCN: PCN203102 **Date:** July 27, 2020

Subject: Qualification of ASE Kaohsiung (ASE-KH) as an Additional Bumping and Finish Process Site for Select WLCSP 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 Inc. (ASE-KH, No.47, Kaifa Road, N.E.P.Z. Kaohsiung City 811, Taiwan, R.O.C.) as an additional bumping and finish process site for select WLCSP products. ASE-KH is Cypress' existing manufacturing site for many other WLCSP products in high volume production mode.

The WLCSP package are assembled at ASE-KH using the following Bill of Materials:

Material	ASE-KH Bill of Materials	NEPES (DECATECH) Bill of Materials
Passivation	PBO (HD8820)	PBO (HD8820)
RDL	Cu	Cu
UBM Seed Layer	Ti, 1000A	Ti, 1000A
UBM Seed Layer	Cu, 2000A	Cu, 2000A
UBM	Cu, 8.9um (before etch) or 8.6um (post etch)	Cu, 9um (before etch) or 8.6um (post etch)
Solder Bump	SAC405	SAC405

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: 35
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 Qualification Test Plans QTP#192301 and QTP#192302. These qualification reports can be found as attachments to this PCN or by visiting 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 ASEKH 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 ASEKH 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.

Sincerely,

Cypress PCN Administration

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Cypress Semiconductor
Package Qualification Report

QTP# 192302 VERSION**
June 2020

68-Ball WLCSP (FL68A) 3.52x3.91x0.40mm

42-Ball WLCSP (FN42A) 2.63x3.18x0.55mm

60-Ball WLCSP (FN60B) 4.654x5.814x0.568mm

68-Ball WLCSP (FN68A) 3.52x3.91x0.55mm

72-Ball WLCSP (FN72A) 4.25x4.98x0.60mm

76-Ball WLCSP (FN76A) 3.87x4.04x0.55mm

99-Ball WLCSP (FN99A) 5.192x5.940x0.6mm

MSL1, 260C

ASEK-Taiwan (AH)

FOR ANY QUESTIONS ON THIS REPORT, PLEASE CONTACT
reliability@cypress.com

Prepared By:
Honesto Sintos
Reliability Engineer

Reviewed By:
Lorena Zapanta
Reliability Manager

Approved By:
David Hoffman
Reliability Director

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PACKAGE QUALIFICATION HISTORY

QTP Number	DESCRIPTION OF QUALIFICATION PURPOSE	Date
154802	New WLCSP Assembly Site Qualification at ASE-Taiwan (G) using 25-Ball WLCSP	Jan. 2016
181107	Qualification of 80-ball WLCSP (3.676x3.19x0.467mm) Package at ASEK-Taiwan (AH) with 0.35mm staggered pitch using High Temp PBO HD8820 at MSL1, 260C Reflow Temperature	May 2018
183314	Qualification of 100-ball WLCSP (4.1x3.90x0.467mm) Package at ASEK-Taiwan (AH) with 80x80um scribe width and laser grooving process with PBO HD8820 and SAC-405 solder ball finish at MSL1, 260C	Aug 2019
192302	Qualification of 8inch WLCSP packages (FL68, FN0AP, FN42A, FN60B, FN68A, FN72A, FN76A and FN99A) using PBO HD8820 and SAC-405 solder ball finish at MSL1,260C	Jul 2020

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MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	FN100A
Package Outline, Type, or Name:	100-ball Wafer Level Chip Scale Package (WLCSP) (4.1x3.9x0.467mm)
Die Backside Preparation Method:	Backgrind
Die Separation Method:	Laser grooving with mechanical saw
Solder Ball/Bump Material:	SAC405
Bonding Method:	N A
Bond Diagram Designation:	002-24299
Thermal Resistance Theta JA °C/W:	20 C W
Package Cross Section Yes/No:	N A
Assembly Process Flow:	002-19411
Name/Location of Assembly (prime) facility:	ASE-Taiwan (AH)
MSL Level	1
Reflow Profile	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	ASE-Taiwan (AH)

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MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	FN99A
Package Outline, Type, or Name:	99-ball Wafer Level Chip Scale Package (WLCSP) (5.192x5.940x0.6mm)
Die Backside Preparation Method:	Backgrind
Die Separation Method:	Laser grooving with mechanical saw
Solder Ball/Bump Material:	SAC405
Bonding Method:	N A
Bond Diagram Designation:	002-27927
Thermal Resistance Theta JA °C/W:	20 C W
Package Cross Section Yes/No:	N A
Assembly Process Flow:	002-19411M
Name/Location of Assembly (prime) facility:	ASE-Taiwan (AH)
MSL Level	1
Reflow Profile	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	ASE-Taiwan (AH)

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RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENT

Stress/Test	Test Condition (Temp/Bias)	Result P/F
Constructional Analysis	Criteria: Meet external and internal characteristics of Cypress package	P
Dye Penetrant Test	Test to determine the existence and extent of cracks, Criteria: No Package Crack	P
Electrostatic Discharge Charge Device Model (ESD-CDM)	500V 1,000V 1,250V JESD22-C101	P
Electrostatic Discharge Human Body Model (ESD-HBM)	1,100V 2,200V 3,300V JESD22, Method A114	P
External Visual	MIL-PRF-38535, MIL-STD-883,Method 2009	P
Final Visual	JESD22-B101	P
Functional Board Level Reliability Test	Temperature Cycle,-40 C to 85 C	P
High Accelerated Saturation Test (HAST)	JEDEC STD 22-A110: 130 C, 85 RH, 5.5V	P
High Accelerated Saturation Test (HAST)	JEDEC STD 22-A110: 130 C, 85 RH, 2.27V Precondition: JESD22 Moisture Sensitivity MSL 1 (168 Hrs.,85 C, 85 RH, 260 C Reflow)	P
High Accelerated Saturation Test (HAST) – Unbiased	JEDEC STD 22-A110: 130 C, 85 RH Precondition: JESD22 Moisture Sensitivity MSL 1 (168 Hrs.,85 C, 85 RH, 260 C Reflow)	P
High Temperature Operating Life Early Failure Rate	Dynamic Operating Condition, Vcc Max 1.8V, 125 C JESD22-A-108	P
High Temperature Operating Life Latent Failure Rate	Dynamic Operating Condition, Vcc Max 1.8V, 125 C JESD22-A-108	P
High Temperature Storage	150 C, no bias	P
Internal Visual	MIL-STD-883-2014	P
Physical Dimension	MIL-STD-1835, JESD22-B100	P
Pressure Cooker Test	JESD22-A102:121 C 100 RH, 15 PSIG Precondition: JESD22 Moisture Sensitivity Level 1 (168 Hrs.,85 C, 85 RH, 260 C Reflow)	P
Solder Ball Bump Shear	JESD22-B117	P
Solderability Test	J-STD-002, JESD22-B102	P
Temperature Cycle	MIL-STD-883, Method 1010, Condition B, -55 C to 125 C Precondition: JESD22 Moisture Sensitivity MSL 1 (168 Hrs.,85 C, 85 RH, 260 C Reflow)	P

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Reliability Test Data

QTP #: 154802

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: CONSTRUCTIONAL ANALYSIS							
CY8C4246FNI (8F480000A)	4528732	611533008	TAIWAN-G	COMP	5	0	
STRESS: DYE PENETRANT TEST							
CY8C4246FNI (8F480000A)	4528732	611533008	TAIWAN-G	COMP	15	0	
STRESS: ESD-CHARGE DEVICE MODEL							
CY8C4246FNI (8F480000A)	4528732	611533009	TAIWAN-G	500	9	0	
CY8C4246FNI (8F480000A)	4528732	611533009	TAIWAN-G	1000	3	0	
CY8C4246FNI (8F480000A)	4528732	611533009	TAIWAN-G	1250	3	0	
STRESS: ESD-HUMAN BODY MODEL PER JESD22, METHOD A114							
CY8C4246FNI (8F480000A)	4528732	611533009	TAIWAN-G	1100	3	0	
CY8C4246FNI (8F480000A)	4528732	611533009	TAIWAN-G	2200	8	0	
CY8C4246FNI (8F480000A)	4528732	611533009	TAIWAN-G	3300	3	0	
STRESS: EXTERNAL VISUAL							
CY8C4246FNI (8F480000A)	4528732	611533008	TAIWAN-G	COMP	5811	0	
CY8C4246FNI (8F480000A)	4528732	611533009	TAIWAN-G	COMP	5739	0	
STRESS: FINAL VISUAL							
CY8C4246FNI (8F480000A)	4528732	611533008	TAIWAN-G	COMP	25	0	
CY8C4246FNI (8F480000A)	4528732	611533009	TAIWAN-G	COMP	16	0	
CY8C4246FNI (8F480000A)	4528732	611533010	TAIWAN-G	COMP	18	0	
STRESS: FUNCTIONAL BOARD LEVEL RELIABILITY TEST, TC COND.N -40C TO 85C							
CY8C4247FNI (8F42478A)	4427504	611431846	DT-PHILS	256	502	0	
TRESS: HI-ACCEL SATURATION TEST (130C, 85%RH, 2.27V), PRE COND 168 HR 85C/85%RH (MSL1)							
CY8C4246FNI (8F480000A)	4528732	611533008	TAIWAN-G	96	30	0	
CY8C4246FNI (8F480000A)	4528732	611533009	TAIWAN-G	96	30	0	
STRESS: UNBIASED HI-ACCEL SATURATION TEST (130C, 85%RH), PRE COND 168 HR 85C/85%RH (MSL1)							
CY8C4246FNI (8F480000A)	4528732	611533008	TAIWAN-G	96	80	0	
CY8C4246FNI (8F480000A)	4528732	611533009	TAIWAN-G	96	80	0	
CY8C4246FNI (8F480000A)	4528732	611533010	TAIWAN-G	96	80	0	

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Reliability Test Data

QTP #: 154802

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE (125C, 1.8V, Vcc Max)							
MB9AF01AM	MIFS # 101	4K55169	TAIWAN-G	COMP	78	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE (125C, 1.8V, Vcc Max)							
MB9AF01AM	MIFS # 101	4K55169	TAIWAN-G	COMP	75	0	
STRESS: HIGH TEMPERATURE STORAGE, 150C							
CY8C4246FNI (8F480000A)	4528732	611533008	TAIWAN-G	500	80	0	
CY8C4246FNI (8F480000A)	4528732	611533008	TAIWAN-G	1000	80	0	
STRESS: PHYSICAL DIMENSION							
CY8C4246FNI (8F480000A)	4528732	611533008	TAIWAN-G	COMP	30	0	
CY8C4246FNI (8F480000A)	4528732	611533009	TAIWAN-G	COMP	30	0	
CY8C4246FNI (8F480000A)	4528732	611533010	TAIWAN-G	COMP	30	0	
STRESS: SOLDER BALL/BUMP SHEAR							
CY8C4246FNI (8F480000A)	4528732	611533008	TAIWAN-G	COMP	5	0	
CY8C4246FNI (8F480000A)	4528732	611533009	TAIWAN-G	COMP	5	0	
CY8C4246FNI (8F480000A)	4528732	611533010	TAIWAN-G	COMP	5	0	
STRESS: TC COND. B -55C TO 125C, PRE COND 168 HRS 85C/85%RH, MSL1							
CY8C4246FNI (8F480000A)	4528732	611533008	TAIWAN-G	500	80	0	
CY8C4246FNI (8F480000A)	4528732	611533008	TAIWAN-G	1000	80	0	
CY8C4246FNI (8F480000A)	4528732	611533009	TAIWAN-G	500	80	0	
CY8C4246FNI (8F480000A)	4528732	611533009	TAIWAN-G	1000	80	0	
CY8C4246FNI (8F480000A)	4528732	611533010	TAIWAN-G	500	80	0	
CY8C4246FNI (8F480000A)	4528732	611533010	TAIWAN-G	1000	80	0	

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Reliability Test Data

QTP #: 181107

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: CONSTRUCTIONAL ANALYSIS							
CY8C6247FDI (8CS40005AO)	9724024	611745366	TAIWAN-AH	COMP	5	0	
STRESS: ELECTRICAL CHAR							
CY8C6247FDI (8CS40005AO)	9724024	611745366	TAIWAN-AH	COMP	6	0	
STRESS: ESD-CHARGE DEVICE MODEL							
CY8C6247FDI (8CS40005AO)	9724024	611745366	TAIWAN-AH	500	9	0	
CY8C6247FDI (8CS40005AO)	9724024	611745366	TAIWAN-AH	750	3	0	
CY8C6247FDI (8CS40005AO)	9724024	611745366	TAIWAN-AH	1000	3	0	
STRESS: ESD-HUMAN BODY MODEL							
CY8C6247FDI (8CS40005AO)	9724024	611745366	TAIWAN-AH	1100	3	0	
CY8C6247FDI (8CS40005AO)	9724024	611745366	TAIWAN-AH	2200	8	0	
CY8C6247FDI (8CS40005AO)	9724024	611745366	TAIWAN-AH	3300	3	0	
STRESS: EXTERNAL VISUAL							
CY8C6247FDI (8CS40005AO)	9724024	611745366	TAIWAN-AH	COMP	1137	0	
CY8C6247FDI (8CS40005AO)	9725016	611745367	TAIWAN-AH	COMP	1049	0	
CY8C6247FDI (8CS40005AO)	9725016	611745368	TAIWAN-AH	COMP	1512	0	
STRESS: UNBIASED HI-ACCEL SATURATION TEST (130C, 85%RH), PRE COND 168 HR 85C/85%RH (MSL1)							
CY8C6247FDI (8CS40005AO)	9724024	611745366	TAIWAN-AH	96	80	0	
STRESS: HI-ACCEL SATURATION TEST (130C, 85%RH, 5.5V), PRE COND 168 HR 85C/85%RH (MSL1)							
CY8C6247FDI (8CS40005AO)	9724024	611745366	TAIWAN-AH	96	30	0	
STRESS: PHYSICAL DIMENSION							
CY8C6247FDI (8CS40005AO)	9724024	611745366	TAIWAN-AH	COMP	30	0	
CY8C6247FDI (8CS40005AO)	9725016	611745367	TAIWAN-AH	COMP	30	0	
CY8C6247FDI (8CS40005AO)	9725016	611745368	TAIWAN-AH	COMP	30	0	
STRESS: SOLDER BALL/BUMP SHEAR							
CY8C6247FDI (8CS40005AO)	9724024	611745366	TAIWAN-AH	COMP	5	0	
CY8C6247FDI (8CS40005AO)	9725016	611745367	TAIWAN-AH	COMP	5	0	
CY8C6247FDI (8CS40005AO)	9725016	611745368	TAIWAN-AH	COMP	5	0	

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Reliability Test Data

QTP #: 181107

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: TC COND. B -55C TO 125C, PRE COND 168 HRS 85C/85%RH, MSL1							
CY8C6247FDI (8CS40005AO)	9724024	611745366	TAIWAN-AH	500	80	0	
CY8C6247FDI (8CS40005AO)	9724024	611745366	TAIWAN-AH	1000	78	0	
CY8C6247FDI (8CS40005AO)	9725016	611745367	TAIWAN-AH	1000	78	0	
CY8C6247FDI (8CS40005AO)	9725016	611745368	TAIWAN-AH	1000	78	0	

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Reliability Test Data

QTP #: 183314

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: CONSTRUCTIONAL ANALYSIS							
CY8C624AFNI (8CS40202AO)	9831036	611839242	TAIWAN-AH	COMP	5	0	
STRESS: ELECTRICAL CHAR							
CY8C624AFNI (8CS40202AO)	9831036	611839242	TAIWAN-AH	COMP	89	0	
STRESS: ESD-CHARGE DEVICE MODEL							
CY8C624AFNI (8CS40202AO)	9836014	611840912	TAIWAN-AH	500	9	0	
CY8C624AFNI (8CS40202AO)	9836014	611840912	TAIWAN-AH	750	3	0	
STRESS: ESD-HUMAN BODY MODEL PER JESD22, METHOD A114							
CY8C624AFNI (8CS40202AO)	9836014	611840912	TAIWAN-AH	1100	3	0	
CY8C624AFNI (8CS40202AO)	9836014	611840912	TAIWAN-AH	2200	8	0	
CY8C624AFNI (8CS40202AO)	9836014	611840912	TAIWAN-AH	3300	3	0	
CY8C624AFNI (8CS40202AO)	9836014	611840912	TAIWAN-AH	4000	3	0	
CY8C624AFNI (8CS40202AO)	9836014	611840912	TAIWAN-AH	5000	3	0	
STRESS: EXTERNAL VISUAL							
CY8C624AFNI (8CS40202AO)	9831036	611839242	TAIWAN-AH	COMP	461	0	
CY8C624AFNI (8CS40202AO)	9836016	611840911	TAIWAN-AH	COMP	461	0	
CY8C624AFNI (8CS40202AO)	9836014	611840912	TAIWAN-AH	COMP	461	0	
STRESS: UNBIASED HI-ACCEL SATURATION TEST (130C, 85%RH), PRE COND 168 HR 85C/85%RH (MSL1)							
CY8C624AFNI (8CS40202AO)	9831036	611839242	TAIWAN-AH	96	87	0	
STRESS: HI-ACCEL SATURATION TEST (130C, 85%RH, 2.27V), PRE COND 168 HR 85C/85%RH (MSL1)							
CY8C624AFNI (8CS40202AO)	9831036	611839242	TAIWAN-AH	96	29	0	
STRESS: PHYSICAL DIMENSION							
CY8C624AFNI (8CS40202AO)	9831036	611839242	TAIWAN-AH	COMP	30	0	
CY8C624AFNI (8CS40202AO)	9836016	611840911	TAIWAN-AH	COMP	30	0	
CY8C624AFNI (8CS40202AO)	9836014	611840912	TAIWAN-AH	COMP	30	0	
STRESS: SOLDER BALL/BUMP SHEAR							
CY8C624AFNI (8CS40202AO)	9831036	611839242	TAIWAN-AH	COMP	5	0	
CY8C624AFNI (8CS40202AO)	9836016	611840911	TAIWAN-AH	COMP	5	0	
CY8C624AFNI (8CS40202AO)	9836014	611840912	TAIWAN-AH	COMP	5	0	

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Reliability Test Data

QTP #: 183314

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: TC COND. B -55C TO 125C, PRE COND 168 HRS 85C/85%RH, MSL1							
CY8C624AFNI (8CS40202AO)	9831036	611839242	TAIWAN-AH	500	88	0	
CY8C624AFNI (8CS40202AO)	9831036	611839242	TAIWAN-AH	1000	88	0	
CY8C624AFNI (8CS40202AO)	9836016	611840911	TAIWAN-AH	500	88	0	
CY8C624AFNI (8CS40202AO)	9836016	611840911	TAIWAN-AH	1000	88	0	
CY8C624AFNI (8CS40202AO)	9836014	611840912	TAIWAN-AH	500	90	0	
CY8C624AFNI (8CS40202AO)	9836014	611840912	TAIWAN-AH	1000	90	0	

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Reliability Test Data

QTP #: 192302

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: CONSTRUCTIONAL ANALYSIS							
CG8440AAT (8F561001AC)	4826188	611925399	TAIWAN-AH	COMP	5	0	
STRESS: ELECTRICAL CHAR							
CG8440AAT (8F561001AC)	4826188	611925399	TAIWAN-AH	COMP	3190	0	
STRESS: ESD-CHARGE DEVICE MODEL							
CG8440AAT (8F561001AC)	4826188	611925399	TAIWAN-AH	500	9	0	
CG8440AAT (8F561001AC)	4826188	611925399	TAIWAN-AH	1000	3	0	
CG8440AAT (8F561001AC)	4826188	611925399	TAIWAN-AH	1250	3	0	
STRESS: ESD-HUMAN BODY MODEL PER JESD22, METHOD A114							
CG8440AAT (8F561001AC)	4826188	611925399	TAIWAN-AH	1100	3	0	
CG8440AAT (8F561001AC)	4826188	611925399	TAIWAN-AH	2200	8	0	
CG8440AAT (8F561001AC)	4826188	611925399	TAIWAN-AH	3300	3	0	
STRESS: EXTERNAL VISUAL							
CG8440AAT (8F561001AC)	4826188	611925399	TAIWAN-AH	COMP	1283	0	
CG8440AAT (8F561001AC)	4919215	611926502	TAIWAN-AH	COMP	2118	0	
CG8440AAT (8F561001AC)	4826188	611925399M1	TAIWAN-AH	COMP	1307	0	
STRESS: UNBIASED HI-ACCEL SATURATION TEST (130C, 85%RH), PRE COND 168 HR 85C/85%RH (MSL1)							
CG8440AAT (8F561001AC)	4826188	611925399	TAIWAN-AH	96	80	0	
CG8440AAT (8F561001AC)	4826188	611925399	TAIWAN-AH	192	80	0	
CG8440AAT (8F561001AC)	4919215	611926502	TAIWAN-AH	96	80	0	
CG8440AAT (8F561001AC)	4919215	611926502	TAIWAN-AH	192	80	0	
CG8440AAT (8F561001AC)	4826188	611925399M1	TAIWAN-AH	96	78	0	
STRESS: HIGH TEMPERATURE STORAGE							
CG8440AAT (8F561001AC)	4826188	611925399	TAIWAN-AH	500	45	0	
CG8440AAT (8F561001AC)	4826188	611925399	TAIWAN-AH	1000	45	0	
CG8440AAT (8F561001AC)	4826188	611925399	TAIWAN-AH	1500	45	0	
STRESS: INTERNAL VISUAL							
CG8440AAT (8F561001AC)	4826188	611925399	TAIWAN-AH	COMP	5	0	
CG8440AAT (8F561001AC)	4919215	611926502	TAIWAN-AH	COMP	5	0	
CG8440AAT (8F561001AC)	4826188	611925399M1	TAIWAN-AH	COMP	5	0	

AN INFINEON TECHNOLOGIES COMPANY

Reliability Test Data

QTP #: 192302

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: PHYSICAL DIMENSION							
CG8440AAT (8F561001AC)	4826188	611925399	TAIWAN-AH	COMP	40	0	
CG8440AAT (8F561001AC)	4919215	611926502	TAIWAN-AH	COMP	40	0	
CG8440AAT (8F561001AC)	4826188	611925399M1	TAIWAN-AH	COMP	40	0	
STRESS: SOLDER BALL SHEAR							
CG8440AAT (8F561001AC)	4826188	611925399	TAIWAN-AH	COMP	6	0	
CG8440AAT (8F561001AC)	4919215	611926502	TAIWAN-AH	COMP	6	0	
CG8440AAT (8F561001AC)	4826188	611925399M1	TAIWAN-AH	COMP	6	0	
STRESS: SER							
CG8440AAT (8F561001AC)	4826188	611925399	TAIWAN-AH	COMP	3	0	
STRESS: TC COND. B -55C TO 125C, PRE COND 168 HRS 85C/85%RH, MSL1							
CG8440AAT (8F561001AC)	4826188	611925399	TAIWAN-AH	1000	80	0	
CG8440AAT (8F561001AC)	4919215	611926502	TAIWAN-AH	1000	80	0	
CG8440AAT (8F561001AC)	4826188	611925399M1	TAIWAN-AH	1000	80	0	

AN INFINEON TECHNOLOGIES COMPANY

Document History Page

Document Title: QTP#192302: 68-Ball WLCSP (FL68A) 3.52x3.91x0.40mm 42-Ball WLCSP (FN42A) 2.63x3.18x0.55mm 60-Ball WLCSP (FN60B) 4.654x5.814x0.568mm 68-Ball WLCSP (FN68A) 3.52x3.91x0.55mm 72-Ball WLCSP (FN72A) 4.25x4.98x0.60mm 76-Ball WLCSP (FN76A) 3.87x4.04x0.55mm 99-Ball WLCSP (FN99A) 5.192x5.940x0.6mm MSL1, 260C ASEK-TAIWAN (AH)

Document Number: 002-30716

Rev.	ECN No.	Orig. of Change	Description of Change
**	6902024	HSTO	Initial spec release.

Cypress Semiconductor
Finish Qualification Report

QTP# 192301 VERSION **
January 2020

ASE-Taiwan (AH) Finish Site
25-Ball WLCSP (FN25C) 1.93x2.02x0.48mm
25-Ball WLCSP (FN25A) 2.07x2.11x0.55mm
35-Ball WLCSP (FN35B) 2.097x2.582x0.482mm
42-Ball WLCSP (FN42A) 2.63x3.18x0.55mm
68-Ball WLCSP (FL68A) 3.52x3.91x0.40mm
68-Ball WLCSP (FN68A) 3.52x3.91x0.55mm
76-Ball WLCSP (FN76A) 3.87x4.04x0.55mm
72-Ball WLCSP (FN72A) 4.25x4.98x0.60mm
60-Ball WLCSP (FN60B) 4.654x5.814x0.568mm
99-Ball WLCSP (FN99A) 5.192x5.940x0.6mm

FOR ANY QUESTIONS ON THIS REPORT, PLEASE CONTACT
reliability@cypress.com

Prepared By:
Honesto Sintos (HSTO)
Reliability Engineer

Reviewed By:
Lorena Zapanta (ILZ)
Reliability Manager

Approved By:
David Hoffman (DHH)
Reliability Director

FINISH QUALIFICATION HISTORY

QTP Number	Description of Qualification Purpose	Date
192301	Qualification of WLCSP Packages (FN25, FN35, FN42, FL68, FN68, FN76, FN72, FN60 and FN99) at ASE-Taiwan (AH) Finish Site	January 2020

PROCESS ENGINEERING QUALIFICATION PERFORMED PER SPECIFICATION REQUIREMENTS

Test	Test Condition (Reference Specifications)	Result P/F
Bend Test	No separation along pocket and ridge area	P
CADFIT Analysis	Pass POD End flash Criteria	P
Detaping	No cover tape tearing	P
Dimensional Measurement	POD Drawing-JESD22-B100	P
Drop Test	Dry Packed Material: No tears punctures Boxes: No Complete structural damage, No progressive crumpling deformed, no tears punctures	P
External Visual	MIL-PRF-38535, MIL-STD-883, METHOD 2009	P
Functionality Test	Pass Manufacturability	P
PBFT	Min≥30gr Average 50 gr Max≤ 70gr	P
Split PBFT Test	Delta of Sprocket side and its opposite side: 5 gr Range: 20 gr	P
Substance Check	European Union RoHS 2002 95 E REACH XVII	P
Surface Resistivity Measurement	Conductive Packing shipping material: $10^5\Omega$/sq Static dissipative Packing shipping material: 10^5-10^{12} Ω/sq	P

1.1.1.1.1 Reliability Test Data

QTP #: 192301

Device	Assy Lot #	Package	Finish Site	Duration	Samp	Rej	Failure Mechanism
STRESS: BEND TEST							
CY8C4024FNI	611931473	FN25C	AH-Taiwan	COMP	1 Strip	0	
CY8C5888FNI	611920881N	FN99A	AH-Taiwan	COMP	1 Strip	0	
STRESS: CADFIT ANALYSIS							
CY8C4024FNI	611931473	FN25C	AH-Taiwan	COMP	1 Strip	0	
CY8C5888FNI	611920881N	FN99A	AH-Taiwan	COMP	1 Strip	0	
STRESS: DETAPING							
CY8C4024FNI	611931473	FN25C	AH-Taiwan	COMP	10 Strips	0	
CY8C5888FNI	611920881N	FN99A	AH-Taiwan	COMP	10 Strips	0	
STRESS: DIMENSIONAL MESAUREMENT							
CY8C4024FNI	611931473	FN25C	AH-Taiwan	COMP	10	0	
CY8C5888FNI	611920881N	FN99A	AH-Taiwan	COMP	10	0	
STRESS: DROP TEST							
CY8C4024FNI	611931473	FN25C	AH-Taiwan	COMP	2000	0	
CY8C5888FNI	611920881N	FN99A	AH-Taiwan	COMP	1200	0	
STRESS: EXTERNAL VISUAL							
CY8C4024FNI	611931473	FN25C	AH-Taiwan	COMP	500	0	
CY8C5888FNI	611920881N	FN99A	AH-Taiwan	COMP	500	0	
STRESS: FIT AND FORM							
CY8C4024FNI	611931473	FN25C	AH-Taiwan	COMP	25	0	
CY8C5888FNI	611920881N	FN99A	AH-Taiwan	COMP	25	0	
STRESS: FUNCTIONALITY TEST							
CY8C4024FNI	611931473	FN25C	AH-Taiwan	COMP	10	0	
CY8C5888FNI	611920881N	FN99A	AH-Taiwan	COMP	10	0	
STRESS: LEAD SCAN							
CY8C4024FNI	611931473	FN25C	AH-Taiwan	COMP	500	0	
CY8C5888FNI	611920881N	FN99A	AH-Taiwan	COMP	500	0	

1.1.1.1.2 Reliability Test Data

QTP #: 192301

Device	Assy Lot #	Package	Finish Site	Duration	Samp	Rej	Failure Mechanism
STRESS: PEEL BACK FORCE TEST							
CY8C4024FNI	611931473	FN25C	AH-Taiwan	COMP	30	0	
CY8C5888FNI	611920881N	FN99A	AH-Taiwan	COMP	30	0	
STRESS: SPLIT PEEL BACK FORCE TEST							
CY8C4024FNI	611931473	FN25C	AH-Taiwan	COMP	10	0	
CY8C5888FNI	611920881N	FN99A	AH-Taiwan	COMP	10	0	
STRESS: SUBSTANCE CHECK							
CY8C4024FNI	611931473	FN25C	AH-Taiwan	COMP	1	0	
CY8C5888FNI	611920881N	FN99A	AH-Taiwan	COMP	1	0	
STRESS: SURFACE RESISTIVITY MEASUREMENT							
CY8C4024FNI	611931473	FN25C	AH-Taiwan	COMP	10	0	
CY8C5888FNI	611920881N	FN99A	AH-Taiwan	COMP	10	0	
STRESS: TAPE PEEL BACK FORCE TEST							
CY8C4024FNI	611931473	FN25C	AH-Taiwan	COMP	1	0	
CY8C5888FNI	611920881N	FN99A	AH-Taiwan	COMP	1	0	

Document History Page

Document Title: QTP#192301: 25-Ball WLCSP (FN25C) 1.93x2.02x0.48mm 25-Ball WLCSP (FN25A) 2.07x2.11x0.55mm 35-Ball WLCSP (FN35B) 2.097x2.582x0.482mm 42-Ball WLCSP (FN42A) 2.63x3.18x0.55mm 68-Ball WLCSP (FL68A) 3.52x3.91x0.40mm 68-Ball WLCSP (FN68A) 3.52x3.91x0.55mm 76-Ball WLCSP (FN76A) 3.87x4.04x0.55mm 72-Ball WLCSP (FN72A) 4.25x4.98x0.60mm 60-Ball WLCSP (FN60B) 4.654x5.814x0.568mm 99-Ball WLCSP (FN99A) 5.192x5.940x0.6mm ASE-Taiwan (AH) Finish Site
Document Number: 002-29565

Rev.	ECN No.	Orig. of Change	Description of Change
**	6790730	HSTO	Initial spec release.

Item	Marketing Part Number	Sample Order Part Number	Sample Availability
1	CY8C3866FNI-210T	CY8C3866FNI-210KGT	Subject to lead time
2	CY8C4127FNI-BL483T	CY8C4127FNI-BL483KGT	Subject to lead time
3	CY8C4127FNI-BL493T	CY8C4127FNI-BL493KGT	Subject to lead time
4	CY8C4128FNI-BL543T	CY8C4128FNI-BL543KGT	Subject to lead time
5	CY8C4128FNI-BL553T	CY8C4128FNI-BL553KGT	Subject to lead time
6	CY8C4128FNI-BL563T	CY8C4128FNI-BL563KGT	Subject to lead time
7	CY8C4128FNI-BL573T	CY8C4128FNI-BL573KGT	Subject to lead time
8	CY8C4128FNI-BL583T	CY8C4128FNI-BL583KGT	Subject to lead time
9	CY8C4128FNI-BL593T	CY8C4128FNI-BL593KGT	Subject to lead time
10	CY8C4247FLI-BL493T	CY8C4247FLI-BL493KGT	Subject to lead time
11	CY8C4247FNI-BL473T	CY8C4247FNI-BL473KGT	Subject to lead time
12	CY8C4247FNI-BL483T	CY8C4247FNI-BL483KGT	Subject to lead time
13	CY8C4247FNI-BL493T	CY8C4247FNI-BL493KGT	Subject to lead time
14	CY8C4247FNQ-BL483T	CY8C4247FNQ-BL483KGT	Subject to lead time
15	CY8C4248FNI-BL543T	CY8C4248FNI-BL543KGT	Subject to lead time
16	CY8C4248FNI-BL553T	CY8C4248FNI-BL553KGT	Subject to lead time
17	CY8C4248FNI-BL563T	CY8C4248FNI-BL563KGT	Subject to lead time
18	CY8C4248FNI-BL573T	CY8C4248FNI-BL573KGT	Subject to lead time
19	CY8C4248FNI-BL583T	CY8C4248FNI-BL583KGT	Subject to lead time
20	CY8C4248FNI-BL593T	CY8C4248FNI-BL593KGT	Subject to lead time
21	CY8C4248FNQ-BL583T	CY8C4248FNQ-BL583KGT	Subject to lead time
22	CY8C4248FLI-BL583T	CY8C4248FLI-BL583KGT	Subject to lead time
23	CY8C5266FNI-LP205T	CY8C5266FNI-LP205KGT	Subject to lead time
24	CY8C5288FNI-LP213T	CY8C5288FNI-LP213KGT	Subject to lead time
25	CY8C5488FNI-LP212T	CY8C5488FNI-LP212KGT	Subject to lead time
26	CY8C5888FNI-LP210T	CY8C5888FNI-LP210KGT	Subject to lead time
27	CY8C5888FNI-LP214T	CY8C5888FNI-LP214KGT	Subject to lead time
28	CYPD3126-42FNXIT	CYPD3126-42FNXIKGT	Available
29	CG8615AAT	CG8615AZT	Subject to lead time
30	CG8669AAT	CG8669AZT	Subject to lead time
31	CG8670AAT	CG8670AZT	Subject to lead time
32	CP8420ATT	CP8420ZTT	Subject to lead time
33	CS8399ATT	CS8399ZTT	Subject to lead time
34	CS8478AAT	CS8478AZT	Subject to lead time
35	CS8480AAT	CS8480AZT	Subject to lead time

Name of part		Material	Vendor	SDS	ICP (RoHS)	Expiry Date
CY 8" 2P2M+ Balldrop WLCSP Parts Running in ASEKH: CCG2B (FN12B) Street Fighter (FN16B) CCG3PA2 (FN30C) PSOC4A-S2 (FN35A) PSOC4B-S0 (FN45B) CMG1 (FN09A)	Passivation Layer	PBO(HD8820)	Hitachi Chemical DuPont MicroSystems Ltd.	SDS_HIT_HD8820_20210625_(Security	HIT_HD8820_20210122_(Security C).pdf	1/22/2021
	UBM/RDL	Cu target	Umicore AG & Co. KG	SDS_Umicore_CU_20220621_(Security C).pdf	Umicore_target_Cu4N5_20210117_(Security	1/17/2021
		Ti target	Umicore AG & Co. KG	SDS_Umicore_Ti_20220722_(Security C).pdf	Umicore_target_Ti3N_20210122_(Security	1/22/2021
	Coating Film (back side)	LC2850	LINTEC Corporation	SDS_LINTEC_LC2850_20210524_(Security	LINTEC_LC2850_20210214_(Security C).pdf	2/14/2021
	Solder Ball	95.5Sn/4.0Ag/0.5Cu	Accurus Scientific Co., Ltd.	SDS_ACC_SAC405_20221016_(Security C).pdf	ACC_SAC405_95.5SN_4.0AG_0.5CU_20	1/10/2021
			Duksan Hi-Metal Co., Ltd.	SDS_DSN_Sn4.0Ag0.5Cu_20220417	DSN_Sn95.5Ag4.0Cu0.5_20210410_(Security	DSN_Sn95.5Ag4.0Cu0.5_Halogen_2021	DSN_Sn95.5Ag4.0Cu0.5_R2_20210412	4/10/2021
			MK Electron Co., Ltd.	SDS_MKE_Sn4.0Ag0.5Cu_20211115	MKE_Sn4.0Ag0.5Cu_20210313_(Security	3/13/2021
			Senju Metal Industry Co., Ltd.	SDS_SEN_7097_20220708_(Security C).pdf	SEN_Solder_ball_7097_20200626_(Security	6/26/2020