Cypress Semiconductor
Package Qualification Report

QTP# 170105 VERSION **
June, 2017

100 to 400pin FBGA Package,

SnAgCu, Au-wire&Cu-wire, 250℃/260℃ Reflow

J-Devices / Hakodate

FOR ANY QUESTIONS ON THIS REPORT, PLEASE CONTACT reliability@cypress.com or via a CYLINK CRM CASE

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PRODUCT QUALIFICATION HISTORY

QTP Number	Description of Qualification Purpose	Date
170105	100 to 400pin FBGA Package Qualification with Au-wire & Cu-wire at J-Devices Hakodate	June, 2017

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PRODUCT DESCRIPTION (for qualification)	
Qualification Purpose: Qualify FBGA package with Au-wire at J-Devices Hakodate site.	
Marketing Part #:	TP03N10
Device Description:	General purpose single-chip Microcontroller product
Cypress Division:	Cypress Semiconductor Corporation – Microcontroller and Connectivity Division

PACKAGE	ASSEMBLY FACILITY SITE
FBGA176	J-Devices Hakodate in Japan

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	LBE176
Package Outline, Type, or Name:	176-FBGA
Mold Compound Name/Manufacturer:	Kyocera E1
Mold Compound Flammability Rating:	V-0
Oxygen Rating Index: >28%	N/A
Lead Frame Designation:	N/A
Substrate Material:	HL-832NXA
Lead Finish, Composition / Thickness:	SnAgCu
Die Separation Method:	Sawing
Die Attach Material:	DF-18C1-40B1
Wire Bond Method:	Ultrasonic & Force
MSL Level	- (M04)
Reflow Profile	250℃

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	J-Devices Aizu site

PRODUCT DESCRIPTION (for qualification)	
Qualification Purpose: Qualify FBGA package with Cu-wire at J-Devices Hakodate site.	
Marketing Part #:	MB9BF218THBGL-GK7E1
Device Description:	General purpose single-chip microcontroller products with Flash
Cypress Division:	Cypress Semiconductor Corporation – Microcontroller Connectivity Division

PACKAGE	ASSEMBLY FACILITY SITE
FBGA192	J-Devices Hakodate in Japan

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	LBE192
Package Outline, Type, or Name:	192-FBGA
Mold Compound Name/Manufacturer:	Kyocera GL1
Mold Compound Flammability Rating:	V-0
Oxygen Rating Index: >28%	N/A
Lead Frame Designation:	N/A
Substrate Material:	E-679FGS
Lead Finish, Composition / Thickness:	SnAgCu
Die Separation Method:	Sawing
Die Attach Material:	EN4900
Wire Bond Method:	Ultrasonic & Force
MSL Level	- (M04)
Reflow Profile	250℃

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	J-Devices Aizu site

PRODUCT DESCRIPTION (for qualification)	
Qualification Purpose: Qualify FBGA package with Au-wire at J-Devices Hakodate site.	
Marketing Part #:	MB86C61BGL-G-DLK5E1
Device Description:	General purpose single-chip microcontroller products with Flash
Cypress Division:	Cypress Semiconductor Corporation – Microcontroller Connectivity Division

PACKAGE	ASSEMBLY FACILITY SITE
FBGA320	J-Devices Hakodate in Japan

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	LBI320
Package Outline, Type, or Name:	320-FBGA
Mold Compound Name/Manufacturer:	Hitachi CEL-410ZFA-U
Mold Compound Flammability Rating:	V-0
Oxygen Rating Index: >28%	N/A
Lead Frame Designation:	N/A
Substrate Material:	E-679F
Lead Finish, Composition / Thickness:	SnAgCu
Die Separation Method:	Sawing
Die Attach Material:	DF-18C1-40B1
Wire Bond Method:	Ultrasonic & Force
MSL Level	- (M06)
Reflow Profile	250℃

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	J-Devices Aizu site

PRODUCT DESCRIPTION (for qualification)	
Qualification Purpose: Qualify FBGA package with Au-wire at J-Devices Hakodate site.	
Marketing Part #:	MB91F196BGL1-GK6E1
Device Description:	General purpose single-chip microcontroller products with Flash
Cypress Division:	Cypress Semiconductor Corporation – Microcontroller Connectivity Division

PACKAGE	ASSEMBLY FACILITY SITE
FBGA400	J-Devices Hakodate in Japan

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	FDH400
Package Outline, Type, or Name:	400-FBGA
Mold Compound Name/Manufacturer:	Kyocera E1
Mold Compound Flammability Rating:	V-0
Oxygen Rating Index: >28%	N/A
Lead Frame Designation:	N/A
Substrate Material:	HL-832NXA
Lead Finish, Composition / Thickness:	SnAgCu
Die Separation Method:	Sawing
Die Attach Material:	DF-18C1-40B1
Wire Bond Method:	Ultrasonic & Force
MSL Level	- (M04)
Reflow Profile	250℃

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	J-Devices Aizu site

PRODUCT DESCRIPTION (for qualification)	
Qualification Purpose: Qualify FBGA package with Au-wire at J-Devices Hakodate site.	
Marketing Part #:	TP03N07
Device Description:	General purpose single-chip microcontroller products with Flash
Cypress Division:	Cypress Semiconductor Corporation – Microcontroller Connectivity Division

PACKAGE	ASSEMBLY FACILITY SITE
FBGA121	J-Devices Hakodate in Japan

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	LZA121
Package Outline, Type, or Name:	121-FBGA
Mold Compound Name/Manufacturer:	Hitachi CEL-9750
Mold Compound Flammability Rating:	V-0
Oxygen Rating Index: >28%	N/A
Lead Frame Designation:	N/A
Substrate Material:	E-679FGS
Lead Finish, Composition / Thickness:	SnAgCu
Die Separation Method:	Sawing
Die Attach Material:	DF-18C1-40B1
Wire Bond Method:	Ultrasonic & Force
MSL Level	- (M06)
Reflow Profile	250℃

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	J-Devices Aizu site

PRODUCT DESCRIPTION (for qualification)	
Qualification Purpose: Qualify FBGA package with Au-wire at J-Devices Hakodate site.	
Marketing Part #:	MB9BF116TBGL-G-K5E1
Device Description:	General purpose single-chip microcontroller products with Flash
Cypress Division:	Cypress Semiconductor Corporation – Microcontroller Connectivity Division

PACKAGE	ASSEMBLY FACILITY SITE
FBGA192	J-Devices Hakodate in Japan

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	LBE192
Package Outline, Type, or Name:	192-FBGA
Mold Compound Name/Manufacturer:	Kyocera GL1
Mold Compound Flammability Rating:	V-0
Oxygen Rating Index: >28%	N/A
Lead Frame Designation:	N/A
Substrate Material:	E-679FGS
Lead Finish, Composition / Thickness:	SnAgCu
Die Separation Method:	Sawing
Die Attach Material:	EN4900
Wire Bond Method:	Ultrasonic & Force
MSL Level	- (M04)
Reflow Profile	250℃

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	J-Devices Aizu site

PRODUCT DESCRIPTION (for qualification)	
Qualification Purpose: Qualify FBGA package with Cu-wire at J-Devices Hakodate site.	
Marketing Part #:	MB9BF128TBGL-GK7E1
Device Description:	General purpose single-chip microcontroller products with Flash
Cypress Division:	Cypress Semiconductor Corporation – Microcontroller Connectivity Division

PACKAGE	ASSEMBLY FACILITY SITE
FBGA192	J-Devices Hakodate in Japan

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	LBE192
Package Outline, Type, or Name:	192-FBGA
Mold Compound Name/Manufacturer:	Kyocera GL1
Mold Compound Flammability Rating:	V-0
Oxygen Rating Index: >28%	N/A
Lead Frame Designation:	N/A
Substrate Material:	E-679FGS
Lead Finish, Composition / Thickness:	SnAgCu
Die Separation Method:	Sawing
Die Attach Material:	HR-9050GT-20
Wire Bond Method:	Ultrasonic & Force
MSL Level	- (M04)
Reflow Profile	250℃

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	J-Devices Aizu site

PRODUCT DESCRIPTION (for qualification)	
Qualification Purpose: Qualify FBGA package with Cu-wire at J-Devices Hakodate site.	
Marketing Part #:	MB91F647BGL-G-K8E1
Device Description:	General purpose single-chip microcontroller products with Flash
Cypress Division:	Cypress Semiconductor Corporation – Microcontroller Connectivity Division

PACKAGE	ASSEMBLY FACILITY SITE
FBGA176	J-Devices Hakodate in Japan

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	LBE176
Package Outline, Type, or Name:	176-FBGA
Mold Compound Name/Manufacturer:	Hitachi CEL-9750
Mold Compound Flammability Rating:	V-0
Oxygen Rating Index: >28%	N/A
Lead Frame Designation:	N/A
Substrate Material:	HL-832NXA
Lead Finish, Composition / Thickness:	SnAgCu
Die Separation Method:	Sawing
Die Attach Material:	DF-18C1-40B1
Wire Bond Method:	Ultrasonic & Force
MSL Level	- (M04)
Reflow Profile	250℃

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	J-Devices Aizu site

PRODUCT DESCRIPTION (for qualification)	
Qualification Purpose: Qualify FBGA package with Cu-wire at J-Devices Hakodate site.	
Marketing Part #:	S6E2H14G0AGB3000A
Device Description:	General purpose single-chip microcontroller products with Flash
Cypress Division:	Cypress Semiconductor Corporation – Microcontroller Connectivity Division

PACKAGE	ASSEMBLY FACILITY SITE
FBGA192	J-Devices Hakodate in Japan

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	LBE192
Package Outline, Type, or Name:	192-FBGA
Mold Compound Name/Manufacturer:	Sumitomo MRG0009
Mold Compound Flammability Rating:	V-0
Oxygen Rating Index: >28%	N/A
Lead Frame Designation:	N/A
Substrate Material:	HL-832NXA
Lead Finish, Composition / Thickness:	SnAgCu
Die Separation Method:	Sawing
Die Attach Material:	DF-18C1-25B1
Wire Bond Method:	Ultrasonic & Force
MSL Level	3
Reflow Profile	260℃

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	J-Devices Aizu site

PRODUCT DESCRIPTION (for qualification)	
Qualification Purpose: Qualify FBGA package with Cu-wire at J-Devices Hakodate site.	
Marketing Part #:	S6E2CCAJ0AGB1000A
Device Description:	General purpose single-chip microcontroller products with Flash
Cypress Division:	Cypress Semiconductor Corporation – Microcontroller Connectivity Division

PACKAGE	ASSEMBLY FACILITY SITE
FBGA192	J-Devices Hakodate in Japan

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	LBE192
Package Outline, Type, or Name:	192-FBGA
Mold Compound Name/Manufacturer:	Sumitomo MRG0009
Mold Compound Flammability Rating:	V-0
Oxygen Rating Index: >28%	N/A
Lead Frame Designation:	N/A
Substrate Material:	HL-832NXA
Lead Finish, Composition / Thickness:	SnAgCu
Die Separation Method:	Sawing
Die Attach Material:	84-3MV
Wire Bond Method:	Ultrasonic & Force
MSL Level	3
Reflow Profile	260℃

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	J-Devices Aizu site

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS

Stress/Test	Test Condition (Temp/Bias)	Result P/F
High Temperature Operating Life Latent Failure Rate	Dynamic Operating Condition, Max. rating Voltage, 125 degreeC, JESD22-A108	P
High Accelerated Saturation Test (HAST)	110 degreeC, 85%RH, Max. Rating Voltage, Precondition: JESD22 Moisture Sensitivity Level3 JEDEC STD 22-A110 or Specific condition	P
Unbiased High Accelerated Saturation Test (UHST)	110 degreeC, 85%RH, Precondition: JESD22 Moisture Sensitivity Level3 JEDEC STD 22-A118 or Specific condition	P
Temperature Cycle	JESD22-A104, Condition C, -55 to 125 degreeC Precondition: JESD22 Moisture Sensitivity Level3 JEDEC STD 22-A118 or Specific condition	P
High Temperature Storage	JESD22-A103: 150 degreeC, (125 degreeC for MB86C61 only)	P

Reliability Test Data

QTP #: 170105

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS : High Temperature Operating Life							
TP03N10	3V-B3257	1641-H01	J-Devices	1000	77	0	
TP03N10	3V-B3257	1641-H02	J-Devices	1000	77	0	
TP03N10	3V-B3257	1641-H03	J-Devices	1000	77	0	
STRESS : High Accelerated Saturation Test							
TP03N10	3V-B3257	1641-H01	J-Devices	264	77	0	
TP03N10	3V-B3257	1641-H02	J-Devices	264	77	0	
TP03N10	3V-B3257	1641-H03	J-Devices	264	77	0	

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STRESS : Unbiased Accelerated Saturation Test

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
TP03N10	3V-B3257	1641-H01	J-Devices	264	77	0	
TP03N10	3V-B3257	1641-H02	J-Devices	264	77	0	
TP03N10	3V-B3257	1641-H03	J-Devices	264	77	0	
MB9BF218	4K84917	1641-H01	J-Devices	264	77	0	
MB9BF218	4K84917	1641-H02	J-Devices	264	77	0	
MB9BF218	4K84917	1641-H03	J-Devices	264	77	0	
MB86C61	4K85546	1646-H01	J-Devices	264	77	0	
MB86C61	4K85546	1646-H02	J-Devices	264	77	0	
MB86C61	4K85546	1646-H03	J-Devices	264	77	0	
MB91F196	7G-54422	1644-H01	J-Devices	264	77	0	
MB91F196	7G-54422	1644-H02	J-Devices	264	77	0	
MB91F196	7G-54422	1644-H03	J-Devices	264	77	0	
TP03N07	7G-53007	1642-H01	J-Devices	264	77	0	
TP03N07	7G-53007	1642-H02	J-Devices	264	77	0	
TP03N07	7G-53007	1642-H03	J-Devices	264	77	0	
MB9BF116	4K84917	1641-H01	J-Devices	264	77	0	
MB9BF116	4K84917	1641-H02	J-Devices	264	77	0	
MB9BF116	4K84917	1641-H03	J-Devices	264	77	0	
MB9BF128	4K84479	1641-H01	J-Devices	264	77	0	
MB9BF128	4K84479	1641-H02	J-Devices	264	77	0	
MB9BF128	4K84479	1641-H03	J-Devices	264	77	0	
MB91F647	7G-29171	1641-H01	J-Devices	264	77	0	
MB91F647	7G-29171	1641-H02	J-Devices	264	77	0	
MB91F647	7G-29171	1641-H03	J-Devices	264	77	0	
S6E2H14G	4K84223	62488904	J-Devices	264	77	0	
S6E2H14G	4K84223	62488905	J-Devices	264	77	0	
S6E2H14G	4K84223	62488906	J-Devices	264	77	0	
S6E2CCAJ	4K84659	62488901	J-Devices	264	77	0	
S6E2CCAJ	4K84659	62488902	J-Devices	264	77	0	
S6E2CCAJ	4K84659	62488903	J-Devices	264	77	0	

STRESS : Temperature Cycle

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
TP03N10	3V-B3257	1641-H01	J-Devices	1000	77	0	
TP03N10	3V-B3257	1641-H02	J-Devices	1000	77	0	
TP03N10	3V-B3257	1641-H03	J-Devices	1000	77	0	
MB9BF218	4K84917	1641-H01	J-Devices	1000	77	0	
MB9BF218	4K84917	1641-H02	J-Devices	1000	77	0	
MB9BF218	4K84917	1641-H03	J-Devices	1000	77	0	
MB86C61	4K85546	1646-H01	J-Devices	1000	77	0	
MB86C61	4K85546	1646-H02	J-Devices	1000	77	0	
MB86C61	4K85546	1646-H03	J-Devices	1000	77	0	
MB91F196	7G-54422	1644-H01	J-Devices	1000	77	0	
MB91F196	7G-54422	1644-H02	J-Devices	1000	77	0	
MB91F196	7G-54422	1644-H03	J-Devices	1000	77	0	
TP03N07	7G-53007	1642-H01	J-Devices	1000	77	0	
TP03N07	7G-53007	1642-H02	J-Devices	1000	77	0	
TP03N07	7G-53007	1642-H03	J-Devices	1000	77	0	
MB9BF116	4K84917	1641-H01	J-Devices	1000	77	0	
MB9BF116	4K84917	1641-H02	J-Devices	1000	77	0	
MB9BF116	4K84917	1641-H03	J-Devices	1000	77	0	
MB9BF128	4K84479	1641-H01	J-Devices	1000	77	0	
MB9BF128	4K84479	1641-H02	J-Devices	1000	77	0	
MB9BF128	4K84479	1641-H03	J-Devices	1000	77	0	
MB91F647	7G-29171	1641-H01	J-Devices	1000	77	0	
MB91F647	7G-29171	1641-H02	J-Devices	1000	77	0	
MB91F647	7G-29171	1641-H03	J-Devices	1000	77	0	
S6E2H14G	4K84223	62488904	J-Devices	1000	77	0	
S6E2H14G	4K84223	62488905	J-Devices	1000	77	0	
S6E2H14G	4K84223	62488906	J-Devices	1000	77	0	
S6E2CCAJ	4K84659	62488901	J-Devices	1000	77	0	
S6E2CCAJ	4K84659	62488902	J-Devices	1000	77	0	
S6E2CCAJ	4K84659	62488903	J-Devices	1000	77	0	

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS ; High Temperature Storage							
TP03N10	3V-B3257	1641-H01	J-Devices	1000	45	0	
MB9BF218	4K84917	1641-H01	J-Devices	1000	45	0	
MB86C61	4K85546	1646-H01	J-Devices	1000	45	0	
MB91F196	7G-54422	1644-H01	J-Devices	1000	45	0	
TP03N07	7G-53007	1642-H01	J-Devices	1000	45	0	
MB9BF116	4K84917	1641-H01	J-Devices	1000	45	0	
MB9BF128	4K84479	1641-H01	J-Devices	1000	45	0	
MB91F647	7G-29171	1641-H01	J-Devices	1000	45	0	
S6E2H14G	4K84223	62488904	J-Devices	1000	45	0	
S6E2CCAJ	4K84659	62488901	J-Devices	1000	45	0	

Document History Page

Document Title: QTP#170105_100 to 400pin-FBGA Package, SnAgCu, Au-wire & Cu-wire, 250℃/260℃ Reflow, J-Devices Hakodate

Document Number 002-19900

Rev.	ECN No.	Orig. of Change	Description of Change
**	5760755	KUMI	Initial release.