

Cypress Semiconductor Package Qualification Report

QTP# 170103 VERSION **
June, 2017

**144/176/208/216-TEQFP Package,
Pb-free, Au-wire/Cu-wire, 260°C Reflow
J-Devices / Fukuoka**

FOR ANY QUESTIONS ON THIS REPORT, PLEASE CONTACT
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PRODUCT QUALIFICATION HISTORY

QTP Number	Description of Qualification Purpose	Date
170103	144/176/208/216-TEQFP Package Qualification with Au-wire/Cu-wire at J-Devices Fukuoka	Jun, 2017

PRODUCT DESCRIPTION (for qualification)	
Qualification Purpose: Qualify TEQFP Lead-free package with Au-wire at J-Devices Fukuoka site.	
Marketing Part #:	MB9DF566MAEEQ-GTK5E1
Device Description:	General purpose single-chip products with Flash
Cypress Division:	Cypress Semiconductor Corporation – Microcontroller and Connectivity Division

PACKAGE	ASSEMBLY FACILITY SITE
TEQFP208 (Au-wire)	J-Devices Fukuoka in Japan

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	LER208
Package Outline, Type, or Name:	208-TEQFP
Mold Compound Name/Manufacturer:	Hitachi CEL-9210
Mold Compound Flammability Rating:	V-0
Oxygen Rating Index: >28%	N/A
Lead Frame Designation:	Full Metal Pad
Substrate Material:	N/A
Lead Finish, Composition / Thickness:	Sn/Bi
Die Separation Method:	Sawing
Die Attach Material:	EN4600
Wire Bond Method:	Ultrasonic & Force
MSL Level	3
Reflow Profile	260°C

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

PRODUCT DESCRIPTION (for qualification)	
Qualification Purpose: Qualify TEQFP Lead-free package with Cu-wire at J-Devices Fukuoka site.	
Marketing Part #:	S6J324CKSFSE2000B
Device Description:	General purpose single-chip products with Flash
Cypress Division:	Cypress Semiconductor Corporation – Microcontroller and Connectivity Division

PACKAGE	ASSEMBLY FACILITY SITE
TEQFP208 (Au-wire)	J-Devices Fukuoka in Japan

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	LET208
Package Outline, Type, or Name:	208-TEQFP
Mold Compound Name/Manufacturer:	Sumitomo EME-G660
Mold Compound Flammability Rating:	V-0
Oxygen Rating Index: >28%	N/A
Lead Frame Designation:	Full Metal Pad
Substrate Material:	N/A
Lead Finish, Composition / Thickness:	Pure-Sn
Die Separation Method:	Sawing
Die Attach Material:	EN4600
Wire Bond Method:	Ultrasonic & Force
MSL Level	3
Reflow Profile	260°C

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

PRODUCT DESCRIPTION (for qualification)	
Qualification Purpose: Qualify TEQFP Lead-free package with Au-wire at J-Devices Fukuoka site.	
Marketing Part #:	S6J324CKSFSE2000B
Device Description:	General purpose single-chip products with Flash
Cypress Division:	Cypress Semiconductor Corporation – Microcontroller and Connectivity Division

PACKAGE	ASSEMBLY FACILITY SITE
TEQFP208 (Cu-wire)	J-Devices Fukuoka in Japan

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	LET208
Package Outline, Type, or Name:	208-TEQFP
Mold Compound Name/Manufacturer:	Sumitomo EME-G660
Mold Compound Flammability Rating:	V-0
Oxygen Rating Index: >28%	N/A
Lead Frame Designation:	Full Metal Pad
Substrate Material:	N/A
Lead Finish, Composition / Thickness:	Pure-Sn
Die Separation Method:	Sawing
Die Attach Material:	EN4600
Wire Bond Method:	Ultrasonic & Force
MSL Level	3
Reflow Profile	260°C

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



PRODUCT DESCRIPTION (for qualification)	
Qualification Purpose: Qualify TEQFP Lead-free package with Au-wire at J-Devices Fukuoka site.	
Marketing Part #:	S6J311EJACSE1000B
Device Description:	General purpose single-chip products with Flash
Cypress Division:	Cypress Semiconductor Corporation – Microcontroller and Connectivity Division

PACKAGE	ASSEMBLY FACILITY SITE
TEQFP176 (Au-wire)	J-Devices Fukuoka in Japan

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	LEP176
Package Outline, Type, or Name:	176-TEQFP
Mold Compound Name/Manufacturer:	Sumitomo EME-G660
Mold Compound Flammability Rating:	V-0
Oxygen Rating Index: >28%	N/A
Lead Frame Designation:	Full Metal Pad
Substrate Material:	N/A
Lead Finish, Composition / Thickness:	Sn/Bi
Die Separation Method:	Sawing
Die Attach Material:	EN4600
Wire Bond Method:	Ultrasonic & Force
MSL Level	3
Reflow Profile	260°C

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

PRODUCT DESCRIPTION (for qualification)	
Qualification Purpose: Qualify TEQFP Lead-free package with Cu-wire at J-Devices Fukuoka site.	
Marketing Part #:	S6J311EJACSE1000B
Device Description:	General purpose single-chip products with Flash
Cypress Division:	Cypress Semiconductor Corporation – Microcontroller and Connectivity Division

PACKAGE	ASSEMBLY FACILITY SITE
TEQFP176 (Cu-wire)	J-Devices Fukuoka in Japan

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	LEP176
Package Outline, Type, or Name:	176-TEQFP
Mold Compound Name/Manufacturer:	Sumitomo EME-G660
Mold Compound Flammability Rating:	V-0
Oxygen Rating Index: >28%	N/A
Lead Frame Designation:	Full Metal Pad
Substrate Material:	N/A
Lead Finish, Composition / Thickness:	Sn/Bi
Die Separation Method:	Sawing
Die Attach Material:	EN4600
Wire Bond Method:	Ultrasonic & Force
MSL Level	3
Reflow Profile	260°C

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)	130 degreeC, 85%RH, Max. Rating Voltage, Precondition: JESD22 Moisture Sensitivity Level3 JEDEC STD 22-A110 110 degreeC, 85%RH, Max. Rating Voltage, Precondition: JESD22 Moisture Sensitivity Level3 JEDEC STD 22-A110	P
Unbiased High Accelerated Saturation Test (UHST)	130 degreeC, 85%RH, Precondition: JESD22 Moisture Sensitivity Level3 JEDEC STD 22-A118:	P
Temperature Cycle	JESD22-A104, Condition C, -65 to 150 degreeC Precondition: JESD22 Moisture Sensitivity Level3 JEDEC STD 22-A118:	P
High Temperature Storage	JESD22-A103: 150 degreeC,	P



Reliability Test Data

QTP #: 170103

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS : High Temperature Operating Life							
MB9DF566	4K84872	1643-801	J-Devices	1000	77	0	
MB9DF566	4K84872	1643-802	J-Devices	1000	77	0	
MB9DF566	4K84872	1643-803	J-Devices	1000	77	0	
S6J311(Cu)	4C39287	644ZZ010	J-Devices	1000	77	0	
S6J311(Cu)	4C39287	644ZZ011	J-Devices	1000	77	0	
S6J311(Cu)	4C39287	644ZZ012	J-Devices	1000	77	0	
STRESS : High Accelerated Saturation Test							
MB9DF566	4K84872	1643-801	J-Devices	264	77	0	
MB9DF566	4K84872	1643-802	J-Devices	264	77	0	
MB9DF566	4K84872	1643-803	J-Devices	264	77	0	
S6J311(Cu)	4C39287	644ZZ010	J-Devices	192	77	0	
S6J311(Cu)	4C39287	644ZZ011	J-Devices	192	77	0	
S6J311(Cu)	4C39287	644ZZ012	J-Devices	192	77	0	
STRESS : Unbiased Accelerated Saturation Test							
MB9DF566	4K84872	1643-801	J-Devices	96	77	0	
MB9DF566	4K84872	1643-802	J-Devices	96	77	0	
MB9DF566	4K84872	1643-803	J-Devices	96	77	0	
S6J324(Au)	4C39127	644ZZ001	J-Devices	96	77	0	
S6J324(Au)	4C39127	644ZZ002	J-Devices	96	77	0	
S6J324(Au)	4C39127	644ZZ003	J-Devices	96	77	0	
S6J324(Cu)	4C39127	644ZZ004	J-Devices	96	77	0	
S6J324(Cu)	4C39127	644ZZ005	J-Devices	96	77	0	
S6J324(Cu)	4C39127	644ZZ006	J-Devices	96	77	0	
S6J311(Au)	4C39287	644ZZ007	J-Devices	96	77	0	
S6J311(Au)	4C39287	644ZZ008	J-Devices	96	77	0	
S6J311(Au)	4C39287	644ZZ009	J-Devices	96	77	0	
S6J311(Cu)	4C39287	644ZZ010	J-Devices	96	77	0	
S6J311(Cu)	4C39287	644ZZ011	J-Devices	96	77	0	
S6J311(Cu)	4C39287	644ZZ012	J-Devices	96	77	0	

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
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STRESS : Temperature Cycle

MB9DF566	4K84872	1643-801	J-Devices	500	77	0	
MB9DF566	4K84872	1643-802	J-Devices	500	77	0	
MB9DF566	4K84872	1643-803	J-Devices	500	77	0	
S6J324(Au)	4C39127	644ZZ001	J-Devices	500	77	0	
S6J324(Au)	4C39127	644ZZ002	J-Devices	500	77	0	
S6J324(Au)	4C39127	644ZZ003	J-Devices	500	77	0	
S6J324(Cu)	4C39127	644ZZ004	J-Devices	1000	77	0	
S6J324(Cu)	4C39127	644ZZ005	J-Devices	1000	77	0	
S6J324(Cu)	4C39127	644ZZ006	J-Devices	1000	76	0	
S6J311(Au)	4C39287	644ZZ007	J-Devices	500	77	0	
S6J311(Au)	4C39287	644ZZ008	J-Devices	500	77	0	
S6J311(Au)	4C39287	644ZZ009	J-Devices	500	77	0	
S6J311(Cu)	4C39287	644ZZ010	J-Devices	1000	77	0	
S6J311(Cu)	4C39287	644ZZ011	J-Devices	1000	77	0	
S6J311(Cu)	4C39287	644ZZ012	J-Devices	1000	77	0	

STRESS ; High Temperature Storage

MB9DF566	4K84872	1643-801	J-Devices	1000	45	0	
S6J324(Au)	4C39127	644ZZ001	J-Devices	2000	45	0	
S6J324(Au)	4C39127	644ZZ002	J-Devices	2000	45	0	
S6J324(Au)	4C39127	644ZZ003	J-Devices	2000	45	0	
S6J324(Cu)	4C39127	644ZZ004	J-Devices	2000	45	0	
S6J324(Cu)	4C39127	644ZZ005	J-Devices	2000	45	0	
S6J324(Cu)	4C39127	644ZZ006	J-Devices	2000	45	0	
S6J311(Au)	4C39287	644ZZ007	J-Devices	1000	45	0	
S6J311(Au)	4C39287	644ZZ008	J-Devices	1000	45	0	
S6J311(Au)	4C39287	644ZZ009	J-Devices	1000	45	0	
S6J311(Cu)	4C39287	644ZZ010	J-Devices	2000	45	0	
S6J311(Cu)	4C39287	644ZZ011	J-Devices	2000	45	0	
S6J311(Cu)	4C39287	644ZZ012	J-Devices	2000	45	0	



Document History Page

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Rev.	ECN No.	Orig. of Change	Description of Change
**	5782340	KUMI	Initial spec. release.