



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

PRODUCT CHANGE NOTIFICATION

PCN: PCN190302

Date: January 21, 2019

Subject: Qualification of G700LA Mold Compound, Pure Sn Leadfinish and CuPdAu Wire for Select QFN Pb-Free Packages Assembled at ASE-KH

To: FUTURE ELECTRONICS
FUTURE ELE
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Change Type: Major

Description of Change:

Cypress announces the qualification of G700LA mold compound, Pure Sn leadfinish and CuPdAu wire for select QFN Pb-Free packages assembled at Advanced Semiconductor Engineering-Kaohsiung (ASE-KH, 26 Chin 3rd Rd., 811, Nantze Export Processing Zone Kaohsiung, Taiwan, R.O.C.).

This mold compound is consistent with Cypress' drive to Green and Pb-free RoHS compliant packages. In addition, this Green and Pb-free G700LA mold compound is compatible with industry standard reflow temperatures for applicable package volume, thickness and lead finish. Also, the new leadfinish and new bond wire type is compatible with industry standards.

The 56-Lead QFN Pb-Free packages are assembled at ASE-KH using the following Bill of Materials:

Material	New ASE-KH Bill of Materials	Current ASE-KH Bill of Materials
Mold Compound	Sumitomo G700LA	Sumitomo G631H
Leadfinish	Pure Sn	NiPdAu
Die Attach Material	Hitachi EN4900F	Hitachi EN4900F
Bond Wire	0.8 mil CuPdAu wire	0.8 mil Copper (Cu)

The 48-Lead QFN Pb-Free packages are assembled at ASE-KH using the following Bill of Materials:

Material	New ASE-KH Bill of Materials	Current ASE-KH Bill of Materials
Mold Compound	Sumitomo G700LA	Sumitomo G631H
Leadfinish	Pure Sn	NiPdAu
Die Attach Material	Hitachi EN4900F	Hitachi EN4900F
Bond Wire	0.8 mil CuPdAu wire	0.8 mil Copper (Cu)

The 32-Lead QFN Pb-Free packages are assembled at ASE-KH using the following Bill of Materials:

Material	New ASE-KH Bill of Materials	Current ASE-KH Bill of Materials
Mold Compound	Sumitomo G700LA	Sumitomo G631H
Leadfinish	Pure Sn	NiPdAu
Die Attach Material	Hitachi EN4900F	Hitachi EN4900F
Bond Wire	0.8 mil CuPdAu wire	0.8 mil Copper (Cu)

Benefit of Change:

The qualification of the G700LA mold compound and Pure Sn leadfinish allows improvement in product reliability and/or product cycle time.

The conversion to CuPdAu wire bonds will keep Cypress in alignment with the overall industry trend towards copper wire bonds.

Part Numbers Affected: 15

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:

These changes have been qualified through a series of tests documented in the Qualification Test Plans summarized in the table below. 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.

QTP Number	Qualification
182610	56L QFN 8x8x1mm BOM Change Qual at ASE-KH
183315	48L QFN BOM Change Qual and CuPdAu Wire Phase-in at ASE-KH
184103	32L QFN BOM Change Qual and CuPdAu Wire Phase-in at ASE-KH

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 with the G700LA mold compound, Pure Sn leadfinish and CuPdAu wire 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

Cypress Semiconductor Package Qualification Report

QTP# 184103 VERSION
December 2018**

**QFN-32 (5x5x1.0mm)
Pure Sn, CuPdAu Wire
MSL3, 260°C Reflow
ASEK-Taiwan (G)**

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

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PACKAGE QUALIFICATION HISTORY

QTP Number	Description of Qualification Purpose	Date
133309	Qualification of QFN-48 (7x7x1.0mm) / QFN68L (8x8x1.0mm) in ASEK assembly using 0.8mil CuPd wire, G700LA / G700SLA mold comp, EN4900F die attach epoxy with Pure Sn leadfinish. This is large die qual for 68L QFN assembled in ASEK.	Aug. 2013
182610	Qualification of QFN-56 (8x8x1.0mm) in ASEK-Taiwan (G) using 0.8mil CuPdAu wire with G700LA mold compound, EN4900F die attach material and Pure Sn leadfinish at MSL3, 260°C Reflow Temperature	Dec. 2018
183315	Qualification of QFN-48 (7x7x1.0mm) in ASEK-Taiwan (G) using 0.8mil CuPdAu wire with G700LA mold compound, EN4900F die attach material and Pure Sn leadfinish at MSL3, 260°C Reflow Temperature	Dec. 2018
184103	Qualification of QFN-32 (5x5x1.0mm) in ASEK-Taiwan (G) using 0.8mil CuPdAu wire with G700LA mold compound, EN4900F die attach material and Pure Sn leadfinish at MSL3, 260°C Reflow Temperature	Dec. 2018

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	QFN68
Package Outline, Type, or Name:	QFN68 (8x8x1.0mm)
Mold Compound Name/Manufacturer:	G700LA / Sumitomo G700SLA / Sumitomo
Mold Compound Flammability Rating:	V-0 / UL94
Mold Compound Alpha Emission Rate:	G700LA – n/a G700SLA - <0.001 cph/m2
Oxygen Rating Index: >28%	54% (typical)
Lead Frame Designation:	RMP (with slots)
Lead Frame Material:	Copper
Substrate Material:	n/a
Lead Finish, Composition / Thickness:	Pure Sn
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Wafer Saw
Die Attach Supplier:	HITACHI
Die Attach Material:	EN4900F
Bond Diagram Designation	001-76055
Wire Bond Method:	Thermosonic
Wire Material/Size:	CuPd / 0.8mil
Thermal Resistance Theta JA °C/W:	14.17 C/W
Package Cross Section Yes/No:	n/a
Assembly Process Flow:	49-41999
Name/Location of Assembly (prime) facility:	ASE-G
MSL LEVEL	3
REFLOW PROFILE	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	CML (R)

Note: Please contact a Cypress Representative for other package availability.

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	QFN56
Package Outline, Type, or Name:	QFN56 (8x8x1.0mm)
Mold Compound Name/Manufacturer:	G700LA / Sumitomo
Mold Compound Flammability Rating:	V-0 / UL94
Mold Compound Alpha Emission Rate:	G700LA – n/a
Oxygen Rating Index: >28%	54% (typical)
Lead Frame Designation:	RMP (with slots)
Lead Frame Material:	Copper
Substrate Material:	n/a
Lead Finish, Composition / Thickness:	Pure Sn
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Wafer Saw
Die Attach Supplier:	HITACHI
Die Attach Material:	EN4900F
Bond Diagram Designation	001-74242 / 001-69552 / 001-68162
Wire Bond Method:	Thermosonic
Wire Material/Size:	CuPdAu / 0.8mil (20um)
Package Cross Section Yes/No:	n/a
Assembly Process Flow:	49-41999
Name/Location of Assembly (prime) facility:	ASE-G
MSL Level	3
Reflow Profile	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	CML (R)

Note: Please contact a Cypress Representative for other package availability.

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	QFN48
Package Outline, Type, or Name:	QFN48 (7x7x1.0mm)
Mold Compound Name/Manufacturer:	G700LA / Sumitomo
Mold Compound Flammability Rating:	V-0 / UL94
Mold Compound Alpha Emission Rate:	G700LA – n/a
Oxygen Rating Index: >28%	54% (typical)
Lead Frame Designation:	RMP (with slots)
Lead Frame Material:	Copper
Substrate Material:	n/a
Lead Finish, Composition / Thickness:	Pure Sn
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Wafer Saw
Die Attach Supplier:	HITACHI
Die Attach Material:	EN4900F
Bond Diagram Designation	001-69865
Wire Bond Method:	Thermosonic
Wire Material/Size:	CuPdAu / 0.8mil (20um)
Package Cross Section Yes/No:	n/a
Assembly Process Flow:	49-41999
Name/Location of Assembly (prime) facility:	ASE-G
MSL Level	3
Reflow Profile	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	CML (R)

Note: Please contact a Cypress Representative for other package availability.

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	QFN32
Package Outline, Type, or Name:	QFN32 (5x5x1.0mm)
Mold Compound Name/Manufacturer:	G700LA / Sumitomo
Mold Compound Flammability Rating:	V-0 / UL94
Mold Compound Alpha Emission Rate:	G700LA – n/a
Oxygen Rating Index: >28%	54% (typical)
Lead Frame Designation:	FMP
Lead Frame Material:	Copper
Substrate Material:	n/a
Lead Finish, Composition / Thickness:	Pure Sn
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Wafer Saw
Die Attach Supplier:	HITACHI
Die Attach Material:	EN4900F
Bond Diagram Designation	001-90049/ 001-68160/ 001-69576
Wire Bond Method:	Thermosonic
Wire Material/Size:	CuPdAu / 0.8mil (20um)
Package Cross Section Yes/No:	n/a
Assembly Process Flow:	49-41999
Name/Location of Assembly (prime) facility:	ASE-G
MSL Level	3
Reflow Profile	260C

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS

Stress/Test	Test Condition (Temp/Bias)	Result P/F
Pressure Cooker Test	JESD22-A102, 121 C, 100%RH, 15 PSIG Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 C°, 60% RH, 260C Reflow)	P
Temperature Cycle	MIL-STD-883C, Method 1010, Condition C, -65 C to 150 C Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 C°, 60% RH, 260C Reflow)	P
Acoustic Microscopy	J-STD-020 Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 C°, 60% RH, 260C Reflow)	P
Constructional Analysis	Criteria: Meet external and internal characteristics of package	P
High Accelerated Saturation Test (HAST)	JEDEC STD 22-A110, 130 C, 85%RH, 5.5V Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 C°, 60% RH, 260C Reflow)	P
X-Ray	MIL-STD-883 - 2012	P
Ball Shear	JESD22-B116A, Cpk : 1.33, Ppk : 1.66	P
Internal Visual	MIL-STD-883-2014	P
High Temp Storage	JESD22-A103: 150 C, no bias	P
Dye Penetrant Test	Test to determine the existence and extent of cracks, Criteria: No Package Crack	P
Die Shear	MIL-STD-883, Method 2019	
Thermal Shock	MIL-STD-883C, Method 1011, Condition B, -55 C to 125C and JESD22-A106B	P
Bond Pull	MIL-STD-883 – Method 2011, Cpk : 1.33, Ppk : 1.66 P	P

Reliability Test Data

QTP #: 133309

<i>Device</i>	<i>Package</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Assy Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
STRESS: ACOUSTIC, MSL3								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	COMP	15	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	COMP	15	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	COMP	15	0	
STRESS: BALL SHEAR								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	COMP	150	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	COMP	150	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	COMP	150	0	
STRESS: BOND PULL								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	COMP	150	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	COMP	150	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	COMP	150	0	
STRESS: CONSTRUCTIONAL ANALYSIS								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	COMP	5	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	COMP	5	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	COMP	5	0	
STRESS: DIE SHEAR								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	COMP	15	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	COMP	15	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	COMP	15	0	
STRESS: DYE PENETRANT TEST								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	COMP	15	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	COMP	15	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	COMP	15	0	
STRESS: HI-ACCEL SATURATION TEST, 130C, 5.5V, 85%RH, PRE COND 192 HR 30C/60%RH, MSL3								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	128	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	128	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	128	37	0	

Reliability Test Data

QTP #: 133309

<i>Device</i>	<i>Package</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Assy Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
STRESS: HIGH TEMPERATURE STORAGE								
CY8CTMA4634 (8CC20411BC)	LQ56B	4225607	611318686	ASE-G	500	78	0	
CY8CTMA4634 (8CC20411BC)	LQ56B	4225607	611318688	ASE-G	500	78	0	
CY8CTMA4634 (8CC20411BC)	LQ56B	4225607	611318689	ASE-G	500	78	0	
STRESS: INTERNAL VISUAL								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	COMP	5	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	COMP	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	COMP	37	0	
STRESS: PRESSURE COOKER TEST (121C, 100%RH), 15 Psig, PRE COND 192 HR 30C/60%RH (MSL3)								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	168	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	288	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	168	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	288	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	168	80	0	
STRESS: TC COND. C -65C TO 150C, PRECONDITION 192 HRS 30C/60%RH								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	500	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	1000	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	500	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	1000	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	500	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	1000	80	0	
STRESS: XRAY								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	COMP	15	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	COMP	15	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	COMP	15	0	

Reliability Test Data

QTP #: 182610

Device	Package	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3								
CY8CLED01D01 (8CC43341BC)	LT56Y	4705810	611813012	ASE-G	COMP	22	0	
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	COMP	22	0	
CY7C65640A (7CC65642EC)	LT56Y	4712660	611813011	ASE-G	COMP	22	0	
STRESS: BALL SHEAR								
CY8CLED01D01 (8CC43341BC)	LT56Y	4705810	611813012	ASE-G	COMP	100	0	
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	COMP	100	0	
CY7C65640A (7CC65642EC)	LT56Y	4712660	611813011	ASE-G	COMP	100	0	
STRESS: BOND PULL								
CY8CLED01D01 (8CC43341BC)	LT56Y	4705810	611813012	ASE-G	COMP	100	0	
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	COMP	100	0	
CY7C65640A (7CC65642EC)	LT56Y	4712660	611813011	ASE-G	COMP	100	0	
STRESS: CONSTRUCTIONAL ANALYSIS								
CY8CLED01D01 (8CC43341BC)	LT56Y	4705810	611813012	ASE-G	COMP	5	0	
STRESS: DYE PENETRANT TEST								
CY8CLED01D01 (8CC43341BC)	LT56Y	4705810	611813012	ASE-G	COMP	15	0	
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	COMP	15	0	
CY7C65640A (7CC65642EC)	LT56Y	4712660	611813011	ASE-G	COMP	15	0	
STRESS: FINAL VISUAL INSPECTION								
CY8CLED01D01 (8CC43341BC)	LT56Y	4705810	611813012	ASE-G	COMP	468	0	
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	COMP	495	0	
CY7C65640A (7CC65642EC)	LT56Y	4712660	611813011	ASE-G	COMP	491	0	
STRESS: HIGH TEMPERATURE STORAGE								
CY8CLED01D01 (8CC43341BC)	LT56Y	4705810	611813012	ASE-G	500	50	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE (150C, 3.8V, Vcc Max)								
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	500	80	0	

Reliability Test Data

QTP #: 182610

Device	Package	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: HI-ACCEL SATURATION TEST, 130C, 5.6V, 85%RH, PRE COND 192 HR 30C/60%RH, MSL3								
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	96	30	0	
CY7C65640A (7CC65642EC)	LT56Y	4712660	611813011	ASE-G	96	30	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611815204	ASE-G	96	30	0	
STRESS: PRESSURE COOKER TEST (121C, 100%RH), 15 Psig, PRE COND 192 HR 30C/60%RH (MSL3)								
CY8CLED01D01 (8CC43341BC)	LT56Y	4705810	611813012	ASE-G	168	80	0	
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	168	80	0	
CY7C65640A (7CC65642EC)	LT56Y	4712660	611813011	ASE-G	168	80	0	
STRESS: TC COND. C -65C TO 150C, PRECONDITION 192 HRS 30C/60%RH								
CY8CLED01D01 (8CC43341BC)	LT56Y	4705810	611813012	ASE-G	500	80	0	
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	500	80	0	
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	1000	80	0	
CY7C65640A (7CC65642EC)	LT56Y	4712660	611813011	ASE-G	500	80	0	
CY7C65640A (7CC65642EC)	LT56Y	4712660	611813011	ASE-G	1000	80	0	
STRESS: XRAY								
CY8CLED01D01 (8CC43341BC)	LT56Y	4705810	611813012	ASE-G	COMP	15	0	
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	COMP	15	0	
CY7C65640A (7CC65642EC)	LT56Y	4712660	611813011	ASE-G	COMP	15	0	

Reliability Test Data

QTP #: 183315

Device	Package	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3								
CY8C28645 (8CC28645AC)	LT48D	4752146	611815204	ASE-G	COMP	22	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611812800	ASE-G	COMP	22	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611819299	ASE-G	COMP	22	0	
STRESS: BALL SHEAR								
CY8C28645 (8CC28645AC)	LT48D	4752146	611815204	ASE-G	COMP	100	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611812800	ASE-G	COMP	100	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611819299	ASE-G	COMP	100	0	
STRESS: BOND PULL								
CY8C28645 (8CC28645AC)	LT48D	4752146	611815204	ASE-G	COMP	100	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611812800	ASE-G	COMP	100	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611819299	ASE-G	COMP	100	0	
STRESS: CONSTRUCTIONAL ANALYSIS								
CY8C28645 (8CC28645AC)	LT48D	4752146	611815204	ASE-G	COMP	5	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611812800	ASE-G	COMP	5	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611819299	ASE-G	COMP	5	0	
STRESS: DYE PENETRANT TEST								
CY8C28645 (8CC28645AC)	LT48D	4752146	611815204	ASE-G	COMP	15	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611812800	ASE-G	COMP	15	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611819299	ASE-G	COMP	15	0	
STRESS: FINAL VISUAL INSPECTION								
CY8C28645 (8CC28645AC)	LT48D	4752146	611815204	ASE-G	COMP	499	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611812800	ASE-G	COMP	496	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611819299	ASE-G	COMP	498	0	
STRESS: HI-ACCEL SATURATION TEST, 130C, 5.6V, 85%RH, PRE COND 192 HR 30C/60%RH, MSL3								
CY8C28645 (8CC28645AC)	LT48D	4752146	611815204	ASE-G	96	30	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611812800	ASE-G	96	30	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611819299	ASE-G	96	30	0	

Reliability Test Data

QTP #: 183315

Device	Package	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
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STRESS: HIGH TEMPERATURE STORAGE

CY8C28645 (8CC28645AC)	LT48D	4752146	611815204	ASE-G	500	50	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611815204	ASE-G	1000	50	0	

STRESS: PRESSURE COOKER TEST (121C, 100%RH), 15 Psig, PRE COND 192 HR 30C/60%RH (MSL3)

CY8C28645 (8CC28645AC)	LT48D	4752146	611815204	ASE-G	96	80	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611815204	ASE-G	168	80	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611812800	ASE-G	96	80	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611812800	ASE-G	168	80	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611819299	ASE-G	96	80	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611819299	ASE-G	168	80	0	

STRESS: TC COND. C -65C TO 150C, PRECONDITION 192 HRS 30C/60%RH

CY8C28645 (8CC28645AC)	LT48D	4752146	611815204	ASE-G	500	80	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611815204	ASE-G	1000	80	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611812800	ASE-G	500	79	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611812800	ASE-G	1000	79	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611819299	ASE-G	500	80	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611819299	ASE-G	1000	80	0	

STRESS: XRAY

CY8C28645 (8CC28645AC)	LT48D	4752146	611815204	ASE-G	COMP	15	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611812800	ASE-G	COMP	15	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611819299	ASE-G	COMP	15	0	

Reliability Test Data

QTP #: 184103

<i>Device</i>	<i>Package</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Assy Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
STRESS: ACOUSTIC, MSL3								
CY7C65213 (7CC68401A)	LT32B	4809318	611831198	ASE-G	COMP	22	0	
CS7453AT (8CC21434A)	LT32B	4748091	611832499	ASE-G	COMP	22	0	
CY8C24423A (8CC24423C)	LT32B	5805009	611829991	ASE-G	COMP	22	0	
STRESS: BALL SHEAR								
CY7C65213 (7CC68401A)	LT32B	4809318	611831198	ASE-G	COMP	100	0	
CS7453AT (8CC21434A)	LT32B	4748091	611832499	ASE-G	COMP	100	0	
CY8C24423A (8CC24423C)	LT32B	5805009	611829991	ASE-G	COMP	100	0	
STRESS: BOND PULL								
CY7C65213 (7CC68401A)	LT32B	4809318	611831198	ASE-G	COMP	100	0	
CS7453AT (8CC21434A)	LT32B	4748091	611832499	ASE-G	COMP	100	0	
CY8C24423A (8CC24423C)	LT32B	5805009	611829991	ASE-G	COMP	100	0	
STRESS: CONSTRUCTIONAL ANALYSIS								
CY7C65213 (7CC68401A)	LT32B	4809318	611831198	ASE-G	COMP	5	0	
CS7453AT (8CC21434A)	LT32B	4748091	611832499	ASE-G	COMP	5	0	
CY8C24423A (8CC24423C)	LT32B	5805009	611829991	ASE-G	COMP	5	0	
STRESS: CROSS SECTION								
CY7C65213 (7CC68401A)	LT32B	4809318	611831198	ASE-G	COMP	5	0	
CS7453AT (8CC21434A)	LT32B	4748091	611832499	ASE-G	COMP	5	0	
CY8C24423A (8CC24423C)	LT32B	5805009	611829991	ASE-G	COMP	5	0	
STRESS: DYE PENETRANT TEST								
CY7C65213 (7CC68401A)	LT32B	4809318	611831198	ASE-G	COMP	15	0	
CS7453AT (8CC21434A)	LT32B	4748091	611832499	ASE-G	COMP	15	0	
CY8C24423A (8CC24423C)	LT32B	5805009	611829991	ASE-G	COMP	15	0	
STRESS: FINAL VISUAL INSPECTION								
CY7C65213 (7CC68401A)	LT32B	4809318	611831198	ASE-G	COMP	497	0	
CS7453AT (8CC21434A)	LT32B	4748091	611832499	ASE-G	COMP	489	0	
CY8C24423A (8CC24423C)	LT32B	5805009	611829991	ASE-G	COMP	494	0	

Document History Page

Document Title:QTP# 184103: 32-Pin QFN (5x5x1.0mm) Pure Sn Leadfinish, CuPdAu Wire MSL3, 260C Reflow, ASEK-Taiwan (G)

Document Number: 002-25951

Rev.	ECN No.	Orig. of Change	Description of Change
**	6410281	JYF	Initial Spec Release

Cypress Semiconductor Package Qualification Report

QTP# 183315 VERSION
December 2018**

**QFN-48 (7x7x1.0mm)
Pure Sn, CuPdAu Wire
MSL3, 260°C Reflow
ASEK-Taiwan (G)**

**FOR ANY QUESTIONS ON THIS REPORT, PLEASE CONTACT
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David Hoffman
Reliability Director

PACKAGE QUALIFICATION HISTORY

QTP Number	Description of Qualification Purpose	Date
133309	Qualification of QFN-48 (7x7x1.0mm) / QFN68L (8x8x1.0mm) in ASEK assembly using 0.8mil CuPd wire, G700LA / G700SLA mold comp, EN4900F die attach epoxy with Pure Sn leadfinish. This is large die qual for 68L QFN assembled in ASEK.	Aug 2013
182610	Qualification of QFN-56 (8x8x1.0mm) in ASEK-Taiwan (G) using 0.8mil CuPdAu wire with G700LA mold compound, EN4900F die attach material and Pure Sn leadfinish at MSL3, 260°C Reflow Temperature	Dec 2018
183315	Qualification of QFN-48 (7x7x1.0mm) in ASEK-Taiwan (G) using 0.8mil CuPdAu wire with G700LA mold compound, EN4900F die attach material and Pure Sn leadfinish at MSL3, 260°C Reflow Temperature	Dec 2018

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	QFN68L
Package Outline, Type, or Name:	QFN68L (8x8x1.0mm)
Mold Compound Name/Manufacturer:	G700LA / Sumitomo G700SLA / Sumitomo
Mold Compound Flammability Rating:	V-0 / UL94
Mold Compound Alpha Emission Rate:	G700LA – n/a G700SLA - <0.001 cph/m2
Oxygen Rating Index: >28%	54% (typical)
Lead Frame Designation:	RMP (with slots)
Lead Frame Material:	Copper
Substrate Material:	n/a
Lead Finish, Composition / Thickness:	Pure Sn
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Wafer Saw
Die Attach Supplier:	HITACHI
Die Attach Material:	EN4900F
Bond Diagram Designation	001-76055
Wire Bond Method:	Thermosonic
Wire Material/Size:	CuPd / 0.8mil
Thermal Resistance Theta JA °C/W:	14.17 C/W
Package Cross Section Yes/No:	n/a
Assembly Process Flow:	49-41999
Name/Location of Assembly (prime) facility:	ASE-G
MSL LEVEL	3
REFLOW PROFILE	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	CML (R)

Note: Please contact a Cypress Representative for other package availability.

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	QFN56
Package Outline, Type, or Name:	QFN56 (8x8x1.0mm)
Mold Compound Name/Manufacturer:	G700LA / Sumitomo
Mold Compound Flammability Rating:	V-0 / UL94
Mold Compound Alpha Emission Rate:	G700LA – n/a
Oxygen Rating Index: >28%	54% (typical)
Lead Frame Designation:	RMP (with slots)
Lead Frame Material:	Copper
Substrate Material:	n/a
Lead Finish, Composition / Thickness:	Pure Sn
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Wafer Saw
Die Attach Supplier:	HITACHI
Die Attach Material:	EN4900F
Bond Diagram Designation	001-74242 / 001-69552 / 001-68162
Wire Bond Method:	Thermosonic
Wire Material/Size:	CuPdAu / 0.8mil (20um)
Thermal Resistance Theta JA °C/W:	16.6 C/W
Package Cross Section Yes/No:	n/a
Assembly Process Flow:	49-41999
Name/Location of Assembly (prime) facility:	ASE-G
MSL Level	3
Reflow Profile	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	CML (R)

Note: Please contact a Cypress Representative for other package availability.

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	QFN48
Package Outline, Type, or Name:	QFN48 (7x7x1.0mm)
Mold Compound Name/Manufacturer:	G700LA / Sumitomo
Mold Compound Flammability Rating:	V-0 / UL94
Mold Compound Alpha Emission Rate:	G700LA – n/a
Oxygen Rating Index: >28%	54% (typical)
Lead Frame Designation:	RMP (with slots)
Lead Frame Material:	Copper
Substrate Material:	n/a
Lead Finish, Composition / Thickness:	Pure Sn
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Wafer Saw
Die Attach Supplier:	HITACHI
Die Attach Material:	EN4900F
Bond Diagram Designation	001-69865
Wire Bond Method:	Thermosonic
Wire Material/Size:	CuPdAu / 0.8mil (20um)
Thermal Resistance Theta JA °C/W:	16.6 C/W
Package Cross Section Yes/No:	n/a
Assembly Process Flow:	49-41999
Name/Location of Assembly (prime) facility:	ASE-G
MSL Level	3
Reflow Profile	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	CML (R)

Note: Please contact a Cypress Representative for other package availability.

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS

Stress/Test	Test Condition (Temp/Bias)	Result P/F
Pressure Cooker Test	JESD22-A102, 121 C, 100%RH, 15 PSIG Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 C°, 60% RH, 260C Reflow)	P
Temperature Cycle	MIL-STD-883C, Method 1010, Condition C, -65 C to 150 C Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 C°, 60% RH, 260C Reflow)	P
Acoustic Microscopy	J-STD-020 Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 C°, 60% RH, 260C Reflow)	P
Constructional Analysis	Criteria: Meet external and internal characteristics of package	P
High Accelerated Saturation Test (HAST)	JEDEC STD 22-A110, 130 C, 85%RH, 5.5V Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 C°, 60% RH, 260C Reflow)	P
X-Ray	MIL-STD-883 - 2012	P
Ball Shear	JESD22-B116A, Cpk : 1.33, Ppk : 1.66	P
Internal Visual	MIL-STD-883-2014	P
High Temp Storage	JESD22-A103: 150 C, no bias	P
Dye Penetrant Test	Test to determine the existence and extent of cracks, Criteria: No Package Crack	P
Die Shear	MIL-STD-883, Method 2019	
Thermal Shock	MIL-STD-883C, Method 1011, Condition B, -55 C to 125C and JESD22-A106B	P
Bond Pull	MIL-STD-883 – Method 2011, Cpk : 1.33, Ppk : 1.66 P	P

Reliability Test Data

QTP #: 133309

Device	Package	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	COMP	15	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	COMP	15	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	COMP	15	0	
STRESS: BALL SHEAR								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	COMP	150	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	COMP	150	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	COMP	150	0	
STRESS: BOND PULL								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	COMP	150	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	COMP	150	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	COMP	150	0	
STRESS: CONSTRUCTIONAL ANALYSIS								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	COMP	5	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	COMP	5	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	COMP	5	0	
STRESS: DIE SHEAR								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	COMP	15	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	COMP	15	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	COMP	15	0	
STRESS: DYE PENETRANT TEST								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	COMP	15	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	COMP	15	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	COMP	15	0	
STRESS: HI-ACCEL SATURATION TEST, 130C, 5.5V, 85%RH, PRE COND 192 HR 30C/60%RH, MSL3								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	128	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	128	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	128	37	0	

Reliability Test Data

QTP #: 133309

<i>Device</i>	<i>Package</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Assy Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
STRESS: HIGH TEMPERATURE STORAGE								
CY8CTMA4634 (8CC20411BC)	LQ56B	4225607	611318686	ASE-G	500	78	0	
CY8CTMA4634 (8CC20411BC)	LQ56B	4225607	611318688	ASE-G	500	78	0	
CY8CTMA4634 (8CC20411BC)	LQ56B	4225607	611318689	ASE-G	500	78	0	
STRESS: INTERNAL VISUAL								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	COMP	5	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	COMP	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	COMP	37	0	
STRESS: PRESSURE COOKER TEST (121C, 100%RH), 15 Psig, PRE COND 192 HR 30C/60%RH (MSL3)								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	168	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	288	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	168	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	288	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	168	80	0	
STRESS: TC COND. C -65C TO 150C, PRECONDITION 192 HRS 30C/60%RH								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	500	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	1000	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	500	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	1000	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	500	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	1000	80	0	
STRESS: XRAY								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	COMP	15	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	COMP	15	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	COMP	15	0	

Reliability Test Data

QTP #: 182610

Device	Package	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3								
CY8CLED01D01 (8CC43341BC)	LT56Y	4705810	611813012	ASE-G	COMP	22	0	
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	COMP	22	0	
CY7C65640A (7CC65642EC)	LT56Y	4712660	611813011	ASE-G	COMP	22	0	
STRESS: BALL SHEAR								
CY8CLED01D01 (8CC43341BC)	LT56Y	4705810	611813012	ASE-G	COMP	100	0	
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	COMP	100	0	
CY7C65640A (7CC65642EC)	LT56Y	4712660	611813011	ASE-G	COMP	100	0	
STRESS: BOND PULL								
CY8CLED01D01 (8CC43341BC)	LT56Y	4705810	611813012	ASE-G	COMP	100	0	
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	COMP	100	0	
CY7C65640A (7CC65642EC)	LT56Y	4712660	611813011	ASE-G	COMP	100	0	
STRESS: CONSTRUCTIONAL ANALYSIS								
CY8CLED01D01 (8CC43341BC)	LT56Y	4705810	611813012	ASE-G	COMP	5	0	
STRESS: DYE PENETRANT TEST								
CY8CLED01D01 (8CC43341BC)	LT56Y	4705810	611813012	ASE-G	COMP	15	0	
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	COMP	15	0	
CY7C65640A (7CC65642EC)	LT56Y	4712660	611813011	ASE-G	COMP	15	0	
STRESS: FINAL VISUAL INSPECTION								
CY8CLED01D01 (8CC43341BC)	LT56Y	4705810	611813012	ASE-G	COMP	468	0	
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	COMP	495	0	
CY7C65640A (7CC65642EC)	LT56Y	4712660	611813011	ASE-G	COMP	491	0	
STRESS: HIGH TEMPERATURE STORAGE								
CY8CLED01D01 (8CC43341BC)	LT56Y	4705810	611813012	ASE-G	500	50	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE (150C, 3.8V, Vcc Max)								
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	500	80	0	

Reliability Test Data

QTP #: 182610

Device	Package	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: HI-ACCEL SATURATION TEST, 130C, 5.6V, 85%RH, PRE COND 192 HR 30C/60%RH, MSL3								
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	96	30	0	
CY7C65640A (7CC65642EC)	LT56Y	4712660	611813011	ASE-G	96	30	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611815204	ASE-G	96	30	0	
STRESS: PRESSURE COOKER TEST (121C, 100%RH), 15 Psig, PRE COND 192 HR 30C/60%RH (MSL3)								
CY8CLED01D01 (8CC43341BC)	LT56Y	4705810	611813012	ASE-G	168	80	0	
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	168	80	0	
CY7C65640A (7CC65642EC)	LT56Y	4712660	611813011	ASE-G	168	80	0	
STRESS: TC COND. C -65C TO 150C, PRECONDITION 192 HRS 30C/60%RH								
CY8CLED01D01 (8CC43341BC)	LT56Y	4705810	611813012	ASE-G	500	80	0	
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	500	80	0	
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	1000	80	0	
CY7C65640A (7CC65642EC)	LT56Y	4712660	611813011	ASE-G	500	80	0	
CY7C65640A (7CC65642EC)	LT56Y	4712660	611813011	ASE-G	1000	80	0	
STRESS: XRAY								
CY8CLED01D01 (8CC43341BC)	LT56Y	4705810	611813012	ASE-G	COMP	15	0	
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	COMP	15	0	
CY7C65640A (7CC65642EC)	LT56Y	4712660	611813011	ASE-G	COMP	15	0	

Reliability Test Data

QTP #: 183315

<i>Device</i>	<i>Package</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Assy Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
STRESS: ACOUSTIC, MSL3								
CY8C28645 (8CC28645AC)	LT48D	4752146	611815204	ASE-G	COMP	22	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611812800	ASE-G	COMP	22	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611819299	ASE-G	COMP	22	0	
STRESS: BALL SHEAR								
CY8C28645 (8CC28645AC)	LT48D	4752146	611815204	ASE-G	COMP	100	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611812800	ASE-G	COMP	100	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611819299	ASE-G	COMP	100	0	
STRESS: BOND PULL								
CY8C28645 (8CC28645AC)	LT48D	4752146	611815204	ASE-G	COMP	100	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611812800	ASE-G	COMP	100	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611819299	ASE-G	COMP	100	0	
STRESS: CONSTRUCTIONAL ANALYSIS								
CY8C28645 (8CC28645AC)	LT48D	4752146	611815204	ASE-G	COMP	5	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611812800	ASE-G	COMP	5	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611819299	ASE-G	COMP	5	0	
STRESS: DYE PENETRANT TEST								
CY8C28645 (8CC28645AC)	LT48D	4752146	611815204	ASE-G	COMP	15	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611812800	ASE-G	COMP	15	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611819299	ASE-G	COMP	15	0	
STRESS: FINAL VISUAL INSPECTION								
CY8C28645 (8CC28645AC)	LT48D	4752146	611815204	ASE-G	COMP	499	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611812800	ASE-G	COMP	496	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611819299	ASE-G	COMP	498	0	
STRESS: HI-ACCEL SATURATION TEST, 130C, 5.6V, 85%RH, PRE COND 192 HR 30C/60%RH, MSL3								
CY8C28645 (8CC28645AC)	LT48D	4752146	611815204	ASE-G	96	30	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611812800	ASE-G	96	30	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611819299	ASE-G	96	30	0	

Reliability Test Data

QTP #: 183315

Device	Package	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
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STRESS: HIGH TEMPERATURE STORAGE

CY8C28645 (8CC28645AC)	LT48D	4752146	611815204	ASE-G	500	50	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611815204	ASE-G	1000	50	0	

STRESS: PRESSURE COOKER TEST (121C, 100%RH), 15 Psig, PRE COND 192 HR 30C/60%RH (MSL3)

CY8C28645 (8CC28645AC)	LT48D	4752146	611815204	ASE-G	96	80	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611815204	ASE-G	168	80	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611812800	ASE-G	96	80	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611812800	ASE-G	168	80	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611819299	ASE-G	96	80	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611819299	ASE-G	168	80	0	

STRESS: TC COND. C -65C TO 150C, PRECONDITION 192 HRS 30C/60%RH

CY8C28645 (8CC28645AC)	LT48D	4752146	611815204	ASE-G	500	80	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611815204	ASE-G	1000	80	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611812800	ASE-G	500	79	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611812800	ASE-G	1000	79	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611819299	ASE-G	500	80	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611819299	ASE-G	1000	80	0	

STRESS: XRAY

CY8C28645 (8CC28645AC)	LT48D	4752146	611815204	ASE-G	COMP	15	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611812800	ASE-G	COMP	15	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611819299	ASE-G	COMP	15	0	



Document History Page

Document Title:QTP#183315: QFN-48 (7x7x1.0mm) PURE SN, CUPDAU WIRE MSL3, 260C REFLOW ASEK-TAIWAN (G)

Document Number: 002-25944

Rev.	ECN No.	Orig. of Change	Description of Change
**	6410114	HSTO	Initial Spec Release

Cypress Semiconductor Package Qualification Report

QTP# 182610 VERSION
December 2018**

**QFN-56 (8x8x1.0mm)
Pure Sn, CuPdAu Wire
MSL3, 260°C Reflow
ASEK-Taiwan (G)**

**FOR ANY QUESTIONS ON THIS REPORT, PLEASE CONTACT
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PACKAGE QUALIFICATION HISTORY

QTP Number	Description of Qualification Purpose	Date
133309	Qualification of QFN-48 (7x7x1.0mm) / QFN68L (8x8x1.0mm) in ASEK assembly using 0.8mil CuPd wire, G700LA / G700SLA mold comp, EN4900F die attach epoxy with Pure Sn leadfinish. This is large die qual for 68L QFN assembled in ASEK.	Aug 2013
182610	Qualification of QFN-56 (8x8x1.0mm) in ASEK-Taiwan (G) using 0.8mil CuPdAu wire with G700LA mold compound, EN4900F die attach material and Pure Sn leadfinish at MSL3, 260°C Reflow Temperature	Dec 2018

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	QFN68L
Package Outline, Type, or Name:	QFN68L (8x8x1.0mm)
Mold Compound Name/Manufacturer:	G700LA / Sumitomo G700SLA / Sumitomo
Mold Compound Flammability Rating:	V-0 / UL94
Mold Compound Alpha Emission Rate:	G700LA – n/a G700SLA - <0.001 cph/m2
Oxygen Rating Index: >28%	54% (typical)
Lead Frame Designation:	RMP (with slots)
Lead Frame Material:	Copper
Substrate Material:	n/a
Lead Finish, Composition / Thickness:	Pure Sn
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Wafer Saw
Die Attach Supplier:	HITACHI
Die Attach Material:	EN4900F
Bond Diagram Designation	001-76055
Wire Bond Method:	Thermosonic
Wire Material/Size:	CuPd / 0.8mil
Thermal Resistance Theta JA °C/W:	14.17 C/W
Package Cross Section Yes/No:	n/a
Assembly Process Flow:	49-41999
Name/Location of Assembly (prime) facility:	ASE-G
MSL LEVEL	3
REFLOW PROFILE	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	CML (R)

Note: Please contact a Cypress Representative for other package availability.

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	QFN56
Package Outline, Type, or Name:	QFN56 (8x8x1.0mm)
Mold Compound Name/Manufacturer:	G700LA / Sumitomo
Mold Compound Flammability Rating:	V-0 / UL94
Mold Compound Alpha Emission Rate:	G700LA – n/a
Oxygen Rating Index: >28%	54% (typical)
Lead Frame Designation:	RMP (with slots)
Lead Frame Material:	Copper
Substrate Material:	n/a
Lead Finish, Composition / Thickness:	Pure Sn
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Wafer Saw
Die Attach Supplier:	HITACHI
Die Attach Material:	EN4900F
Bond Diagram Designation	001-74242 / 001-69552 / 001-68162
Wire Bond Method:	Thermosonic
Wire Material/Size:	CuPdAu / 0.8mil (20um)
Thermal Resistance Theta JA °C/W:	16.6 C/W
Package Cross Section Yes/No:	n/a
Assembly Process Flow:	49-41999
Name/Location of Assembly (prime) facility:	ASE-G
MSL Level	3
Reflow Profile	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	CML (R)

Note: Please contact a Cypress Representative for other package availability.

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS

Stress/Test	Test Condition (Temp/Bias)	Result P/F
Pressure Cooker Test	JESD22-A102, 121 C, 100%RH, 15 PSIG Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 C°, 60% RH, 260C Reflow)	P
Temperature Cycle	MIL-STD-883C, Method 1010, Condition C, -65 C to 150 C Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 C°, 60% RH, 260C Reflow)	P
Acoustic Microscopy	J-STD-020 Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 C°, 60% RH, 260C Reflow)	P
Constructional Analysis	Criteria: Meet external and internal characteristics of package	P
High Accelerated Saturation Test (HAST)	JEDEC STD 22-A110, 130 C, 85%RH, 5.5V Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 C°, 60% RH, 260C Reflow)	P
X-Ray	MIL-STD-883 - 2012	P
Ball Shear	JESD22-B116A, Cpk : 1.33, Ppk : 1.66	P
Internal Visual	MIL-STD-883-2014	P
High Temp Storage	JESD22-A103: 150 C, no bias	P
Dye Penetrant Test	Test to determine the existence and extent of cracks, Criteria: No Package Crack	P
Die Shear	MIL-STD-883, Method 2019	
Thermal Shock	MIL-STD-883C, Method 1011, Condition B, -55 C to 125C and JESD22-A106B	P
Bond Pull	MIL-STD-883 – Method 2011, Cpk : 1.33, Ppk : 1.66 P	P

Reliability Test Data

QTP #: 133309

Device	Package	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	COMP	15	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	COMP	15	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	COMP	15	0	
STRESS: BALL SHEAR								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	COMP	150	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	COMP	150	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	COMP	150	0	
STRESS: BOND PULL								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	COMP	150	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	COMP	150	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	COMP	150	0	
STRESS: CONSTRUCTIONAL ANALYSIS								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	COMP	5	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	COMP	5	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	COMP	5	0	
STRESS: DIE SHEAR								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	COMP	15	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	COMP	15	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	COMP	15	0	
STRESS: DYE PENETRANT TEST								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	COMP	15	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	COMP	15	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	COMP	15	0	
STRESS: HI-ACCEL SATURATION TEST, 130C, 5.5V, 85%RH, PRE COND 192 HR 30C/60%RH, MSL3								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	128	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	128	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	128	37	0	

Reliability Test Data

QTP #: 133309

Device	Package	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: HIGH TEMPERATURE STORAGE								
CY8CTMA4634 (8CC20411BC)	LQ56B	4225607	611318686	ASE-G	500	78	0	
CY8CTMA4634 (8CC20411BC)	LQ56B	4225607	611318688	ASE-G	500	78	0	
CY8CTMA4634 (8CC20411BC)	LQ56B	4225607	611318689	ASE-G	500	78	0	
STRESS: INTERNAL VISUAL								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	COMP	5	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	COMP	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	COMP	37	0	
STRESS: PRESSURE COOKER TEST (121C, 100%RH), 15 Psig, PRE COND 192 HR 30C/60%RH (MSL3)								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	168	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	288	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	168	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	288	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	168	80	0	
STRESS: TC COND. C -65C TO 150C, PRECONDITION 192 HRS 30C/60%RH								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	500	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	1000	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	500	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	1000	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	500	80	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	1000	80	0	
STRESS: XRAY								
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314399	ASE-G	COMP	15	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314401	ASE-G	COMP	15	0	
CY8C5868LTI (8C560681AC)	LT68G	4304019	611314402	ASE-G	COMP	15	0	

Reliability Test Data

QTP #: 182610

<i>Device</i>	<i>Package</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Assy Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
STRESS: ACOUSTIC, MSL3								
CY8CLED01D01 (8CC43341BC)	LT56Y	4705810	611813012	ASE-G	COMP	22	0	
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	COMP	22	0	
CY7C65640A (7CC65642EC)	LT56Y	4712660	611813011	ASE-G	COMP	22	0	
STRESS: BALL SHEAR								
CY8CLED01D01 (8CC43341BC)	LT56Y	4705810	611813012	ASE-G	COMP	100	0	
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	COMP	100	0	
CY7C65640A (7CC65642EC)	LT56Y	4712660	611813011	ASE-G	COMP	100	0	
STRESS: BOND PULL								
CY8CLED01D01 (8CC43341BC)	LT56Y	4705810	611813012	ASE-G	COMP	100	0	
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	COMP	100	0	
CY7C65640A (7CC65642EC)	LT56Y	4712660	611813011	ASE-G	COMP	100	0	
STRESS: CONSTRUCTIONAL ANALYSIS								
CY8CLED01D01 (8CC43341BC)	LT56Y	4705810	611813012	ASE-G	COMP	5	0	
STRESS: DYE PENETRANT TEST								
CY8CLED01D01 (8CC43341BC)	LT56Y	4705810	611813012	ASE-G	COMP	15	0	
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	COMP	15	0	
CY7C65640A (7CC65642EC)	LT56Y	4712660	611813011	ASE-G	COMP	15	0	
STRESS: FINAL VISUAL INSPECTION								
CY8CLED01D01 (8CC43341BC)	LT56Y	4705810	611813012	ASE-G	COMP	468	0	
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	COMP	495	0	
CY7C65640A (7CC65642EC)	LT56Y	4712660	611813011	ASE-G	COMP	491	0	
STRESS: HIGH TEMPERATURE STORAGE								
CY8CLED01D01 (8CC43341BC)	LT56Y	4705810	611813012	ASE-G	500	50	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE (150C, 3.8V, Vcc Max)								
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	500	80	0	

Reliability Test Data

QTP #: 182610

Device	Package	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: HI-ACCEL SATURATION TEST, 130C, 5.6V, 85%RH, PRE COND 192 HR 30C/60%RH, MSL3								
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	96	30	0	
CY7C65640A (7CC65642EC)	LT56Y	4712660	611813011	ASE-G	96	30	0	
CY8C28645 (8CC28645AC)	LT48D	4752146	611815204	ASE-G	96	30	0	
STRESS: PRESSURE COOKER TEST (121C, 100%RH), 15 Psig, PRE COND 192 HR 30C/60%RH (MSL3)								
CY8CLED01D01 (8CC43341BC)	LT56Y	4705810	611813012	ASE-G	168	80	0	
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	168	80	0	
CY7C65640A (7CC65642EC)	LT56Y	4712660	611813011	ASE-G	168	80	0	
STRESS: TC COND. C -65C TO 150C, PRECONDITION 192 HRS 30C/60%RH								
CY8CLED01D01 (8CC43341BC)	LT56Y	4705810	611813012	ASE-G	500	80	0	
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	500	80	0	
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	1000	80	0	
CY7C65640A (7CC65642EC)	LT56Y	4712660	611813011	ASE-G	500	80	0	
CY7C65640A (7CC65642EC)	LT56Y	4712660	611813011	ASE-G	1000	80	0	
STRESS: XRAY								
CY8CLED01D01 (8CC43341BC)	LT56Y	4705810	611813012	ASE-G	COMP	15	0	
CY7C65621 (7CC65620DK)	LT56Y	4745119	611813010	ASE-G	COMP	15	0	
CY7C65640A (7CC65642EC)	LT56Y	4712660	611813011	ASE-G	COMP	15	0	



Document History Page

Document Title:QTP#182610: QFN-56 (8x8x1.0mm) PURE SN, CUPDAU WIRE MSL3, 260C REFLOW ASEK-TAIWAN (G)

Document Number: 002-25941

Rev.	ECN No.	Orig. of Change	Description of Change
**	6409970	HSTO	Initial Spec Release

Item	Marketing Part Number	Sample Ordering Part Number	Package
1	CY7C65213-32LTXI	CY7C65213-32LTXIKG subject to lead time	32L QFN
2	CY7C65620-56LTXC	CY7C65620-56LTXCKGG	56L QFN
3	CY7C65621-56LTXI	CY7C65621-56LTXIKG subject to lead time	56L QFN
4	CY7C65630-56LTXC	CY7C65630-56LTXCKGG	56L QFN
5	CY7C65631-56LTXC	CY7C65631-56LTXCKGG	56L QFN
6	CY7C65631-56LTXI	CY7C65631-56LTXIKG subject to lead time	56L QFN
7	CY7C65640A-LTXC	CY7C65640A-LTXCKGG	56L QFN
8	CY8C21434-24LTXI	CY8C21434-24LTXIKGG subject to lead time	32L QFN
9	CY8C24423A-24LTXI	CY8C24423A-24LTXIKGG subject to lead time	32L QFN
10	CY8C28645-24LTXI	CY8C28645-24LTXIKG subject to lead time	32L QFN
11	CG7297AM	CG7297XM subject to lead time	32L QFN
12	CG7558AA	CG7558XA subject to lead time	32L QFN
13	CG7786AAT	CG7786AXT	56L QFN
14	CS7224AA	CS7224XA subject to lead time	32L QFN
15	CS7275AA	CS7275XA subject to lead time	56L QFN