

Cypress Semiconductor Package Qualification Report

**QTP# 153009 VERSION **
April 2016**

**120L TQFP (14x14x1.4mm)
Pure Sn Leadfinish, CuPd Wire
MSL3, 260C Reflow
Amkor-Philippines (M)**

**FOR ANY QUESTIONS ON THIS REPORT PLEASE CONTACT reliability@cypress.com :
OR VIA LINK A CYLINK CRM CASE**

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PACKAGE QUALIFICATION HISTORY

QTP Number	Description of Qualification Purpose	Date
153009	Qualification of 120L TQFP (14x14x1.4mm) Package using 1.2mil CuPd wire, G631 mold compound, AP4200 die attach material, CuAg leadframe and Pure Sn leadfinish at MSL3, 260C Reflow Temperature.	Apr 2016

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	AZ0AE
Package Outline, Type, or Name:	120L TQFP (14x14x1.4mm)
Mold Compound Name/Manufacturer:	G631HQ / Sumitomo
Mold Compound Flammability Rating:	V-0 / UL94
Mold Compound Alpha Emission Rate:	N/A (not low alpha mold compound)
Oxygen Rating Index: >28%	>28% typical value
Lead Frame Designation:	Full Metal Pad
Lead Frame Material:	CuAg (C194)
Substrate Material:	N/A
Lead Finish, Composition / Thickness:	Pure Sn
Die Backside Preparation Method/Metallization:	Grinding
Die Separation Method:	Wafer Saw
Die Attach Supplier:	Evertch Enterprise
Die Attach Material:	AP4200
Bond Diagram Designation	001-91280
Wire Bond Method:	Thermosonic
Wire Material/Size:	CuPd / 1.2 mil
Thermal Resistance Theta JA °C/W:	31°C/W
Package Cross Section Yes/No:	No
Assembly Process Flow:	49-24999
Name/Location of Assembly (prime) facility:	Amkor-Philippines (M)
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
High Temperature Operating Life Latent Failure Rate (LFR)	Dynamic Operating Condition, 150°C, 2.3V, 500 Hours JESD22-A-108-B	P
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 Temp Storage	JESD22-A103: 150 C, no bias	P
X-Ray	MIL-STD-883 – 2012	P
Internal Visual	MIL-STD-883-2014	P
Final Visual Inspection	JESD22-B101B	P
Bond Pull	MIL-STD-883 – Method 2011	P
Ball Shear	JESD22-B116A	P
High Accelerated Saturation Test (HAST)	JEDEC STD 22-A110, 130 C, 85%RH, 3.63V Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 C°, 60% RH, 260C Reflow)	P
Dye Penetrant Test	No Package Crack	P
Electrostatic Discharge Charge Device Model (ESD-CDM)	500V, JESD22-C101	P
Physical Dimension	MIL-STD-1835, JESD22-B100	P
Post Stress Ball Shear	JESD22-A116	P
Post Stress Bond Pull	MIL-STD-883 – Method 2011	P
Solderability	J-STD-002, JESD22-B102	P
Die Shear	MIL-STD-883, Method 2019 Per die size: <ul style="list-style-type: none"> • <3000 sq. mils = 1.2 kgf • 30001-5000 sq. mils = 1.2 kgf • >5001 sq. mils = 1.2 kgf 	P



Reliability Test Data

QTP #: 153009

<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								
CY7C0832AV (7C08323CC)	AZ120	4450242	611512169	AMKOR-M	COMP	15	0	
CY7C0832AV (7C08323CC)	AZ120	4450242	611512160	AMKOR-M	COMP	15	0	
CY7C0832AV (7C08323CC)	AZ120	4450242	611512161	AMKOR-M	COMP	15	0	
STRESS: BALL SHEAR								
CY7C0832AV (7C08323CC)	AZ120	4450242	611512169	AMKOR-M	COMP	150	0	
CY7C0832AV (7C08323CC)	AZ120	4450242	611512160	AMKOR-M	COMP	150	0	
CY7C0832AV (7C08323CC)	AZ120	4450242	611512161	AMKOR-M	COMP	150	0	
STRESS: BOND PULL								
CY7C0832AV (7C08323CC)	AZ120	4450242	611512169	AMKOR-M	COMP	150	0	
CY7C0832AV (7C08323CC)	AZ120	4450242	611512160	AMKOR-M	COMP	150	0	
CY7C0832AV (7C08323CC)	AZ120	4450242	611512161	AMKOR-M	COMP	150	0	
STRESS: CONSTRUCTIONAL ANALYSIS								
CY7C0832AV (7C08323CC)	AZ120	4430901	611438709	AMKOR-M	COMP	5	0	
STRESS: DIE SHEAR								
CY7C0832AV (7C08323CC)	AZ120	4450242	611512169	AMKOR-M	COMP	15	0	
CY7C0832AV (7C08323CC)	AZ120	4450242	611512160	AMKOR-M	COMP	15	0	
CY7C0832AV (7C08323CC)	AZ120	4450242	611512161	AMKOR-M	COMP	15	0	
STRESS: DYE PENETRANT								
CY7C0832AV (7C08323CC)	AZ120	4430901	611438709	AMKOR-M	COMP	15	0	
CY7C0832AV (7C08323CC)	AZ120	4430901	611438708	AMKOR-M	COMP	15	0	
CY7C0832AV (7C08323CC)	AZ120	4430901	611438707	AMKOR-M	COMP	15	0	
STRESS: ESD-CHARGE DEVICE MODEL								
CY7C0832AV (7C08323CC)	AZ120	4430901	611438709	AMKOR-M	500	9	0	
CY7C0832AV (7C08323CC)	AZ120	4430901	611438709	AMKOR-M	1000	3	0	
CY7C0832AV (7C08323CC)	AZ120	4430901	611438709	AMKOR-M	1250	3	0	



Reliability Test Data

QTP #: 153009

Device	Package	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
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STRESS: FINAL VISUAL

CY7C0832AV (7C08323CC)	AZ120	4450242	611512169	AMKOR-M	COMP	274	0	
CY7C0832AV (7C08323CC)	AZ120	4450242	611512160	AMKOR-M	COMP	142	0	
CY7C0832AV (7C08323CC)	AZ120	4450242	611512161	AMKOR-M	COMP	146	0	

STRESS: HIGH ACCELERATED SATURATION TEST 130C, 3.63V, 85%RH, PRE COND 192 HR 30C/60%RH (MSL3)

CY7C0832AV (7C08323CC)	AZ120	4430901	611438709	AMKOR-M	96	29	0	
CY7C0832AV (7C08323CC)	AZ120	4430901	611438708	AMKOR-M	96	30	0	
CY7C0832AV (7C08323CC)	AZ120	4430901	611438707	AMKOR-M	96	30	0	

STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 150C, 2.3V, Vcc Max

CY7C0832AV (7C08323CC)	AZ120	4430901	611438709	AMKOR-M	500	80	0	
CY7C0832AV (7C08323CC)	AZ120	4430901	611438708	AMKOR-M	500	80	0	
CY7C0832AV (7C08323CC)	AZ120	4430901	611438707	AMKOR-M	500	80	0	

STRESS: HIGH TEMPERATURE STORAGE

CY8C27543 (8C27543BC)	AZ44	4405950	611423694	AMKOR-M	500	79	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423694	AMKOR-M	1000	79	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423693	AMKOR-M	500	80	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423693	AMKOR-M	1000	80	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423692	AMKOR-M	500	80	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423692	AMKOR-M	1000	80	0	

STRESS: INTERNAL VISUAL

CY7C0832AV (7C08323CC)	AZ120	4450242	611512169	AMKOR-M	COMP	150	0	
CY7C0832AV (7C08323CC)	AZ120	4450242	611512160	AMKOR-M	COMP	150	0	
CY7C0832AV (7C08323CC)	AZ120	4450242	611512161	AMKOR-M	COMP	150	0	

STRESS: PRESSURE COOKER TEST

CY7C0832AV (7C08323CC)	AZ120	4450242	611512169	AMKOR-M	168	78	0	
CY7C0832AV (7C08323CC)	AZ120	4450242	611512160	AMKOR-M	168	79	0	
CY7C0832AV (7C08323CC)	AZ120	4450242	611512161	AMKOR-M	168	80	0	



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STRESS: PHYSICAL DIMENSIONS								
CY7C0832AV (7C08323CC)	AZ120	4450242	611512169	AMKOR-M	COMP	30	0	
CY7C0832AV (7C08323CC)	AZ120	4450242	611512160	AMKOR-M	COMP	30	0	
CY7C0832AV (7C08323CC)	AZ120	4450242	611512161	AMKOR-M	COMP	30	0	
STRESS: POST HIGH ACCELERATED SATURATION TEST BALL SHEAR TEST								
CY7C0832AV (7C08323CC)	AZ120	4430901	611438709	AMKOR-M	96	5	0	
STRESS: POST HIGH ACCELERATED SATURATION TEST BOND PULL								
CY7C0832AV (7C08323CC)	AZ120	4430901	611438709	AMKOR-M	96	5	0	
STRESS: POST MSL BALL SHEAR TEST								
CY7C0832AV (7C08323CC)	AZ120	4430901	611438709	AMKOR-M	COMP	1	0	
STRESS: POST MSL BOND PULL								
CY7C0832AV (7C08323CC)	AZ120	4430901	611438709	AMKOR-M	COMP	1	0	
STRESS: POST PCT BALL SHEAR								
CY7C0832AV (7C08323CC)	AZ120	4450242	611512169	AMKOR-M	168	5	0	
STRESS: POST PCT BOND PULL								
CY7C0832AV (7C08323CC)	AZ120	4450242	611512169	AMKOR-M	168	5	0	
STRESS: POST TCT BALL SHEAR								
CY7C0832AV (7C08323CC)	AZ120	4430901	611438709	AMKOR-M	500	5	0	
CY7C0832AV (7C08323CC)	AZ120	4430901	611438709	AMKOR-M	1000	5	0	
STRESS: POST TCT BOND PULL								
CY7C0832AV (7C08323CC)	AZ120	4430901	611438709	AMKOR-M	500	5	0	
CY7C0832AV (7C08323CC)	AZ120	4430901	611438709	AMKOR-M	1000	5	0	
STRESS: POST HIGH TEMPERATURE STORAGE BALL SHEAR TEST								
CY8C27543 (8C27543BC)	AZ44	4405950	611423694	AMKOR-M	1000	5	0	
STRESS: POST HIGH TEMPERATURE STORAGE BOND PULL								
CY8C27543 (8C27543BC)	AZ44	4405950	611423694	AMKOR-M	1000	5	0	



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STRESS: SOLDERABILITY								
CY7C0832AV (7C08323CC)	AZ120	4430901	611438709	AMKOR-M	COMP	3	0	
CY7C0832AV (7C08323CC)	AZ120	4430901	611438708	AMKOR-M	COMP	3	0	
CY7C0832AV (7C08323CC)	AZ120	4430901	611438707	AMKOR-M	COMP	3	0	
STRESS: TEMPERATURE CYCLE								
CY7C0832AV (7C08323CC)	AZ120	4430901	611438709	AMKOR-M	500	82	0	
CY7C0832AV (7C08323CC)	AZ120	4430901	611438709	AMKOR-M	1000	72	0	
CY7C0832AV (7C08323CC)	AZ120	4430901	611438708	AMKOR-M	500	83	0	
CY7C0832AV (7C08323CC)	AZ120	4430901	611438708	AMKOR-M	1000	83	0	
CY7C0832AV (7C08323CC)	AZ120	4430901	611438707	AMKOR-M	500	85	0	
CY7C0832AV (7C08323CC)	AZ120	4430901	611438707	AMKOR-M	1000	85	0	
STRESS: X-RAY								
CY7C0832AV (7C08323CC)	AZ120	4450242	611512169	AMKOR-M	COMP	15	0	
CY7C0832AV (7C08323CC)	AZ120	4450242	611512160	AMKOR-M	COMP	15	0	
CY7C0832AV (7C08323CC)	AZ120	4450242	611512161	AMKOR-M	COMP	15	0	



Document History Page

Document Title: QTP#153009: 120L TQFP (14x14x1.4mm) Pure Sn Leadfinish, CuPd Wire MSL3, 260C Reflow Amkor-Philippines (M)

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Rev.	ECN No.	Orig. of Change	Description of Change
**	5226437	HSTO	Initial spec release