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Cypress Semiconductor
Package Qualification Report

QTP# 150202 VERSION *B
May 2016

44L TQFP (10x10x1.4mm/1.0mm)
52L TQFP (10x10x1.4mm/1.0mm)
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
150202	Qualification of 44L TQFP (10x10x1.4mm) Package, using 0.8mil CuPd wire, G631 mold compound, AP4200 die attach material and Pure Sn leadfinish at MSL3, 260C Reflow Temperature	Apr 2015

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	AZ44
Package Outline, Type, or Name:	44L TQFP (10x10x1.4mm)
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:	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:	Evertech Enterprise
Die Attach Material:	AP4200
Bond Diagram Designation	001-91463
Wire Bond Method:	Thermosonic
Wire Material/Size:	CuPd / 0.8 mil
Thermal Resistance Theta JA °C/W:	60°C/W
Package Cross Section Yes/No:	No
Assembly Process Flow:	001-97022
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, 5.25V 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
Solderability	J-STD-002, JESD22-B102	P
Post Stress Ball Shear	JESD22-A116	P
Post Stress Bond Pull	MIL-STD-883 – Method 2011	P
Die Shear	MIL-STD-883, Method 2019 Per die size: • <3000 sq. mils = 1.2 kgf • 30001-5000 sq. mils = 1.2 kgf • >5001 sq. mils = 1.2 kgf	P

Reliability Test Data

QTP #: 150202

Device	Package	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3								
CY8C27543 (8C27543BC)	AZ44	4405950	611423694	AMKOR-M	COMP	15	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423693	AMKOR-M	COMP	15	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423692	AMKOR-M	COMP	15	0	
STRESS: BALL SHEAR								
CY8C27543 (8C27543BC)	AZ44	4405950	611423694	AMKOR-M	COMP	150	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423693	AMKOR-M	COMP	150	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423692	AMKOR-M	COMP	150	0	
STRESS: BOND PULL								
CY8C27543 (8C27543BC)	AZ44	4405950	611423694	AMKOR-M	COMP	150	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423693	AMKOR-M	COMP	150	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423692	AMKOR-M	COMP	150	0	
STRESS: CONSTRUCTIONAL ANALYSIS								
CY8C27543 (8C27543BC)	AZ44	4405950	611423694	AMKOR-M	COMP	5	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423693	AMKOR-M	COMP	5	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423692	AMKOR-M	COMP	5	0	
STRESS: DIE SHEAR								
CY8C27543 (8C27543BC)	AZ44	4405950	611423694	AMKOR-M	COMP	15	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423693	AMKOR-M	COMP	15	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423692	AMKOR-M	COMP	15	0	
STRESS: DYE PENETRANT								
CY8C27543 (8C27543BC)	AZ44	4405950	611423694	AMKOR-M	COMP	15	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423693	AMKOR-M	COMP	15	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423692	AMKOR-M	COMP	15	0	
STRESS: ESD-CHARGE DEVICE MODEL								
CY8C27543 (8C27543BC)	AZ44	4405950	611423694	AMKOR-M	500	9	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423694	AMKOR-M	1000	3	0	

CY8C27543 (8C27543BC)	AZ44	4405950	611423694	AMKOR-M	1250	3	0

Reliability Test Data

QTP #: 150202

Device	*Package*	*Fab Lot #*	*Assy Lot #*	*Assy Loc*	*Duration*	*Samp*	*Rej*	*Failure Mechanism*
STRESS: FINAL VISUAL INSPECTION								
CY8C27543 (8C27543BC)	AZ44	4405950	611423694	AMKOR-M	COMP	796	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423694	AMKOR-M	COMP	794	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423694	AMKOR-M	COMP	603	0	
STRESS: HIGH ACCELERATED SATURATION TEST 130C, 5.5V, 85%RH, PRE COND 192 HR 30C/60%RH (MSL3)								
CY8C27543 (8C27543BC)	AZ44	4405950	611423694	AMKOR-M	96	30	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423693	AMKOR-M	96	30	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423692	AMKOR-M	96	30	0	
CY7B995AXIKP (7CP87B995)	AZ44	8430008	611522027	AMKOR-M	192	77	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: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 150C, 2.3V, Vcc Max								
7C08323CC	AZ120	4430901	611438709	AMKOR-M	500	80	0	
7C08323CC	AZ120	4430901	611438708	AMKOR-M	500	80	0	
7C08323CC	AZ120	4430901	611438707	AMKOR-M	500	80	0	
STRESS: PRESSURE COOKER TEST								
CY8C27543 (8C27543BC)	AZ44	4405950	611423694	AMKOR-M	168	80	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423694	AMKOR-M	288	80	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423693	AMKOR-M	168	80	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423693	AMKOR-M	288	80	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423692	AMKOR-M	168	80	0	

CY8C27543 (8C27543BC)	AZ44	4405950	611423692	AMKOR-M	288	80	0

Reliability Test Data

QTP #: 150202

Device	Package	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: PHYSICAL DIMENSION								
CY8C27543 (8C27543BC)	AZ44	4405950	611423694	AMKOR-M	COMP	30	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423693	AMKOR-M	COMP	30	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423692	AMKOR-M	COMP	30	0	
STRESS: POST HIGH ACCELERATED SATURATION TEST BALL SHEAR TEST								
CY8C27543 (8C27543BC)	AZ44	4405950	611423694	AMKOR-M	96	5	0	
STRESS: POST HIGH ACCELERATED SATURATION TEST BOND PULL								
CY8C27543 (8C27543BC)	AZ44	4405950	611423694	AMKOR-M	96	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	
STRESS: POST PRESSURE COOKER TEST BALL SHEAR								
CY8C27543 (8C27543BC)	AZ44	4405950	611423694	AMKOR-M	288	5	0	
STRESS: POST PRESSURE COOKER TEST BOND PULL								
CY8C27543 (8C27543BC)	AZ44	4405950	611423694	AMKOR-M	288	5	0	
STRESS: POST TEMPERATURE CYCLE BALL SHEAR								
CY8C27543 (8C27543BC)	AZ44	4405950	611423694	AMKOR-M	1000	5	0	
STRESS: POST TEMPERATURE CYCLE CONSTRUCTIONAL ANALYSIS								
CY8C27543 (8C27543BC)	AZ44	4405950	611423694	AMKOR-M	1000	5	0	
STRESS: POST TEMPERATURE CYCLE BOND PULL								
CY8C27543 (8C27543BC)	AZ44	4405950	611423694	AMKOR-M	1000	5	0	
STRESS: SOLDERABILITY								
CY8C27543 (8C27543BC)	AZ44	4405950	611423694	AMKOR-M	COMP	3	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423693	AMKOR-M	COMP	3	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423692	AMKOR-M	COMP	3	0	

Reliability Test Data

QTP #: 150202

Device	Package	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: TEMPERATURE CYCLE								
CY8C27543 (8C27543BC)	AZ44	4405950	611423694	AMKOR-M	500	80	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423694	AMKOR-M	1000	80	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: X-RAY								
CY8C27543 (8C27543BC)	AZ44	4405950	611423694	AMKOR-M	COMP	15	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423693	AMKOR-M	COMP	15	0	
CY8C27543 (8C27543BC)	AZ44	4405950	611423692	AMKOR-M	COMP	15	0	

Document History Page

Document Title: QTP#150202: 44L/52L TQFP (10X10X1.4MM/1.0MM) PURE SN LEADFINISH, CUPD WIRE MSL3, 260C REFLOW AMKOR-PHILIPPINES (M)
Document Number: 001-97306

Rev.	ECN No.	Orig. of Change	Description of Change
**	4733403	HSTO	Initial spec release
*A	4794191	HSTO	Update Electrical Test/Finish Description Table
*B	4399360	HSTO DCON	Update contact person for Reliability Director Added HAST extended readpoint result. -Removed Distribution and posting information from Document history page. -Updated Cypress logo with the new tagline.