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Cypress Semiconductor Package Qualification Report

**QTP# 154902 VERSION **
May 2016**

**16L SOIC (300mil)
NiPdAu leadfinish, Au Wire
MSL3, 260C Reflow
Amkor-Philippines (M)**

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

QTP Number	Description of Qualification Purpose	Date
154902	Qualification of New Leadframe Design for 16L-SOIC using 0.8mil Au wire with G600 mold compound, 8290 die attach material, Copper PPF (C194FH) leadframe material and NiPdAu leadfinish assembled at Amkor-Philippines (M).	May 2016

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	SZ163
Package Outline, Type, or Name:	16-Lead SOIC (300mil)
Mold Compound Name/Manufacturer:	G600 / Sumitomo
Mold Compound Flammability Rating:	V-0 / UL94
Mold Compound Alpha Emission Rate:	N/A
Oxygen Rating Index: >28%	>28% typical value
Lead Frame Designation:	Full Metal Pad
Lead Frame Material:	Copper
Substrate Material:	N/A
Lead Finish, Composition / Thickness:	NiPdAu
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Saw Process
Die Attach Supplier:	Henkel
Die Attach Material:	8290
Bond Diagram Designation	001-51385
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au / 0.8 mil
Thermal Resistance Theta JA °C/W:	56.58°C/W
Package Cross Section Yes/No:	Yes
Assembly Process Flow:	001-87675
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
Bond Pull	MIL-STD-883 – Method 2011	P
Ball Shear	JESD22-B116A	P
Adhesion of Lead Finish	MIL-STD-883, Method 2025 – Adhesion of Lead Finish	P
Temperature Cycle	JESD22-A104, -65°C to 150°C Precondition: JESD22-A113 Moisture Sensitivity MSL 3 192 Hrs, 30C/60%RH+3IR-Reflow, 260°C+0, -5°C	P
X-Ray	MIL-STD-883 – 2012	P
Acoustic	J-STD-020 Precondition: JESD22-A113 Moisture Sensitivity MSL 3 192 Hrs, 30C/60%RH+3IR-Reflow, 260C+0, -5C	P
Internal Visual	MIL-STD-883-2014	P
Final Visual Inspection	JESD22-B101B	P
Physical Dimension	MIL-STD-1835, JESD22-B100	P
Dye Penetrant Test	Criteria: No Package Crack	P
Constructional Analysis	Criteria: Meet external and internal characteristics of Cypress package	P
Solderability	JESD22-B102	P

Reliability Test Data

QTP #: 154902

Device	Package	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3								
CY14B101PA (7C1431B3AC)	SZ815	4528987	611603816	AMKOR-M	COMP	22	0	
CY14B101PA (7C1431B3AC)	SZ815	4528987	611603816M	AMKOR-M	COMP	22	0	
CY14B101PA (7C1431B3AC)	SZ815	4526083	611604194	AMKOR-M	COMP	22	0	
STRESS: BALL SHEAR								
CY14B101PA (7C1431B3AC)	SZ815	4528987	611603816	AMKOR-M	COMP	56	0	
CY14B101PA (7C1431B3AC)	SZ815	4528987	611603816M	AMKOR-M	COMP	56	0	
CY14B101PA (7C1431B3AC)	SZ815	4526083	611604194	AMKOR-M	COMP	56	0	
STRESS: BOND PULL								
CY14B101PA (7C1431B3AC)	SZ815	4528987	611603816	AMKOR-M	COMP	56	0	
CY14B101PA (7C1431B3AC)	SZ815	4528987	611603816M	AMKOR-M	COMP	56	0	
CY14B101PA (7C1431B3AC)	SZ815	4526083	611604194	AMKOR-M	COMP	56	0	
STRESS: CONSTRUCTIONAL ANALYSIS								
CY14B101PA (7C1431B3AC)	SZ815	4528987	611603816	AMKOR-M	COMP	5	0	
CY14B101PA (7C1431B3AC)	SZ815	4526083	611604194M	AMKOR-M	COMP	5	0	
STRESS: CROSS-SECTION								
CY14B101PA (7C1431B3AC)	SZ815	4528987	611603816	AMKOR-M	COMP	5	0	
STRESS: DYE PENETRANT								
CY14B101PA (7C1431B3AC)	SZ815	4528987	611603816	AMKOR-M	COMP	15	0	
CY14B101PA (7C1431B3AC)	SZ815	4528987	611603816M	AMKOR-M	COMP	15	0	
CY14B101PA (7C1431B3AC)	SZ815	4526083	611604194	AMKOR-M	COMP	15	0	
STRESS: FINAL VISUAL								
CY14B101PA (7C1431B3AC)	SZ815	4528987	611603816	AMKOR-M	COMP	1024	0	
CY14B101PA (7C1431B3AC)	SZ815	4528987	611603816M	AMKOR-M	COMP	1020	0	
CY14B101PA (7C1431B3AC)	SZ815	4526083	611604194	AMKOR-M	COMP	1038	0	
STRESS: INTERNAL VISUAL								
CY14B101PA (7C1431B3AC)	SZ815	4528987	611603816	AMKOR-M	COMP	5	0	
CY14B101PA (7C1431B3AC)	SZ815	4528987	611603816M	AMKOR-M	COMP	5	0	
CY14B101PA (7C1431B3AC)	SZ815	4526083	611604194	AMKOR-M	COMP	5	0	

Reliability Test Data

QTP #: 154902

Device	Package	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
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STRESS: LEAD FINISH ADHESION

CY14B101PA (7C1431B3AC)	SZ815	4528987	611603816	AMKOR-M	COMP	5	0	
CY14B101PA (7C1431B3AC)	SZ815	4528987	611603816M	AMKOR-M	COMP	5	0	
CY14B101PA (7C1431B3AC)	SZ815	4526083	611604194	AMKOR-M	COMP	5	0	

STRESS: PHYSICAL DIMENSION

CY14B101PA (7C1431B3AC)	SZ815	4528987	611603816	AMKOR-M	COMP	56	0	
CY14B101PA (7C1431B3AC)	SZ815	4528987	611603816M	AMKOR-M	COMP	56	0	
CY14B101PA (7C1431B3AC)	SZ815	4526083	611604194	AMKOR-M	COMP	56	0	

STRESS: SODLERABILITY – (CERAMIC PLATE TEST)

CY14B101PA (7C1431B3AC)	SZ815	4528987	611603816	AMKOR-M	COMP	3	0	
CY14B101PA (7C1431B3AC)	SZ815	4528987	611603816M	AMKOR-M	COMP	3	0	
CY14B101PA (7C1431B3AC)	SZ815	4526083	611604194	AMKOR-M	COMP	3	0	

STRESS: SODLERABILITY – (WETTING BALANCE TEST)

CY14B101PA (7C1431B3AC)	SZ815	4528987	611603816	AMKOR-M	COMP	5	0	
CY14B101PA (7C1431B3AC)	SZ815	4528987	611603816M	AMKOR-M	COMP	5	0	
CY14B101PA (7C1431B3AC)	SZ815	4526083	611604194	AMKOR-M	COMP	5	0	
CY14B101PA (7C1431B3AC)	SZ815	4526083	611604194M	AMKOR-M	COMP	5	0	

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

CY14B101PA (7C1431B3AC)	SZ815	4528987	611603816	AMKOR-M	500	80	0	
CY14B101PA (7C1431B3AC)	SZ815	4528987	611603816	AMKOR-M	1000	80	0	
CY14B101PA (7C1431B3AC)	SZ815	4528987	611603816M	AMKOR-M	COMP	79	0	
CY14B101PA (7C1431B3AC)	SZ815	4528987	611603816M	AMKOR-M	COMP	79	0	
CY14B101PA (7C1431B3AC)	SZ815	4526083	611604194	AMKOR-M	COMP	79	0	
CY14B101PA (7C1431B3AC)	SZ815	4526083	611604194	AMKOR-M	COMP	79	0	

STRESS: X-RAY

CY14B101PA (7C1431B3AC)	SZ815	4528987	611603816	AMKOR-M	COMP	56	0	
CY14B101PA (7C1431B3AC)	SZ815	4528987	611603816M	AMKOR-M	COMP	56	0	
CY14B101PA (7C1431B3AC)	SZ815	4526083	611604194	AMKOR-M	COMP	56	0	



Document History Page

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Document Number: 002-13440

Rev.	ECN No.	Orig. of Change	Description of Change
**	5289021	HSTO	Initial spec release