

Cypress Semiconductor Automotive Package Qualification Report

**QTP# 152801 VERSION **
September 2015**

**8L SOIC (150mil)
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

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QTP Number	Description of Qualification Purpose	Date
152801	Qualification of 8L SOIC (150mil) in Amkor-Philippines (M) using 1.0mil Au wire with Sumitomo G700 mold compound, Ablestik 8290 die attach material and NiPdAu (roughened) leadfinish at MSL3, 260C Reflow Temperature.	July 2015

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	SZ815
Package Outline, Type, or Name:	8L SOIC (150mil)
Mold Compound Name/Manufacturer:	G700LS / Sumitomo
Mold Compound Flammability Rating:	UL-94 V-0
Mold Compound Alpha Emission Rate:	N/A (Not low alpha mold compound)
Oxygen Rating Index: >28%	54%
Lead Frame Designation:	Full Metal Pad
Lead Frame Material:	Copper
Substrate Material:	N/A
Lead Finish, Composition / Thickness:	Roughened NiPdAu
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Saw
Die Attach Supplier:	Ablestik
Die Attach Material:	8290
Bond Diagram Designation	001-17468
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au / 1 mil
Thermal Resistance Theta JA °C/W:	186.4 C/W
Package Cross Section Yes/No:	N/A
Assembly Process Flow:	001-86654
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 Early Failure Rate	AEC-Q100-008 and JESD22-A108, 150°C Dynamic Operating Condition, Vcc Max = 3.8V	P
High Temperature Operating Life Latent Failure Rate	JESD22-A108, 150°C Dynamic Operating Condition, Vcc Max = 3.8V	P
High Accelerated Saturation Test (HAST)	JESD22-A110, 130C, 3.8V, 85%RH Precondition: JESD22-A113 Moisture Sensitivity MSL 3 192 Hrs, 30C/60%RH+3IR-Reflow, 260°C+0, -5°C	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
Pressure Cooker	JESD22-A102, 121C, 100%RH, 15 Psig Precondition: JESD22-A113 Moisture Sensitivity MSL 3 192 Hrs, 30C/60%RH+3IR-Reflow, 260°C+0, -5°C	P
Acoustic	J-STD-020 Precondition: JESD22-A113 Moisture Sensitivity MSL 3 192 Hrs, 30C/60%RH+3IR-Reflow, 260C+0, -5C	P
High Temp Storage	JESD22-A103: 150 C, no bias	P
Wire Bond Pull	Mil-Std 883, Method 2011	P
Post Temperature Cycle Wire Bond Pull	Mil-Std 883, Method 2011	P
Dye Penetrant Test	Criteria: No Package Crack	P
Constructional Analysis	Criteria: Meet external and internal characteristics of Cypress package	
Solderability	JESD22-B102	P



Reliability Test Data

QTP #: 152801

Device	Package	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3								
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520042	AMKOR-M	COMP	22	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520043	AMKOR-M	COMP	22	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520044	AMKOR-M	COMP	22	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611516161	AMKOR-M	COMP	22	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611516162	AMKOR-M	COMP	22	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611516163	AMKOR-M	COMP	22	0	
STRESS: CONSTRUCTIONAL ANALYSIS								
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520042	AMKOR-M	COMP	5	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611516161	AMKOR-M	COMP	5	0	
STRESS: DYE PENETRANT								
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520042	AMKOR-M	COMP	15	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520043	AMKOR-M	COMP	15	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520044	AMKOR-M	COMP	15	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611516161	AMKOR-M	COMP	15	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611516162	AMKOR-M	COMP	15	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611516163	AMKOR-M	COMP	15	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 150C, 3.8V, Vcc Max								
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520042	AMKOR-M	48	800	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520043	AMKOR-M	48	800	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520044	AMKOR-M	48	800	0	
STRESS: HI-ACCEL SATURATION TEST, 130C, 3.63V, 85%RH, PRE COND 192 HR 30C/60%RH, MSL3								
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520042	AMKOR-M	96	80	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520043	AMKOR-M	96	80	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520044	AMKOR-M	96	80	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611516161	AMKOR-M	96	80	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611516162	AMKOR-M	96	80	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611516163	AMKOR-M	96	80	0	



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STRESS: HIGH TEMPERATURE STORAGE								
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520042	AMKOR-M	96	80	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 150C, 3.8V, Vcc Max								
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520042	AMKOR-M	408	80	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520043	AMKOR-M	408	80	0	
STRESS: PRESSURE COOKER TEST								
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520042	AMKOR-M	96	80	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520042	AMKOR-M	168	80	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520043	AMKOR-M	96	80	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520043	AMKOR-M	168	80	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520044	AMKOR-M	96	80	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520044	AMKOR-M	168	80	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611516161	AMKOR-M	96	80	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611516161	AMKOR-M	168	80	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611516162	AMKOR-M	96	80	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611516162	AMKOR-M	168	80	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611516163	AMKOR-M	96	80	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611516163	AMKOR-M	168	80	0	
STRESS: POST TCT BOND PULL								
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520042	AMKOR-M	500	5	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520043	AMKOR-M	500	5	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520044	AMKOR-M	500	5	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611516161	AMKOR-M	500	5	0	
STRESS: PRE/POST LFR CRITICAL PARAMETER								
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520042	AMKOR-M	COMP	30+2	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520043	AMKOR-M	COMP	30+2	0	
STRESS: SOLDERABILITY								
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520042	AMKOR-M	COMP	15	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520043	AMKOR-M	COMP	15	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520044	AMKOR-M	COMP	15	0	

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Reliability Test Data

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<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: TC COND. C -65C TO 150C, PRECONDITION 192 HRS 30C/60%RH								
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520042	AMKOR-M	500	85	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520043	AMKOR-M	500	85	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611520044	AMKOR-M	500	85	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611516161	AMKOR-M	500	85	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611516161	AMKOR-M	1000	80	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611516162	AMKOR-M	500	80	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611516162	AMKOR-M	1000	80	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611516163	AMKOR-M	500	85	0	
CY2305CSXA (7A823C15AC)	SZ815	4451980	611516163	AMKOR-M	1000	80	0	



Document History Page

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AMKOR-PHILIPPINES (M)

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Rev.	ECN No.	Orig. of Change	Description of Change
**	4925122	HSTO	Initial spec release