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# Cypress Semiconductor Automotive Package Qualification Report

**QTP# 150418 VERSION \*\***  
**September 2015**

**48L VGBGA (6x8x1.0mm)**  
**SAC-105 ball finish, Au Wire**  
**MSL3, 260C Reflow**  
**ASEK-Taiwan (G)**

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

<b>QTP Number</b>	<b>Description of Qualification Purpose</b>	<b>Date</b>
150418	Qualification of 48L VFBGA (6x8x1.0mm) in ASEK-Taiwan (G) using 0.8mil Au wire with KE-G2250 mold compound, Ablebond 2100A die attach material, 2L BT substrate material and SAC-105 solder finish at MSL3, 260C Reflow Temperature.	Sept 2015

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	BZ48A
Package Outline, Type, or Name:	48L VFBGA (6x8x1.0mm)
Mold Compound Name/Manufacturer:	KE-G2250 / Kyocera
Mold Compound Flammability Rating:	V0 UL94
Mold Compound Alpha Emission Rate:	0.001 CPH/cm2
Oxygen Rating Index: >28%	28%
Lead Frame Designation:	N/A
Lead Frame Material:	N/A
Substrate Material:	BT
Lead Finish, Composition / Thickness:	SAC105 (SnAgCu)
Die Backside Preparation Method/Metallization:	Backgrind to 7mils
Die Separation Method:	Laser Groove + Mech'l Saw
Die Attach Supplier:	Ablestik
Die Attach Material:	Ablebond 2100A
Bond Diagram Designation	001-95780
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au / 0.8mil
Thermal Resistance Theta JA °C/W:	30.68 C/W
Package Cross Section Yes/No:	Y
Assembly Process Flow:	002-03864
Name/Location of Assembly (prime) facility:	ASEK-Taiwan (G)
MSL LEVEL	3
REFLOW PROFILE	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	Chipmos Taiwan (GO)

**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, 125°C Dynamic Operating Condition, Vcc Max = 1.44V	P
High Temperature Operating Life Latent Failure Rate	JESD22-A108, 125°C Dynamic Operating Condition, Vcc Max = 1.44V	P
High Accelerated Saturation Test (HAST)	JESD22-A110, 130C, 5.55V, 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
Electrostatic Discharge Human Body Model (ESD-HBM)	AEC-Q100-002 500V/1000V/1500V/2000V	P
Electrostatic Discharge Charge Device Model (ESD-CDM)	AEC-Q100-011 250V/500V/ 750v (corner pins)	P
Wire Ball Shear	AEC-Q100-001	P
Wire Bond Pull	Mil-Std 883, Method 2011	P
Electrical Distribution	AEC-Q100-009	P
Latch up Sensitivity	AEC-Q100-004	P
Final Visual	JESD22-B101B	P
Physical Dimensions	JESD22-B100/108	P
Solderability	JESD22-B102	P
Solder Ball Shear	AEC Q100-010	P
Post Temperature Cycle Wire Bond Pull	Mil-Std 883, Method 2011	P
High Temperature Storage Life Test	JESD22-A103, 150 C	P
Dye Penetrant Test	Criteria: No Package Crack	P
Constructional Analysis	Criteria: Meet external and internal characteristics of Cypress package	
Acoustic	J-STD-020 Precondition: JESD22-A113 Moisture Sensitivity MSL 3 192 Hrs, 30C/60%RH+3IR-Reflow, 260C+0, -5C	P



## Reliability Test Data

**QTP #: 150418**

<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>
<b>STRESS: ACOUSTIC, MSL3</b>								
CY62147G30 (7A172147AO)	BK48A	9507001	611516597	ASEK-G	COMP	22	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516595	ASEK-G	COMP	22	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516596	ASEK-G	COMP	22	0	
<b>STRESS: BALL SHEAR</b>								
CY62147G30 (7A172147AO)	BK48A	9507001	611516597	ASEK-G	COMP	150	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516595	ASEK-G	COMP	150	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516596	ASEK-G	COMP	150	0	
<b>STRESS: BOND PULL</b>								
CY62147G30 (7A172147AO)	BK48A	9507001	611516597	ASEK-G	COMP	150	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516595	ASEK-G	COMP	150	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516596	ASEK-G	COMP	150	0	
<b>STRESS: CONSTRUCTIONAL ANALYSIS</b>								
CY62147G30 (7A172147AO)	BK48A	9507001	611516597	ASEK-G	COMP	5	0	
<b>STRESS: DYE PENETRANT TEST</b>								
CY62147G30 (7A172147AO)	BK48A	9507001	611516597	ASEK-G	COMP	15	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516595	ASEK-G	COMP	15	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516596	ASEK-G	COMP	15	0	
<b>STRESS: ELECTRICAL DISTRIBUTION</b>								
CY62147G30 (7A172147AO)	BK48A	9507001	611516597	ASEK-G	COMP	30	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516595	ASEK-G	COMP	30	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516596	ASEK-G	COMP	30	0	
<b>STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 125C, 1.44V, Vcc Max</b>								
CY62147G30 (7A172147AO)	BK48A	9507001	611516597	ASEK-G	96	849	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516595	ASEK-G	96	849	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516596	ASEK-G	96	849	0	



## Reliability Test Data

### QTP #: 150418

Device	Package	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
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#### STRESS: ESD-CHARGE DEVICE MODEL

CY62147G30 (7A172147AO)	BK48A	9507001	611516597	ASEK-G	250	3	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516597	ASEK-G	500	3	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516597	ASEK-G	750	3	0	

#### STRESS: ESD-HUMAN BODY CIRCUIT

CY62147G30 (7A172147AO)	BK48A	9507001	611516597	ASEK-G	500	3	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516597	ASEK-G	1000	3	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516597	ASEK-G	2000	3	0	

#### STRESS: FINAL VISUAL

CY62147G30 (7A172147AO)	BK48A	9507001	611516597	ASEK-G	COMP	2268	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516595	ASEK-G	COMP	2349	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516596	ASEK-G	COMP	2480	0	

#### STRESS: HI-ACCEL SATURATION TEST, 130C, 5.55V, 85%RH, PRE COND 192 HR 30C/60%RH, MSL3

CY62147G30 (7A172147AO)	BK48A	9507001	611516597	ASEK-G	96	85	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516595	ASEK-G	96	85	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516596	ASEK-G	96	85	0	

#### STRESS: HIGH TEMPERATURE STORAGE

CY62147G30 (7A172147AO)	BK48A	9507001	611516597	ASEK-G	1000	85	0	
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#### STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 125C, 1.44V, Vcc Max

CY62147G30 (7A172147AO)	BK48A	9507001	611516597	ASEK-G	1000	80	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516595	ASEK-G	1000	79	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516596	ASEK-G	1000	78	0	



## Reliability Test Data

**QTP #: 150418**

<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>
<b>STRESS: PRESSURE COOKER TEST</b>								
CY62147G30 (7A172147AO)	BK48A	9507001	611516597	ASEK-G	96	85	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516595	ASEK-G	96	85	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516596	ASEK-G	96	85	0	
<b>STRESS: PHYSICAL DIMENSION</b>								
CY62147G30 (7A172147AO)	BK48A	9507001	611516597	ASEK-G	COMP	30	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516595	ASEK-G	COMP	30	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516596	ASEK-G	COMP	30	0	
<b>STRESS: POST TEMPERATURE CYCLE WIRE BOND PULL</b>								
CY62147G30 (7A172147AO)	BK48A	9507001	611516597	ASEK-G	500	5	0	
<b>STRESS: PRE/POST LFR CRITICAL PARAMETER</b>								
CY62147G30 (7A172147AO)	BK48A	9507001	611516597	ASEK-G	COMP	30+2	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516595	ASEK-G	COMP	30+2	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516596	ASEK-G	COMP	30+2	0	
<b>STRESS: STATIC LATCH-UP (+/-140mA 125C)</b>								
CY62147G30 (7A172147AO)	BK48A	9507001	611516597	ASEK-G	COMP	6	0	
<b>STRESS: SOLDER BALL SHEAR</b>								
CY62147G30 (7A172147AO)	BK48A	9507001	611516597	ASEK-G	COMP	150	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516595	ASEK-G	COMP	150	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516596	ASEK-G	COMP	150	0	
<b>STRESS: SOLDERABILITY</b>								
CY62147G30 (7A172147AO)	BK48A	9507001	611516597	ASEK-G	COMP	15	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516595	ASEK-G	COMP	15	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516596	ASEK-G	COMP	15	0	
<b>STRESS: TC COND. C -65C TO 150C, PRECONDITION 192 HRS 30C/60%RH</b>								
CY62147G30 (7A172147AO)	BK48A	9507001	611516597	ASEK-G	500	85	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516595	ASEK-G	500	85	0	
CY62147G30 (7A172147AO)	BK48A	9507001	611516596	ASEK-G	500	85	0	





## Document History Page

Document Title: QTP#150418: AUTOMOTIVE 48L VGBGA (6X8X1.0MM) SAC-105 BALL FINISH, AU WIRE  
MSL3, 260C REFLOW ASEK-TAIWAN (G)  
Document Number: 002-03890

Rev.	ECN No.	Orig. of Change	Description of Change
**	4949578	HSTO	Initial spec release