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# Cypress Semiconductor Package Qualification Report

QTP# 154604 VERSION \*\*  
April, 2016

**60 FBGA Package (10mm x 18mm x 1.2mm)**

**SAC405, CuPd**

**MSL3, 260C Reflow**

**ASE-G / Taiwan**

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

QTP Number	Description of Qualification Purpose	Date
154604	New Industrial 60 FBGA (10mm x 18mm x 1.2mm) Package for nvSRAM (Rainier) at ASE, using Low Alpha KE-G2250 Mold Compound, ATB-125 Die Attach Film, 0.8 mil CuPd Wire, and SAC405 Solder Balls	Apr 2016



MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	BK60B
Package Outline, Type, or Name:	60 FBGA (10mm x 18 mm x 1.2 mm)
Mold Compound Name/Manufacturer:	Low Alpha KE-G2250 / Kyocera
Mold Compound Flammability Rating:	UL-94, V-0
Mold Compound Alpha Emission Rate:	<0.002
Oxygen Rating Index: >28%	28%
Substrate Material:	BT Resin
Lead Finish, Composition / Thickness:	SAC405
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	100% Saw
Die Attach Supplier:	Hitachi
Die Attach Material:	ATB-125 Die Attach Film
Bond Diagram Designation	002-03473
Wire Bond Method:	Ultrasonic
Wire Material/Size:	0.8 mil CuPd
Thermal Resistance Theta JA °C/W:	21°C/W
Package Cross Section Yes/No:	Yes
Assembly Process Flow:	64-22-0000-0059
Name/Location of Assembly (prime) facility:	ASE / Taiwan
MSL LEVEL	3
REFLOW PROFILE	260

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	Wafer Sort: Cypress CMI, USA; Class Test/Finish: ASE, Taiwan

**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 Accelerated Saturation Test (HAST)	JEDEC STD 22-A110: 130C, 85%RH, 3.6V Precondition: JESD22 Moisture Sensitivity Level 3 (192 Hrs., 30 C°, 60% RH)	P
Pressure Cooker Test	JESD22-A102: 121 C, 100%RH, 15 PSIG Precondition: JESD22 Moisture Sensitivity Level 3 (192 Hrs., 30 C°, 60% RH)	P
Temperature Cycle	MIL-STD-883C, Method 1010, Condition C, -65 C to 150 C Precondition: JESD22 Moisture Sensitivity Level 3 (192 Hrs., 30 C°, 60% RH)	P
High Temp Storage	JESD22-A103: 150 C, no bias	P
Electrostatic Discharge Charge Device Model (ESD-CDM)	(500V, 1,000V, 1250V) JESD22-C101	P
Acoustic Microscopy	J-STD-020 Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 C°, 60% RH)	P
Ball Shear	JESD22-B116A Cpk : 1.33, Ppk : 1.66	P
Bond Pull	MIL-STD-883 – Method 2011, Cpk : 1.33, Ppk : 1.66	P
Constructional Analysis	Criteria: Meet external and internal characteristics of Cypress package	P
Die Shear	MIL-STD-883, Method 2019  Per die size: <ul style="list-style-type: none"> <li>&lt;3000 sq. mils = 1.2 kgf</li> <li>30001-5000 sq. mils = 1.2 kgf</li> <li>&gt;5001 sq. mils = 1.2 kgf</li> </ul>	P
Dye Penetrant Test	Test to determine the existence and extent of cracks, Criteria: No Package Crack	P
BGA Solder Ball Shear	JESD22-B117B Cpk : 1.33, Ppk : 1.66	P
Internal Visual	MIL-STD-883-2014	P
Final Visual Inspection	JESD22-B101B	P
Physical Dimension	MIL-STD-1835, JESD22-B100	P
Solderability, Steam Aged	J-STD-002, JESD22-B102  95% solder coverage minimum	P
X-Ray	MIL-STD-883 - 2012	P



## Reliability Test Data

QTP #: 154604

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
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**STRESS: Highly Accelerated Saturation Test (HAST), 130C, 85%RH, 3.6V (MSL 3 Preconditioning)**

CY14B116N-BA25XIES	4521076	611537842	ASE-G	96	24	0	
CY14B116N-BA25XIES	4519113	611537843	ASE-G	96	25	0	

**STRESS: Temperature Cycling Test (TCT), Condition C, -65 C to 150 C (MSL 3 Preconditioning)**

CY14B116N-BA25XIES	4521076	611537842	ASE-G	500	80	0	
CY14B116N-BA25XIES	4519113	611537843	ASE-G	500	80	0	
CY14B116N-BA25XIES	4519113	611537844	ASE-G	500	80	0	

**STRESS: Pressure Cooker Test (PCT), 121 C, 100%RH, 15 PSIG (MSL 3 Preconditioning)**

CY14B116N-BA25XIES	4521076	611537842	ASE-G	168	78	0	
CY14B116N-BA25XIES	4519113	611537843	ASE-G	168	80	0	

**STRESS: High Temperature Storage: 150C**

CY14B116N-BA25XIES	4521076	611537842	ASE-G	500	80	0	
CY14B116N-BA25XIES	4521076	611537842	ASE-G	1000	80	0	

**STRESS: Electrostatic Discharge- Charge Device Model (ESD-CDM): 48 BGA- 500V**

CY14B116N-BA25XIES	4521076	611537842	ASE-G	500V	9	0	
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**STRESS: Electrostatic Discharge- Charge Device Model (ESD-CDM): 48 BGA- 1,000V**

CY14B116N-BA25XIES	4521076	611537842	ASE-G	1,000V	3	0	
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**STRESS: Electrostatic Discharge- Charge Device Model (ESD-CDM): 48 BGA- 1,250V**

CY14B116N-BA25XIES	4521076	611537842	ASE-G	1,250V	3	0	
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**STRESS: Acoustic Microscopy (MSL 3 Preconditioning)**

CY14B116N-BA25XIES	4521076	611537842	ASE-G	COMP	15	0	
CY14B116N-BA25XIES	4519113	611537843	ASE-G	COMP	15	0	
CY14B116N-BA25XIES	4519113	611537844	ASE-G	COMP	15	0	

**STRESS: Wire Bond Shear**

CY14B116N-BA25XIES	4521076	611537842	ASE-G	COMP	220	0	
CY14B116N-BA25XIES	4519113	611537843	ASE-G	COMP	220	0	
CY14B116N-BA25XIES	4519113	611537844	ASE-G	COMP	220	0	

**STRESS: Wire Bond Pull**

CY14B116N-BA25XIES	4521076	611537842	ASE-G	COMP	220	0	
CY14B116N-BA25XIES	4519113	611537843	ASE-G	COMP	220	0	
CY14B116N-BA25XIES	4519113	611537844	ASE-G	COMP	220	0	

**STRESS: Constructional Analysis**

CY14B116N-BA25XIES	4521076	611537842	ASE-G	COMP	5	0	
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**STRESS: Die Shear**

CY14B116N-BA25XIES	4521076	611537842	ASE-G	COMP	15	0	
CY14B116N-BA25XIES	4519113	611537843	ASE-G	COMP	15	0	
CY14B116N-BA25XIES	4519113	611537844	ASE-G	COMP	15	0	

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## Reliability Test Data

QTP #: 154604

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
<b>STRESS: Dye Penetrant Test</b>							
CY14B116N-BA25XIES	4521076	611537842	ASE-G	COMP	15	0	
CY14B116N-BA25XIES	4519113	611537843	ASE-G	COMP	15	0	
CY14B116N-BA25XIES	4519113	611537844	ASE-G	COMP	15	0	
<b>STRESS: BGA Solder Ball Shear</b>							
CY14B116N-BA25XIES	4521076	611537842	ASE-G	COMP	30	0	
CY14B116N-BA25XIES	4519113	611537843	ASE-G	COMP	30	0	
CY14B116N-BA25XIES	4519113	611537844	ASE-G	COMP	30	0	
<b>STRESS: Internal Visual Inspection</b>							
CY14B116N-BA25XIES	4521076	611537842	ASE-G	COMP	5	0	
<b>STRESS: Final Visual Inspection</b>							
CY14B116N-BA25XIES	4521076	611537842	ASE-G	COMP	519	0	
CY14B116N-BA25XIES	4519113	611537843	ASE-G	COMP	517	0	
CY14B116N-BA25XIES	4519113	611537844	ASE-G	COMP	520	0	
<b>STRESS: Physical Dimensions</b>							
CY14B116N-BA25XIES	4521076	611537842	ASE-G	COMP	30	0	
CY14B116N-BA25XIES	4519113	611537843	ASE-G	COMP	30	0	
CY14B116N-BA25XIES	4519113	611537844	ASE-G	COMP	30	0	
<b>STRESS: Solderability- BGA</b>							
CY14B116N-BA25XIES	4521076	611537842	ASE-G	COMP	3	0	
CY14B116N-BA25XIES	4519113	611537843	ASE-G	COMP	3	0	
CY14B116N-BA25XIES	4519113	611537844	ASE-G	COMP	3	0	
<b>STRESS: X-RAY</b>							
CY14B116N-BA25XIES	4521076	611537842	ASE-G	COMP	15	0	
CY14B116N-BA25XIES	4519113	611537843	ASE-G	COMP	15	0	
CY14B116N-BA25XIES	4519113	611537844	ASE-G	COMP	15	0	



## Document History Page

Document Title: QTP# 154604: Qualification of the 60 FBGA (10mm x 18mm x 1.2mm) ASE Package for  
nvSRAM, using Low Alpha KE-G2250, ATB-125 DAF, CuPd, and SAC405, at MSL3  
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**	5201741	BECK	Initial Release