



# Cypress Semiconductor Package Qualification Report

**QTP# 171402 VERSION \*\*  
June 2017**

**121-Ball FBGA (10x10x1.2mm)  
SAC-105 Solder Ball Finish,  
CuPdAu Wire  
MSL3, 260°C Reflow  
BKK-Thailand (SB)**

**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>
171402	Qualification of 121-Ball FBGA (10x10x1.2mm) at Cypress-Bangkok, Thailand (SB) using KMC-3580LVA Mold Compound, QMI-546 Die Attach Epoxy, SAC-105 Solder Ball Finish, 0.8 mil CuPdAu Wire at MSL3, 260C Reflow Temperature	June 2017

<b>MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION</b>	
<b>Package Designation:</b>	BK121
<b>Package Outline, Type, or Name:</b>	121-Ball FBGA (Fine Ball Grid Array)
<b>Mold Compound Name/Manufacturer:</b>	KMC-3580LVA/ShinEtsu
<b>Mold Compound Flammability Rating:</b>	V-0 / UL94
<b>Oxygen Rating Index:</b>	> 54%
<b>Substrate Material:</b>	Substrate Cu/BT
<b>Lead Finish, Composition / Thickness:</b>	Sn/Ag/Cu (SAC-105)
<b>Die Backside Preparation Method/Metallization:</b>	Backgrind
<b>Die Separation Method:</b>	Saw
<b>Die Attach Supplier:</b>	Henkel
<b>Die Attach Material:</b>	QMI-546
<b>Bond Diagram Designation:</b>	002-09900/002-09910/002-09911
<b>Wire Bond Method:</b>	Thermosonic
<b>Wire Material/Size:</b>	CuPdAu, 0.8 mil
<b>Thermal Resistance Theta JA °C/W:</b>	26.5/ 52.8/ 50.3 °C/W
<b>Package Cross Section Yes/No:</b>	No
<b>Assembly Process Flow:</b>	F02-001.31
<b>Name/Location of Assembly (prime) facility:</b>	BKK-Thailand (SB)
<b>MSL Level</b>	3
<b>Reflow Profile</b>	260C

<b>ELECTRICAL TEST / FINISH DESCRIPTION</b>	
<b>Test Location:</b>	BKK-Thailand (SB)

**RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS**

Stress/Test	Test Condition (Temp/Bias)	Result P/F
Acoustic Microscopy	J-STD-020 Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30°C, 60% RH, 260°C Reflow)	P
Constructional Analysis	Criteria: Meet external and internal characteristics of Cypress package	P
Electrostatic Discharge Charge Device Model (ESD-CDM)	500V/1,000V/1,250V JESD22-C101	P
High Accelerated Saturation Test (HAST)	JEDEC STD 22-A110: 110°C, 85% RH, 3.3V Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 °C, 60% RH, 260°C Reflow)	P
High Accelerated Saturation Test (HAST) - Unbiased	JEDEC STD 22-A110: 130°C, 85% RH Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 °C, 60% RH, 260°C Reflow)	P
High Temperature Storage	JESD22-A103:150°C/200°C No bias	P
Temperature Cycle	MIL-STD-883, Method 1010, Condition B, -55°C to 125°C Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30°C, 60% RH, 260°C Reflow)	P
Temperature Cycle	MIL-STD-883, Method 1010, Condition C, -65°C to 150°C Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30°C, 60% RH, 260°C Reflow)	P



## Reliability Test Data

QTP #: 171402

Device	Fab Lot #	Assy Lot #	Ass Loc	Duration	Samp	Rej	Failure Mechanism
<b>STRESS: ACOUSTIC, MSL3</b>							
CYUSB3343 (7CP07520AC)	4628341	5867030	SB-Thailand	COMP	254	0	
CYUSB3343 (7CP07520AC)	4628341	5867180	SB-Thailand	COMP	256	0	
CYUSB3343 (7CP07520AC)	4628341	5867170	SB-Thailand	COMP	256	0	
<b>STRESS: CONSTRUCTIONAL ANALYSIS – HI-ACCEL SATURATION TEST (110C, 85%RH, 3.3V)</b>							
CYUSB3343 (7CP07520AC)	4628341	5867030	SB-Thailand	264	10	0	
CYUSB3343 (7CP07520AC)	4628341	5867180	SB-Thailand	264	10	0	
CYUSB3343 (7CP07520AC)	4628341	5867170	SB-Thailand	264	10	0	
<b>STRESS: CONSTRUCTIONAL ANALYSIS – HIGH TEMPERATURE STORAGE, PLASTIC, 200C</b>							
CYUSB3343 (7CP07520AC)	4628341	5867030	SB-Thailand	350	15	0	
CYUSB3343 (7CP07520AC)	4628341	5867030	SB-Thailand	500	15	0	
CYUSB3343 (7CP07520AC)	4628341	5867180	SB-Thailand	350	15	0	
CYUSB3343 (7CP07520AC)	4628341	5867180	SB-Thailand	500	15	0	
CYUSB3343 (7CP07520AC)	4628341	5867170	SB-Thailand	350	15	0	
CYUSB3343 (7CP07520AC)	4628341	5867170	SB-Thailand	500	15	0	
<b>STRESS: CONSTRUCTIONAL ANALYSIS – TEMPERATURE CYCLE COND. B -55C TO 125C</b>							
CYUSB3343 (7CP07520AC)	4628341	5867030	SB-Thailand	1000	15	0	
CYUSB3343 (7CP07520AC)	4628341	5867180	SB-Thailand	1000	15	0	
CYUSB3343 (7CP07520AC)	4628341	5867170	SB-Thailand	1000	15	0	
<b>STRESS: CONSTRUCTIONAL ANALYSIS – TEMPERATURE CYCLE COND. C -65C TO 150C</b>							
CYUSB3343 (7CP07520AC)	4628341	5867030	SB-Thailand	500	15	0	
CYUSB3343 (7CP07520AC)	4628341	5867180	SB-Thailand	500	15	0	
CYUSB3343 (7CP07520AC)	4628341	5867170	SB-Thailand	500	15	0	



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Device	Fab Lot #	Assy Lot #	Ass Loc	Duration	Samp	Rej	Failure Mechanism
<b>STRESS: ESD-CHARGE DEVICE MODEL</b>							
CYUSB3343 (7CP07520AC)	4628341	5867030	SB-Thailand	500	9	0	
CYUSB3343 (7CP07520AC)	4628341	5867030	SB-Thailand	1000	3	0	
CYUSB3343 (7CP07520AC)	4628341	5867030	SB-Thailand	1250	3	0	
CYUSB3343 (7CP07520AC)	4628341	5867180	SB-Thailand	500	9	0	
CYUSB3343 (7CP07520AC)	4628341	5867180	SB-Thailand	1000	3	0	
CYUSB3343 (7CP07520AC)	4628341	5867180	SB-Thailand	1250	3	0	
CYUSB3343 (7CP07520AC)	4628341	5867170	SB-Thailand	500	9	0	
CYUSB3343 (7CP07520AC)	4628341	5867170	SB-Thailand	1000	3	0	
CYUSB3343 (7CP07520AC)	4628341	5867170	SB-Thailand	1250	3	0	
<b>STRESS: HI-ACCEL SATURATION TEST (110C, 85%RH, 3.3V), PRE COND 192 HR 30C/60%RH (MSL3)</b>							
CYUSB3343 (7CP07520AC)	4628341	5867030	SB-Thailand	96	25	0	
CYUSB3343 (7CP07520AC)	4628341	5867030	SB-Thailand	264	25	0	
CYUSB3343 (7CP07520AC)	4628341	5867030	SB-Thailand	528	15	0	
CYUSB3343 (7CP07520AC)	4628341	5867180	SB-Thailand	96	25	0	
CYUSB3343 (7CP07520AC)	4628341	5867180	SB-Thailand	264	25	0	
CYUSB3343 (7CP07520AC)	4628341	5867180	SB-Thailand	528	15	0	
CYUSB3343 (7CP07520AC)	4628341	5867170	SB-Thailand	96	25	0	
CYUSB3343 (7CP07520AC)	4628341	5867170	SB-Thailand	264	25	0	
CYUSB3343 (7CP07520AC)	4628341	5867170	SB-Thailand	528	15	0	
<b>STRESS: HIGH TEMPERATURE STORAGE, PLASTIC, 150C</b>							
CYUSB3343 (7CP07520AC)	4628341	5867030	SB-Thailand	500	45	0	
CYUSB3343 (7CP07520AC)	4628341	5867030	SB-Thailand	1000	45	0	
CYUSB3343 (7CP07520AC)	4628341	5867180	SB-Thailand	500	45	0	
CYUSB3343 (7CP07520AC)	4628341	5867180	SB-Thailand	1000	45	0	
CYUSB3343 (7CP07520AC)	4628341	5867170	SB-Thailand	500	45	0	
CYUSB3343 (7CP07520AC)	4628341	5867170	SB-Thailand	1000	45	0	



## Reliability Test Data

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Device	Fab Lot #	Assy Lot #	Ass Loc	Duration	Samp	Rej	Failure Mechanism
<b>STRESS: HIGH TEMPERATURE STORAGE, PLASTIC, 200C</b>							
CYUSB3343 (7CP07520AC)	4628341	5867030	SB-Thailand	100	75	0	
CYUSB3343 (7CP07520AC)	4628341	5867030	SB-Thailand	350	60	0	
CYUSB3343 (7CP07520AC)	4628341	5867030	SB-Thailand	500	45	0	
CYUSB3343 (7CP07520AC)	4628341	5867180	SB-Thailand	100	75	0	
CYUSB3343 (7CP07520AC)	4628341	5867180	SB-Thailand	350	60	0	
CYUSB3343 (7CP07520AC)	4628341	5867180	SB-Thailand	500	45	0	
CYUSB3343 (7CP07520AC)	4628341	5867170	SB-Thailand	100	75	0	
CYUSB3343 (7CP07520AC)	4628341	5867170	SB-Thailand	350	60	0	
CYUSB3343 (7CP07520AC)	4628341	5867170	SB-Thailand	500	45	0	
<b>STRESS: TEMPERATURE CYCLE COND. B -55C TO 125C, PRE COND 192 HRS 30C/60%RH, MSL3</b>							
CYUSB3343 (7CP07520AC)	4628341	5867030	SB-Thailand	500	77	0	
CYUSB3343 (7CP07520AC)	4628341	5867030	SB-Thailand	1000	77	0	
CYUSB3343 (7CP07520AC)	4628341	5867180	SB-Thailand	500	77	0	
CYUSB3343 (7CP07520AC)	4628341	5867180	SB-Thailand	1000	77	0	
CYUSB3343 (7CP07520AC)	4628341	5867170	SB-Thailand	500	77	0	
CYUSB3343 (7CP07520AC)	4628341	5867170	SB-Thailand	1000	77	0	
<b>STRESS: TEMPERATURE CYCLE COND. C -65C TO 150C, PRE COND 192 HRS 30C/60%RH, MSL3</b>							
CYUSB3343 (7CP07520AC)	4628341	5867030	SB-Thailand	500	77	0	
CYUSB3343 (7CP07520AC)	4628341	5867180	SB-Thailand	500	77	0	
CYUSB3343 (7CP07520AC)	4628341	5867170	SB-Thailand	500	77	0	
<b>STRESS: UNBIASED HI-ACCEL SATURATION TEST (130C, 85%RH), PRE COND 192 HR 30C/60%RH (MSL3)</b>							
CYUSB3343 (7CP07520AC)	4628341	5867030	SB-Thailand	96	76	0	
CYUSB3343 (7CP07520AC)	4628341	5867180	SB-Thailand	96	77	0	
CYUSB3343 (7CP07520AC)	4628341	5867170	SB-Thailand	96	77	0	



## Document History Page

Document Title: QTP# 171402: 121-BALL FBGA (10X10X1.2MM) SAC-105 SOLDER BALL FINISH, CUPDAU WIRE, MSL3, 260C REFLOW, BKK-THAILAND (SB)  
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Rev.	ECN No.	Orig. of Change	Description of Change
**	5775686	JYF	Initial spec release.