

Cypress Semiconductor Package Qualification Report

**QTP# 164906 VERSION *A
February 2017**

**36-Ball VFBGA (6x8x1.0mm)
SAC-105 & SnPb Solder Ball Finish,
CuPd Wire
MSL3, 260°C Reflow
BKK-Thailand (SB)**

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

QTP Number	Description of Qualification Purpose	Date
164906	Qualification of 36-Ball VFBGA (6x8x1.0mm) at Cypress-Bangkok, Thailand (SB) using KMC- 3580LVA Mold Compound, QMI-546 and CRM-1577DB Die Attach Epoxies, SAC-105 & SnPb Solder Ball Finish, 0.8 mil CuPd Wire at MSL3, 260C reflow temperature.	December 2016

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	BV36/BZ36A
Package Outline, Type, or Name:	36-Ball VFBGA (Very Fine Ball Grid Array)
Mold Compound Name/Manufacturer:	KMC-3580LVA/ShinEtsu
Mold Compound Flammability Rating:	V-0 / UL94
Oxygen Rating Index:	>40%
Substrate Material:	2-Layer BT Resin Substrate
Lead Finish, Composition / Thickness:	Sn/Ag/Cu (SAC-105) & SnPb
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Saw
Die Attach Supplier:	Henkel/Sumitomo
Die Attach Material:	QMI-546/CRM-1577DB
Bond Diagram Designation:	002-14148
Wire Bond Method:	Thermosonic
Wire Material/Size:	CuPd, 0.8 mil
Thermal Resistance Theta JA °C/W:	44.79°C/W
Package Cross Section Yes/No:	No
Assembly Process Flow:	001-98249
Name/Location of Assembly (prime) facility:	BKK-Thailand (SB)
MSL Level	3
Reflow Profile	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	CML-R

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
Ball Shear	JESD22-B116	P
Bond Pull	MIL-STD-883 – Method 2011	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"> • <3000 sq. mils = 1.2 kgf • 30001-5000 sq. mils = 1.2 kgf • >5001 sq. mils = 1.2 kgf 	P
Dye Penetrant Test	Test to determine the existence and extent of cracks, Criteria: No Package Crack	P
Electrostatic Discharge Charge Device Model (ESD-CDM)	500V/1,000V/1,250V JESD22-C101	P
Final Visual	JESD22-B101	P
High Accelerated Saturation Test (HAST)	JEDEC STD 22-A110: 110°C, 85% RH, 5.5V Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 °C, 60% RH, 260°C Reflow)	P
High Temperature Storage	JESD22-A103:150°C No bias	P
Internal Visual	MIL-STD-883-2014	P
Physical Dimension	MIL-STD-1835, JESD22-B100	P
Pressure Cooker	JESD22-A102:121°C /100%RH, 15 PSIG Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 °C, 60% RH, 260°C Reflow)	P
Solder Ball Shear	JESD22-B117	P
Solderability	J-STD-002, JESD22-B102	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
X-Ray	MIL-STD-883 - 2012	P



Reliability Test Data

QTP #: 164906

<i>Device</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Ass Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
STRESS: ACOUSTIC, MSL3							
CY62157EV30LL (7CP62157F)	4501549	RFB2171	SB-Thailand	COMP	15	0	
CY62157EV30LL (7CP62157F)	4503799	RFB2191	SB-Thailand	COMP	15	0	
CY62167EV30LL (7CP62167F)	4318389	611514441	SB-Thailand	COMP	15	0	
CY62167EV30LL (7CP62167F)	4318389	611514442	SB-Thailand	COMP	15	0	
CY62138EV30LL (7CP62138F)	4628338	611635621	SB-Thailand	COMP	15	0	
CY62148EV30LL (7CP62148F)	4628338	611635622	SB-Thailand	COMP	15	0	
STRESS: BALL SHEAR							
CY62138EV30LL (7CP62138F)	4628338	611635621	SB-Thailand	COMP	10	0	
CY62148EV30LL (7CP62148F)	4628338	611635622	SB-Thailand	COMP	10	0	
CY62138FV30LL (7CP62138G)	4626928	611638514	SB-Thailand	COMP	10	0	
STRESS: BOND PULL							
CY62138EV30LL (7CP62138F)	4628338	611635621	SB-Thailand	COMP	10	0	
CY62148EV30LL (7CP62148F)	4628338	611635622	SB-Thailand	COMP	10	0	
CY62138FV30LL (7CP62138G)	4626928	611638514	SB-Thailand	COMP	10	0	
STRESS: CONSTRUCTIONAL ANALYSIS							
CY62157EV30LL (7CP62157F)	4503799	RFB2191	SB-Thailand	COMP	5	0	
CY62167EV30LL (7CP62167F)	4318389	611514442	SB-Thailand	COMP	5	0	
CY62138FV30LL (7CP62138G)	4626928	611638514	SB-Thailand	COMP	5	0	
STRESS: DIE SHEAR							
CY62138EV30LL (7CP62138F)	4628338	611635621	SB-Thailand	COMP	15	0	
CY62148EV30LL (7CP62148F)	4628338	611635622	SB-Thailand	COMP	15	0	
CY62138FV30LL (7CP62138G)	4626928	611638514	SB-Thailand	COMP	15	0	
STRESS: DYE PENETRANT TEST							
CY62167EV30LL (7CP62167F)	4318389	611514442	SB-Thailand	COMP	15	0	
CY62138EV30LL (7CP62138F)	4628338	611635621	SB-Thailand	COMP	15	0	
CY62167EV30LL (7CP62167F)	4318389	611514441	SB-Thailand	COMP	15	0	



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STRESS: ESD-CHARGE DEVICE MODEL							
CY62157EV30LL (7CP62157F)	4503799	RFB2191	SB-Thailand	500	9	0	
CY62157EV30LL (7CP62157F)	4503799	RFB2191	SB-Thailand	1000	3	0	
CY62157EV30LL (7CP62157F)	4503799	RFB2191	SB-Thailand	1250	3	0	
STRESS: FINAL VISUAL							
CY62138EV30LL (7CP62138F)	4628338	611635621	SB-Thailand	COMP	1198	0	
CY62148EV30LL (7CP62148F)	4628338	611635622	SB-Thailand	COMP	1492	0	
CY62138FV30LL (7CP62138G)	4626928	611638514	SB-Thailand	COMP	4137	0	
STRESS: HI-ACCEL SATURATION TEST (110C, 85%RH, 5.5V), PRE COND 192 HR 30C/60%RH (MSL3)							
CY62157EV30LL (7CP62157F)	4501549	RFB2171	SB-Thailand	264	30	0	
CY62157EV30LL (7CP62157F)	4501549	RFB2171	SB-Thailand	528	30	0	
CY62157EV30LL (7CP62157F)	4503799	RFB2191	SB-Thailand	264	30	0	
CY62157EV30LL (7CP62157F)	4503799	RFB2191	SB-Thailand	528	27	0	
CY62167EV30LL (7CP62167F)	4318389	611514441	SB-Thailand	264	30	0	
CY62167EV30LL (7CP62167F)	4318389	611514441	SB-Thailand	528	27	0	
STRESS: HIGH TEMPERATURE STORAGE, PLASTIC, 150C							
CY62157EV30LL (7CP62157F)	4501549	RFB2171	SB-Thailand	500	77	0	
CY62157EV30LL (7CP62157F)	4501549	RFB2171	SB-Thailand	1000	75	0	
STRESS: INTERNAL VISUAL							
CY62157EV30LL (7CP62157F)	4503799	RFB2191	SB-Thailand	COMP	5	0	
CY62167EV30LL (7CP62167F)	4318389	611514442	SB-Thailand	COMP	5	0	
STRESS: PHYSICAL DIMENSION							
CY62138EV30LL (7CP62138F)	4628338	611635621	SB-Thailand	COMP	1198	0	
CY62148EV30LL (7CP62148F)	4628338	611635622	SB-Thailand	COMP	1492	0	
CY62138FV30LL (7CP62138G)	4626928	611638514	SB-Thailand	COMP	4137	0	
STRESS: PRESSURE COOKER TEST (121C, 100%RH, 15 Psig), PRE COND 192 HR 30C/60%RH (MSL3)							
CY62157EV30LL (7CP62157F)	4501549	RFB2171	SB-Thailand	168	80	0	
CY62157EV30LL (7CP62157F)	4503799	RFB2191	SB-Thailand	168	80	0	
CY62157EV30LL (7CP62157F)	4503799	RFB2191	SB-Thailand	288	76	0	
CY62138EV30LL (7CP62138F)	4628338	611635621	SB-Thailand	COMP	5	0	

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STRESS: SOLDER BALL SHEAR							
CY62148EV30LL (7CP62148F)	4628338	611635622	SB-Thailand	COMP	5	0	
CY62138FV30LL (7CP62138G)	4626928	611638514	SB-Thailand	COMP	5	0	
STRESS: SOLDERABILITY TEST							
CY62167EV30LL (7CP62167F)	4318389	611514441	SB-Thailand	COMP	3	0	
CY62167EV30LL (7CP62167F)	4318389	611514442	SB-Thailand	COMP	3	0	
STRESS: TEMPERATURE CYCLE COND. C -65C TO 150C, PRE COND 192 HRS 30C/60%RH, MSL3							
CY62157EV30LL (7CP62157F)	4501549	RFB2171	SB-Thailand	500	80	0	
CY62157EV30LL (7CP62157F)	4501549	RFB2171	SB-Thailand	1000	80	0	
CY62157EV30LL (7CP62157F)	4503799	RFB2191	SB-Thailand	500	80	0	
CY62157EV30LL (7CP62157F)	4503799	RFB2191	SB-Thailand	1000	80	0	
CY62167EV30LL (7CP62167F)	4318389	611514441	SB-Thailand	500	80	0	
CY62167EV30LL (7CP62167F)	4318389	611514441	SB-Thailand	1000	80	0	
CY62167EV30LL (7CP62167F)	4318389	611514442	SB-Thailand	500	79	0	
STRESS: X-RAY							
CY62138EV30LL (7CP62138F)	4628338	611635621	SB-Thailand	COMP	24	0	
CY62148EV30LL (7CP62148F)	4628338	611635622	SB-Thailand	COMP	24	0	
CY62138FV30LL (7CP62138G)	4626928	611638514	SB-Thailand	COMP	24	0	



Document History Page

Document Title: QTP# 164906: 36-BALL VFBGA (6X8X1.0MM) SAC-105 & SNPB SOLDER BALL FINISH, CUPD WIRE, MSL3, 260C REFLOW, BKK-THAILAND (SB)
Document Number: 002-18194

Rev.	ECN No.	Orig. of Change	Description of Change
**	5552972	JYF	Initial spec release.
*A	5622166	JYF	Added new DPT and CA data (page 5).