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Cypress Semiconductor Package Qualification Report

QTP# 074102 VERSION*A
October 2014

**165-Ball Fine Pitch Ball Grid Array (FBGA)
(15 x 17 x 1.4mm)
SnPbAg,MSL3, 220C Reflow
CML-RA (Autoline)**

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

Qual Report	Description of Qualification Purpose	Date Comp
074102	Qualify 165-Ball FBGA (15 x 17 x 1.4mm), SnPbAg, MSL3, 220C Reflow assembled at CML-RA	June 08

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	BB165
Package Outline, Type, or Name:	165-Ball Fine Pitch Ball Grid Array (FBGA)
Mold Compound Name/Manufacturer:	Cookson – CK7000-LA
Mold Compound Flammability Rating:	V-O per UL94
Mold Compound Alpha Emission Rate :	NA
Oxygen Rating Index:	N/A
Substrate Material:	KINSUS - BT
Lead Finish, Composition / Thickness:	SnPbAg
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	100% Saw
Die Attach Supplier:	Dexter
Die Attach Material:	QMI506
Die Attach Method:	Epoxy
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au, 1.0 mil
Thermal Resistance Theta JA °C/W:	16.1°C/W
Package Cross Section Yes/No:	N/A
Assembly Process Flow:	001-09031
Name/Location of Assembly (prime) facility:	CML-RA
MSL Level	3
Reflow Profile	220C

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	P
Ball Shear	JESD22-B116A	P
Bond Pull	MIL-STD-883 – Method 2011,	P
Constructional Analysis	Meet external and internal characteristics of Cypress package	P
Die Shear	MIL-STD-883, Method 2019	P
Dye Penetrant Test	Criteria: No Package Crack	P
Electrostatic Discharge Charge Device Model (ESD-CDM)	500V JESD22-C101	P
Electrostatic Discharge Human Body Model (ESD-HBM)	2,200V JESD22, Method A114-E	P
Final Visual Inspection	JESD22-B101B	P
Internal Visual	MIL-STD-883-2014	P
High Accelerated Saturation Test (HAST)	130°C, 85%RH, 1.80V Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs., 30°C/60%RH+3IR-Reflow, 220°C+0, -5°C	P
High Temperature Storage	150C, no bias	P
Physical Dimension	MIL-STD-1835, JESD22-B100	P
Pressure Cooker	121C, 100%RH, 15 Psig Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs., 30°C/60%RH+3IR-Reflow, 220°C+0, -5°C	P
Solderability	J-STD-002, JESD22-B102	P
Temperature Cycle	JEDEC22, Condition C, -65°C to 150°C Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs., 30°C/60%RH+3IR-Reflow, 220°C+0, -5°C	P
Thermal Shock	MIL-STD-883C, Method 1011	P
X-Ray	MIL-STD-883 - 2012	P

Reliability Test Data

QTP #: 074102

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3							
CY7C1412AV18 (7C1412B)	4727226	610746394	CML-RA	COMP	15	0	
CY7C1412AV18 (7C1412B)	4727226	610746398	CML-RA	COMP	15	0	
CY7C1412AV18 (7C1412B)	4727226	610746258	CML-RA	COMP	15	0	
STRESS: BALL SHEAR							
CY7C1412AV18 (7C1412B)	4727226	610746258	CML-RA	COMP	30	0	
STRESS: BOND PULL							
CY7C1412AV18 (7C1412B)	4727226	610746258	CML-RA	COMP	30	0	
STRESS: CONSTRUCTIONAL ANALYSIS							
CY7C1412AV18 (7C1412B)	4727226	610746394	CML-RA	COMP	5 0		
STRESS: DIE SHEAR							
CY7C1412AV18 (7C1412B)	4727226	610746258	CML-RA	COMP	30	0	
STRESS: DYE PENETRANT TEST							
CY7C1412AV18 (7C1412B)	4727226	610746394	CML-RA	COMP	15	0	
CY7C1412AV18 (7C1412B)	4727226	610746398	CML-RA	COMP	15	0	
CY7C1412AV18 (7C1412B)	4727226	610746258	CML-RA	COMP	15	0	
STRESS: ESD-CHARGE DEVICE MODEL, 500V							
CY7C1412AV18 (7C1412B)	4727226	610746394	CML-RA	COMP	9	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22, METHOD A114-E, 2,200V							
CY7C1412AV18 (7C1412B)	4727226	610746394	CML-RA	COMP	8	0	
STRESS: FINAL VISUAL							
CY7C1412AV18 (7C1412B)	4727226	610746258	CML-RA	COMP	1563	0	
STRESS: HI-ACCEL SATURATION TEST (130C, 85%RH, 1.80V), PRE COND 192 HR 30C/60%RH, MSL3							
CY7C1313AV18 (7R1313B)	4535671	610546317	CML-RA	128	50	0	
STRESS: HIGH TEMPERATURE STORAGE, PLASTIC, 150C							
CY7C1313AV18 (7R1313B)	4540176	610559351	CML-RA	500	45	0	
CY7C1313AV18 (7R1313B)	4540176	610559351	CML-RA	1000	45	0	
STRESS: INTERNAL VISUAL							
CY7C1412AV18 (7C1412B)	4727226	610746394	CML-RA	COMP	5	0	

Reliability Test Data

QTP #: 074102

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: PRESSURE COOKER TEST (121C, 100%RH, 15 Psig), PRE COND 192 HR 30C/60%RH, MSL3							
CY7C1412AV18 (7C1412B)	4727226	610746394	CML-RA	168	75	0	
STRESS: PHYSICAL DIMENSIONS							
CY7C1412AV18 (7C1412B)	4727226	610746258	CML-RA	COMP	30	0	
STRESS: SOLDER BALL SHEAR							
CY7C1412AV18 (7C1412B)	4727226	610746258	CML-RA	COMP	30	0	
STRESS: SOLDERABILITY							
CY7C1412AV18 (7C1412B)	4727226	610746394	CML-RA	COMP	3	0	
CY7C1412AV18 (7C1412B)	4727226	610746398	CML-RA	COMP	3	0	
CY7C1412AV18 (7C1412B)	4727226	610746258	CML-RA	COMP	3	0	
STRESS: TC COND. C -65C TO 150C, PRE COND 192 HRS 30C/60%RH, MSL3							
CY7C1412AV18 (7C1412B)	4727226	610746394	CML-RA	500	80	0	
CY7C1412AV18 (7C1412B)	4727226	610746394	CML-RA	1000	80	0	
CY7C1412AV18 (7C1412B)	4727226	610746398	CML-RA	500	77	0	
CY7C1412AV18 (7C1412B)	4727226	610746398	CML-RA	1000	76	0	
CY7C1412AV18 (7C1412B)	4727226	610746258	CML-RA	500	80	0	
CY7C1412AV18 (7C1412B)	4727226	610746258	CML-RA	1000	80	0	
STRESS: THERMAL SHOCK							
CY7C1313AV18 (7R1313B)	4540176	610559351	CML-RA	100	45	0	
CY7C1313AV18 (7R1313B)	4540176	610559351	CML-RA	200	45	0	
STRESS: X-RAY							
CY7C1412AV18 (7C1412B)	4727226	610746394	CML-RA	COMP	15	0	

Document History Page

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Reflow CML-RA (Autoline)
Document Number: 001-90025

Rev.	ECN No.	Orig. of Change	Description of Change
**	4189149	HSTO	Initial Spec Release Initiate report as per memo HGA-633.
*A	4552290	HSTO	Align qualification report based on the new template in the front page

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