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Cypress Semiconductor Package Qualification Report

**QTP 104107 VERSION*C
February 2015**

**48 – Ball FBGA
(6X10X1.2mm)
SnAgCu, MSL3, 260C Reflow
CML-RA**

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

Qual Report	Description of Qualification Purpose	Date Comp
104107	Qualification of 6x10x1.2mm FBGA Package in CML,Autoline#8 using (NVS RAM –7C1421B8C & 7C1404B8C) Devices, QMI 506 Die Attach Epoxy, 0.8mil Au wire, KE-G2270 Molding Compound, 0.3mm „SnAgCu Solder Ball, MSL3 / 260 Reflow Temperatur	Jan 11

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	BK 48 (6X10X1.2mm)
Package Outline, Type, or Name:	48-Ball FBGA
Mold Compound Name/Manufacturer:	KE-G2270 / Kyoceral
Mold Compound Flammability Rating:	UL-94V (0)
Substrate Material:	BT Resin
Lead Finish, Composition / Thickness:	SAC105
Die Backside Preparation Method/Metallization:	Backgrinding
Die Separation Method:	Saw
Die Attach Supplier:	Henkel
Die Attach Material:	QMI-506
Die Attach Method:	Epoxy
Bond Diagram Designation:	001-62040, 001-63867, 001-64013
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au / 0.8 mil
Thermal Resistance Theta JA °C/W:	31.11 °C/W
Package Cross Section Yes/No:	Yes
Assembly Process Flow:	11-21101
Name/Location of Assembly (prime) facility:	CML-RA
MSL Level	3
Reflow Profile	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	CML-RA

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, 16g minimum	P
Bond Pull	MIL-STD-883 – Method 2011, 3g minimum	P
Constructional Analysis	Criteria: Meet external and internal characteristics of cypress package	P
Die Shear	MIL-STD-883, Method 2019, 3kg minimum	P
Dye Penetration	No package crack, 6 hours at 60 psia	P
ESD HBM	2200V, JESD22-A114E	P
ESD CDM	500V, JESD22-C101C	P
Final Visual	JESD22-B101B	P
High Temp Storage	150C, no bias	P
Internal Visual	MIL-STD-883-2014	P
High Accelerated Saturation Test (HAST)	110°C, 85%RH, 5.25V/ 3.3V Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs., 30°C/60%RH+3IR-Reflow, 260°C+0, -5°C	P
Physical Dimension	MIL-STD-1835, JESD22-B100	P
Pressure Cooker	121°C, 100%RH Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs., 30°C/60%RH+3IR-Reflow, 260°C+0, -5°C	P
Solder Ball Shear	JESD22-B116A, 500g minimum	P
BGA Solderability	J-STD-002, JESD22-B102	P
Temperature Cycle	MIL-STD-883C, Method 1010, Condition B, -55°C to 125°C Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs., 30°C/60%RH+3IR-Reflow, 260°C+0, -5°C	P
Thermal Shock	MIL-STD-883C, Method 1010, Condition B, -55°C to 125°C	P
X-ray	MIL-STD-883 2012	P



Reliability Test Data

QTP #: 104107

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3							
CY14V104LA (7C1424B8C)	4020495	611053397	CML-RA	COMP	15	0	
CY14V104LA (7C1424B8C)	4020495	611053396	CML-RA	COMP	15	0	
CY14V101LA (7C1421B8C)	4011032	611047405	CML-RA	COMP	15	0	
STRESS: BALL SHEAR							
CY14V104LA (7C1424B8C)	4020495	611053397	CML-RA	COMP	30	0	
CY14V104LA (7C1424B8C)	4020495	611053396	CML-RA	COMP	30	0	
CY14V101LA (7C1421B8C)	4011032	611047405	CML-RA	COMP	30	0	
STRESS: BOND PULL							
CY14V104LA (7C1424B8C)	4020495	611053397	CML-RA	COMP	30	0	
CY14V104LA (7C1424B8C)	4020495	611053396	CML-RA	COMP	30	0	
CY14V101LA (7C1421B8C)	4011032	611047405	CML-RA	COMP	30	0	
STRESS : CONSTRUCTIONAL ANALYSIS							
CY14V104LA (7C1424B8C)	4020495	611053397	CML-RA	COMP	5	0	
STRESS : DYE PENETRATION TEST							
CY14V104LA (7C1424B8C)	4020495	611053397	CML-RA	COMP	15	0	
CY14V104LA (7C1424B8C)	4020495	611053396	CML-RA	COMP	15	0	
CY14V101LA (7C1421B8C)	4011032	611047405	CML-RA	COMP	15	0	
STRESS: DIE SHEAR							
CY14V104LA (7C1424B8C)	4020495	611053397	CML-RA	COMP	30	0	
CY14V104LA (7C1424B8C)	4020495	611053396	CML-RA	COMP	30	0	
CY14V101LA (7C1421B8C)	4011032	611047405	CML-RA	COMP	30	0	
STRESS: ESD-CHARGE DEVICE MODEL, (500V)							
CY14V104LA (7C1424B8C)	4020495	611053397	CML-RA	COMP	9	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22, METHOD A114-B, (2,200V)							
CY14V104LA (7C1424B8C)	4020495	611053397	CML-RA	COMP	8	0	

Reliability Test Data

QTP #: 104107

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: HIGH TEMP STORAGE							
CY14V104LA (7C1424B8C)	4020495	611053397	CML-RA	500	77	0	
CY14B104LA (7C1404B8C)	4020495	611047403	CML-RA	500	77	0	
CY14B104LA (7C1404B8C)	4020495	611047403	CML-RA	1000	77	0	
STRESS: HI-ACCEL SATURATION TEST (110C, 85%RH, 5.25V / 3.3V, PRE COND 192 HR 30C/60%RH, MSL3							
CY14V104LA (7C1424B8C)	4020495	611053397	CML-RA	264	29	0	
CY14B104LA (7C1404B8C)	4020495	611047403	CML-RA	264	47	0	
STRESS : INTERNAL VISUAL							
CY14V104LA (7C1424B8C)	4020495	611053397	CML-RA	COMP	5	0	
STRESS : PHYSICAL DIMENSION							
CY14V104LA (7C1424B8C)	4020495	611053397	CML-RA	COMP	30	0	
STRESS: PRESSURE COOKER TEST, 121C, 100%RH, PRE COND 192 HR 30C/60%RH, MSL3							
CY14V104LA (7C1424B8C)	4020495	611053397	CML-RA	168	77	0	
STRESS: SOLDER BALL SHEAR							
CY14V104LA (7C1424B8C)	4020495	611053397	CML-RA	COMP	30	0	
CY14V104LA (7C1424B8C)	4020495	611053396	CML-RA	COMP	30	0	
CY14V101LA (7C1421B8C)	4011032	611047405	CML-RA	COMP	30	0	
STRESS: SOLDERABILITY TEST							
CY14V104LA (7C1424B8C)	4020495	611053397	CML-RA	COMP	3	0	
CY14V104LA (7C1424B8C)	4020495	611053396	CML-RA	COMP	3	0	
CY14V101LA (7C1421B8C)	4011032	611047405	CML-RA	COMP	3	0	
STRESS: TC COND. B -55C TO 125C, PRE COND192 HRS 30C/60%RH, MSL3							
CY14V104LA (7C1424B8C)	4020495	611053397	CML-RA	500	77	0	
CY14V104LA (7C1424B8C)	4020495	611053396	CML-RA	500	77	0	
CY14V101LA (7C1421B8C)	4011032	611047405	CML-RA	500	77	0	
STRESS: THERMAL SHOCK							
CY14V104LA (7C1424B8C)	4020495	611053397	CML-RA	500	77	0	
CY14V104LA (7C1424B8C)	4020495	611053397	CML-RA	1000	77	0	



Reliability Test Data

QTP #: 104107

<i>Device</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>
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STRESS : X-RAY

CY14V104LA (7C1424B8C)	4020495	611053397	CML-RA	COMP	77	0	
CY14V104LA (7C1424B8C)	4020495	611053396	CML-RA	COMP	77	0	
CY14V101LA (7C1421B8C)	4011032	611047405	CML-RA	COMP	77	0	



Document History Page

Document Title: QTP 104107: 48 - BALL FBGA (6X10X1.2MM), SNAGCU, MSL3, 260C AT CML-RA
QUALIFICATION REPORT

Document Number: 001-66415

Rev.	ECN No.	Orig. of Change	Description of Change
**	3129719	NSR	Initial spec release
*A	3514525	NSR	Corrected the gold wire diameter from 1.0 mil to 0.8 mil in reference to BE MQ memo ZZQ-52. Remove version 1.0 in title page.
*B	4262755	HSTO	Sunset Review Removed the reference Cypress specs in the reliability test performed table and replace with the reference industry standards.
*C	4646266	HSTO	Align qualification report based on the new template in the front page

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