

# **Cypress Semiconductor Package Qualification Report**

**QTP# 082017 VERSION 1.0  
Jun 2008**

**56-Ball VFBGA**

**(5 x 5 x 1.0mm)**

**SnAgCu,MSL3, 260C Solder Reflow**

**CML-RA**

## **CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:**

Rene Rodgers  
Reliability Engineer, MTS  
(408) 943-2732

Mira Ben-Tzur  
Quality Engineering Director  
(408) 943-2675

### PACKAGE QUALIFICATION HISTORY

<b>Qual Report</b>	<b>Description of Qualification Purpose</b>	<b>Date Comp</b>
042801	Qualify all VFBGA (7mils Wafer Thickness) Packages at MSL3, 260C Reflow assembled in CML-RA	Dec 04
064702	Qualify 56/100-Ball VFBGA packages using KE-G2270M Mold Compound, QMI 506 Epoxy, BT-Kinsus Substrate assembled at CML-RA	Dec 06
082017	Qualify 56 VFBGA (5x5x1.0mm) Substrate Material (SUBV56G) using KE-G2270 Mold Compound, QMI 506 Die Attach Epoxy, SnAgCu, MSL3,260C reflow assembled at CML-RA	Jun 08

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
<b>Package Designation:</b>	BZ56
<b>Package Outline, Type, or Name:</b>	56-Ball Very Fine Ball Grid Array (VFBGA)
<b>Mold Compound Name/Manufacturer:</b>	Kyocera/G2270M
<b>Mold Compound Flammability Rating:</b>	V-O per UL94
<b>Mold Compound Alpha Emission Rate:</b>	0.001 CPH/cm <sup>2</sup>
<b>Oxygen Rating Index:</b>	N/A
<b>Substrate Material:</b>	CCL-H832NX
<b>Lead Finish, Composition / Thickness:</b>	SnAgCu
<b>Die Backside Preparation Method/Metallization:</b>	Backgrind
<b>Die Separation Method:</b>	100% Saw
<b>Die Attach Supplier:</b>	Dexter
<b>Die Attach Material:</b>	QMI506
<b>Die Attach Method:</b>	Epoxy
<b>Bond Diagram Designation:</b>	001-11808
<b>Wire Bond Method:</b>	Thermosonic
<b>Wire Material/Size:</b>	Au. 0.8 mil
<b>Thermal Resistance Theta JA °C/W:</b>	110.92
<b>Package Cross Section Yes/No:</b>	Yes
<b>Assembly Process Flow:</b>	11-21099M
<b>Name/Location of Assembly (prime) facility:</b>	CML-RA
<b>MSL Level</b>	3
<b>Reflow Profile</b>	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
<b>Test Location:</b>	CML-R, CML-RA

**Note:** Please contact a Cypress Representative for other packages availability

**RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS**

<b>Stress/Test</b>	<b>Test Condition (Temp/Bias)</b>	<b>Result P/F</b>
Acoustic Microscopy Test	Cypress Spec 25-00104	P
Ball Shear	Cypress Spec 24-00018	P
Bond Pull	Cypress Spec 12-00292	P
Constructional Analysis	Cypress Spec 25-20035	P
Cross Section	Cypress Spec 25-20026	P
Dye Penetration	Cypress Spec 25-00046	P
External Visual	Cypress Spec 25-00038	P
Final Visual Inspection	Cypress Spec 12-00292	P
High Accelerated Saturation	130°C, 3.6V, 85%RH Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs., 30°C/60%RH+3IR-Reflow, <b>260°C</b> +0, -5°C	P
Internal Visual	Cypress Spec 12-00292	P
Physical Dimension	Cypress Spec 25-00031	P
Pressure Cooker	121C, 100%RH, 15 Psig Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs., 30°C/60%RH+3IR-Reflow, <b>260°C</b> +0, -5°C	P
Temperature Cycle	JEDEC22, Condition C, -65°C to 150°C Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs., 30°C/60%RH+3IR-Reflow, <b>260°C</b> +0, -5°C	P
Solderability	Cypress Spec 25-00018	P

## Reliability Test Data

QTP #: 042801

<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>
<b>STRESS: ACOUSTIC, MSL3</b>							
CY62157DV18LL (7R62357D)	4338727	610441999	CML-RA	COMP	15	0	
CY62157DV18LL (7R62357D)	4338727	610442000	CML-RA	COMP	15	0	
CY62157DV18LL (7R62357D)	4338727	610442001	CML-RA	COMP	15	0	
<b>STRESS: BALL SHEAR</b>							
CY62157DV18LL (7R62357D)	4338727	610441999	CML-RA	COMP	10	0	
CY62157DV18LL (7R62357D)	4338727	610442000	CML-RA	COMP	10	0	
<b>STRESS: EXTERNAL VISUAL</b>							
CY62157DV18LL (7R62357D)	4338727	610441999	CML-RA	COMP	15	0	
CY62157DV18LL (7R62357D)	4338727	610442000	CML-RA	COMP	15	0	
<b>STRESS: HI-ACCEL SATURATION TEST (130C, 85%RH, 3.6V), PRE COND 192 HR 30C/60%RH, MSL3</b>							
CY62157DV18LL (7R62357D)	4338727	610441999	CML-RA	128	45	0	
<b>STRESS: PRESSURE COOKER TEST (121C, 100%RH), 15 Psig, PRE COND 192 HR 30C/60%RH, MSL3</b>							
CY62157DV18LL (7R62357D)	4338727	610441999	CML-RA	168	45	0	
<b>STRESS: TC COND. C -65C TO 150C, PRE COND 192 HRS 30C/60%RH, MSL3</b>							
CY62157DV18LL (7R62357D)	4338727	610441999	CML-RA	300	45	0	
CY62157DV18LL (7R62357D)	4338727	610441999	CML-RA	500	45	0	
CY62157DV18LL (7R62357D)	4338727	610441999	CML-RA	1000	44	0	
CY62157DV18LL (7R62357D)	4338727	610442000	CML-RA	300	48	0	
CY62157DV18LL (7R62357D)	4338727	610442000	CML-RA	500	48	0	
CY62157DV18LL (7R62357D)	4338727	610442000	CML-RA	300	47	0	
CY62157DV18LL (7R62357D)	4338727	610442001	CML-RA	300	50	0	
CY62157DV18LL (7R62357D)	4338727	610442001	CML-RA	500	50	0	
CY62157DV18LL (7R62357D)	4338727	610442001	CML-RA	1000	49	0	

## Reliability Test Data

QTP #: 064702

<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>
<b>STRESS: CONSTRUCTIONAL ANALYSIS</b>							
CYWB0124AB (7C07100A)	4636435	610664727M	CML-RA	COMP	5	0	
CYWB0124AB (7C07100A)	4636435	610664727M1	CML-RA	COMP	5	0	
CYWB0124AB (7C07100A)	4636435	610664727M2	CML-RA	COMP	5	0	
CY7C68053 (7C68053A)	4615637		CML-RA	COMP	5	0	
<b>STRESS: DYE PENETRATION</b>							
CYWB0124AB (7C07100A)	4636435	610664727M	CML-RA	COMP	1000	0	
CYWB0124AB (7C07100A)	4636435	610664727M1	CML-RA	COMP	1000	0	
CYWB0124AB (7C07100A)	4636435	610664727M2	CML-RA	COMP	1000	0	
CY7C68053 (7C68053A)	4615637		CML-RA	COMP	1000	0	
<b>STRESS: SOLDERABILITY</b>							
CYWB0124AB (7C07100A)	4636435	610664727M	CML-RA	COMP	5	0	
CYWB0124AB (7C07100A)	4636435	610664727M1	CML-RA	COMP	5	0	
CYWB0124AB (7C07100A)	4636435	610664727M2	CML-RA	COMP	5	0	
CY7C68053 (7C68053A)	4615637		CML-RA	COMP	5	0	

## Reliability Test Data

QTP #: 082017

<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>
<b>STRESS: ACOUSTIC, MSL3</b>							
CY7C68053 (7C680510AC)	4741739	610804230	CML-RA	COMP	324	0	
CY7C68053 (7C680510AC)	4743631	610819865	CML-RA	COMP	324	0	
<b>STRESS: BOND PULL</b>							
CY7C68053 (7C680510AC)	4741739	610804230	CML-RA	COMP	30	0	
<b>STRESS: CONSTRUCTIONAL ANALYSIS</b>							
CY7C68053 (7C680510AC)	4741739	610804230	CML-RA	COMP	5	0	
CY7C68053 (7C680510AC)	4743631	610819865	CML-RA	COMP	5	0	
<b>STRESS: CROSS SECTION</b>							
CY7C68053 (7C680510AC)	4741739	610804230	CML-RA	COMP	5	0	
CY7C68053 (7C680510AC)	4743631	610819865	CML-RA	COMP	5	0	
<b>STRESS: FINAL VISUAL INSPECTION</b>							
CY7C68053 (7C680510AC)	4741739	610804230	CML-RA	COMP	1046	0	
<b>STRESS: INTERNAL VISUAL</b>							
CY7C68053 (7C680510AC)	4741739	610804230	CML-RA	COMP	5	0	
CY7C68053 (7C680510AC)	4743631	610819865	CML-RA	COMP	5	0	
<b>STRESS: PHYSICAL DIMENSION</b>							
CY7C68053 (7C680510AC)	4741739	610804230	CML-RA	COMP	30	0	
<b>STRESS: SOLDERABILITY</b>							
CY7C68053 (7C680510AC)	4741739	610804230	CML-RA	COMP	3	0	
<b>STRESS: TC COND. C -65C TO 150C, PRE COND 192 HRS 30C/60%RH, MSL3</b>							
CY7C68053 (7C680510AC)	4743631	610819865	CML-RA	500	319	0	
CY7C68053 (7C680510AC)	4743631	610819865	CML-RA	1000	318	0	
CY7C68053 (7C680510AC)	4741739	610804230	CML-RA	500	323	0	
CY7C68053 (7C680510AC)	4741739	610804230	CML-RA	1000	321	0	