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Cypress Semiconductor Package Qualification Report

**QTP# 113007
November 2013**

**165 FBGA (13x15x1.4 mm)
SnAgCu, MSL3, 260°C Reflow /
SnPb, MSL3, 220°C Reflow
ASE-Taiwan (G)**

CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:

Mira Ben-Tzur
Reliability Director
(408) 943-2675

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

PACKAGE QUALIFICATION HISTORY

QTP Number	Description of Qualification Purpose	Date
050704	165-Ball FBGA (15 x 17 x 1.4mm), MSL3, 260C Reflow assembled at ASE-Taiwan (G)	Mar 2005
050704	165-Ball FBGA (15x17x1.4mm and 13x15x.1.4mm) using G2270 Mold Compound and Ablestik 2025D , MSL3, 260C Reflow assembled at ASE-Taiwan (G)	Mar 2008
113007	Qualification of 165BGA 13X15X1.4mm package using ATB-125 Die Attach Film (DAF) material at ASE-G	Sep 2011

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	BW165
Package Outline, Type, or Name:	165 – FBGA (13x15x1.4mm)
Mold Compound Name/Manufacturer:	KE-G2270 / Kyocera
Mold Compound Flammability Rating:	V-O per UL94
Mold Compound Alpha Emission Rate:	N/A
Oxygen Rating Index: >28%	N/A
Substrate Designation:	A10551-0
Lead Frame Material:	N/A
Substrate Material:	BT Resin
Lead Finish, Composition / Thickness:	SAC405
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Wafersaw
Die Attach Supplier:	Ablestik
Die Attach Material:	ATB-125
Wire Bond Method:	Thermosonic
Wire Material/Size:	1.0mil / Au
Thermal Resistance Theta JA °C/W:	13.7 °C/W
Package Cross Section Yes/No:	Yes
Assembly Process Flow:	49-41999
Name/Location of Assembly (prime) facility:	ASE-Taiwan (G)
MSL LEVEL	3
REFLOW PROFILE	260C / 220C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	CML-R

Note: Please contact a Cypress Representative for other package availability.

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS

Stress/Test	Test Condition (Temp/Bias)	Result P/F
High Accelerated Saturation Test (HAST)	JEDEC STD 22-A110: 130 C, 85%RH, 3.6V/1.98V / 2.25V Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 C°, 60% RH, 260C Reflow)	P
High Temperature Storage	JESD22-A103:150 C, no bias	P
Pressure Cooker Test	JESD22-A102: 121 C, 100%RH, 15 PSIG Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 C°, 60% RH, 260C Reflow)	P
Temperature Cycle	MIL-STD-883C, Method 1010, Condition C, -65 C to 150 C Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 C°, 60% RH, 260C Reflow)	P
Thermal Shock	MIL-STD-883C, Method 1010, Condition B, -55 C to 125 C	P
Acoustic Microscopy	J-STD-020 Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 C°, 60% RH, 260C Reflow)	P
Ball Shear	JESD22-B116A, Cpk : 1.33, Ppk : 1.66	P
Bond Pull	MIL-STD-883 – Method 2011, Cpk : 1.33, Ppk : 1.66	P
Constructional Analysis	Criteria: Meet external and internal characteristics of Cypress package	P
Coplanarity	<= 8 mils	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
Electrostatic Discharge Charge Device Model (ESD-CDM)	500V JESD22-C101	P
Electrostatic Discharge Human Body Model (ESD-HBM)	2,200V JESD22, Method A114-B / MIL-STD-883, Method 3015.7	P
External Visual	MIL-PRF-38535, MILSTD-883, METHOD 2009	P
Internal Visual	MIL-STD-883-2014	P
Final Visual Inspection	JESD22-B101B	P
Physical Dimension	MIL-STD-1835, JESD22-B100	P
X-Ray	MIL-STD-883 - 2012	P

Reliability Test Data

QTP #: 050704

<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>
STRESS: ACOUSTIC, MSL3							
CY7C1470V33 (7C1470A)	4352891	610457386	TAIWAN-G	COMP	15	0	
CY7C1470V33 (7C1470A)	4414234	610457387	TAIWAN-G	COMP	15	0	
CY7C1470V33 (7C1470A)	4402400	610500796	TAIWAN-G	COMP	15	0	
CY7C1313AV18 (7C1313B)	4352777	610419844	TAIWAN-G	COMP	15	0	
STRESS: BALL SHEAR							
CY7C1470V33 (7C1470A)	4352891	610457386	TAIWAN-G	COMP	100	0	
CY7C1470V33 (7C1470A)	4414234	610457387	TAIWAN-G	COMP	100	0	
CY7C1470V33 (7C1470A)	4352890	610457388	TAIWAN-G	COMP	100	0	
STRESS: BOND PULL							
CY7C1470V33 (7C1470A)	4352891	610457386	TAIWAN-G	COMP	100	0	
CY7C1470V33 (7C1470A)	4414234	610457387	TAIWAN-G	COMP	100	0	
CY7C1470V33 (7C1470A)	4352890	610457388	TAIWAN-G	COMP	100	0	
STRESS: COPLANARITY							
CY7C1470V33 (7C1470A)	4352891	610457386	TAIWAN-G	COMP	200	0	
CY7C1470V33 (7C1470A)	4414234	610457387	TAIWAN-G	COMP	200	0	
CY7C1470V33 (7C1470A)	4352890	610457388	TAIWAN-G	COMP	200	0	
CY7C1313AV18 (7C1313B)	4352777	610419844	TAIWAN-G	COMP	5	0	
STRESS: CONSTRUCTIONAL ANALYSIS							
CY7C1512KO (7C1512KO)	8102014	611128730	TAIWAN-G	COMP	5	0	
STRESS: DIE SHEAR							
CY7C1470V33 (7C1470A)	4352891	610457386	TAIWAN-G	COMP	15	0	
CY7C1470V33 (7C1470A)	4414234	610457387	TAIWAN-G	COMP	15	0	
CY7C1470V33 (7C1470A)	4352890	610457388	TAIWAN-G	COMP	15	0	
STRESS: ESD-CHARGE DEVICE MODEL, 500V							
CY7C1470V33 (7C1470A)	4352891	610457386	TAIWAN-G	COMP	9	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22, METHOD A114-B, 2,200V							
CY7C1470V33 (7C1470A)	4352891	610457386	TAIWAN-G	COMP	9	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER MIL STD 883, METHOD 3015, 2,200V							



CY7C1470V33 (7C1470A) 4352891 610457386 TAIWAN-G COMP 3 0

Reliability Test Data

QTP #: 050704

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
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STRESS: EXTERNAL VISUAL

CY7C1470V33 (7C1470A)	4352891	610457386	TAIWAN-G	COMP	315	0	
CY7C1470V33 (7C1470A)	4414234	610457387	TAIWAN-G	COMP	210	0	
CY7C1470V33 (7C1470A)	4352890	610457388	TAIWAN-G	COMP	106	0	
CY7C1313AV18 (7C1313B)	4352777	610419844	TAIWAN-G	COMP	15	0	

STRESS: INTERNAL VISUAL

CY7C1470V33 (7C1470A)	4352891	610457386	TAIWAN-G	COMP	5	0	
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STRESS: HI-ACCEL SATURATION TEST (130C, 85%RH, 3.6V), PRE COND 192 HR 30C/60%RH, MSL3

CY7C1470V33 (7C1470A)	4414234	610457387	TAIWAN-G	128	47	0	
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STRESS: HI-ACCEL SATURATION TEST (130C, 85%RH, 1.98V), PRE COND 192 HR 30C/60%RH, MSL3

CY7C1313AV18 (7C1313B)	4352777	610419844	TAIWAN-G	128	45	0	
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STRESS: HIGH TEMPERATURE STORAGE, PLASTIC, 150C

CY7C1470V33 (7C1470A)	4352890	610457388	TAIWAN-G	644	45	0	
CY7C1470V33 (7C1470A)	4352890	610457388	TAIWAN-G	1000	45	0	

STRESS: PHYSICAL DIMENSIONS

CY7C1470V33 (7C1470A)	4352891	610457386	TAIWAN-G	COMP	10	0	
CY7C1470V33 (7C1470A)	4414234	610457387	TAIWAN-G	COMP	10	0	
CY7C1470V33 (7C1470A)	4352890	610457388	TAIWAN-G	COMP	10	0	

STRESS: PRESSURE COOKER TEST (121C, 100%RH), 15 Psig, PRE COND 192 HR 30C/60%RH (MSL3)

CY7C1470V33 (7C1470A)	4352891	610457386	TAIWAN-G	168	48	0	
CY7C1470V33 (7C1470A)	4352891	610457386	TAIWAN-G	288	48	0	
CY7C1313AV18 (7C1313B)	4352777	610419844	TAIWAN-G	168	45	0	

STRESS: THERMAL SHOCK

CY7C1470V33 (7C1470A)	4352891	610457386	TAIWAN-G	100	50	0	
CY7C1470V33 (7C1470A)	4352891	610457386	TAIWAN-G	200	50	0	

Reliability Test Data

QTP #: 050704

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
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STRESS: TC COND. C -65C TO 150C, PRE COND 192 HR 30C/60%RH, MSL3

CY7C1470V33 (7C1470A)	4352891	610457386	TAIWAN-G		300	48	0
CY7C1470V33 (7C1470A)	4352891	610457386	TAIWAN-G		500	46	0
CY7C1470V33 (7C1470A)	4352891	610457386	TAIWAN-G		1000	46	0
CY7C1470V33 (7C1470A)	4414234	610457387	TAIWAN-G		300	48	0
CY7C1470V33 (7C1470A)	4414234	610457387	TAIWAN-G		500	48	0
CY7C1470V33 (7C1470A)	4414234	610457387	TAIWAN-G		1000	48	0
CY7C1470V33 (7C1470A)	4402400	610500796	TAIWAN-G		300	49	0
CY7C1470V33 (7C1470A)	4402400	610500796	TAIWAN-G		500	49	0
CY7C1313AV18 (7C1313B)	4352777	610419844	TAIWAN-G		300	44	0

STRESS: X-RAY

CY7C1470V33 (7C1470A)	4352891	610457386	TAIWAN-G	COMP	76	0
CY7C1470V33 (7C1470A)	4414234	610457387	TAIWAN-G	COMP	76	0
CY7C1470V33 (7C1470A)	4352890	610457388	TAIWAN-G	COMP	76	0
CY7C1313AV18 (7C1313B)	4352777	610419844	TAIWAN-G	COMP	15	0

Reliability Test Data

QTP #: 113007

<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>
STRESS: ACOUSTIC, MSL3							
CY7C1512KO (7C1512KO)	8102014	611128730	TAIWAN-G	COMP	15	0	
CY7C1512KO (7C1512KO)	8102014	611131480	TAIWAN-G	COMP	15	0	
CY7C1512KO (7C1512KO)	8102014	611128728	TAIWAN-G	COMP	15	0	
STRESS: CONSTRUCTIONAL ANALYSIS							
CY7C1512KO (7C1512KO)	8102014	611128730	TAIWAN-G	COMP	5	0	
STRESS: INTERNAL VISUAL							
CY7C1512KO (7C1512KO)	8102014	611128730	TAIWAN-G	COMP	5	0	
STRESS: HI-ACCEL SATURATION TEST, 110C, 2.25V, 60%RH, PRE COND 192 HR 30C/60%RH, MSL3							
CY7C1512KO (7C1512KO)	8102014	611128730	TAIWAN-G	264	80	0	
CY7C1512KO (7C1512KO)	8102014	611131480	TAIWAN-G	264	80	0	
STRESS: PRESSURE COOKER TEST (121C, 100%RH), 15 Psig, PRE COND 192 HR 30C/60%RH (MSL3)							
CY7C1512KO (7C1512KO)	8102014	611128730	TAIWAN-G	168	80	0	
CY7C1512KO (7C1512KO)	8102014	611128730	TAIWAN-G	288	80	0	
CY7C1512KO (7C1512KO)	8102014	611131480	TAIWAN-G	168	80	0	
CY7C1512KO (7C1512KO)	8102014	611131480	TAIWAN-G	288	80	0	
STRESS: TC COND. C -65C TO 150C, PRE COND 192 HR 30C/60%RH, MSL3							
CY7C1512KO (7C1512KO)	8102014	611128730	TAIWAN-G	500	80	0	
CY7C1512KO (7C1512KO)	8102014	611131480	TAIWAN-G	500	80	0	
CY7C1512KO (7C1512KO)	8102014	611128728	TAIWAN-G	500	80	0	
STRESS: X-RAY							
CY7C1512KO (7C1512KO)	8102014	611128730	TAIWAN-G	COMP	76	0	



Document History Page

Document Title: QTP 113007: 165 FBGA (13X15X1.4 MM) SNAGCU, MSL3, 260C REFLOW ASE-TAIWAN (G)
Document Number: 001-72961

Rev.	ECN No.	Orig. of Change	Description of Change
**	3380293	NSR	Initial spec release.
*A	3809129	NSR	Removed the reference Cypress specs in reliability tests performed table and replace with reference Industry standards.
*B	4184077	HSTO	Sunset Review Removed Obsolete specification on page 3 (Major Package Information Table Used)

Distribution: WEB

Posting: None