Cypress Semiconductor
Package Qualification Report

QTP# 073509 VERSION 1.0
November 2007

165 FBGA
(13 x 15 x 1.4 mm)
SnAgCu, MSL3, 260°C Reflow
AIT-Indonesia

CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:

Rene Rodgers
Principal Reliability Engineer
(408) 943-2732

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

PACKAGE QUALIFICATION HISTORY

QUAL REPORT	DESCRIPTION OF QUALIFICATION PURPOSE	DATE COMP.
073509	Qualify 165FBGA (13 x 15 x 1.4 mm) SnAgCu MSL3, 260C Reflow, using CRM 1577A Epoxy and Nitto GE100LFCSV Mold Compound assembled at AIT , Indonesia	Nov 07

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	BB165
Package Outline, Type, or Name:	165 Fine Ball Grid Array (FBGA)
Mold Compound Name/Manufacturer:	Nitto GE100LFCSV
Mold Compound Flammability Rating:	V-0 UL-94
Oxygen Rating Index:	NA
Substrate Material:	Green Substrate
Lead Finish, Composition / Thickness:	SnAgCu
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Saw
Die Attach Supplier:	Ablestik
Die Attach Material:	CRM 1577A
Die Attach Method:	Epoxy
Bond Diagram Designation:	001-11241
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au/1.0mil
Thermal Resistance Theta JA °C/W :	16.1°C/W
Package Cross Section Yes/No:	N/A
Assembly Process Flow:	001-08480
Name/Location of Assembly (prime) facility:	AIT-Indonesia
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
High Temperature Operating Life Early Failure Rate	Dynamic Operating Condition, Vcc Max=2.4V, 125°C	P
High Temperature Operating Life Latent Failure Rate	Dynamic Operating Condition, Vcc Max=2.4V, 125°C	P
High Accelerated Saturation Test (HAST)	130°C, 1.98V, 85%RH Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs, 30°C/60%RH + 3IR-Reflow, **260°C**+0, -5°C	P
High Temp Storage	150C, no bias	P
Pressure Cooker	121°C, 100%RH, 15 PSIG Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs, 30°C /60%RH + 3IR-Reflow**, 260°C**+0, -5°C	P
Temperature Cycle	MIL-STD-883C, Method 1010, Condition C, -65°C to -+ 150°C Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs 30°C/60%RH + 3IR-Reflow, **260°C**+0, -5°C	P
Acoustic Microscopy	Cypress Spec 25-00104	P
Ball Shear	Cypress Spec 12-00292	P
Constructional Analysis	Cypress Spec 25-20035	P
Cross Section	Cypress Spec 25-20026	P
Die Shear	Cypress Spec 12-00292	P
Dye Penetrant Test	Cypress Spec 25-00046	P
External Visual	Cypress Spec 12-00292	P
Internal Visual	Cypress Spec 12-00292	P
X-Ray	MIL-STD-883-2012	P
Solder Ball Shear	JESD-B117	P
Solder Ball X-ray	Cypress Spec 12-00292	P

Reliability Test Data

QTP #: 073509

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC							
CY7C1305BV25 (7C1305D)	4707226	610736491	AIT-INDONESIA	COMP	15	0	
CY7C1305BV25 (7C1305D)	4707226	610736490	AIT-INDONESIA	COMP	15	0	
CY7C1305BV25 (7C1305D)	4707226	610736493	AIT-INDONESIA	COMP	15	0	
STRESS: SOLDER BALL SHEAR							
CY7C1305BV25 (7C1305D)	4707226	610736493	AIT-INDONESIA	COMP	5	0	
STRESS: CONSTRUCTIONAL ANALYSIS							
CY7C1305BV25 (7C1305D)	4707226	610736491	AIT-INDONESIA	COMP	5	0	
STRESS: DIE SHEAR							
CY7C1305BV25 (7C1305D)	4707226	610736491	AIT-INDONESIA	COMP	15	0	
CY7C1305BV25 (7C1305D)	4707226	610736490	AIT-INDONESIA	COMP	15	0	
STRESS: DYE PENETRANT TEST							
CY7C1305BV25 (7C1305D)	4707226	610736491	AIT-INDONESIA	COMP	15	0	
CY7C1305BV25 (7C1305D)	4707226	610736490	AIT-INDONESIA	COMP	15	0	
CY7C1305BV25 (7C1305D)	4707226	610736493	AIT-INDONESIA	COMP	15	0	
STRESS: EXTERNAL VISUAL							
CY7C1305BV25 (7C1305D)	4707226	610736491	AIT-INDONESIA	COMP	282	0	
CY7C1305BV25 (7C1305D)	4707226	610736490	AIT-INDONESIA	COMP	285	0	
CY7C1305BV25 (7C1305D)	4707226	610736493	AIT-INDONESIA	COMP	142	0	
STRESS: X-RAY							
CY7C1305BV25 (7C1305D)	4707226	610736491	AIT-INDONESIA	COMP	15	0	
CY7C1305BV25 (7C1305D)	4707226	610736490	AIT-INDONESIA	COMP	15	0	
STRESS: HIGH TEMP STORAGE							
CY62157DV30LL (7C62157D)	4650097	610714531	AIT-INDONESIA	500	80	0	
CY62157DV30LL (7C62157D)	4650097	610714531	AIT-INDONESIA	1000	80	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE (125C, 5.5V, Vcc Max)							
CY62157DV30LL (7C62157D)	4650097	610714531	AIT-INDONESIA	96	1504	0	
CY62157DV30LL (7C62157D)	4650097	610714590	AIT-INDONESIA	96	1009	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE (125C, 5.5V, Vcc Max)							
CY62157DV30LL (7C62157D)	4650097	610714531	AIT-INDONESIA	168	120	0	
CY62157DV30LL (7C62157D)	4650097	610714590	AIT-INDONESIA	168	118	0	

Reliability Test Data

QTP #: 073509

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: HI-ACCEL SATURATION TEST, (130C, 3.6V), 85%RH, PRE COND 192 HR 30C/60%RH, MSL3							
CY7C1305BV25 (7C1305D)	4707226	610736491	AIT-INDONESIA	128	75	0	
CY7C1305BV25 (7C1305D)	4707226	610736490	AIT-INDONESIA	128	77	0	
STRESS: INTERNAL VISUAL							
CY7C1305BV25 (7C1305D)	4707226	610736491	AIT-INDONESIA	COMP	10	0	
CY7C1305BV25 (7C1305D)	4707226	610736490	AIT-INDONESIA	COMP	10	0	
CY7C1305BV25 (7C1305D)	4707226	610736493	AIT-INDONESIA	COMP	10	0	
STRESS: PRESSURE COOKER TEST (121C, 100%RH), PRE COND 192HRS 30C/60%RH, MSL3							
CY7C1305BV25 (7C1305D)	4707226	610736491	AIT-INDONESIA	168	77	0	
CY7C1305BV25 (7C1305D)	4707226	610736490	AIT-INDONESIA	168	76	0	
STRESS: SOLDER BALL CROSS SECTION							
CY7C1305BV25 (7C1305D)	4707226	610736493	AIT-INDONESIA	COMP	5	0	
STRESS: TC COND. -65C TO 150 C, PRECONDITION 192 HRS 30C/60%RH, MSL3							
CY7C1305BV25 (7C1305D)	4707226	610736491	AIT-INDONESIA	500	70	0	
CY7C1305BV25 (7C1305D)	4707226	610736490	AIT-INDONESIA	500	77	0	
CY7C1305BV25 (7C1305D)	4707226	610736493	AIT-INDONESIA	500	77	0	
STRESS: SOLDER BALL X-RAY							
CY7C1305BV25 (7C1305D)	4707226	610736493	AIT-INDONESIA	COMP	5	0	