

# **Cypress Semiconductor Package Qualification Report**

**QTP# 073703 VERSION 1.0  
November 2007**

**165 FBGA  
(13 x 15 x 1.4 mm)  
SnPb, MSL3, 220°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**

<b>QUAL REPORT</b>	<b>DESCRIPTION OF QUALIFICATION PURPOSE</b>	<b>DATE COMP.</b>
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
073703	Qualify 165FBGA (13 x 15 x 1.4 mm) SnPb MSL3, 220C Reflow, using CRM 1577A Epoxy and Nitto GE100LFCSV Mold Compound assembled at AIT , Indonesia	Nov 07

<b>MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION</b>	
<b>Package Designation:</b>	BB165
<b>Package Code :</b>	BB0AC
<b>Package Outline, Type, or Name:</b>	165 Fine Ball Grid Array (FBGA)
<b>Mold Compound Name/Manufacturer:</b>	Nitto GE100LFCSV
<b>Mold Compound Flammability Rating:</b>	V-0 UL-94
<b>Oxygen Rating Index:</b>	NA
<b>Substrate Material:</b>	Green Substrate
<b>Lead Finish, Composition / Thickness:</b>	Sn (63%) Pb(37%)
<b>Die Backside Preparation Method/Metallization:</b>	Backgrind
<b>Die Separation Method:</b>	Saw
<b>Die Attach Supplier:</b>	Ablestik
<b>Die Attach Material:</b>	CRM 1577A
<b>Die Attach Method:</b>	Epoxy
<b>Bond Diagram Designation:</b>	001-11241
<b>Wire Bond Method:</b>	Thermosonic
<b>Wire Material/Size:</b>	Au/1.0mil
<b>Thermal Resistance Theta JA °C/W :</b>	16.1°C/W
<b>Package Cross Section Yes/No:</b>	N/A
<b>Assembly Process Flow:</b>	001-08480
<b>Name/Location of Assembly (prime) facility:</b>	AIT-Indonesia
<b>MSL Level:</b>	3
<b>Reflow Profile:</b>	220C

<b>ELECTRICAL TEST / FINISH DESCRIPTION</b>	
<b>Test Location:</b>	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

<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</b>							
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	
<b>STRESS: SOLDER BALL SHEAR</b>							
CY7C1305BV25 (7C1305D)	4707226	610736493	AIT-INDONESIA	COMP	5	0	
<b>STRESS: CONSTRUCTIONAL ANALYSIS</b>							
CY7C1305BV25 (7C1305D)	4707226	610736491	AIT-INDONESIA	COMP	5	0	
<b>STRESS: DIE SHEAR</b>							
CY7C1305BV25 (7C1305D)	4707226	610736491	AIT-INDONESIA	COMP	15	0	
CY7C1305BV25 (7C1305D)	4707226	610736490	AIT-INDONESIA	COMP	15	0	
<b>STRESS: DYE PENETRANT TEST</b>							
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	
<b>STRESS: EXTERNAL VISUAL</b>							
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	
<b>STRESS: HIGH TEMP STORAGE</b>							
CY62157DV30LL (7C62157D)	4650097	610714531	AIT-INDONESIA	500	80	0	
CY62157DV30LL (7C62157D)	4650097	610714531	AIT-INDONESIA	1000	80	0	
<b>STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE (125C, 5.5V, Vcc Max)</b>							
CY62157DV30LL (7C62157D)	4650097	610714531	AIT-INDONESIA	96	1504	0	
CY62157DV30LL (7C62157D)	4650097	610714590	AIT-INDONESIA	96	1009	0	
<b>STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE (125C, 5.5V, Vcc Max)</b>							
CY62157DV30LL (7C62157D)	4650097	610714531	AIT-INDONESIA	168	120	0	
CY62157DV30LL (7C62157D)	4650097	610714590	AIT-INDONESIA	168	118	0	
<b>STRESS: HI-ACCEL SATURATION TEST, (130C, 3.6V), 85%RH, PRE COND 192 HR 30C/60%RH, MSL3</b>							
CY7C1305BV25 (7C1305D)	4707226	610736491	AIT-INDONESIA	128	75	0	
CY7C1305BV25 (7C1305D)	4707226	610736490	AIT-INDONESIA	128	77	0	

## Reliability Test Data

QTP #: 073509

<b>Device</b>	<b>Fab Lot #</b>	<b>Assy Lot #</b>	<b>Assy Loc</b>	<b>Duration</b>	<b>Samp</b>	<b>Rej</b>	<b>Failure Mechanism</b>
<b>STRESS: INTERNAL VISUAL</b>							
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	
<b>STRESS: PRESSURE COOKER TEST (121C, 100%RH), PRE COND 192HRS 30C/60%RH, MSL3</b>							
CY7C1305BV25 (7C1305D)	4707226	610736491	AIT-INDONESIA	168	77	0	
CY7C1305BV25 (7C1305D)	4707226	610736490	AIT-INDONESIA	168	76	0	
<b>STRESS: SOLDER BALL CROSS SECTION</b>							
CY7C1305BV25 (7C1305D)	4707226	610736493	AIT-INDONESIA	COMP	5	0	
<b>STRESS: TC COND. -65C TO 150 C, PRECONDITION 192 HRS 30C/60%RH, MSL3</b>							
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	
<b>STRESS: SOLDER BALL X-RAY</b>							
CY7C1305BV25 (7C1305D)	4707226	610736493	AIT-INDONESIA	COMP	5	0	

### Reliability Test Data

QTP #: 073703

<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: EXTERNAL VISUAL</b>							
CY7C1305BV25 (7C1305D)	4707226	610736493	AIT-INDONESIA	COMP	15	0	
CY7C1305BV25 (7C1305D)	4707226	610736495	AIT-INDONESIA	COMP	15	0	
<b>STRESS: SOLDER BALL SHEAR</b>							
CY7C1305BV25 (7C1305D)	4707226	610736493	AIT-INDONESIA	COMP	5	0	
CY7C1305BV25 (7C1305D)	4707226	610736495	AIT-INDONESIA	COMP	5	0	
<b>STRESS: SOLDERABILITY</b>							
CY7C1305BV25 (7C1305D)	4707226	610736493	AIT-INDONESIA	COMP	3	0	
CY7C1305BV25 (7C1305D)	4707226	610736495	AIT-INDONESIA	COMP	3	0	
<b>STRESS: SOLDER BALL CROSS SECTION</b>							
CY7C1305BV25 (7C1305D)	4707226	610736493	AIT-INDONESIA	COMP	5	0	
CY7C1305BV25 (7C1305D)	4707226	610736495	AIT-INDONESIA	COMP	5	0	
<b>STRESS: SOLDER BALL X-RAY</b>							
CY7C1305BV25 (7C1305D)	4707226	610736493	AIT-INDONESIA	COMP	5	0	
CY7C1305BV25 (7C1305D)	4707226	610736495	AIT-INDONESIA	COMP	5	0	