

# **Cypress Semiconductor Package Qualification Report**

**QTP# 073603 VERSION 1.2  
April 2008**

**60 FBGA  
(8 x 20 x 1.2mm)  
SnAgCu, MSL3, 260°C Reflow  
AIT-Indonesia**

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

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**PACKAGE QUALIFICATION HISTORY**

<b>QUAL REPORT</b>	<b>DESCRIPTION OF QUALIFICATION PURPOSE</b>	<b>DATE COMP.</b>
073603	Qualify 60 FBGA (8 x 20 x 1.2mm) Pb-Free, MSL3, 260C Reflow, using CRM 1577A Epoxy and Nitto GE100LFCSV Mold Compound with SAC Solder Balls assembled at AIT , Indonesia	Nov 07

**MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION**

<b>Package Designation:</b>	BA60
<b>Package Outline, Type, or Name:</b>	60 Fine Ball Grid Array (FBGA)
<b>Mold Compound Name/Manufacturer:</b>	Nitto GE100LFCSV
<b>Mold Compound Flammability Rating:</b>	V-0 UL-94
<b>Mold Compound Alpha Emission Rate :</b>	≥ 0.0015 cm <sup>2</sup> /h
<b>Oxygen Rating Index:</b>	NA
<b>Substrate Material:</b>	Green Substrate
<b>Lead Finish, Composition / Thickness:</b>	98.5% Sn, 1% Ag, 0.5% Cu.
<b>Die Backside Preparation Method/Metallization:</b>	Backgrind
<b>Die Separation Method:</b>	Saw
<b>Die Attach Supplier:</b>	Sumitomo
<b>Die Attach Material:</b>	CRM 1577A
<b>Die Attach Method:</b>	Epoxy
<b>Bond Diagram Designation:</b>	001-16106
<b>Wire Bond Method:</b>	Thermosonic
<b>Wire Material/Size:</b>	Au/ 0.8mil
<b>Thermal Resistance Theta JA °C/W :</b>	55.08 °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>	260C

**ELECTRICAL TEST / FINISH DESCRIPTION**

<b>Test Location:</b>	CML-R
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**RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS**

Stress/Test	Test Condition (Temp/Bias)	Result P/F
Electrostatic Discharge Charge Device Model (ESD-CDM)	500V Cypress Spec. 25-00020	P
Electrostatic Discharge Human Body Model (ESD-HBM)	2,200V JESD22, Method A114-E	P
High Accelerated Saturation Test (HAST)	130°C, 3.65V, 85%RH Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs, 30°C/60%RH + 3IR-Reflow, <b>260°C</b> +0, -5°C	P
High Temp Storage	150C, no bias	P
Pressure Cooker	121°C, 100%RH, 15 PSIG Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs, 30°C /60%RH + 3IR-Reflow, <b>260°C</b> +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, <b>260°C</b> +0, -5°C	P
Acoustic Microscopy	Cypress Spec 25-00104	P
Ball Shear	Cypress Spec 12-00292	P
Solder Ball Shear	JESD-B117	P
Bond Pull	Cypress Spec 12-00292	P
Constructional Analysis	Cypress Spec 25-20035	P
Die Shear	Cypress Spec 12-00292	P
Dye Penetrant Test	Cypress Spec 25-00046	P
Final Visual Inspection	Cypress Spec 12-00292	P
Internal Visual	Cypress Spec 12-00292	P
Physical Dimension	Cypress Spec 25-00031	P
Solderability	Cypress Spec 25-00018	P
Thermal Shock	Cypress Spec 25-00014	P
X-Ray	MIL-STD-883-2012	P

## Reliability Test Data

QTP #: 073603

<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>							
CY7C1069A (7C1069A)	4715238	610736299	AIT-INDONESIA	COMP	15	0	
CY7C1069A (7C1069A)	4715238	610736300	AIT-INDONESIA	COMP	15	0	
CY7C1069A (7C1069A)	4714877	610736301	AIT-INDONESIA	COMP	15	0	
<b>STRESS: BALL SHEAR</b>							
CY7C1069A (7C1069A)	4715238	610736299	AIT-INDONESIA	COMP	10	0	
<b>STRESS: BOND PULL</b>							
CY7C1069A (7C1069A)	4715238	610736299	AIT-INDONESIA	COMP	15	0	
<b>STRESS: CONSTRUCTIONAL ANALYSIS</b>							
CY7C1069A (7C1069A)	4715238	610736299	AIT-INDONESIA	COMP	5	0	
<b>STRESS: DIE SHEAR</b>							
CY7C1069A (7C1069A)	4715238	610736299	AIT-INDONESIA	COMP	15	0	
<b>STRESS: DYE PENETRANT TEST</b>							
CY7C1069A (7C1069A)	4715238	610736299	AIT-INDONESIA	500V	9	0	
CY7C1069A (7C1069A)	4715238	610736300	AIT-INDONESIA	COMP	15	0	
CY7C1069A (7C1069A)	4714877	610736301	AIT-INDONESIA	COMP	15	0	
<b>STRESS: ESD-CHARGE DEVICE MODEL, 500V</b>							
CY7C1069A (7C1069A)	4715238	610736299	AIT-INDONESIA	COMP	9	0	
<b>STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22, METHOD A114-E, 2,200V</b>							
CY7C1061A (7C1069A)	4412629	610447764	AIT-INDONESIA	COMP	9	0	
<b>STRESS: FINAL VISUAL INSPECTION</b>							
CY7C1069A (7C1069A)	4715238	610736299	AIT-INDONESIA	COMP	990	0	
CY7C1069A (7C1069A)	4715238	610736300	AIT-INDONESIA	COMP	629	0	
CY7C1069A (7C1069A)	4714877	610736301	AIT-INDONESIA	COMP	531	0	
<b>STRESS: HIGH TEMP STORAGE</b>							
CY7C62167D (7C62162D)	4701893	610725091	AIT-INDONESIA	500	77	0	
CY7C62167D (7C62162D)	4701893	610725091	AIT-INDONESIA	1000	76	0	
<b>STRESS: HI-ACCEL SATURATION TEST, (130C, 3.6V), 85%RH, PRE COND 192 HR 30C/60%RH, MSL3</b>							
CY7C1069A (7C1069A)	4715238	610736299	AIT-INDONESIA	128	76	0	
<b>STRESS: INTERNAL VISUAL</b>							
CY7C1069A (7C1069A)	4715238	610736299	AIT-INDONESIA	COMP	5	0	

**Reliability Test Data**  
**QTP #: 073603**

<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: PHYSICAL DIMENSIONS</b>							
CY7C1069A (7C1069A)	4715238	610736299	AIT-INDONESIA	COMP	10	0	
CY7C1069A (7C1069A)	4715238	610736300	AIT-INDONESIA	COMP	10	0	
CY7C1069A (7C1069A)	4714877	610736301	AIT-INDONESIA	COMP	10	0	
<b>STRESS: PRESSURE COOKER TEST (121C, 100%RH), PRE COND 192HRS 30C/60%RH, MSL3</b>							
CY7C1069A (7C1069A)	4715238	610736299	AIT-INDONESIA	168	76	0	
<b>STRESS: SOLDERABILITY</b>							
CY7C1069A (7C1069A)	4715238	610736299	AIT-INDONESIA	COMP	3	0	
CY7C1069A (7C1069A)	4715238	610736300	AIT-INDONESIA	COMP	3	0	
CY7C1069A (7C1069A)	4714877	610736301	AIT-INDONESIA	COMP	3	0	
<b>STRESS: SOLDER BALL SHEAR</b>							
CY7C1069A (7C1069A)	4715238	610736299	AIT-INDONESIA	COMP	2	0	
CY7C1069A (7C1069A)	4715238	610736300	AIT-INDONESIA	COMP	2	0	
CY7C1069A (7C1069A)	4714877	610736301	AIT-INDONESIA	COMP	2	0	
<b>STRESS: TC COND. -65C TO 150 C, PRECONDITION 192 HRS 30C/60%RH, MSL3</b>							
CY7C1069A (7C1069A)	4715238	610736299	AIT-INDONESIA	500	77	0	
CY7C1069A (7C1069A)	4715238	610736300	AIT-INDONESIA	500	76	0	
CY7C1069A (7C1069A)	4714877	610736301	AIT-INDONESIA	500	77	0	
<b>STRESS: THERMAL SHOCK</b>							
CY7C1069A (7C1069A)	4715238	610736299	AIT-INDONESIA	200	77	0	
CY7C1069A (7C1069A)	4715238	610736299	AIT-INDONESIA	1000	77	0	
<b>STRESS: X-RAY</b>							
CY7C1069A (7C1069A)	4715238	610736299	AIT-INDONESIA	COMP	15	0	