

Cypress Semiconductor Package Qualification Report

**QTP# 071902 VERSION 1.0
December 2007**

**48 VFBGA
(6 x 8 x 1.0mm)
SnAgCu, MSL3, 260°C Reflow
AIT-Indonesia**

CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:

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PACKAGE QUALIFICATION HISTORY

QUAL REPORT	DESCRIPTION OF QUALIFICATION PURPOSE	DATE COMP.
071902	Qualify 48 FBGA (6 x 8 x 1.0mm) Pb-Free, MSL3, 260C Reflow, using CRM 1577A Epoxy and Nitto GE100LFCSV Mold Compound assembled at AIT , Indonesia	Dec 07

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION

Package Designation:	BZ48
Package Outline, Type, or Name:	48 Very Fine Ball Grid Array (VFBGA)
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:	98.5% Sn, 1% Ag, 0.5% Cu
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Saw
Die Attach Supplier:	Sumitomo
Die Attach Material:	CRM 1577A
Die Attach Method:	Epoxy
Bond Diagram Designation:	001-13322
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au/ 0.8mil
Thermal Resistance Theta JA °C/W :	74.96
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
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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=2.40V, 125°C	P
High Temperature Operating Life Latent Failure Rate	Dynamic Operating Condition, Vcc Max=2.40V, 125°C	P
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-B	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, 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
High Accelerated Saturation Test	130°C, 85%RH, 3.65V, 3PSIG Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs, 30°C60%RH+3IR-Reflow, 260°C +0, -5°C	
Temperature Humidity Bias	85C, 85%RH, 3.65V 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
Bond Pull	Cypress Spec 12-00292	P
Constructional Analysis	Cypress Spec 25-20035	P
Die Shear	Cypress Spec 12-00292	P
Dye Penetration Test	Cypress Spec 25-00046	P
External Visual	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
Cross Section	Cypress Spec 12-00292	
X-Ray	MIL-STD-883-2012	P

Reliability Test Data

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<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							
CY62157D (7C62157D)	4650097	610714531	AIT-INDONESIA	COMP	15	0	
CY62157D (7C62157D)	4650097	610714590	AIT-INDONESIA	COMP	15	0	
CY62157D (7C62157D)	4650097	610714533	AIT-INDONESIA	COMP	15	0	
STRESS: BALL SHEAR							
CY62157D (7C62157D)	4650097	610714531	AIT-INDONESIA	COMP	10	0	
STRESS: BOND PULL							
CY62157D (7C62157D)	4650097	610714531	AIT-INDONESIA	COMP	10	0	
STRESS: CONSTRUCTIONAL ANALYSIS							
CY62157D (7C62157D)	4650097	610714531	AIT-INDONESIA	COMP	5	0	
STRESS: DIE SHEAR							
CY62157D (7C62157D)	4650097	610714531	AIT-INDONESIA	COMP	15	0	
CY62157D (7C62157D)	4650097	610714590	AIT-INDONESIA	COMP	15	0	
STRESS: DYE PENETRANT TEST							
CY62157D (7C62157D)	4650097	610714531	AIT-INDONESIA	COMP	15	0	
CY62157D (7C62157D)	4650097	610714590	AIT-INDONESIA	COMP	15	0	
CY62157D (7C62157D)	4650097	610714533	AIT-INDONESIA	COMP	15	0	
STRESS: ESD-CHARGE DEVICE MODEL, 500V							
CY62157D (7C62157D)	4650097	610714531	AIT-INDONESIA	COMP	9	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22, METHOD A114-B, 2,200V							
CY62157D (7C62157D)	4650097	610714531	AIT-INDONESIA	COMP	8	0	
STRESS: EXTERNAL VISUAL							
CY62157D (7C62157D)	4650097	610714531	AIT-INDONESIA	COMP	843	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE (125C, 2.40V, Vcc Max)							
CY62157D (7C62157D)	4650097	610714531	AIT-INDONESIA	96	1504	0	
CY62157D (7C62157D)	4650097	610714590	AIT-INDONESIA	96	1009	0	
CY62157D (7C62157D)	4650097	610714533	AIT-INDONESIA	96	500	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE (125C, 2.40V, Vcc Max)							
CY62157D (7C62157D)	4650097	610714531	AIT-INDONESIA	168	118	0	
CY62157D (7C62157D)	4650097	610714531	AIT-INDONESIA	1000	116	0	
CY62157D (7C62157D)	4650097	610714590	AIT-INDONESIA	168	118	0	
CY62157D (7C62157D)	4650097	610714590	AIT-INDONESIA	1000	118	0	

Reliability Test Data

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Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: HIGH TEMP STORAGE							
CY62157D (7C62157D)	4650097	610714531	AIT-INDONESIA	500	80	0	
CY62157D (7C62157D)	4650097	610714531	AIT-INDONESIA	1000	80	0	
STRESS: INTERNAL VISUAL							
CY62157D (7C62157D)	4650097	610714531	AIT-INDONESIA	COMP	5	0	
CY62157D (7C62157D)	4650097	610714590	AIT-INDONESIA	COMP	5	0	
STRESS: PHYSICAL DIMENSIONS							
CY62157D (7C62157D)	4650097	610714531	AIT-INDONESIA	COMP	30	0	
STRESS: PRESSURE COOKER TEST (121C, 100%RH), PRE COND 192HRS 30C/60%RH, MSL3							
CY62157D (7C62157D)	4650097	610714531	AIT-INDONESIA	168	79	0	
CY62157D (7C62157D)	4650097	610714590	AIT-INDONESIA	168	79	0	
STRESS: SOLDERABILITY							
CY62157D (7C62157D)	4650097	610714531	AIT-INDONESIA	COMP	3	0	
CY62157D (7C62157D)	4650097	610714590	AIT-INDONESIA	COMP	3	0	
CY62157D (7C62157D)	4650097	610714533	AIT-INDONESIA	COMP	3	0	
STRESS: TC COND. -65C TO 150 C, PRECONDITION 192 HRS 30C/60%RH, MSL3							
CY62157D (7C62157D)	4650097	610714531	AIT-INDONESIA	500	78	0	
CY62157D (7C62157D)	4650097	610714531	AIT-INDONESIA	1000	78	0	
CY62157D (7C62157D)	4650097	610714590	AIT-INDONESIA	500	80	0	
CY62157D (7C62157D)	4650097	610714590	AIT-INDONESIA	1000	80	0	
CY62157D (7C62157D)	4650097	610714533	AIT-INDONESIA	500	80	0	
CY62157D (7C62157D)	4650097	610714533	AIT-INDONESIA	1000	78	0	
STRESS: TEMPERATURE HUMIDITY BIAS, 3.65V, PRECONDITION 192 HRS 30C/60%RH, MSL3							
CY62157D (7C62157D)	4650097	610714531	AIT-INDONESIA	1000	75	0	
STRESS: HI-ACCEL SATURATION TEST. 130C, 3.65V, 85%RH, PRE COND 192 HR 30C/60%RH, MSL3							
CY62157D (7C62157D)	4734873	610757800	AIT-INDONESIA	128	80	0	
STRESS: THERMAL SHOCK							
CY62157D (7C62157D)	4650097	610714531	AIT-INDONESIA	200	80	0	
CY62157D (7C62157D)	4650097	610714531	AIT-INDONESIA	1000	79	0	
STRESS: X-RAY							
CY62157D (7C62157D)	4650097	610714531	AIT-INDONESIA	COMP	15	0	
CY62157D (7C62157D)	4650097	610714590	AIT-INDONESIA	COMP	15	0	