

# **Cypress Semiconductor Package Qualification Report**

**QTP# 041701 VERSION 1.0  
August 2005**

**120-Lead TQFP w/ Heat Slug**

**(14 x14 x 1.4mm)**

**Pb-Free, MSL3, 260°C Reflow**

**Amkor Seoul Korea Assembly**

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

Mira Ben-Tzur  
Principal Reliability Engineer  
(408) 943-2675

Sabbas Daniel  
Quality Engineering Director  
(408) 943-2685

**PACKAGE QUALIFICATION HISTORY**

<b>QUAL REPORT</b>	<b>DESCRIPTION OF QUALIFICATION PURPOSE</b>	<b>DATE COMP.</b>
041701	120-Lead TQFP with Heat Slug (14 x 14 x1.4mm) Pb-Free, MSL3, 260°C Reflow using G700L mold compound, Ablestik 3230 die attach, 100% Matte Sn with Annealing Process (150°C, 1Hour) assembled at Amkor Seoul Korea	Jul 05

<b>MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION</b>	
<b>Package Designation:</b>	AG120A
<b>Package Outline, Type, or Name:</b>	120-Lead TQFP with Heat Slug (14 x 14 x 1.4mm)
<b>Mold Compound Name/Manufacturer:</b>	G700L
<b>Mold Compound Flammability Rating:</b>	V-0 per UL94
<b>Oxygen Rating Index:</b>	N/A
<b>Leadframe Material:</b>	Copper, Full Metal Pad
<b>Lead Finish, Composition / Thickness:</b>	100% Matte Sn (300-800u) with Annealing Process (150°C, 1Hour)
<b>Die Backside Preparation Method/Metallization:</b>	Backgrinding
<b>Die Separation Method:</b>	Wafer Sawing
<b>Die Attach Supplier:</b>	Ablestik
<b>Die Attach Material:</b>	3230
<b>Die Attach Method:</b>	Epoxy
<b>Bond Diagram Designation:</b>	10-05944
<b>Wire Bond Method:</b>	Thermosonic
<b>Wire Material/Size:</b>	Au 1.2mil
<b>Thermal Resistance Theta JA °C/W:</b>	36.02°C/W
<b>Package Cross Section Yes/No:</b>	Yes
<b>Assembly Process Flow:</b>	49-10999
<b>Name/Location of Assembly (prime) facility:</b>	Anam Seoul Korea (L)

<b>ELECTRICAL TEST / FINISH DESCRIPTION</b>	
<b>Test Location:</b>	CML-R
<b>Fault Coverage:</b>	100%

**RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS**

Stress/Test	Test Condition (Temp/Bias)	Result P/F
High Accelerated Saturation Test (HAST)	130°C, 3.63V, 85%RH Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs 30°C/60%RH+3IR-Reflow, 260°C+0, -5°C	P
Pressure Cooker Test	121°C, 100%RH 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 150C Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs 30°C/60%RH+3IR-Reflow, 260°C+0, -5°C	P
Acoustic Microscopy Test	Cypress Spec. 25-00104	P
External Visual	Cypress Spec. 12-00292/12-00103	P
Solderability	Cypress Spec. 25-00018	P
X-Ray	Cypress Spec. 12-00292	P
Adhesion of Lead Finish	Cypress Spec. 25-00029	P

## Reliability Test Data

QTP #: 041701

<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, MSL3</b>							
CYS25G0101DX (7B9532B)	4150348	610426488	L-SEOL	COMP	15	0	
CYS25G0101DX (7B9532B)	4245583	610508865	L-SEOL	COMP	15	0	
CYS25G0101DX (7B9532B)	4217949	610508866	L-SEOL	COMP	15	0	
<b>STRESS: ADHESION OF LEAD FINISH</b>							
CYS25G0101DX (7B9532B)	4245583	610508865	L-SEOL	COMP	3	0	
CYS25G0101DX (7B9532B)	4217949	610508866	L-SEOL	COMP	3	0	
<b>STRESS: EXTERNAL VISUAL</b>							
CYS25G0101DX (7B9532B)	4245583	610508865	L-SEOL	COMP	15	0	
CYS25G0101DX (7B9532B)	4217949	610508866	L-SEOL	COMP	15	0	
<b>STRESS: HI-ACCEL SATURATION TEST, 130C, 85%RH, 3.63V, PRE CONDITION 192 HR 30C/60%RH, MSL3</b>							
CYS25G0101DX (7B9532B)	4150348	610426488	L-SEOL	128	35	0	
CYS25G0101DX (7B9532B)	4245583	610508865	L-SEOL	128	46	0	
<b>STRESS: PRESSURE COOKER TEST, 121C, 100%RH, PRE CONDITION 192 HR 30C/60%RH, MSL3</b>							
CYS25G0101DX (7B9532B)	4150348	610426488	L-SEOL	168	48	0	
<b>STRESS: SOLDERABILITY</b>							
CYS25G0101DX (7B9532B)	4245583	610508865	L-SEOL	COMP	3	0	
CYS25G0101DX (7B9532B)	4217949	610508866	L-SEOL	COMP	3	0	
<b>STRESS: TC COND. C -65C TO 150C, PRE CONDITION 192 HR 30C/60%RH, MSL3</b>							
CYS25G0101DX (7B9532B)	4150348	610426488	L-SEOL	300	50	0	
CYS25G0101DX (7B9532B)	4150348	610426488	L-SEOL	500	50	0	
CYS25G0101DX (7B9532B)	4150348	610426488	L-SEOL	1000	50	0	
CYS25G0101DX (7B9532B)	4245583	610508865	L-SEOL	300	50	0	
CYS25G0101DX (7B9532B)	4245583	610508865	L-SEOL	500	50	0	
CYS25G0101DX (7B9532B)	4217949	610508866	L-SEOL	300	49	0	
<b>STRESS: X-RAY</b>							
CYS25G0101DX (7B9532B)	4245583	610508865	L-SEOL	COMP	15	0	
CYS25G0101DX (7B9532B)	4217949	610508866	L-SEOL	COMP	15	0	