Cypress Semiconductor
Package Qualification Report

QTP# 040708 VERSION 1.0
March 2004

Quarter Size Outline Package (QSOP)

Pb-Free, MSL1, 260C Solder Reflow Temperature
Amkor-Phil

CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:

Rene Rodgers
Principal Reliability Engineer
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PRODUCT QUALIFICATION HISTORY

Qual Report		Description of Qualification Purpose		Date Comp.
033203		Qualify 16-lead SOIC, Pb-Free, MSL1, 260C Solder Reflow @Amkor-Philippines		Dec 03
040708		Qualify Amkor-Philippines for QSOP (150mils) Pb-Free, MSL1, 260C Solder Reflow Temperature using 6600H Mold Compound, Ablestik 8290, 100% Matte Sn, with Annealing Process (150C, 1 hour) by extension on QTP 033203		Feb 04

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	S1615
Package Outline, Type, or Name:	16-lead Small Outline IC (SOIC)
Mold Compound Name/Manufacturer:	Sumitomo 6600H
Mold Compound Flammability Rating:	V-O per UL 94
Oxygen Rating Index:	>28%
Lead Frame Material:	Copper
Lead Finish, Composition / Thickness:	Pure Tin
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Wafer Saw
Die Attach Supplier:	Ablestik
Die Attach Material:	8290
Die Attach Method:	Eutectic
Bond Diagram Designation	10-02699
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au, 1.0 mils
Thermal Resistance Theta JA °C/W:	121.6°C/W
Package Cross Section Yes/No:	N/A
Assembly Process Flow:	49-41999M
Name/Location of Assembly (prime) facility:	Amkor- Philippines (Phil-M)

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	Cypress Philippines (CML-R)
Fault Coverage:	100%

Note: Please contact a Cypress Representative for other packages availability.

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENT

Stress/Test	Test Condition (Temp/Bias)	Result P/F
High Accelerated Saturation Test (HAST)	130°C, 3.6V, 85%RH Precondition: JESD22 Moisture Sensitivity MSL 1 168 Hrs., 85°C/85%RH+3IR-Reflow, 260°C+5, -0°C	P
Temperature Cycle	Precondition: JESD22 Moisture Sensitivity MSL 1 168 Hrs., 85°C/85%RH+3IR-Reflow, 260°C+5, -0°C	P
Pressure Cooker	Precondition: JESD22 Moisture Sensitivity MSL 1 168 Hrs., 85°C/85%RH+3IR-Reflow, 260°C+5, -0°C 121°C, 100%RH	P
High Temperature Storage	150C, no bias	P
Acoustic Microscopy	Cypress Spec. 25-00104	P
X-Ray	Cypress Spec 12-00292	P
Solderability	Cypress Spec 12-00292	P
External Visual	Cypress Spec 12-00292	P
Adhesion of Lead Finish	Cypress Spec 25-00029	P

Reliability Test Data

QTP #: 033203

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL1							
CY2292SC	2322742	*610340131*	PHIL-M	COMP	15	0	
CY2292SC	2322742	*610340131M*	PHIL-M	COMP	15	0	
CY2292SC	2322742	*610340131M1*	PHIL-M	COMP	15	0	
STRESS: ADHESION OF LEAD FINISH							
CY27022SC	9214305	*610239606*	PHIL-M	COMP	5	0	
CY27022SC	9214305	*610239608*	PHIL-M	COMP	5	0	
STRESS: EXTERNAL VISUAL							
CY2292SC	2322742	*610340131M*	PHIL-M	COMP	15	0	
CY2292SC	2322742	*610340131M1*	PHIL-M	COMP	15	0	
STRESS: SOLDERABILITY							
CY2292SC	2322742	*610340131*	PHIL-M	COMP	5	0	
CY2292SC	2322742	*610340131M*	PHIL-M	COMP	5	0	
STRESS: X-RAY							
CY2292SC	2322742	*610340131*	PHIL-M	COMP	15	0	
STRESS: HI-ACCEL SATURATION TEST, 130C, 85%RH, 3.63V , 168 HRS., 85C/85%RH, MSL1							
CY2292SC	2322742	*610340131*	PHIL-M	128	42	0	
CY2292SC	2322742	*610340131M*	PHIL-M	128	48	0	
STRESS: PRESSURE COOKER TEST, 121C, 100%RH, 168 Hrs., 85C/85%RH, MSL1							
CY2292SC	2322742	*610340131*	PHIL-M	168	48	0	
STRESS: TC CONDITION C, -65C TO 150C, PRE COND. 168 HRS., 85C/85%RH, MSL1							
CY2292SC	2322742	*610340131*	PHIL-M	300	50	0	
CY2292SC	2322742	*610340131*	PHIL-M	500	50	0	
CY2292SC	2322742	*610340131*	PHIL-M	1000	49	0	
CY2292SC	2322742	*610340131M*	PHIL-M	300	50	0	
CY2292SC	2322742	*610340131M*	PHIL-M	500	49	0	
CY2292SC	2322742	*610340131M*	PHIL-M	1000	48	0	
CY2292SC	2322742	*610340131M1*	PHIL-M	300	50	0	
CY2292SC	2322742	*610340131M1*	PHIL-M	500	50	0	
CY2292SC	2322742	*610340131M1*	PHIL-M	1000	50	0	