

Cypress Semiconductor Package Qualification Report

**QTP# 022903 VERSION 1.0
June, 2003**

**16-lead TSSOP
Larger Die Size (4 x 4mm)
235°C Reflow, MSL1
Amkor-Anam, Philippines**

CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:

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PRODUCT QUALIFICATION HISTORY

Qual Report	Description of Qualification Purpose	Date Comp
97151	16-lead TSSOP package qual @ Anam-Phil.	Jul 97
022903	16-lead TSSOP with larger die size (4 x 4 mm) at MSL1 with 235°C Reflow Peak @Amkor-Anam, Phil	Apr 03

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	Z1611
Package Outline, Type, or Name:	16-lead Thin Small Outline Packages (TSSOP)
Mold Compound Name/Manufacturer:	EME-7351-T
Mold Compound Flammability Rating:	V-O per UL94
Oxygen Rating Index:	>28%
Lead Frame Material:	Copper
Lead Finish, Composition / Thickness:	Solder Plated 85% +10/-5Sn, 15% +5/-10Pb
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Sawing
Die Attach Supplier:	Ablestik
Die Attach Material:	84-1LMISR4
Die Attach Method:	Dispensing
Bond Diagram Designation:	10-05212
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au, 1.0mil
Thermal Resistance Theta JA °C/W:	121.71°C/W
Package Cross Section Yes/No:	N/A
Assembly Process Flow:	49-24017
Name/Location of Assembly (prime) facility:	Amkor-Anam, PHIL (PHIL-M)

PACKAGE AVAILABILITY

PACKAGE	ASSEMBLY SITE FACILITY
16-lead TSSOP	Amkor-Anam, Philippines (PHIL-M)

RELIABILITY TESTS PERFORMED

Stress/Test	Test Condition (Temp/Bias)	Result P/F
Temperature Cycle	Precondition: JESD22 Moisture Sensitivity MSL1 168 Hrs, 85°C/85%RH+3IR-Reflow, 220°C+5, -0°C Precondition: JESD22 Moisture Sensitivity MSL 1 168 Hrs, 85°C/85 %RH+3IR-Reflow, 235°C+5, 0°C MIL-STD-883C, Method 1010, Condition C, -65°C to 150°C	P
Pressure Cooker	Precondition: JESD22 Moisture Sensitivity MSL1 168 Hrs, 85°C/85%RH+3IR-Reflow, 220°C+5, -0°C Precondition: JESD22 Moisture Sensitivity MSL 1 168 Hrs, 85°C/85%RH+3IR-Reflow, 235°C+5, 0°C 121°C, 100%RH	P
High Accelerated Saturation Test	140°C, 5.5V Precondition: JESD22 Moisture Sensitivity MSL1 168 Hrs, 85°C/85%RH+3IR-Reflow, 220°C+5, -0°C 130°C, 3.63V Precondition: JESD22 Moisture Sensitivity MSL 1 168 Hrs 85°C/85%RH+3IR-Reflow, 235°C+5, 0°C	P
Thermal Shock	125C, -55C	P
High Temperature Storage	150C, 165C, No Bias	P
Bond Pull	Cypress Spec 12-00292	P
Physical Dimensions	Cypress Spec 25-00031	P
Ball Shear	Cypress Spec. 12-00292	P
Die Shear	Cypress Spec 12-00292	P
External Visual	Cypress Spec 12-00292	P
Internal Visual	Cypress Spec 12-00292	P
Solderability	Cypress Spec 12-00292	P
X-Ray	MIL-STD-883C, Method 2012, Cypress Spec 12-00292	P
Acoustics Microscopy MSL 1	Cypress Spec 12-00292	P

Reliability Test Data

QTP #: 97151

<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, MSL1, 220C REFLOW							
CY2308ZC (7C80726A)	3704497	349702279-1	PHIL-M	COMP	15	0	
CY2308ZC (7C80726A)	3704497	349702279-2	PHIL-M	COMP	15	0	
CY2308ZC (7C80726A)	3704497	349702279-3	PHIL-M	COMP	15	0	
STRESS: INTERNAL VISUAL							
CY2308ZC (7C80726A)	3704497	349702279-1	PHIL-M	COMP	5	0	
STRESS: EXTERNAL VISUAL							
CY2308ZC (7C80726A)	3704497	349702279-1	PHIL-M	COMP	15	0	
STRESS: PHYSICAL DIMENSION							
CY2308ZC (7C80726A)	3704497	349702279-1	PHIL-M	COMP	5	0	
STRESS: BALL SHEAR							
CY2308ZC (7C80726A)	3704497	349702279-1	PHIL-M	COMP	10	0	
STRESS: BOND PULL							
CY2308ZC (7C80726A)	3704497	349702279-1	PHIL-M	COMP	10	0	
STRESS: DIE SHEAR							
CY2308ZC (7C80726A)	3704497	349702279-1	PHIL-M	COMP	15	0	
STRESS: SOLDERABILITY							
CY2308ZC (7C80726A)	3704497	349702279-1	PHIL-M	COMP	12	0	
STRESS: X-RAY							
CY2308ZC (7C80726A)	3704497	349702279-1	PHIL-M	COMP	15	0	
STRESS: THERMAL SHOCK, 125C, -55C							
CY2308ZC (7C80726A)	3704497	349702279-1	PHIL-M	100	48	0	
CY2308ZC (7C80726A)	3704497	349702279-1	PHIL-M	200	48	0	
STRESS: HIGH TEMPERATURE STORAGE, 165C							
CY2308ZC (7C80726A)	3704497	349702279-1	PHIL-M	336	48	0	
CY2308ZC (7C80726A)	3704497	349702279-1	PHIL-M	1000	48	0	

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STRESS: HI-ACCEL SATURATION TEST, 140C, 85%RH, 5.5V, PRE COND 168 HR 85C/85%RH, MSL1, 220C REFLOW							
CY2308ZC (7C80726A)	3704497	349702279-1	PHIL-M	128	48	0	
STRESS: TC COND. C -65C TO 150C, , PRE COND 168 HR 85C/85%RH, MSL1, 220C REFLOW							
CY2308ZC (7C80726A)	3704497	349702279-1	PHIL-M	300	48	0	
CY2308ZC (7C80726A)	3704497	349702279-1	PHIL-M	1000	48	0	
CY2308ZC (7C80726A)	3704497	349702279-2	PHIL-M	300	48	0	
CY2308ZC (7C80726A)	3704497	349702279-2	PHIL-M	1000	48	0	
CY2308ZC (7C80726A)	3704497	349702279-3	PHIL-M	300	48	0	
CY2308ZC (7C80726A)	3704497	349702279-3	PHIL-M	1000	48	0	

Reliability Test Data

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STRESS: ACOUSTIC, MSL1, 235C REFLOW							
CY2414ZC (7C841400A)	2216967	610220376	PHIL-M	COMP	15	0	
CY2414ZC (7C841400A)	2216967	610220377	PHIL-M	COMP	15	0	
CY2414ZC (7C841400A)	2216967	610220378	PHIL-M	COMP	15	0	
STRESS: INTERNAL VISUAL							
CY2414ZC (7C841400A)	2216967	610220376	PHIL-M	COMP	5	0	
STRESS: EXTERNAL VISUAL							
CY2414ZC (7C841400A)	2216967	610220376	PHIL-M	COMP	15	0	
STRESS: PHYSICAL DIMENSION							
CY2414ZC (7C841400A)	2216967	610220376	PHIL-M	COMP	5	0	
STRESS: BALL SHEAR							
CY2414ZC (7C841400A)	2216967	610220376	PHIL-M	COMP	10	0	
STRESS: BOND PULL							
CY2414ZC (7C841400A)	2216967	610220376	PHIL-M	COMP	10	0	
STRESS: DIE SHEAR							
CY2414ZC (7C841400A)	2216967	610220376	PHIL-M	COMP	15	0	
STRESS: X-RAY							
CY2414ZC (7C841400A)	2216967	610220376	PHIL-M	COMP	15	0	
STRESS: THERMAL SHOCK, 125C, -55C							
CY2414ZC (7C841400A)	2216967	610220376	PHIL-M	100	45	0	
CY2414ZC (7C841400A)	2216967	610220376	PHIL-M	200	45	0	
STRESS: HIGH TEMPERATURE STORAGE, 150C							
CY2414ZC (7C841400A)	2216967	610220376	PHIL-M	500	45	0	
CY2414ZC (7C841400A)	2216967	610220376	PHIL-M	1000	45	0	
CY2414ZC (7C841400A)	2216967	610220376	PHIL-M	1500	45	0	

Reliability Test Data

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Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: STRESS: PRESSURE COOKER TEST, 121C, 100%RH, PRE COND 168 HR 85C/85%RH, MSL1, 235C REFLOW							
CY2414ZC (7C841400A)	2216967	610220376	PHIL-M	168	45	0	
STRESS: HI-ACCEL SATURATION TEST, 130C, 85%RH, 3.63V, PRE COND 168 HR 85C/85%RH, MSL1, 235C REFLOW							
CY2414ZC (7C841400A)	2216967	610220376	PHIL-M	128	42	0	
STRESS: TC COND. C -65C TO 150C, , PRE COND 168 HR 85C/85%RH, MSL1							
CY2414ZC (7C841400A)	2216967	610220376	PHIL-M	300	44	0	
CY2414ZC (7C841400A)	2216967	610220376	PHIL-M	500	44	0	
CY2414ZC (7C841400A)	2216967	610220376	PHIL-M	1000	44	0	
CY2414ZC (7C841400A)	2216967	610220377	PHIL-M	300	41	0	
CY2414ZC (7C841400A)	2216967	610220377	PHIL-M	500	41	0	
CY2414ZC (7C841400A)	2216967	610220377	PHIL-M	1000	41	0	
CY2414ZC (7C841400A)	2216967	610220378	PHIL-M	300	43	0	
CY2414ZC (7C841400A)	2216967	610220378	PHIL-M	500	43	0	
CY2414ZC (7C841400A)	2216967	610220378	PHIL-M	1000	43	0	