

# **Cypress Semiconductor Package Qualification Report**

**QTP# 024302 VERSION 1.1**

**April, 2003**

**44-lead Thin Small Outline Package (TSOP II) using  
Hitachi CEL9200CYR / IV77 Molding Compound and  
260°C Reflow, Ni/Pd Leadframe, MSL3**

**Cypress Philippines (CML-R) Assembly**

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

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Reliability Director  
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**PACKAGE QUALIFICATION HISTORY**

<b>QUAL REPORT</b>	<b>DESCRIPTION OF QUALIFICATION PURPOSE</b>	<b>DATE COMP.</b>
020807	44-lead TSOP II (435mm) with Ni-Pd leadframe and QMI 509	Jul 02
024302	Upgrade to 260°C solder reflow peak temperature	Nov 02

<b>MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION</b>	
<b>Package Designation:</b>	ZS444
<b>Package Outline, Type, or Name:</b>	44 Lead Thin Small Outline Package (TSOP II)
<b>Mold Compound Name/Manufacturer:</b>	Hitachi CEL9200CYR/IV77
<b>Mold Compound Flammability Rating:</b>	V-O per UL94
<b>Oxygen Rating Index:</b>	> 28 %
<b>Lead Frame Material:</b>	Copper base with Ni/Pd and Gold Flash Plating
<b>Lead Finish, Composition / Thickness:</b>	Ni/Pd with Gold Flash
<b>Die Backside Preparation Method/Metallization:</b>	Backgrind to 14 mil thickness
<b>Die Separation Method:</b>	Wafer saw
<b>Die Attach Supplier:</b>	Dexter
<b>Die Attach Material:</b>	QMI 509
<b>Bond Diagram Designation</b>	10-03494
<b>Wire Bond Method:</b>	Thermosonic
<b>Wire Material/Size:</b>	Au, 1. 0 mil
<b>Thermal Resistance Theta JA °C/W:</b>	66.5°C/W
<b>Package Cross Section Yes/No:</b>	Yes
<b>Assembly Process Flow:</b>	11-20007
<b>Name/Location of Assembly (prime) facility:</b>	Cypress Philippines (CML-R)

<b>ELECTRICAL TEST / FINISH DESCRIPTION</b>	
<b>Test Location:</b>	Cypress Philippines (CML-R)
<b>Fault Coverage:</b>	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
Temperature Cycle	1) QTP #024302 192 Hrs., 30°C/60%RH+3IR-Reflow, 260°C+5, -0°C 2) QTP #020807 192 Hrs., 30°C/60%RH+3IR-Reflow, 235°C+5, -0°C Precondition: JESD22 Moisture Sensitivity MSL 3	P
High Accelerated Saturation Test	1) QTP #024302 192 Hrs., 30°C/60%RH+3IR-Reflow, 260°C+5, -0°C 2) QTP #020807 192 Hrs., 30°C/60%RH+3IR-Reflow, 235°C+5, -0°C Precondition: JESD22 Moisture Sensitivity MSL 3	P
Pressure Cooker	1) QTP #024302 192 Hrs., 30°C/60%RH+3IR-Reflow, 260°C+5, -0°C 2) QTP #020807 192 Hrs., 30°C/60%RH+3IR-Reflow, 235°C+5, -0°C Precondition: JESD22 Moisture Sensitivity MSL 3	P
High Temperature Storage	1) QTP #020807 150°C, no bias	P
Adhesion of lead finish	1) QTP #020807 Cypress Spec 25-00029	P
Solderability, Steam Aged	1) QTP #020807 Cypress Spec. 25-00018	P
Physical Dimensions	1) QTP #020807 Cypress Spec. 25-00031	P
X-Ray	1) QTP #020807 MIL-STD-883C, Method 2012, Cypress Spec 12-000292	P
External Visual	1) QTP #020807 Cypress Spec 25-00038	P
SEM X-Section	1) QTP #020807 MIL-STD-883, Method 883-2018-2	P
Acoustic Microscopy Test (C-SAM) MSL3	1) QTP #020807 Cypress Spec 25-00104	P

## Reliability Test Data

QTP #: 024302

<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>							
CY62136VLL-ZSC (7C62136A)	4135681	610208751	CSPI-R	COMP	15	0	
CY62136VLL-ZSC (7C62136A)	4135681	610208811	CSPI-R	COMP	15	0	
CY62136VLL-ZSC (7C62136A)	4135681	610208812	CSPI-R	COMP	15	0	
<b>STRESS: HI-ACCEL SATURATION TEST, 130C, 85%RH, 3.63V, PRE COND 192 HR 30C/60%RH, MSL3</b>							
CY62136VLL-ZSC (7C62136A)	4135681	610208751	CSPI-R	128	45	0	
<b>STRESS: PRESSURE COOKER TEST, 121C, 100%RH, PRE COND 192 HR 30C/60%RH, MSL3</b>							
CY62136VLL-ZSC (7C62136A)	4135681	610208751	CSPI-R	168	45	0	
<b>STRESS: TC CONDITION C, 150C TO -65C, PRE COND 192 HR 30C/60%RH, MSL3</b>							
CY62136VLL-ZSC (7C62136A)	4135681	610208751	CSPI-R	300	45	0	
CY62136VLL-ZSC (7C62136A)	4135681	610208751	CSPI-R	500	45	0	
CY62136VLL-ZSC (7C62136A)	4135681	610208751	CSPI-R	1000	45	0	
CY62136VLL-ZSC (7C62136A)	4135681	610208811	CSPI-R	300	45	0	
CY62136VLL-ZSC (7C62136A)	4135681	610208811	CSPI-R	500	44	0	
CY62136VLL-ZSC (7C62136A)	4135681	610208811	CSPI-R	1000	44	0	
CY62136VLL-ZSC (7C62136A)	4135681	610208812	CSPI-R	300	45	0	
CY62136VLL-ZSC (7C62136A)	4135681	610208812	CSPI-R	500	45	0	

## Reliability Test Data

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<b>STRESS: ACOUSTIC, MSL3</b>							
CY62136VLL-ZSC (7C62136A)	4135681	610208751	CSPI-R	COMP	15	0	
CY62136VLL-ZSC (7C62136A)	4135681	610208811	CSPI-R	COMP	15	0	
CY62136VLL-ZSC (7C62136A)	4135681	610208812	CSPI-R	COMP	15	0	
<b>STRESS: HI-ACCEL SATURATION TEST, 130C, 85%RH, 3.63V, PRE COND 192 HR 30C/60%RH, MSL3</b>							
CY62136VLL-ZSC (7C62136A)	4135681	610208751	CSPI-R	128	43	0	
CY62136VLL-ZSC (7C62136A)	4135681	610208811	CSPI-R	128	45	0	
<b>STRESS: PRESSURE COOKER TEST, 121C, 100%RH, PRE COND 192 HR 30C/60%RH, MSL3</b>							
CY62136VLL-ZSC (7C62136A)	4135681	610208751	CSPI-R	168	45	0	
<b>STRESS: SOLDERABILITY</b>							
CY62136VLL-ZSC (7C62136A)	4135681	610208751	CSPI-R	COMP	3	0	
CY62136VLL-ZSC (7C62136A)	4135681	610208811	CSPI-R	COMP	3	0	
<b>STRESS: ADHESION OF LEAD FINISH</b>							
CY62136VLL-ZSC (7C62136A)	4135681	610208751	CSPI-R	COMP	3	0	
CY62136VLL-ZSC (7C62136A)	4135681	610208811	CSPI-R	COMP	3	0	
<b>STRESS: EXTERNAL VISUAL</b>							
CY62136VLL-ZSC (7C62136A)	4135681	610208751	CSPI-R	COMP	1288	0	
CY62136VLL-ZSC (7C62136A)	4135681	610208811	CSPI-R	COMP	1263	0	
<b>STRESS: HIGH TEMPERATURE STORAGE, 150C</b>							
CY62136VLL-ZSC (7C62136A)	4135681	610208751	CSPI-R	500	45	0	
CY62136VLL-ZSC (7C62136A)	4135681	610208751	CSPI-R	1000	45	0	
<b>STRESS: X-RAY</b>							
CY62136VLL-ZSC (7C62136A)	4135681	610208751	CSPI-R	COMP	32	0	
CY62136VLL-ZSC (7C62136A)	4135681	610208811	CSPI-R	COMP	32	0	

## Reliability Test Data

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<b>STRESS: TC CONDITION C, 150C TO -65C, PRE COND 192 HR 30C/60%RH, MSL3</b>							
CY62136VLL-ZSC (7C62136A)	4135681	610208751	CSPI-R	300	45	0	
CY62136VLL-ZSC (7C62136A)	4135681	610208751	CSPI-R	500	45	0	
CY62136VLL-ZSC (7C62136A)	4135681	610208811	CSPI-R	300	42	0	
CY62136VLL-ZSC (7C62136A)	4135681	610208811	CSPI-R	500	42	0	
CY62136VLL-ZSC (7C62136A)	4135681	610208812	CSPI-R	300	44	0	
CY62136VLL-ZSC (7C62136A)	4135681	610208812	CSPI-R	500	44	0	
CY62136VLL-ZSC (7C62136A)	4135681	610208812	CSPI-R	1000	43	0	