

Cypress Semiconductor Package Qualification Report

**QTP# 010609 VERSION 2.0 (G1)
October 2004**

<p>Sumitomo 6600HR Molding Compound ≤ 56-lead SSOP Package MSL 1 Cypress Philippines (CML-R)</p>

CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:

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Principal Reliability Engineer
(408) 943-2675

Package Qualification History

Qual Report	Description of Qualification Purpose	Date Comp.
97513	48/56-lead SSOP package die size 105.7x 137.6 using Sumitomo EME6600HR Molding Compound	Mar 98
010609	Sumitomo EME6600HR with No Post Mold Cure Process for Qualified ≤ 56-lead SSOP Package MSL1 at CML-R	Feb 01

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	O563
Package Outline, Type, or Name:	56-lead Shrunken Small Outline Package (SSOP)
Mold Compound Name/Manufacturer:	Sumitomo 6600HR
Mold Compound Flammability Rating:	V-O per UL94
Oxygen Rating Index:	>28%
Lead Frame Material:	Silver spot plated Copper
Lead Finish, Composition / Thickness:	Solder Plate, 85% Sn - 15% Pb
Die Backside Preparation Method/Metallization:	N/A
Die Separation Method:	Wafer Saw
Die Attach Method:	Silver Epoxy-Snap Cure
Die Attach Supplier:	Dexter
Die Attach Material:	QMI 509 (Snap Cure Die Attach material, No PMC)
Bond Diagram Designation	10-03741
Wire Bond Method:	Thermosonic
Wire Material/Size:	Gold/ 1.0 mil
Thermal Resistance Theta JA °C/W:	72°C/W
Package Cross Section Yes/No:	N/A
Assembly Process Flow:	11-20012
Name/Location of Assembly (prime) facility:	Cypress Philippines (CML-R)

RoHS PPM level:

Package	Package Weight	Solder Plating	Assembly Site	Lead (Pb)	Mercury (Hg)	Chromium (Cr VI)	Cadmium (Cd)
SSOP 56	0.74 gm	Sn/Pb	CML	3.7 ppm	<0.05 ppm	< 2 ppm	< 1 ppm

Polychlorinated biphenyls (PCB)	Polybrominated biphenyls (PBB)	Polybrominated diphenylethers (PBDE)
< 1 ppm	< 1 ppm	< 1 ppm

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	Cypress Philipines (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
Temperature Cycle	MIL-STD-883C, Method 1010, Condition C, -65°C to 150°C Precondition: JESD22 Moisture Sensitivity MSL 1 168 Hrs., 85°C/85%RH+3IR-Reflow, 220°C+5, -0°C	P
High Accelerated Saturation Test	140°C, 85%RH, 3.63V 130°C, 85%RH, 3.63V Precondition: JESD22 Moisture Sensitivity MSL 1 168 Hrs., 85°C/85%RH+3IR-Reflow, 220°C+5, -0°C	P
Pressure Cooker Test	No bias, 121°C, 100%, Precondition: JESD22 Moisture Sensitivity MSL 1 168 Hrs., 85°C/85%RH+3IR-Reflow, 220°C+5, -0°C	P
X-Ray	MIL-STD-883-2012, 12-00292	P
High Temperature Storage	150°C, no bias 165°C, no bias	P
Thermal Shock	Cypress Spec 25-00014	P
Die Shear	Cypress Spec 12-00292	P
Physical Dimensions	Cypress Spec 25-00031	P
Internal Visual	Cypress Spec 12-00292	P
External Visual	Cypress Spec 12-00292	P
Ball Shear	Cypress Spec 12-00292	P
Bond Pull	Cypress Spec 12-00292	P
Solderability	Cypress Spec 25-00018	P
Acoustic Microscopy Test	Cypress Spec 25-00104	P

Reliability Test Data

QTP #: 97513

<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							
CY2273APVC	3716122	619709953	CML-R	COMP	15	0	
CY2273APVC	3716122	619709954	CML-R	COMP	15	0	
CY2273APVC	3716122	619709955	CML-R	COMP	15	0	
STRESS: BOND PULL							
CY2273APVC	3716122	619709953	CML-R	COMP	15	0	
STRESS: BALL SHEAR							
CY2273APVC	3716122	619709953	CML-R	COMP	10	0	
STRESS: DIE SHEAR							
CY2273APVC	3716122	619709953	CML-R	COMP	15	0	
STRESS: EXTERNAL VISUAL							
CY2273APVC	3716122	619709953	CML-R	COMP	15	0	
STRESS: HI-ACCEL SATURATION TEST, 140C, 85%RH,3.63V, PRE COND 168 HR 85C/85%RH, MSL1							
CY2273APVC	3716122	619709953	CML-R	128	45	0	
STRESS: HIGH TEMP STORGAGE, PLASTIC, 165C							
CY2273APVC	3716122	619709953	CML-R	336	45	0	
STRESS: INTERNAL VISUAL							
CY2273APVC	3716122	619709953	CML-R	COMP	5	0	
STRESS: PHYSICAL DIMENSIONS							
CY2273APVC	3716122	619709953	CML-R	COMP	5	0	
STRESS: SOLDERABILITY							
CY2273APVC	3716122	619709953	CML-R	COMP	3	0	
STRESS: TC CONDITION C, -65C TO 150C, PRE COND. 168 HRS 85C/85% RH, MSL1							
CY2273APVC	3716122	619709953	CML-R	300	45	0	
CY2273APVC	3716122	619709954	CML-R	300	45	0	
CY2273APVC	3716122	619709955	CML-R	300	45	0	
STRESS: THERMAL SHOCK, CONDITION B							
CY2273APVC	3716122	619709953	CML-R	100	45	0	
CY2273APVC	3716122	619709953	CML-R	200	45	0	
STRESS: X-RAY							
CY2273APVC	3716122	619709953	CML-R	COMP	15	0	
CY2273APVC	3716122	619709954	CML-R	COMP	15	0	

Reliability Test Data

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Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL1							
CY222OPVC (7C822000A)	2027375	610050264	CML-R	COMP	15	0	
CY222OPVC (7C822000A)	2037375	610050263	CML-R	COMP	15	0	
CY222OPVC (7C822000A)	2027375	610050498	CML-R	COMP	15	0	
STRESS: HI-ACCEL SATURATION TEST, 130C, 85%RH, PRE COND 168 HR 85C/85%RH, MSL1							
CY222OPVC (7C822000A)	2027375	610050264	CMLR	128	49	0	
STRESS: HIGH TEMP STORAGE, PLASTIC, 150C							
CY222OPVC (7C822000A)	2027375	610050264	CML-R	500	50	0	
CY222OPVC (7C822000A)	2027375	610050264	CML-R	1000	50	0	
STRESS: PRESSURE COOKER TEST, 121C, 100%RH, PRE COND 168HRS 85C/85%RH, MSL1							
CY222OPVC (7C822000A)	2027375	610050264	CML-R	168	49	0	
STRESS: TC CONDITION C, -65C TO 150C, PRE COND. 168 HRS 85C/85% RH, MSL1							
CY222OPVC (7C822000A)	2027375	610050264	CML-R	300	48	0	
CY222OPVC (7C822000A)	2027375	610050264	CML-R	500	48	0	
CY222OPVC (7C822000A)	2027375	610050264	CML-R	1000	48	0	
STRESS: X-RAY							
CY222OPVC (7C822000A)	2027375	610050264	CML-R	COMP	15	0	
CY222OPVC (7C822000A)	2027375	610050263	CML-R	COMP	15	0	

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: TC CONDITION C, -65C TO 150C, PRE COND. 168 HRS 85C/85% RH, MSL1							
CY222OPVC-1 (7C822000A)	2027375	610050263	CML-R	300	49	0	
CY222OPVC-1 (7C822000A)	2027375	610050263	CML-R	500	49	0	
CY222OPVC-1 (7C822000A)	2027375	610050263	CML-R	1000	49	0	
CY222OPVC-1 (7C822000A)	2027375	610050498	CML-R	300	50	0	
CY222OPVC-1 (7C822000A)	2027375	610050498	CML-R	500	50	0	
CY222OPVC-1 (7C822000A)	2027375	610050498	CML-R	1000	50	0	