

Cypress Semiconductor Package Qualification Report

**QTP# 050303 VERSION 2.0
July 2005**

**56-Lead QFN (8 x 8mm) Package
NiPdAu (No PMC), MSL1, 260°C Reflow
CML-RA**

CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:

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PACKAGE QUALIFICATION HISTORY

QUAL REPORT	DESCRIPTION OF QUALIFICATION PURPOSE	DATE COMP.
050303	56-Lead (8 x 8mm) QFN package Full Metal Pad, NiPdAu (No PMC), MSL1 @260°C Reflow using Hitachi CEL9220HF13	Apr 05
050308	Qualify CML-RA (Autoline) as a New Test Site for 56-QFN Package	Jun 05

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	LY56
Package Outline, Type, or Name:	56-Lead Quad Flat no Lead (QFN) – 8x8mm punch type
Mold Compound Name/Manufacturer:	CEL9220HF13/HITACHI
Mold Compound Flammability Rating:	UL-94
Oxygen Rating Index:	NA
Lead Frame Material:	Copper base
Lead Finish, Composition / Thickness:	NiPdAu (Ni: 20~80 uinch, Pd:0. 8~1.2uinch, Au: 0.12~0.5 uinch)
Die Backside Preparation Method/Metallization:	Grinding
Die Separation Method:	Blade Sawing
Die Attach Supplier:	Dexter
Die Attach Material:	QMI509
Die Attach Method:	Epoxy
Bond Diagram Designation	10-05310
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au 1.0mil
Thermal Resistance Theta JA °C/W:	18 °C/W
Package Cross Section Yes/No:	N/A
Assembly Process Flow:	11-21099
Name/Location of Assembly (prime) facility:	CML-RA

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	CML-R, CML-RA
Fault Coverage:	100%

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENT

Stress/Test	Test Condition (Temp/Bias)	Result P/F
High Temperature Operating Life Early Failure Rate	Dynamic Operating Condition, Vcc = 3.8V, 150°C	P
High Temperature Operating Life Latent Failure Rate	Dynamic Operating Condition, Vcc = 3.8V, 150°C	P
High Accelerated Saturation Test	130°C, 3.8V, 85%RH Precondition: JESD22 Moisture Sensitivity MSL 1 168 Hrs 85°C/85%RH+3IR-Reflow, 260°C+0, -5°C	P
Pressure Cooker Test	121°C, 100%RH Precondition: JESD22 Moisture Sensitivity MSL 1 168 Hrs 85°C/85%RH+3IR-Reflow, 260°C+0, -5°C	P
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, 260°C+0, -5°C	P
Acoustics Microscopy	Cypress Spec 12-00292	P
Ball Shear	Cypress Spec 12-00292	P
Bond Pull	Cypress Spec 12-00292	P
Die Shear	Cypress Spec 12-00292	P
Electrostatic Discharge Charge Device Model (ESD-CDM)	500V Cypress Spec. 25-00020	P
Electrostatic Discharge Human Body Model (ESD-HBM)	2,200V JESD22, Method A114-B	P
Electrostatic Discharge Human Body Model (ESD-HBM)	2,200V MIL-STD-883, Method 3015.7	P
External Visual	Cypress Spec 12-00292	P
Flammability	Cypress Spec 25-00082	P
High Temp Storage	150°C, no bias	P
Physical Dimension	Cypress Spec. 25-00031	P
Thermal Shock	Cypress Spec. 25-00014	P
Solderability	Cypress Spec 25-00018	P
X-Ray	Cypress Spec 12-00292	P

Reliability Test Data

QTP #: 050303

<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							
CY7C65640 (7C65641D)	4429648	610460187	CML-RA	COMP	15	0	
CY7C65640 (7C65641D)	4421246	610460486	CML-RA	COMP	15	0	
CY7C65640 (7C65641D)	4429546	610460185	CML-RA	COMP	15	0	
STRESS: BALL SHEAR							
CY7C65640 (7C65641D)	4429648	610460187	CML-RA	COMP	10	0	
STRESS: BOND PULL							
CY7C65640 (7C65641D)	4429648	610460187	CML-RA	COMP	10	0	
STRESS: DIE SHEAR							
CY7C65640 (7C65641D)	4429648	610460187	CML-RA	COMP	15	0	
STRESS: ESD-CHARGE DEVICE MODEL, 500V							
CY7C65640 (7C65641D)	4429648	610460187	CML-RA	COMP	9	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22, METHOD A114-B, 2,200V							
CY7C65640 (7C65641D)	4429648	610460187	CML-RA	COMP	9	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER MIL STD 883, METHOD 3015, 2,200V							
CY7C65640 (7C65641D)	4429648	610460187	CML-RA	COMP	3	0	
STRESS: EXTERNAL VISUAL							
CY7C65640 (7C65641D)	4429648	610460187	CML-RA	COMP	15	0	
STRESS: INTERNAL VISUAL							
CY7C65640 (7C65641D)	4429648	610460187	CML-RA	COMP	5	0	
STRESS: HI-ACCEL SATURATION TEST, 130C, 85%RH, 3.8V, PRE COND 168 HR 85C/85%RH, MSL1							
CY7C65640 (7C65641D)	4429648	610460187	CML-RA	128	45	0	
CY7C65640 (7C65641D)	4421246	610460486	CML-RA	128	40	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 150C, 3.8V, Vcc Max							
C7C68000 (7C68000A)	4415384	610464622	CML-RA	48	1499	0	
C7C68000 (7C68000A)	4413041	610464386	CML-RA	48	1492	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 125C, 3.8V, Vcc Max							
C7C68000 (7C68000A)	4415384	610464622	CML-RA	96	798	0	
C7C68000 (7C68000A)	4413041	610464386	CML-RA	96	442	0	
STRESS: SOLDERABILITY							
CY7C65640 (7C65641D)	4429648	610460187	CML-RA	COMP	3	0	

Reliability Test Data

QTP #: 050303

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 150C, 3.8V, Vcc Max							
C7C68000 (7C68000A)	4415384	610464622	CML-RA	80	116	0	
C7C68000 (7C68000A)	4415384	610464622	CML-RA	500	114	0	
C7C68000 (7C68000A)	4413041	610464386	CML-RA	80	116	0	
C7C68000 (7C68000A)	4413041	610464386	CML-RA	500	114	0	
STRESS: HIGH TEMPERATURE STORAGE, PLASTIC, 150C							
CY7C65640 (7C65641D)	4429648	610460187	CML-RA	500	50	0	
CY7C65640 (7C65641D)	4429648	610460187	CML-RA	1000	50	0	
STRESS: PRESSURE COOKER TEST, 121C, 100%RH, PRE COND 168 HR 85C/85%RH, MSL1							
CY7C65640 (7C65641D)	4429648	610460187	CML-RA	168	50	0	
CY7C65640 (7C65641D)	4421246	610460486	CML-RA	168	50	0	
CY7C65640 (7C65641D)	4429546	610460185	CML-RA	168	50	0	
STRESS: PHYSICAL DEIMENSIONS							
CY7C65640 (7C65641D)	4429648	610460187	CML-RA	COMP	5	0	
STRESS: TC COND. C -65C TO 150C, PRE COND 168 HR 85C/85%RH, MSL1							
CY7C65640 (7C65641D)	4429648	610460187	CML-RA	300	50	0	
CY7C65640 (7C65641D)	4429648	610460187	CML-RA	500	50	0	
CY7C65640 (7C65641D)	4429648	610460187	CML-RA	1000	50	0	
CY7C65640 (7C65641D)	4421246	610460486	CML-RA	300	49	0	
CY7C65640 (7C65641D)	4421246	610460486	CML-RA	500	49	0	
CY7C65640 (7C65641D)	4421246	610460486	CML-RA	1000	49	0	
CY7C65640 (7C65641D)	4429546	610460185	CML-RA	300	50	0	
CY7C65640 (7C65641D)	4429546	610460185	CML-RA	500	50	0	
CY7C65640 (7C65641D)	4429546	610460185	CML-RA	1000	50	0	
STRESS: THERMAL SHOCK							
CY7C65640 (7C65641D)	4429648	610460187	CML-RA	100	50	0	
CY7C65640 (7C65641D)	4429648	610460187	CML-RA	200	50	0	
STRESS: X-RAY							
CY7C65640 (7C65641D)	4429648	610460187	CML-RA	COMP	15	0	
CY7C65640 (7C65641D)	4421246	610460486	CML-RA	COMP	15	0	