

Cypress Semiconductor Package Qualification Report

**QTP# 051703 VERSION 2.0
December 2006**

56-Lead QFN (8 x 8mm) Package

NiPdAu Leadframe (Rev. 8)

MSL3, 260°C Reflow

CML-RA (Autoline)

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
051703	56-Lead (8 x 8mm) QFN package, Full Metal Pad, Dual U-Groove on paddle, NiPdAu Leadframe (Rev. 8), MSL1 @260°C Reflow using Hitachi CEL9220HF13	May 05
051703	Cypress established policy requiring MSL and Reflow Peak Temperature alignment for Cypress and its Assembly Subcontractors. Downgrade MSL1 to MSL3	Sep 06

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	10-06326
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au 0.8mil
Thermal Resistance Theta JA °C/W:	18 °C/W
Package Cross Section Yes/No:	N/A
Assembly Process Flow:	11-21029
Name/Location of Assembly (prime) facility:	CML-RA
MSL Level	3
Reflow Profile	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	CML-R

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 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% 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, 15 Psig, 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	

Reliability Test Data

QTP #: 051703

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STRESS: ACOUSTIC, MSL1							
CY7C66113A (7C66113H)	2446408	610500015	CML-RA	COMP	15	0	
CY7C66113A (7C66113H)	2447511	610500017	CML-RA	COMP	15	0	
CY7C66113A (7C66113H)	2447512	610500016	CML-RA	COMP	15	0	
STRESS: BALL SHEAR							
CY7C66113A (7C66113H)	2446408	610500015	CML-RA	COMP	15	0	
CY7C66113A (7C66113H)	2447511	610500017	CML-RA	COMP	15	0	
CY7C66113A (7C66113H)	2447512	610500016	CML-RA	COMP	15	0	
STRESS: BOND PULL							
CY7C66113A (7C66113H)	2446408	610500015	CML-RA	COMP	10	0	
CY7C66113A (7C66113H)	2447511	610500017	CML-RA	COMP	10	0	
CY7C66113A (7C66113H)	2447512	610500016	CML-RA	COMP	10	0	
STRESS: DIE SHEAR							
CY7C66113A (7C66113H)	2446408	610500015	CML-RA	COMP	15	0	
CY7C66113A (7C66113H)	2447511	610500017	CML-RA	COMP	15	0	
CY7C66113A (7C66113H)	2447512	610500016	CML-RA	COMP	15	0	
STRESS: EXTERNAL VISUAL							
CY7C66113A (7C66113H)	2446408	610500015	CML-RA	COMP	461	0	
CY7C66113A (7C66113H)	2447511	610500017	CML-RA	COMP	461	0	
CY7C66113A (7C66113H)	2447512	610500016	CML-RA	COMP	461	0	
STRESS: INTERNAL VISUAL							
CY7C66113A (7C66113H)	2446408	610500015	CML-RA	COMP	15	0	
CY7C66113A (7C66113H)	2447511	610500017	CML-RA	COMP	15	0	
CY7C66113A (7C66113H)	2447512	610500016	CML-RA	COMP	15	0	
STRESS: PHYSICAL DIMENSIONS							
CY7C66113A (7C66113H)	2446408	610500015	CML-RA	COMP	15	0	
CY7C66113A (7C66113H)	2447511	610500017	CML-RA	COMP	15	0	
CY7C66113A (7C66113H)	2447512	610500016	CML-RA	COMP	15	0	

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STRESS: SOLDERABILITY

CY7C66113A (7C66113H)	2446408	610500015	CML-RA	COMP	15	0	
CY7C66113A (7C66113H)	2447511	610500017	CML-RA	COMP	15	0	
CY7C66113A (7C66113H)	2447512	610500016	CML-RA	COMP	15	0	

STRESS: X-RAY

CY7C66113A (7C66113H)	2446408	610500015	CML-RA	COMP	15	0	
CY7C66113A (7C66113H)	2447511	610500017	CML-RA	COMP	15	0	
CY7C66113A (7C66113H)	2447512	610500016	CML-RA	COMP	15	0	