

Cypress Semiconductor Package Qualification Report

**QTP# 082902 VERSION*A
October, 2014**

**32-Lead Saw QFN (Quad Flat No-Lead)
(5 x 5 x 0.93mm)
NiPdAu, MSL3, 260 °C Reflow
CML-RA**

**FOR ANY QUESTIONS ON THIS REPORT, PLEASE CONTACT
reliability@cypress.com or via a CYLINK CRM CASE**

Prepared By:
Josephine Pineda
Reliability Engineer

Reviewed By:
Rene Rodgers
Reliability Manager

Approved By:
Richard Oshiro
Reliability Director

PACKAGE QUALIFICATION HISTORY

QTP Number	Description of Qualification Purpose	Date
082902	Qualify 32-Lead Saw -QFN (5 x 5 x 0.93mm), Preplated NiPdAu, using EMC Hitachi CEL9220HF13 Mold Compound, QMI509 Epoxy, MSL3, 260C Reflow assembled at CML-RA	Jul 08

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	LT32
Package Outline, Type, or Name:	32-Lead Saw Quad Flat No Lead (QFN)
Mold Compound Name/Manufacturer:	Hitachi CEL 9220HF13
Mold Compound Flammability Rating:	V-O per UL94
Oxygen Rating Index:	None
Lead Frame Material:	C194
Lead Finish, Composition / Thickness:	NiPdAu
Die Backside Preparation	Grinding
Die Separation Method:	Blade Sawing
Die Attach Supplier:	Dexter
Die Attach Material:	QMI509
Die Attach Method:	Epoxy
Bond Diagram Designation	001-47086
Wire Bond Method:	Thermosonic
Wire Material/Size:	AuPd/0.8mil
Thermal Resistance Theta JA °C/W:	22 °C/W
Package Cross Section Yes/No:	Yes
Assembly Process Flow:	11-20029
Name/Location of Assembly (prime)	CML-RA
MSL Level	3
Reflow Profile	260C

ELECTRICAL TEST/FINISH DESCRIPTION	
Test Location	CML-RA

Note: Please contact a Cypress Representative for other packages availability.

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS

Stress/Test	Test Condition (Temp/Bias)	Result P/F
Temperature Cycle	MIL-STD-883, Method 1010, Condition C, -65 C to 150 C Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs, 30°C/60%RH+ Reflow, 260°C+0, -5°C	P
Pressure Cooker Test	JESD22-A102: 121 °C, 100%RH, 15 Psig Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs, 30°C/60%RH+ Reflow, 260°C+0, -5°C	P
High Accelerated Saturation Test (HAST)	JEDEC STD 22-A110: 130 °C, 5.25V, 85% RH Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs, 30°C/60%RH+ Reflow, 260°C+0, -5°C	P
Acoustics Microscopy	J-STD-020 Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs, 30°C/60%RH+ Reflow, 260°C+0, -5°C	P
Thermal Shock	MIL-STD-883, Method 1011, Condition B, -55 C to 125C and JESD22-A106, Condition C, -55 C to 125C	P
Die Shear	MIL-STD-883, Method 2019 Per die size: <ul style="list-style-type: none"> • <3000 sq. mils = 1.2 kgf • 3000-5000 sq. mils = 1.2 kgf • >5000 sq. mils = 1.2 kgf 	P
Ball Shear	JESD22-B116, Cpk : 1.33, Ppk : 1.66	P
External Visual	MIL-PRF-38535, MILSTD-883, METHOD 2009	P
Bond Pull	MIL-STD-883 – Method 2011, 1.33, Ppk : 1.66	P
X-ray	MIL-STD-883 2012	P
Solderability, Steam Aged	J-STD-002, JESD22-B102 95% solder coverage minimum	P
Constructional Analysis	Criteria: Meet external and internal characteristics of Cypress package	P
Dye Penetration	Test to determine the existence and extent of cracks, Criteria: No Package Crack	P
Physical Dimension	MIL-STD-1835, JESD22-B100	P



Reliability Test Data

QTP #:082902

<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, MSL3							
CY8C21434 (8C21434AC)	4741654	610816488D	CML-RA	COMP	80	0	
CY8C21434 (8C21434AC)	4741654	610816488E	CML-RA	COMP	80	0	
CY8C21434 (8C21434AC)	4741654	610816488F	CML-RA	COMP	80	0	
STRESS: HI-ACCEL SATURATION TEST, 130C, 5.25V, 60%RH, PRE COND 192 HR 30C/60%RH, MSL3							
CY8C21434 (8C21434AC)	4741654	610816488D	CML-RA	128	79	0	
STRESS: PRESSURE COOKER TEST, 121C, 100%RH, 15 Psig, PRE COND 192 HR 30C/60%RH, MSL3							
CY8C21434 (8C21434AC)	4741654	610816488D	CML-RA	168	77	0	
STRESS: TC COND. C -65C TO 150C, PRE COND 192 HR 30C/60%RH, MSL3							
CY8C21434 (8C21434AC)	4741654	610816488D	CML-RA	500	79	0	
CY8C21434 (8C21434AC)	4741654	610816488D	CML-RA	1000	79	0	
CY8C21434 (8C21434AC)	4741654	610816488E	CML-RA	500	80	0	
CY8C21434 (8C21434AC)	4741654	610816488E	CML-RA	1000	80	0	
CY8C21434 (8C21434AC)	4741654	610816488F	CML-RA	500	80	0	
CY8C21434 (8C21434AC)	4741654	610816488F	CML-RA	1000	80	0	
STRESS: THERMAL SHOCK COND. B - 55C TO 125C							
CY8C21434 (8C21434AC)	4741654	610816488D	CML-RA	200	78	0	
CY8C21434 (8C21434AC)	4741654	610816488D	CML-RA	1000	78	0	
STRESS: PHYSICAL DIMENSION							
CY8C21434 (8C21434AC)	4741654	610816488D	CML-RA	COMP	30	0	
STRESS: BALL SHEAR							
CY8C21434 (8C21434AC)	4741654	610816488D	CML-RA	COMP	30	0	
STRESS: BOND PULL							
CY8C21434 (8C21434AC)	4741654	610816488D	CML-RA	COMP	30	0	
STRESS: DIE SHEAR							
CY8C21434 (8C21434AC)	4741654	610816488D	CML-RA	COMP	30	0	
STRESS: CONSTRUCTIONAL ANALYSIS							
CY8C21434 (8C21434AC)	4741654	610816488D	CML-RA	COMP	5	0	
CY8C21434 (8C21434AC)	4741654	610816488E	CML-RA	COMP	5	0	
CY8C21434 (8C21434AC)	4741654	610816488F	CML-RA	COMP	5	0	

Company Confidential

A printed copy of this document is considered uncontrolled. Refer to online copy for latest revision.



Reliability Test Data

QTP #:082902

<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: DYE PENETRANT TEST							
CY8C21434 (8C21434AC)	4741654	610816488D	CML-RA	COMP	10	0	
CY8C21434 (8C21434AC)	4741654	610816488E	CML-RA	COMP	10	0	
CY8C21434 (8C21434AC)	4741654	610816488F	CML-RA	COMP	10	0	
STRESS: EXTERNAL VISUAL							
CY8C21434 (8C21434AC)	4741654	610816488D	CML-RA	COMP	324	0	
STRESS: SOLDERABILITY							
CY8C21434 (8C21434AC)	4741654	610816488D	CML-RA	COMP	3	0	
CY8C21434 (8C21434AC)	4741654	610816488E	CML-RA	COMP	3	0	
CY8C21434 (8C21434AC)	4741654	610816488F	CML-RA	COMP	3	0	
STRESS: X-RAY							
CY8C21434 (8C21434AC)	4741654	610816488D	CML-RA	COMP	30	0	
CY8C21434 (8C21434AC)	4741654	610816488E	CML-RA	COMP	30	0	
CY8C21434 (8C21434AC)	4741654	610816488F	CML-RA	COMP	30	0	



Document History Page

Document Title: QTP# 082902:32-LEAD SAW QFN (QUAD FLAT NO-LEAD) (5 X 5 X 0.93MM), NIPDAU, MSL3
260C REFLOW, CML-RA
Document Number: 001-89578

Rev.	ECN No.	Orig. of Change	Description of Change
**	4149083	JYF	Initial Spec Release.
*A	4526822	JYF	Sunset review: Updated QTP title page for template alignment.

Distribution: WEB

Posting: None