



# Cypress Semiconductor Package Qualification Report

QTP# 110901 VERSION \*B  
August 2018

**44-Lead TQFP (10x10x1.4 mils) &  
64-Lead TQFP (14x14x1.4 mils)  
Standard and Pb-Free  
NiPdAu, MSL3, 260C Reflow  
JCET-China (JT)**

**FOR ANY QUESTIONS ON THIS REPORT, PLEASE CONTACT  
[reliability@cypress.com](mailto:reliability@cypress.com) or via a CYLINK CRM CASE**

**Prepared By:**  
Josephine F. Pineda (JYF)  
Staff Reliability Engineer

**Reviewed By:**  
Lorena R. Zapanta (ILZ)  
Sr. Principal Reliability Engineer

**Approved By:**  
David Hoffman (DHH)  
Reliability Director



### PACKAGE QUALIFICATION HISTORY

<b>QTP Number</b>	<b>Description of Qualification Purpose</b>	<b>Date</b>
110901	Qualify New Assembly Site (JCET) Qual – for 44L TQFP (10x10x1.4) / for 64L TQFP (14x14x1.4), Pb-Free and Standard Package Using KEG6000, QMI-509, 0.9 mil Gold Wire and NiPdAu Lead Finish	Apr 2011

<b>MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION</b>	
Package Designation:	A64 / AZ44A
Package Outline, Type, or Name:	64L/44L TQFP
Mold Compound Name/Manufacturer:	KEG6000 / Kyocera
Mold Compound Flammability Rating:	V-O per UL94
Mold Compound Alpha Emission Rate:	0.002 CPH/cm2
Oxygen Rating Index: >28%	N/A
Lead Frame Designation:	Reduced Metal Pad
Lead Frame Material:	Copper
Substrate Material:	N/A
Lead Finish, Composition / Thickness:	NiPdAu
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Wafersaw
Die Attach Supplier:	Henkel
Die Attach Material:	QMI 509
Bond Diagram Designation	10-02746, 10-06308, 001-30702
Wire Bond Method:	Thermosonic
Wire Material/Size:	0.9mil (23um) / Au
Thermal Resistance Theta JA °C/W:	Refer to Datasheet
Package Cross Section Yes/No:	Yes
Assembly Process Flow:	001-64160
Name/Location of Assembly (prime) facility:	JT-JCET China
MSL Level	3
Reflow Profile	260C

<b>ELECTRICAL TEST / FINISH DESCRIPTION</b>	
Test Location:	CML-R



## RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS

Stress/Test	Test Condition (Temp/Bias)	Result P/F
High Accelerated Saturation Test (HAST)	JEDEC STD 22-A110: 130C, 85%RH, 5.50V Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30C, 60% RH, 260C Reflow)	P
Pressure Cooker Test	JESD22-A102: 121C, 100%RH, 15 PSIG Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30C, 60% RH, 260C Reflow)	P
Temperature Cycle	MIL-STD-883, Method 1010, Condition C, -65C to 150C Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30C, 60% RH, 260C Reflow)	P
High Temp Storage	JESD22-A103: 150C, no bias	P
Electrostatic Discharge Charge Device Model (ESD-CDM)	(500V) JESD22-C101	P
Acoustic Microscopy	J-STD-020 Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30C, 60% RH, 260C Reflow)	P
Ball Shear	JESD22-B116 Cpk : 1.33, Ppk : 1.66	P
Bond Pull	MIL-STD-883 – Method 2011, Cpk : 1.33, Ppk : 1.66	P
Constructional Analysis	Criteria: Meet external and internal characteristics of Cypress package	P
Die Shear	MIL-STD-883, Method 2019  Per die size: <ul style="list-style-type: none"> <li>• &lt;3000 sq. mils = 1.2 kgf</li> <li>• 30001-5000 sq. mils = 1.2 kgf</li> <li>• &gt;5001 sq. mils = 1.2 kgf</li> </ul>	P
Dye Penetrant Test	Test to determine the existence and extent of cracks, Criteria: No Package Crack	P
Internal Visual	MIL-STD-883-2014	P
Final Visual Inspection	JESD22-B101	P
Lead Integrity	JESD22-B105, MIL STD 883	P
Physical Dimension	MIL-STD-1835, JESD22-B100	P
Thermal Shock	MIL-STD-883, Method 1011, Condition B, -55 C to 125C and JESD22-A106, Condition C, -55 C to 125C	P
Solderability, Steam Aged	J-STD-002, JESD22-B102 95% solder coverage minimum	P
X-Ray	MIL-STD-883 - 2012	P



## Reliability Test Data

### QTP #: 110901

<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>							
CY7C144 (7C144C)	2817505	611105339	JT-CHINA	COMP	15	0	
CY37032VP44 (7C37610C)	8036020	611105340	JT-CHINA	COMP	15	0	
CP5790DM (7C531510D)	4040620	611105338	JT-CHINA	COMP	15	0	
<b>STRESS: BALL SHEAR</b>							
CY7C144 (7C144C)	2817505	611105339	JT-CHINA	COMP	10	0	
CY37032VP44 (7C37610C)	8036020	611105340	JT-CHINA	COMP	10	0	
CP5790DM (7C531510D)	4040620	611105338	JT-CHINA	COMP	10	0	
<b>STRESS: BOND PULL</b>							
CY7C144 (7C144C)	2817505	611105339	JT-CHINA	COMP	10	0	
<b>STRESS: CONSTRUCTIONAL ANALYSIS</b>							
CY7C144 (7C144C)	2817505	611105339	JT-CHINA	COMP	5	0	
CY37032VP44 (7C37610C)	8036020	611105340	JT-CHINA	COMP	5	0	
CP5790DM (7C531510D)	4040620	611105338	JT-CHINA	COMP	5	0	
<b>STRESS: DYE PENETRATION TEST</b>							
CY7C144 (7C144C)	2817505	611105339	JT-CHINA	COMP	15	0	
CY37032VP44 (7C37610C)	8036020	611105340	JT-CHINA	COMP	15	0	
CP5790DM (7C531510D)	4040620	611105338	JT-CHINA	COMP	15	0	
<b>STRESS: DIE SHEAR</b>							
CY7C144 (7C144C)	2817505	611105339	JT-CHINA	COMP	15	0	
CY37032VP44 (7C37610C)	8036020	611105340	JT-CHINA	COMP	15	0	
CP5790DM (7C531510D)	4040620	611105338	JT-CHINA	COMP	15	0	
<b>STRESS: ESD-CHARGE DEVICE MODEL, (500V)</b>							
CY7C144 (7C144C)	2817505	611105339	JT-CHINA	COMP	9	0	



## Reliability Test Data

**QTP #: 110901**

<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: HI-ACCEL SATURATION TEST, 130C, 5.50V, 60%RH, PRE COND 192 HR 30C/60%RH, MSL3</b>							
CY7C144 (7C144C)	2817505	611105339	JT-CHINA	128	80	0	
<b>STRESS: HIGH TEMP STORAGE, 150C</b>							
CY7C144 (7C144C)	2817505	611105339	JT-CHINA	500	80	0	
<b>STRESS: INTERNAL VISUAL</b>							
CY7C144 (7C144C)	2817505	611105339	JT-CHINA	COMP	5	0	
CY37032VP44 (7C37610C)	8036020	611105340	JT-CHINA	COMP	5	0	
CP5790DM (7C531510D)	4040620	611105338	JT-CHINA	COMP	5	0	
<b>STRESS: PRESSURE COOKER TEST (121C, 100%RH), 15 Psig, PRE COND 192 HR 30C/60%RH (MSL3)</b>							
CY7C144 (7C144C)	2817505	611105339	JT-CHINA	168	80	0	
CY7C144 (7C144C)	2817505	611105339	JT-CHINA	288	80	0	
<b>STRESS: PHYSICAL DIMENSION</b>							
CY7C144 (7C144C)	2817505	611105339	JT-CHINA	COMP	30	0	
CY37032VP44 (7C37610C)	8036020	611105340	JT-CHINA	COMP	30	0	
CP5790DM (7C531510D)	4040620	611105338	JT-CHINA	COMP	30	0	
<b>STRESS: SOLDERABILITY</b>							
CY7C144 (7C144C)	2817505	611105339	JT-CHINA	COMP	3	0	
CY37032VP44 (7C37610C)	8036020	611105340	JT-CHINA	COMP	3	0	
CP5790DM (7C531510D)	4040620	611105338	JT-CHINA	COMP	3	0	
<b>STRESS: TC COND. C -65C TO 150C, PRE COND 192 HR 30C/60%RH, MSL3</b>							
CY7C144 (7C144C)	2817505	611105339	JT-CHINA	500	80	0	
CY37032VP44 (7C37610C)	8036020	611105340	JT-CHINA	500	80	0	
CP5790DM (7C531510D)	4040620	611105338	JT-CHINA	500	80	0	
<b>STRESS: THERMAL SHOCK</b>							
CY7C144 (7C144C)	2817505	611105339	JT-CHINA	200	80	0	
CY7C144 (7C144C)	2817505	611105339	JT-CHINA	1000	80	0	
<b>STRESS: X-RAY</b>							
CY7C144 (7C144C)	2817505	611105339	JT-CHINA	COMP	15	0	
CY37032VP44 (7C37610C)	8036020	611105340	JT-CHINA	COMP	15	0	
CP5790DM (7C531510D)	4040620	611105338	JT-CHINA	COMP	15	0	



## Document History Page

Document Title: QTP 110901:44L/64L TQFP, NIPDAU, MSL3 260C REFLOW JCET- CHINA (JT)  
Document Number: 001-68912

Rev.	ECN No.	Orig. of Change	Description of Change
**	3218981	NSR	Initial spec release
*A	4352343	RT	Sunset Review- Align spec with current qual report template. Corrected assembly process flow spec number
*B	6275621	JYF	Deleted obsolete spec# 25-00014 and aligned spec with the current Qualification Report template
		FRA	Removed Distribution: WEB and Posting: None in document history page.