Document No.001-69096 Rev. *D
ECN # 6481748

Cypress Semiconductor Package Qualification Report

QTP# 110902 VERSION *D
February 2019

32-Lead SOIC (450 mils)

Standard and Pb-free

NiPdAu, MSL3, 260°C/235°C Reflow

JCET-China (JT)

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

Prepared By:
Honesto Sintos
Reliability Engineer

Reviewed By:
Lorena Zapanta
Reliability Manager

Approved By:
David Hoffman
Reliability Director

PACKAGE QUALIFICATION HISTORY

QTP Number	Description of Qualification Purpose	Date
110902	Qualify New Assembly Site (JCET) Qual – 32L SOJ 450 mils, Pb-Free Package and Standard Packages Using KEG6000, QMI-509, 0.9 mil Gold Wire and NiPdAu Lead Finish	Apr 2011
120110	Qualification of Samsung as Alternate Leadframe for SZ324 Commercial/Industrial Packages built in JCET-China	Feb 2012

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	SZ324
Package Outline, Type, or Name:	32 Lead SOIC
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: Sumiko / Samsung Techwin
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	001-44790, 10-06262, 001-37219
Wire Bond Method:	Thermosonic
Wire Material/Size:	0.9mil / Au (23um)
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 / 235C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	CML-R

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

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS

Stress/Test	Test Condition (Temp/Bias)	Result P/F
High Accelerated Saturation Test (HAST)	130 C, 85%RH, 5.5V Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 C°, 60% RH, 260C Reflow)	P
Pressure Cooker Test	121 C, 100%RH, 15 PSIG Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 C°, 60% RH, 260C Reflow)	P
Temperature Cycle	MIL-STD-883, Method 1010, Condition C, -65 C to 150 C Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 C°, 60% RH, 260C Reflow)	P
High Temp Storage	JESD22-A103, 150 C, no bias 150 C	P
Electrostatic Discharge Human Body Model (ESD-HBM)	(2200V) JEDEC EIA/JESD22-A114	P
Electrostatic Discharge Charge Device Model (ESD-CDM)	(500V) JESD22-C101	P
Acoustic Microscopy	J-STD-020 Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 C°, 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 package	P
Die Shear	MIL-STD-883, Method 2019 Per die size: <3000 sq. Mils = 1.2 kgf 30001-5000 sq. Mils = 1.2 kgf >5001 sq. Mils = 1.2 kgf	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
Adhesion of Lead Finish	MIL-STD-883, Method 2025	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	P
X-Ray	MIL-STD-883 – 2012	P

Reliability Test Data

QTP #: 110902

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3							
CY62148BNLL (7C621483NC)	4043414	611105341	JT-CHINA	COMP	15	0	
CG6713AM (7C62148F)	4042800	611105347	JT-CHINA	COMP	15	0	
CG6707AM (7C62128K)	4007701	611105342	JT-CHINA	COMP	15	0	
STRESS: BALL SHEAR							
CY62148BNLL (7C621483NC)	4043414	611105341	JT-CHINA	COMP	10	0	
CG6713AM (7C62148F)	4042800	611105347	JT-CHINA	COMP	10	0	
CG6707AM (7C62128K)	4007701	611105342	JT-CHINA	COMP	10	0	
STRESS: BOND PULL							
CY62148BNLL (7C621483NC)	4043414	611105341	JT-CHINA	COMP	10	0	
CG6713AM (7C62148F)	4042800	611105347	JT-CHINA	COMP	10	0	
CG6707AM (7C62128K)	4007701	611105342	JT-CHINA	COMP	10	0	
STRESS: CONSTRUCTIONAL ANALYIS							
CY62148BNLL (7C621483NC)	4043414	611105341	JT-CHINA	COMP	5	0	
CG6713AM (7C62148F)	4042800	611105347	JT-CHINA	COMP	5	0	
CG6707AM (7C62128K)	4007701	611105342	JT-CHINA	COMP	5	0	
STRESS: DYE PENETRATION TEST							
CY62148BNLL (7C621483NC)	4043414	611105341	JT-CHINA	COMP	15	0	
CG6713AM (7C62148F)	4042800	611105347	JT-CHINA	COMP	15	0	
CG6707AM (7C62128K)	4007701	611105342	JT-CHINA	COMP	15	0	
STRESS: DIE SHEAR							
CY62148BNLL (7C621483NC)	4043414	611105341	JT-CHINA	COMP	15	0	
CG6713AM (7C62148F)	4042800	611105347	JT-CHINA	COMP	15	0	
CG6707AM (7C62128K)	4007701	611105342	JT-CHINA	COMP	15	0	
STRESS: ESD-CHARGE DEVICE MODEL, (500V)							
CY62148BNLL (7C621483NC)	4043414	611105341	JT-CHINA	COMP	9	0	

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

Reliability Test Data

QTP #: 110902

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: HI-ACCEL SATURATION TEST, 130C, 5.5V, 60%RH, PRE COND 192 HR 30C/60%RH, MSL3							
CY62148BNLL (7C621483NC)	4043414	611105341	JT-CHINA	128	80	0	
STRESS: HIGH TEMP STORAGE, 150C							
CY62148BNLL (7C621483NC)	4043414	611105341	JT-CHINA	500	80	0	
CY62148BNLL (7C621483NC)	4043414	611105341	JT-CHINA	1000	80	0	
STRESS: INTERNAL VISUAL							
CY62148BNLL (7C621483NC)	4043414	611105341	JT-CHINA	COMP	5	0	
CG6713AM (7C62148F)	4042800	611105347	JT-CHINA	COMP	5	0	
CG6707AM (7C62128K)	4007701	611105342	JT-CHINA	COMP	5	0	
STRESS: LEAD INTEGRITY							
CY62148BNLL (7C621483NC)	4043414	611105341	JT-CHINA	COMP	5	0	
CG6713AM (7C62148F)	4042800	611105347	JT-CHINA	COMP	5	0	
CG6707AM (7C62128K)	4007701	611105342	JT-CHINA	COMP	5	0	
STRESS: PRESSURE COOKER TEST (121C, 100%RH), 15 Psig, PRE COND 192 HR 30C/60%RH (MSL3)							
CY62148BNLL (7C621483NC)	4043414	611105341	JT-CHINA	168	80	0	
CY62148BNLL (7C621483NC)	4043414	611105341	JT-CHINA	288	80	0	
STRESS: PHYSICAL DIMENSION							
CY62148BNLL (7C621483NC)	4043414	611105341	JT-CHINA	COMP	30	0	
CG6713AM (7C62148F)	4042800	611105347	JT-CHINA	COMP	30	0	
CG6707AM (7C62128K)	4007701	611105342	JT-CHINA	COMP	30	0	
STRESS: SOLDERABILITY							
CY62148BNLL (7C621483NC)	4043414	611105341	JT-CHINA	COMP	3	0	
CG6713AM (7C62148F)	4042800	611105347	JT-CHINA	COMP	3	0	
CG6707AM (7C62128K)	4007701	611105342	JT-CHINA	COMP	3	0	

Reliability Test Data

QTP #: 110902

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: TC COND. C –65C TO 150C, PRE COND 192 HR 30C/60%RH, MSL3							
CY62148BNLL (7C621483NC)	4043414	611105341	JT-CHINA	500	80	0	
CY62148BNLL (7C621483NC)	4043414	611105341	JT-CHINA	1000	79	0	
CG6713AM (7C62148F)	4042800	611105347	JT-CHINA	500	80	0	
CG6713AM (7C62148F)	4042800	611105347	JT-CHINA	1000	80	0	
CG6707AM (7C62128K)	4007701	611105342	JT-CHINA	500	79	0	
STRESS: THERMAL SHOCK							
CY62148BNLL (7C621483NC)	4043414	611105341	JT-CHINA	500	79	0	
CY62148BNLL (7C621483NC)	4043414	611105341	JT-CHINA	1000	79	0	
STRESS: X-RAY							
CY62148BNLL (7C621483NC)	4043414	611105341	JT-CHINA	COMP	15	0	
CG6713AM (7C62148F)	4042800	611105347	JT-CHINA	COMP	15	0	
CG6707AM (7C62128K)	4007701	611105342	JT-CHINA	COMP	15	0	

Reliability Test Data

QTP #: 120110

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3							
CY62128BNLL (7A62128NHC)	4105511	611158454	JT-CHINA	COMP	22	0	
CY62128BNLL (7A62128NHC)	4105511	611158455	JT-CHINA	COMP	22	0	
CY62128BNLL (7A62128NHC)	4105511	611158456	JT-CHINA	COMP	22	0	
STRESS: BOND PULL							
CY62128BNLL (7A62128NHC)	4105511	611158454	JT-CHINA	COMP	30	0	
STRESS: CONSTRUCTIONAL ANALYIS							
CY62128BNLL (7A62128NHC)	4105511	611158454	JT-CHINA	COMP	5	0	
STRESS: CROSS SECTION							
CY62128BNLL (7A62128NHC)	4105511	611158454	JT-CHINA	COMP	5	0	
STRESS: DYE PENETRATION TEST							
CY62128BNLL (7A62128NHC)	4105511	611158454	JT-CHINA	COMP	15	0	
CY62128BNLL (7A62128NHC)	4105511	611158455	JT-CHINA	COMP	15	0	
CY62128BNLL (7A62128NHC)	4105511	611158456	JT-CHINA	COMP	15	0	
STRESS: INTERNAL VISUAL							
CY62128BNLL (7A62128NHC)	4105511	611158454	JT-CHINA	COMP	5	0	
STRESS: ADHESION OF LEAD FINISH							
CY62128BNLL (7A62128NHC)	4105511	611158454	JT-CHINA	COMP	5	0	
STRESS: PRESSURE COOKER TEST (121C, 100%RH), 15 Psig, PRE COND 192 HR 30C/60%RH (MSL3)							
CY62128BNLL (7A62128NHC)	4105511	611158454	JT-CHINA	96	80	0	
CY62128BNLL (7A62128NHC)	4105511	611158454	JT-CHINA	168	80	0	
CY62128BNLL (7A62128NHC)	4105511	611158455	JT-CHINA	96	80	0	
CY62128BNLL (7A62128NHC)	4105511	611158455	JT-CHINA	168	80	0	
CY62128BNLL (7A62128NHC)	4105511	611158456	JT-CHINA	96	80	0	
CY62128BNLL (7A62128NHC)	4105511	611158456	JT-CHINA	168	80	0	
STRESS: PHYSICAL DIMENSION							
CY62128BNLL (7A62128NHC)	4105511	611158454	JT-CHINA	COMP	30	0	

Reliability Test Data

QTP #: 120110

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: SOLDERABILITY							
CY62128BNLL (7A62128NHC)	4105511	611158454	JT-CHINA	COMP	15	0	
CY62128BNLL (7A62128NHC)	4105511	611158455	JT-CHINA	COMP	15	0	
CY62128BNLL (7A62128NHC)	4105511	611158456	JT-CHINA	COMP	15	0	
STRESS: TC COND. C –65C TO 150C, PRE COND 192 HR 30C/60%RH, MSL3							
CY62128BNLL (7A62128NHC)	4105511	611158454	JT-CHINA	500	80	0	
CY62128BNLL (7A62128NHC)	4105511	611158454	JT-CHINA	1000	80	0	
CY62128BNLL (7A62128NHC)	4105511	611158455	JT-CHINA	500	80	0	
CY62128BNLL (7A62128NHC)	4105511	611158455	JT-CHINA	1000	80	0	
CY62128BNLL (7A62128NHC)	4105511	611158456	JT-CHINA	500	80	0	
CY62128BNLL (7A62128NHC)	4105511	611158456	JT-CHINA	1000	80	0	

CYPRESS
EMBEDDED IN TOMORROW™

Document History Page

Document Title: QTP 110902:32L SOIC (450 MILS), NIPDAU, MSL3 260C/235C REFLOW JCET- CHINA (JT)
Document Number: 001-69096

Rev.	ECN No.	Orig. of Change	Description of Change
**	3227757	NSR	Initial spec release
*A	3524152	NSR	Added QTP 120110 data for the alternate Samsung Leadframe. Removed QTP version in the tile page.
*B	4001826	ILZ	Removed reference Cypress Specs in Reliability Tests Performed table and replaced with the reference Industry standards. Reliability Test Data for QTP 120110 – Added 1000cyc TC data
*C	4384405	ILZ	Sunset spec review Updated front page to reflect new qualification report template per Spec 001-57716 Page 3 – Major package information table – Replaced assembly process flow spec# 001-64159 with 001-64160. Reliability tests performed per specification requirements Table : Deleted revision of the following Standards: Rev C of MIL-STD- 883, Temperature cycle Stress Rev A of JESD22-B116, Ball shear test\ Rev B of JESD22-A114, ESD-HBM Rev B of JESD22-B101, Final visual inspection Rev C of MIL-STD-883 and Rev B of JESD22-A106, Thermal shock stress
*D	6481748	HSTO DCON	Update Cypress logo Update Contact Person Update “MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION” table Removed distribution:web and posting:none from the document history page