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Cypress Semiconductor
Package Qualification Report

QTP# 064701 VERSION*A
October, 2014

≤160-Lead Thin Quad Flat Pack (TQFP)
(1.4mm Thick)
Pure Sn, MSL3, 260C
Amkor-Bupyong Korea (Q)

FOR ANY QUESTIONS ON THIS REPORT, PLEASE CONTACT
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PACKAGE QUALIFICATION HISTORY

QTP Number	Description of Qualification Purpose	Date
064701	Qualify Amkor-Bupyong Korea (Q) to build ≤160-Lead TQFP with Pure Sn matte finish using G700L Mold Compound and 3230 Epoxy. Also, standard and Pb-Free parts	Jan 07

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	AZ160
Package Outline, Type, or Name:	160-Lead Thin Quad Flat Pack (TQFP)
Mold Compound Name/Manufacturer:	G700L
Mold Compound Flammability Rating:	V-O per UL 94
Oxygen Rating Index:	None
Lead Frame Material:	Copper
Lead Finish, Composition / Thickness:	Pure Sn Matte
Die Backside Preparation	Backgrinding
Die Separation Method:	Wafer Sawing
Die Attach Supplier:	Ablestik
Die Attach Material:	3230
Bond Diagram Designation	001-10746
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au 0.9 mil
Thermal Resistance Theta JA °C/W:	31°C/W
Package Cross Section Yes/No:	No
Assembly Process Flow:	49-10997
Name/Location of Assembly (prime) facility:	Amkor-Bupyong Korea (Q)
MSL Level	3
Reflow Profile	260C

ELECTRICAL TEST/FINISH DESCRIPTION	
Test Location	Cypress Philippines (CML-R)

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS

Stress/Test	Test Condition (Temp/Bias)	Result P/F
Acoustic Microscopy	J-STD-020 Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs, 30°C/60%RH+ Reflow, 260°C+0, -5°C	P
Adhesion of Lead Finish	MIL-STD-883, Method 2025	P
Ball Shear	JESD22-B116, Cpk : 1.33, Ppk : 1.66	P
Bond Pull	MIL-STD-883 – Method 2011, 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: • <3000 sq. mils = 1.2 kgf • 30001-5000 sq. mils = 1.2 kgf • > 5001 sq. mils = 1.2 kgf	P
Dye Penetration	Test to determine the existence and extent of cracks, Criteria: No Package Crack	P
External Visual	MIL-PRF-38535, MILSTD-883, METHOD 2009	P
High Accelerated Saturation Test (HAST)	JEDEC STD 22-A110: 130°C, 3.63V, 85% RH Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs, 30°C/60%RH+ Reflow, 260°C+0, -5°C	P
Internal Visual	MIL-STD-883-2014	P
Physical Dimensions	MIL-STD-1835, JESD22-B100	P
Pressure Cooker	JESD22-A102: 121°C, 100%RH, 15 Psig Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs, 30°C/60%RH+ Reflow, 260°C+0, -5	P
Solderability, Steam Aged	J-STD-002, JESD22-B102 95% solder coverage minimum	P
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
X-Ray	MIL-STD-883, Method 32012, Cypress	P

Reliability Test Data

QTP#: 064701

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3							
CY37192P160 (7C37645B)	8619074	610655289	KOREA-Q	COMP	15	0	
CY37192P160 (7C37645B)	8619074	610655290	KOREA-Q	COMP	15	0	
CY37192P160 (7C37645B)	8619074	610655291	KOREA-Q	COMP	15	0	
STRESS: BALL SHEAR							
CY37192P160 (7C37645B)	8619074	610655289	KOREA-Q	COMP	10	0	
STRESS: BOND PULL							
CY37192P160 (7C37645B)	8619074	610655289	KOREA-Q	COMP	10	0	
STRESS: CONSTRUCTIONAL ANALYSIS							
CY37192P160 (7C37645B)	8619074	610655289	KOREA-Q	COMP	5	0	
STRESS: DIE SHEAR							
CY37192P160 (7C37645B)	8619074	610655289	KOREA-Q	COMP	15	0	
CY37192P160 (7C37645B)	8619074	610655290	KOREA-Q	COMP	15	0	
STRESS: DYE PENETRATION							
CY37192P160 (7C37645B)	8619074	610655289	KOREA-Q	COMP	15	0	
CY37192P160 (7C37645B)	8619074	610655290	KOREA-Q	COMP	15	0	
CY37192P160 (7C37645B)	8619074	610655291	KOREA-Q	COMP	15	0	
STRESS: EXTERNAL VISUAL							
CY37192P160 (7C37645B)	8619074	610655289	KOREA-Q	COMP	15	0	
STRESS: INTERNAL VISUAL							
CY37192P160 (7C37645B)	8619074	610655289	KOREA-Q	COMP	5	0	
CY37192P160 (7C37645B)	8619074	610655290	KOREA-Q	COMP	5	0	
STRESS: PHYSICAL DIMENSIONS							
CY37192P160 (7C37645B)	8619074	610655289	KOREA-Q	COMP	5	0	
CY37192P160 (7C37645B)	8619074	610655290	KOREA-Q	COMP	5	0	
CY37192P160 (7C37645B)	8619074	610655291	KOREA-Q	COMP	5	0	
STRESS: PRESSURE COOKER TEST (121C, 100%RH, 15 Psig), PRE COND 192 HR 30C/60%RH, MSL3							
CY37192P160 (7C37645B)	8619074	610655289	KOREA-Q	168	50	0	

Reliability Test Data

QTP#: 064701

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: TC COND. C -65C TO 150C, PRE COND 192 HRS 30C/60%RH, MSL3							
CY37192P160 (7C37645B)	8619074	610655289	KOREA-Q	300	50	0	
CY37192P160 (7C37645B)	8619074	610655290	KOREA-Q	300	50	0	
CY37192P160 (7C37645B)	8619074	610655291	KOREA-Q	300	50	0	

Document History Page

Document Title: QTP# 064701:<160-LEAD THIN QUAD FLAT PACK (TQFP) (1.4MM THICK) PURE SN, MSL3, 260C AMKOR-BUPYONG KOREA (Q)
Document Number: 001-89571

Rev.	ECN No.	Orig. of Change	Description of Change
**	4148854	JYF	Initial Spec Release.
*A	4526545	JYF	Sunset review: Updated QTP title page for template alignment.

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