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Cypress Semiconductor
Package Qualification Report

QTP# 080610 VERSION*A
October, 2014

120-Lead Thin Quad Flat Pack (TQFP)
(14 x 14 x 1.4mm)
Pure Sn, MSL3, 260C Reflow
Amkor-Seoul, Korea (K1)

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

QTP Number	Description of Qualification Purpose	Date
034703	120-lead TQFP (14mm x 14mm x 1.4mm) with Heat Slug, MSL3, 220C Reflow, using G700L Mold Compound and 3230 Epoxy assembled at Amkor-Bupyong, Korea ,–K1	Mar 04
080610	Larger Die Qualification of TQFP 120 leads, Pure Sn, MSL3, 260C Reflow at Amkor- Korea	Apr 08

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	A120, AZ120, AT120
Package Outline, Type, or Name:	120-lead Thin Quad Flat Pack (TQFP)
Mold Compound Name/Manufacturer:	G700L
Mold Compound Flammability Rating:	V-O per UL 94
Mold Compound Alpha Emission Rate :	N/A
Oxygen Rating Index:	N/A
Lead Frame Material:	Copper
Lead Finish, Composition / Thickness:	Pure Sn
Die Backside Preparation	Grinding
Die Separation Method:	Sawing
Die Attach Supplier:	Ablestik
Die Attach Material:	3230
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au 1.2 mil
Thermal Resistance Theta JA °C/W:	22.8 °C/W
Package Cross Section Yes/No:	No
Assembly Process Flow:	49-10999
Name/Location of Assembly (prime) facility:	Amkor-Seoul, Korea (K1)

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
High Temperature Operating Life Early Failure Rate	Dynamic Operating Condition, Vcc Max = 3.8V, 150C JESD22-A108	P
High Temperature Operating Life Latent Failure Rate	Dynamic Operating Condition, Vcc Max= 3.8V, 150C JESD22-A108	P
High Accelerated Saturation Test (HAST)	JEDEC STD 22-A110:130°C, 3.6V, 85%RH Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs, 30C/60%RH+ Reflow, 260°C+5, 0°C	P
Pressure Cooker	JESD22-A102: 121°C, 100%RH, 15 Psig Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs, 30C/60%RH+ Reflow, 260°C+5, 0°C	P
Temperature Cycle	MIL-STD-883, Method 1010, Condition C, -65°C to 150°C Precondition: JESD22 Moisture Sensitivity Level 3 192 Hrs, 30C/60%RH+ Reflow, 260°C+0, -5°C	P
Acoustic Microscopy	J-STD-020 Precondition: JESD22 Moisture Sensitivity Level 192 Hrs, 30C/60%RH+ Reflow, 260°C+0, -5°C	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: • <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
High Temperature Storage	JESD22-A103:150C, no bias	P
Internal Visual	MIL-STD-883-2014	P
Thermal Shock	MIL-STD-883, Method 1011, Condition B, -55 C to 125C and JESD22-A106, Condition C, -55 C to 125C	P
X-Ray	MIL-STD-883 2012	P

Reliability Test Data

QTP #: 034703

Device	Fab Lot#	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3							
CYS25G0101DX (7B9532B)	4243999	610334714	SEOUL-L	COMP	15	0	
CYS25G0101DX (7B9532B)	4243999	610334715	SEOUL-L	COMP	15	0	
CYS25G0101DX (7B9532B)	4243999	610334716	SEOUL-L	COMP	15	0	
STRESS: DIE SHEAR							
CYS25G0101DX (7B9532B)	4243999	610334714	SEOUL-L	COMP	15	0	
CYS25G0101DX (7B9532B)	4243999	610334715	SEOUL-L	COMP	15	0	
STRESS: HI-ACCEL SATURATION TEST (130C, 85%RH, 3.63V), PRE COND 192 HR 30C/60%RH, MSL3							
CYS25G0101DX (7B9532B)	4243999	610334714	SEOUL-L	128	45	0	
CYS25G0101DX (7B9532B)	4243999	610334715	SEOUL-L	128	45	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 150C, 3.8V, Vcc Max							
CYWUSB6934 (7B6934A))	4318747	610336918/9/20	SEOUL-L	48	795	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 150C, 3.8V, Vcc Max							
CYWUSB6934 (7B6934A))	4318747	610336918/9/20	SEOUL-L	168	269	0	
CYWUSB6934 (7B6934A))	4318747	610336918/9/20	SEOUL-L	500	266	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 150C, 7V, Vcc Max							
CY7C136 (7C136G)	2127990	610346637	TAIWN-G	48	999	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 150C, 7.V, Vcc Max							
CY7C136 (7C136G)	2127990	610346637	TAIWN-G	80	120	0	
CY7C136 (7C136G)	2127990	610346637	TAIWN-G	500	120	0	
STRESS: HIGH TEMPERATURE STORAGE, 150C							
CYS25G0101DX (7B9532B)	4243999	610334714	SEOUL-L	500	44	0	
CYS25G0101DX (7B9532B)	4243999	610334714	SEOUL-L	1000	42	0	
STRESS: INTERNAL VISUAL							
CYS25G0101DX (7B9532B)	4243999	610334714	SEOUL-L	COMP	5	0	
CYS25G0101DX (7B9532B)	4243999	610334715	SEOUL-L	COMP	5	0	
STRESS: PRESSURE COOKER TEST (121C, 100%RH), PRE COND 192 HR 30C/60%RH							
CYS25G0101DX (7B9532B)	4243999	610334714	SEOUL-L	168	45	0	
CYS25G0101DX (7B9532B)	4243999	610334715	SEOUL-L	168	44	0	

Reliability Test Data

QTP #: 034703

Device	Fab Lot#	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: TC COND. C -65C TO 150C, PRECONDITION 192 HRS 30C/60%RH (MSL3)							
CYS25G0101DX (7B9532B)	4243999	610334714	SEOUL-L	300	43	0	
CYS25G0101DX (7B9532B)	4243999	610334714	SEOUL-L	500	43	0	
CYS25G0101DX (7B9532B)	4243999	610334715	SEOUL-L	300	45	0	
CYS25G0101DX (7B9532B)	4243999	610334715	SEOUL-L	500	45	0	
CYS25G0101DX (7B9532B)	4243999	610334716	SEOUL-L	300	44	0	
CYS25G0101DX (7B9532B)	4243999	610334716	SEOUL-L	500	44	0	
STRESS: X-RAY							
CYS25G0101DX (7B9532B)	4243999	610334714	SEOUL-L	COMP	15	0	
CYS25G0101DX (7B9532B)	4243999	610334715	SEOUL-L	COMP	15	0	

Reliability Test Data

QTP #: 080610

Device	Fab Lot#	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3							
CY7C0831AV (7C08313C)	4610855	610802371	SEOUL-L	COMP	15	0	
CY7C0831AV (7C08313C)	4610855	610802370	SEOUL-L	COMP	15	0	
CY7C0831AV (7C08313C)	4610855	610803178	SEOUL-L	COMP	15	0	
STRESS: BALL SHEAR							
CY7C0831AV (7C08313C)	4610855	610802371	SEOUL-L	COMP	10	0	
STRESS: BOND PULL							
CY7C0831AV (7C08313C)	4610855	610802371	SEOUL-L	COMP	10	0	
STRESS: CONSTRUCTIONAL ANALYSIS							
CY7C0831AV (7C08313C)	4610855	610802371	SEOUL-L	COMP	5	0	
STRESS: DIE SHEAR							
CY7C0831AV (7C08313C)	4610855	610802371	SEOUL-L	COMP	15	0	
STRESS: DYE PENETRANT TEST							
CY7C0831AV (7C08313C)	4610855	610802371	SEOUL-L	COMP	15	0	
CY7C0831AV (7C08313C)	4610855	610802370	SEOUL-L	COMP	15	0	
CY7C0831AV (7C08313C)	4610855	610803178	SEOUL-L	COMP	15	0	
STRESS: INTERNAL VISUAL							
CY7C0831AV (7C08313C)	4610855	610802371	SEOUL-L	COMP	5	0	
STRESS: HI-ACCEL SATURATION TEST (130C, 85%RH, 3.6V), PRE COND 192 HR 30C/60%RH, MSL3							
CY7C0831AV (7C08313C)	4610855	610802371	SEOUL-L	128	70	0	
STRESS: HIGH TEMPERATURE STORAGE, 150C							
CYS25G0101DX (7B9532B)	4243999	610334714	SEOUL-L	500	44	0	
CYS25G0101DX (7B9532B)	4243999	610334714	SEOUL-L	1000	42	0	
STRESS: PRESSURE COOKER TEST (121C, 100%RH), PRE COND 192 HR 30C/60%RH							
CY7C0831AV (7C08313C)	4610855	610802371	SEOUL-L	168	77	0	
STRESS: SOLDERABILITY							
CY7C0831AV (7C08313C)	4610855	610802371	SEOUL-L	COMP	3	0	
CY7C0831AV (7C08313C)	4610855	610802370	SEOUL-L	COMP	3	0	
CY7C0831AV (7C08313C)	4610855	610803178	SEOUL-L	COMP	3	0	

Reliability Test Data

QTP #: 080610

Device	Fab Lot#	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: TC COND. C -65C TO 150C, PRECONDITION 192 HRS 30C/60%RH (MSL3)							
CY7C0831AV (7C08313C)	4610855	610802371	SEOUL-L	500	76	0	
CY7C0831AV (7C08313C)	4610855	610802371	SEOUL-L	1000	76	0	
CY7C0831AV (7C08313C)	4610855	610802370	SEOUL-L	500	77	0	
CY7C0831AV (7C08313C)	4610855	610802370	SEOUL-L	1000	77	0	
CY7C0831AV (7C08313C)	4610855	610803178	SEOUL-L	500	77	0	
CY7C0831AV (7C08313C)	4610855	610803178	SEOUL-L	1000	77	0	
STRESS: THERMAL SHOCK							
CY7C0831AV (7C08313C)	4610855	610802371	SEOUL-L	200	77	0	
CY7C0831AV (7C08313C)	4610855	610802371	SEOUL-L	1000	77	0	
STRESS: X-RAY							
CY7C0831AV (7C08313C)	4610855	610802371	SEOUL-L	COMP	15	0	

Document History Page

Document Title: QTP# 080610:120-LEAD THIN QUAD FLAT PACK (TQFP) (14 X 14 X 1.4 MM) PURE SN, MSL3, 260C REFLOW, AMKOR-SEOUL, KOREA (K1)
Document Number: 001-89576

Rev.	ECN No.	Orig. of Change	Description of Change
**	4148955	JYF	Initial Spec Release.
*A	4526822	JYF	Sunset review: Updated QTP title page for template alignment.

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