

Cypress Semiconductor Package Qualification Report

**QTP# 155107 VERSION*A
December 2017**

**42-Ball Wafer Level Chip Scale Package
(WLCSP), 2.63x3.18x0.55 mm
MSL1, 260C
Deca Technologies (DT) - Philippines**

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

Prepared By:
Josephine Pineda (JYF)
Staff Reliability Engineer

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

Approved By:
David Hoffman (DHH)
Reliability Director

PACKAGE QUALIFICATION HISTORY

QTP Number	Description of Qualification Purpose	Date
112201	Qualification of WLCSP assembly in Deca Technologies (DT) - Philippines for Wafer Processing and Die Finishing Steps using SAC 405 Solder Finish, at MSL1, 260C	Oct. 2011
155107	Qualification of 42-Ball WLCSP (2.63x3.18x0.55 mm) New Mask Tooling with 0.4mm Pitch using HD8820 PBO 1/2 Material at Deca Technologies (DT) - Philippines	Nov. 2017

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION

Package Designation:	FN42A
Package Outline, Type, or Name:	42-Ball Wafer Level Chip Scale Package (WLCSP), 2.63x3.18x0.55 mm
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Saw Process
Solder Ball/Bump Material:	SAC-405
Bonding Method:	Bump/ RDL
Bond Diagram Designation	002-08174
Thermal Resistance Theta JA °C/W:	34°C /W
Package Cross Section Yes/No:	N/A
Assembly Process Flow:	001-69882
Name/Location of Assembly (prime) facility:	DT-Philippines
MSL Level	1
Reflow Profile	260C

ELECTRICAL TEST / FINISH DESCRIPTION

Test Location:	CML-R and DT-Philippines
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RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS

Stress/Test	Test Condition (Temp/Bias)	Result P/F
Constructional Analysis	Criteria: Meet external and internal characteristics of Cypress package	P
External Visual	MIL-PRF-38535, MIL-STD-883, Method 2009	P
Functional Board Level Reliability Test	Temperature Cycle, -40°C to 85°C	P
High Accelerated Saturation Test (HAST)	JEDEC STD 22-A110: 130°C, 85%RH, 1.98V Precondition: JESD22 Moisture Sensitivity Level (168 Hrs., 85°C, 85% RH, 260°C Reflow)	P
High Accelerated Saturation Test (HAST)	JEDEC STD 22-A110: 130°C, 85%RH, 5.5V Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30°C, 60% RH, 260°C Reflow)	P
High Temp Storage	JESD22-A103: 150°C, no bias	P
Internal Visual	MIL-STD-883-2014	P
Physical Dimension	MIL-STD-1835, JESD22-B100	P
Pressure Cooker Test	JESD22-A102, 121°C, 100%RH, 15 PSIG Precondition: JESD22 Moisture Sensitivity Level (168 Hrs., 85°C, 85% RH, 260°C Reflow)	P
Solder Ball/Bump Shear	JESD22-B117	P
Temperature Cycle	MIL-STD-883, Method 1010, Condition B, -55°C to 125°C Precondition: JESD22 Moisture Sensitivity Level (168 Hrs., 85°C, 85% RH, 260°C Reflow)	P
Thermal Shock	MIL-STD-883, Method 1011, Condition B, -55 C to 125C and JESD22-A106, Condition C, -55 C to 125C	P



Reliability Test Data

QTP #: 112201

<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: CONSTRUCTIONAL ANALYSIS							
CYWB0226ABSX (7C071011C)	4024545	402454503	DT-PHIL	COMP	5	0	
STRESS: ELECTRICAL CHARACTERIZATION							
CYWB0226ABSX (7C071011C)	4046829	404682925	DT-PHIL	COMP	1 wafer	0	
STRESS: EXTERNAL VISUAL							
CYWB0226ABSX (7C071011C)	4024545	402454503	DT-PHIL	COMP	1558	0	
CYWB0226ABSX (7C071011C)	4024545	402454505	DT-PHIL	COMP	1621	0	
CYWB0226ABSX (7C071011C)	4024545	402454507	DT-PHIL	COMP	1356	0	
STRESS: HI-ACCEL SATURATION TEST, 130C, 1.98V, PRE COND 168 HR 85C/85%RH, MSL1							
CYWB0226ABSX (7C071011C)	4024545	402454503	DT-PHIL	96	67	0	
CYWB0226ABSX (7C071011C)	4024545	402454505	DT-PHIL	96	72	0	
STRESS: HIGH TEMPERATURE STORAGE, 150C							
CYWB0226ABSX (7C071011C)	4024545	402454503	DT-PHIL	500	79	0	
CYWB0226ABSX (7C071011C)	4024545	402454503	DT-PHIL	1000	77	0	
STRESS: INTERNAL VISUAL							
CYWB0226ABSX (7C071011C)	4024545	402454503	DT-PHIL	COMP	5	0	
CYWB0226ABSX (7C071011C)	4024545	402454505	DT-PHIL	COMP	5	0	
CYWB0226ABSX (7C071011C)	4024545	402454507	DT-PHIL	COMP	5	0	
STRESS: PHYSICAL DIMENSION							
CYWB0226ABSX (7C071011C)	4024545	402454503	DT-PHIL	COMP	30	0	
CYWB0226ABSX (7C071011C)	4024545	402454505	DT-PHIL	COMP	30	0	
CYWB0226ABSX (7C071011C)	4024545	402454507	DT-PHIL	COMP	30	0	
STRESS: PRESSURE COOKER TEST, 121C, 100%RH, 15 Psig, PRE COND 168 HR 85C/85%RH, MSL1							
CYWB0226ABSX (7C071011C)	4024545	402454503	DT-PHIL	96	77	0	
CYWB0226ABSX (7C071011C)	4024545	402454505	DT-PHIL	96	76	0	
CYWB0226ABSX (7C071011C)	4024545	402454507	DT-PHIL	96	78	0	



Reliability Test Data

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Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: SOLDER BALL/BUMP SHEAR							
CYWB0226ABSX (7C071011C)	4024545	402454503	DT-PHIL	COMP	30	0	
CYWB0226ABSX (7C071011C)	4024545	402454505	DT-PHIL	COMP	30	0	
CYWB0226ABSX (7C071011C)	4024545	402454507	DT-PHIL	COMP	30	0	
STRESS: TC COND. B -55C TO 125C, PRE COND 168 HRS 85C/85%RH, MSL1							
CYWB0226ABSX (7C071011C)	4024545	402454503	DT-PHIL	500	78	0	
CYWB0226ABSX (7C071011C)	4024545	402454503	DT-PHIL	1000	78	0	
CYWB0226ABSX (7C071011C)	4024545	402454505	DT-PHIL	500	78	0	
CYWB0226ABSX (7C071011C)	4024545	402454505	DT-PHIL	1000	78	0	
CYWB0226ABSX (7C071011C)	4024545	402454507	DT-PHIL	500	79	0	
CYWB0226ABSX (7C071011C)	4024545	402454507	DT-PHIL	1000	79	0	
STRESS: THERMAL SHOCK							
CYWB0226ABSX (7C071011C)	4024545	402454503	DT-PHIL	200	80	0	



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STRESS: CONSTRUCTIONAL ANALYSIS							
CYPD3105 (7F64300A)	4548640	611602663	DT-PHIL	COMP	5	0	
CYPD3105 (7F64300A)	4548640	611600220	DT-PHIL	COMP	5	0	
CYPD3105 (7F64300A)	4548640	611602662	DT-PHIL	COMP	5	0	
STRESS: FUNCTIONAL BOARD LEVEL RELIABILITY TEST, TC COND.N -40C TO 85C							
CY8C4247FNI (8F42478A)	4427504	611431846	DT-PHIL	256	502	0	
CY8C4247FNI (8F42478A)	4427504	611431846	DT-PHIL	500	493	0	
STRESS: HI-ACCEL SATURATION TEST, 130C, 5.5V, 85%RH, PRE COND 192 HR 30C/60%RH, MSL3							
CY8C4247LQI (8CP42478A)	4427504	611436359	CML-RA	96	28	0	
CY8C4247LQI (8CP42478A)	4427504	611436359	CML-RA	128	28	0	
STRESS: HIGH TEMP STORAGE, 150C							
CY8C4247FNI (8F42478A)	4427504	611431846	DT-PHIL	500	84	0	
CY8C4247FNI (8F42478A)	4427504	611431846	DT-PHIL	1000	84	0	
STRESS: PHYSICAL DIMENSION							
CYPD3105 (7F64300A)	4548640	611602663	DT-PHIL	COMP	30	0	
CYPD3105 (7F64300A)	4548640	611602662	DT-PHIL	COMP	30	0	
CYPD3105 (7F64300A)	4548641	611604409	DT-PHIL	COMP	30	0	
CYPD3105 (7F64300A)	4548641	611604408	DT-PHIL	COMP	30	0	
STRESS: PRESSURE COOKER TEST (121C, 100%RH), 15 Psig, PRE COND 168 HR 85C/85%RH (MSL1)							
CY8C4247FNI (8F42478A)	4427504	611431847	DT-PHIL	168	82	0	
CY8C4247FNI (8F42478A)	4427504	611431847	DT-PHIL	288	82	0	
STRESS: SOLDER BALL/BUMP SHEAR							
CYPD3105 (7F64300A)	4548640	611602663	DT-PHIL	COMP	50	0	
CYPD3105 (7F64300A)	4548640	611602662	DT-PHIL	COMP	50	0	
CYPD3105 (7F64300A)	4548641	611604409	DT-PHIL	COMP	50	0	
CYPD3105 (7F64300A)	4548641	611604408	DT-PHIL	COMP	50	0	



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STRESS: TC COND. B -55C TO 125C, PRE COND 168 HR 85C/85%RH, MSL1							
CY8C4247FNI (8F42478A)	4427504	611431846	DT-PHIL	500	83	0	
CY8C4247FNI (8F42478A)	4427504	611431846	DT-PHIL	1000	83	0	
CYBL10563 (7F45563A)	4427504	611431845	DT-PHIL	500	82	0	
CYBL10563 (7F45563A)	4427504	611431845	DT-PHIL	1000	82	0	
CY8C4247FNI (8F42478A)	4427504	611431847	DT-PHIL	500	83	0	
CY8C4247FNI (8F42478A)	4427504	611431847	DT-PHIL	1000	83	0	



Document History Page

Document Title: QTP#155107: 42-BALL WAFER LEVEL CHIP SCALE PACKAGE (WLCSP), 2.63x3.18x0.55 mm
, MSL1, 260C DECA TECHNOLOGIES (DT)
Document Number: 002-22130

Rev.	ECN No.	Orig. of Change	Description of Change
**	5974057	JYF	Initial release.
*A	5992117	JYF	Updated FBLRT data.