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Cypress Semiconductor
Package Qualification Report

QTP# 034503 VERSION *B
April 2015

All Plastic & Thermally Enhanced Quad Flatpacks

Pb-Free, MSL3, 260C Reflow

ASEK-Taiwan Assembly

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

QTP Number	Description of Qualification Purpose	Date
034503	Qualify All Plastic & Thermally Enhanced Quad Flatpacks, Pb-Free, MSL3, 260C Reflow using G700A MC, CRM1076DS epoxy and Matte Tin Plating with Annealing Process (150C, 1hr) ssembled @ASEK-Taiwan	Jan 04

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	N52
Package Outline, Type, or Name:	52-lead Plastic Quad Flatpack (PQFP)
Mold Compound Name/Manufacturer:	G700A
Mold Compound Flammability Rating:	V-O per UL94
Oxygen Rating Index: >28%	None
Lead Frame Material:	Alloy42
Substrate Material:	N/A
Lead Finish, Composition / Thickness:	Pure Sn
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Sawing
Die Attach Supplier:	CRM
Die Attach Material:	1076DS
Bond Diagram Designation	10-02869
Wire Bond Method:	Thermosonic
Wire Material/Size:	1.0 mil / Au
Thermal Resistance Theta JA °C/W:	96°C/W
Package Cross Section Yes/No:	Yes
Assembly Process Flow:	49-41999
Name/Location of Assembly (prime) facility:	ASEK-Taiwan
MSL LEVEL	3
REFLOW PROFILE	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	Cypress Philippines (CML-R)
Fault Coverage:	100%

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

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	NT208
Package Outline, Type, or Name:	208-lead Thermally Enhanced Quad Flatpack (EQFP)
Mold Compound Name/Manufacturer:	G700A
Mold Compound Flammability Rating:	V-O per UL94
Oxygen Rating Index: >28%	None
Lead Frame Material:	Copper
Substrate Material:	N/A
Lead Finish, Composition / Thickness:	Pure Sn
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Sawing
Die Attach Supplier:	CRM
Die Attach Material:	1076DS
Wire Bond Method:	Thermosonic
Wire Material/Size:	1.0 mil / Au
Thermal Resistance Theta JA °C/W:	96°C/W
Package Cross Section Yes/No:	Yes
Assembly Process Flow:	49-41999
Name/Location of Assembly (prime) facility:	ASEK-Taiwan
MSL LEVEL	3
REFLOW PROFILE	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	Cypress Philippines (CML-R)
Fault Coverage:	100%

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 = 7V, 150C	P
High Temperature Operating Life Latent Failure Rate	Dynamic Operating Condition, Vcc Max = 7V, 150°C	P
Temperature Cycle	MIL-STD-883C, Method 1010, Condition C, -65°C to 150°C Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs., 30°C/60%RH+3IR-Reflow, 260°C+5, -0°C	P
Pressure Cooker	121°C, 100%RH Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs, 30C/60%RH+3IR-Reflow, 260°C+5, 0°C	P
High Accelerated Saturation Test (HAST)	130°C, 1.98V, 85%RH Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs, 30C/60%RH+3IR-Reflow, 260°C+5, 0°C	P
Acoustic Microscopy, MSL 3	J-STD-020	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
External Visual	MIL-PRF-38535, MIL-STD-883, METHOD 2009,	P
High Temperature Storage	150C, no bias	P
Internal Visual	MIL-STD-883-2014	P
Adhesion of lead finish	MIL-STD-883, Method 2025	P
Solderability	J-STD-002, JESD22-B102 95% solder coverage minimum	P
X-Ray	MIL-STD-883, Method 2012	P

Reliability Test Data

QTP #: 034503

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3							
CY39200Z208 (7C39770A)	9222749	610346251	TAIWN-G	COMP	15	0	
CY39200Z208 (7C39770A)	9222749	610346252	TAIWN-G	COMP	15	0	
CY7C136 (7C136G)	2127990	610346637	TAIWN-G	COMP	15	0	
STRESS: ADHESION OF LEAD FINISH							
CY39200Z208 (7C39770A)	9222749	610346252	TAIWN-G	COMP	3	0	
STRESS: DIE SHEAR							
CY7C136 (7C136G)	2127990	610346637	TAIWN-G	COMP	10	0	
CY39200Z208 (7C39770A)	9222749	610346251	TAIWN-G	COMP	10	0	
CY39200Z208 (7C39770A)	9222749	610346252	TAIWN-G	COMP	10	0	
STRESS: EXTERNAL VISUAL							
CY7C136 (7C136G)	2127990	610346637	TAIWN-G	COMP	15	0	
CY39200Z208 (7C39770A)	9222749	610346251	TAIWN-G	COMP	15	0	
STRESS: HI-ACCEL SATURATION TEST (130C, 85%RH, 1.98V), PRE COND 192 HR 30C/60%RH, MSL3							
CY39200Z208 (7C39770A)	9222749	610346251	TAIWN-G	128	50	0	
CY39200Z208 (7C39770A)	9222749	610346252	TAIWN-G	128	50	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: INTERNAL VISUAL							
CY7C136 (7C136G)	2127990	610346637	TAIWN-G	COMP	5	0	
CY39200Z208 (7C39770A)	9222749	610346251	TAIWN-G	COMP	5	0	
STRESS: PRESSURE COOKER TEST (121C, 100%RH), PRE COND 192 HR 30C/60%RH							
CY39200Z208 (7C39770A)	9222749	610346251	TAIWN-G	144	50	0	
CY39200Z208 (7C39770A)	9222749	610346251	TAIWN-G	272	50	0	
CY7C136 (7C136G)	2127990	610346637	TAIWN-G	168	45	0	

Reliability Test Data

QTP #: 034503

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: SOLDERABILITY							
CY7C136 (7C136G)	2127990	610346637	TAIWN-G	COMP	3	0	
CY39200Z208 (7C39770A)	9222749	610346251	TAIWN-G	COMP	3	0	
STRESS: TC COND. C -65C TO 150C, PRECONDITION 192 HRS 30C/60%RH, MSL3							
CY39200Z208 (7C39770A)	9222749	610346251	TAIWN-G	300	50	0	
CY39200Z208 (7C39770A)	9222749	610346251	TAIWN-G	500	50	0	
CY39200Z208 (7C39770A)	9222749	610346252	TAIWN-G	300	50	0	
CY39200Z208 (7C39770A)	9222749	610346252	TAIWN-G	500	50	0	
CY7C136 (7C136G)	2127990	610346637	TAIWN-G	300	45	0	
CY7C136 (7C136G)	2127990	610346637	TAIWN-G	500	43	0	
CY7C136 (7C136G)	2127990	610346637	TAIWN-G	1000	42	0	
STRESS: X-RAY							
CY7C136 (7C136G)	2127990	610346637	TAIWN-G	COMP	15	0	
CY39200Z208 (7C39770A)	9222749	610346251	TAIWN-G	COMP	15	0	

Document History Page

Document Title: QTP 034503:ALL PLASTIC & THERMALLY ENHANCED QUAD FLATPACKS , PB-FREE, MSL3 260C REFLOW, ASEK-TAIWAN
Document Number: 001-68976

Rev.	ECN No.	Orig. of Change	Description of Change
**	3223182	NSR	Corrected the LF material of 52L PQFP from Copper to Alloy42. Changed the Cypress Technical Contact for Qualification Data. Used qual report spec template.
*A	4362805	HSTO	Align qualification report based on the new template in the front page Deleted obsolete specs 10-04256. Deleted Cypress reference specs 25-00104, 12-00292, 25-00029, and 25-00018 and replaced it with industry standard.
*B	4749347	HSTO	Update reference for Reliability Director

Distribution: WEB

Posting: None