

# **Cypress Semiconductor Package Qualification Report**

**QTP# 050706 VERSION 1.0  
March 2005**

**ALL Thin Quad Flat Pack (TQFP)**

**(1.4mm Thick)**

**MSL3, SnPb Lead Finish, 260C Reflow**

**ASEK- Taiwan Assembly**

## **CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:**

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### PACKAGE QUALIFICATION HISTORY

QUAL REPORT	DESCRIPTION OF QUALIFICATION PURPOSE	DATE COMP.
034101	ALL TQFP, 1.4mm Thick, 100% Sn, MSL3, 260C Reflow, using Cel 9200THF Mold Compound and 8340 Epoxy and Matte Tin Plating assembled @ ASE Kaohsiung Taiwan	Mar 04
050706	ALL TQFP, 1.4mm Thick, SnPb Lead Finish, MSL3, 260C Reflow, using Cel 9200THF Mold Compound and 8340 Epoxy and Matte Tin Plating assembled @ ASE Kaohsiung Taiwan	Mar 05

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
<b>Package Designation:</b>	A100
<b>Package Outline, Type, or Name:</b>	100-lead Thin Quad Flat Pack (TQFP)
<b>Mold Compound Name/Manufacturer:</b>	Cel 9200THF
<b>Mold Compound Flammability Rating:</b>	V-O per UL 94
<b>Oxygen Rating Index:</b>	None
<b>Lead Frame Material:</b>	Copper
<b>Lead Finish, Composition / Thickness:</b>	Pure Sn
<b>Die Backside Preparation Method/Metallization:</b>	Grinding
<b>Die Separation Method:</b>	Sawing
<b>Die Attach Supplier:</b>	Ablestik
<b>Die Attach Material:</b>	8340
<b>Bond Diagram Designation</b>	10-04115
<b>Wire Bond Method:</b>	Thermosonic
<b>Wire Material/Size:</b>	Au 1.2 mil
<b>Thermal Resistance Theta JA °C/W:</b>	46.7 °C/W
<b>Package Cross Section Yes/No:</b>	Yes
<b>Assembly Process Flow:</b>	49-41999
<b>Name/Location of Assembly (prime) facility:</b>	ASEK Taiwan (G)

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

**Note:** Please contact a Cypress Representative for other packages availability.

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	A160
Package Outline, Type, or Name:	160-lead Thin Quad Flat Pack (TQFP)
Mold Compound Name/Manufacturer:	Cel 9200THF
Mold Compound Flammability Rating:	V-O per UL 94
Oxygen Rating Index:	None
Lead Frame Material:	Copper
Lead Finish, Composition / Thickness:	Pure Sn
Die Backside Preparation Method/Metallization:	Grinding
Die Separation Method:	Sawing
Die Attach Supplier:	Ablestik
Die Attach Material:	8340
Bond Diagram Designation	10-03710
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au 1.3 mil
Thermal Resistance Theta JA °C/W:	32.80 °C/W
Package Cross Section Yes/No:	Yes
Assembly Process Flow:	49-41004
Name/Location of Assembly (prime) facility:	ASEK Taiwan (G)

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

**Note:** Please contact a Cypress Representative for other packages availability.

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	A176
Package Outline, Type, or Name:	176-lead Thin Quad Flat Pack (TQFP)
Mold Compound Name/Manufacturer:	Cel 9200THF
Mold Compound Flammability Rating:	V-O per UL 94
Oxygen Rating Index:	None
Lead Frame Material:	Copper
Lead Finish, Composition / Thickness:	Pure Sn
Die Backside Preparation Method/Metallization:	Grinding
Die Separation Method:	Sawing
Die Attach Supplier:	Ablestik
Die Attach Material:	8340
Bond Diagram Designation	10-04266
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au 1.2 mil
Thermal Resistance Theta JA °C/W:	30.39 °C/W
Package Cross Section Yes/No:	Yes
Assembly Process Flow:	49-41021
Name/Location of Assembly (prime) facility:	ASEK Taiwan (G)

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

**Note:** Please contact a Cypress Representative for other packages availability.

# **RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS**

<b>Stress/Test</b>	<b>Test Condition (Temp/Bias)</b>	<b>Result P/F</b>
Acoustic Microscopy, MSL 3	Cypress Spec. 25-00104	P
Adhesion of Lead Finish	Cypress Spec 25-00029	P
External Visual	Cypress Spec 12-00292	P
High Accelerated Saturation Test (HAST)	130°C, 3.63V, 85%RH Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs, 30°C/60%RH+3IR-Reflow, <b>260</b> °C+5, 0°C	P
Internal Visual	Cypress Spec 12-00292	P
Pressure Cooker	121°C, 100%RH Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs, 30°C/60%RH+3IR-Reflow, <b>260</b> °C+5, 0°C	P
Solderability	Cypress Spec. 25-00018	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, <b>260</b> °C+5, -0°C	P
X-Ray	MIL-STD-883, Method 32012, Cypress Spec. 12-00292	P

## *Reliability Test Data*

**QTP #: 034101**

Device	Fab Lot #	Assy Lot #	Ass Loc	Duration	Samp	Rej	Failure Mechanism
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**STRESS: ACOUSTIC, MSL3**

CY7C1372B (7C1372B))	9244935	SWR#19136	TAIWN-G	COMP	15	0	
CY7B993V (7B993A)	4323867	610351300	TAIWN-G	COMP	15	0	
CY37128P160 (7C37637B)	8334828	610347535	TAIWN-G	COMP	15	0	

**STRESS: ADHESION OF LEAD FINISH**

CY7C1372B (7C1372B))	9244935	SWR#19136	TAIWN-G	COMP	3	0	
CY7C0852V (7C08523A)	4328799	610346772	TAIWN-G	COMP	3	0	

**STRESS: EXTERNAL VISUAL**

CY7C1372B (7C1372B))	9244935	SWR#19136	TAIWN-G	COMP	15	0	
CY7C0852V (7C08523A)	4328799	610346772	TAIWN-G	COMP	15	0	

**STRESS: HI-ACCEL SATURATION TEST (130C, 85%RH, 3.63V), PRE COND 192 HR 30C/60%RH, MSL3**

CY7C1372B (7C1372B))	9244935	SWR#19136	TAIWN-G	128	43	0	
CY7B993V (7B993A)	4323867	610351300	TAIWN-G	128	44	0	

**STRESS: INTERNAL VISUAL**

CY7C1372B (7C1372B))	9244935	SWR#19136	TAIWN-G	COMP	5	0	
CY7C0852V (7C08523A)	4328799	610346772	TAIWN-G	COMP	5	0	

**STRESS: PRESSURE COOKER TEST (121C, 100%RH), PRE COND 192 HR 30C/60%RH**

CY7C1372B (7C1372B))	9244935	SWR#19136	TAIWN-G	168	47	0	
CY37128P160 (7C37637B)	8334828	610347535	TAIWN-G	168	49	0	

**STRESS: SOLDERABILITY**

CY7C1372B (7C1372B))	9244935	SWR#19136	TAIWN-G	COMP	3	0	
CY7C0852V (7C08523A)	4328799	610346772	TAIWN-G	COMP	3	0	

**STRESS: TC COND. C -65C TO 150C, PRECONDITION 192 HRS 30C/60%RH (MSL3)**

CY7C1372B (7C1372B))	9244935	SWR#19136	TAIWN-G	300	48	0	
CY7B993V (7B993A)	4323867	610351300	TAIWN-G	300	43	0	
CY37128P160 (7C37637B)	8334828	610347535	TAIWN-G	300	50	0	
CY37128P160 (7C37637B)	8334828	610347535	TAIWN-G	500	50	0	
CY37128P160 (7C37637B)	8334828	610347535	TAIWN-G	1000	47	0	

**STRESS: X-RAY**

CY7C1372B (7C1372B))	9244935	SWR#19136	TAIWN-G	COMP	15	0	
CY7B993V (7B993A)	4323867	610351300	TAIWN-G	COMP	15	0	