

Cypress Semiconductor Package Qualification Report

**QTP# 034101 VERSION *A
February 2015**

**ALL Thin Quad Flat Pack
1.4mm Thick, MSL3, 100% Sn, 260°C Reflow
ASEK- Taiwan Assembly**

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

Prepared By:
Honesto Sintos
Reliability Engineer

Reviewed By:
Rene Rodgers
Reliability Manager

Approved By:
Richard Oshiro
Reliability Director

PACKAGE QUALIFICATION HISTORY

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

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION

| | |
|------------------------------------------------|-------------------------------------|
| Package Designation: | A100 |
| Package Outline, Type, or Name: | 100-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: | 100% Sn |
| Die Backside Preparation Method/Metallization: | Grinding |
| Die Separation Method: | Sawing |
| Die Attach Supplier: | Ablestik |
| Die Attach Material: | 8340 |
| Wire Bond Method: | Thermosonic |
| Wire Material/Size: | Au 1.2 mil & 1.0 mil |
| Thermal Resistance Theta JA °C/W: | 46.7 °C/W |
| Package Cross Section Yes/No: | Yes |
| Assembly Process Flow: | Not Applicable |
| 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: | 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: | 100% 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 |
| 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: | 100% Sn |
| Die Backside Preparation Method/Metallization: | Grinding |
| Die Separation Method: | Sawing |
| Die Attach Supplier: | Ablestik |
| Die Attach Material: | 8340 |
| 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 |
| 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

| Stress/Test | Test Condition (Temp/Bias) | Result P/F |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Acoustic Microscopy, MSL 3 | J-STD-020 Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs, 30°C/60%RH+3IR-Reflow, 260°C +5, 0°C | P |
| Adhesion of Lead Finish | MIL-STD-883, Method 2025 | P |
| External Visual | MIL-PRF-38535, MILSTD-883, METHOD 2009 | 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, 260°C +5, 0°C | P |
| Internal Visual | MIL-STD-883-2014 | P |
| Pressure Cooker | 121°C, 100%RH Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs, 30°C/60%RH+3IR-Reflow, 260°C +5, 0°C | P |
| Solderability | J-STD-002, JESD22-B102 95% solder coverage minimum | 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 |
| X-Ray | MIL-STD-883, Method 32012 | P |



Reliability Test Data

QTP #: 034101

| Device | Fab Lot # | Assy Lot # | Ass Loc | Duration | Samp | Rej | Failure Mechanism |
|-----------------------------------------------------------------------------------------------|-----------|------------|---------|----------|------|-----|-------------------|
| 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 | |



Reliability Test Data

QTP #: 034101

| <i>Device</i> | <i>Fab Lot #</i> | <i>Assy Lot #</i> | <i>Ass Loc</i> | <i>Duration</i> | <i>Samp</i> | <i>Rej</i> | <i>Failure Mechanism</i> |
|-------------------------------|------------------|-------------------|----------------|-----------------|-------------|------------|--------------------------|
| STRESS: ACOUSTIC, MSL3 | | | | | | | |
| CY7C1372B (7C1372B)) | 9244935 | SWR#19136 | TAIWN-G | COMP | 15 | 0 | |
| CY7B993V (7B993A) | 4323867 | 610351300 | TAIWN-G | COMP | 15 | 0 | |



Document History Page

Document Title: QTP 034101: ALL THIN QUAD FLAT PACK 1.4MM THICK, MSL3, 100% SN, 260C REFLOW, ASEK- TAIWAN ASSEMBLY
Document Number: 001-85726

| Rev. | ECN No. | Orig. of Change | Description of Change |
|------|---------|-----------------|-------------------------------------------------------------------------------------------------|
| ** | 3873609 | NSR | Initial Spec Release. |
| *A | 4649947 | HSTO | Align qualification report based on the new template in the front page Deleted obsolete spec |

Distribution: WEB

Posting: None