

TEST PRODUCT QUALIFICATION REPORT

TITLE:

ADSP-2147x 196-Ball CSP_BGA

Test Second Source UTAC (Singapore) Qualification

PCN NUMBER:

23_0254

REVISION:

A

DATE:

20 November 2023

PROJECT BACKGROUND

Test correlation is carried out to qualify UTAC Singapore as an additional final test site for ADI devices to support production.

SUMMARY

All references to ADSP-2147x in this report, apply to all 196-Ball CSP_BGA ADSP-21478/9 products.

ADSP-2147x is released at UTAC as 2nd source test solution.

There is no change to the form, fit, function, quality, or reliability between platforms.

This report documents the successful completion of the product test correlation requirements of ADSP-2147x 196-Ball CSP_BGA between STATS ChipPAC and UTAC sites.

Test product qualification was performed according to Analog Devices Specification

TEST AND PRODUCT INFORMATION

| | |
|-----------------|---|
| Device | ADSP-2147x |
| Package | 196-Ball CSP_BGA, 12x12x1.41mm, 0.8mm pitch |
| Tester Platform | HP93K_6 |

Description and Test Results

Table 1 provides a description of the qualification tests conducted and corresponding test results for ADSP-2147x. All the units have undergone electrical tests on both the sending and receiving sites on the same test platform. Any device that did not meet the electrical qualification requirements without further analysis and data to prove passing, the qualification would be considered failed.

Table 1. Test Product Transfer Qualification Criteria

| Generic | Package | Lot Size | Sending Site | Receiving Site | Mean Shift =< 5% | Sigma Ratio =< 1.3 |
|------------|---|----------|--------------|----------------|---------------------|-----------------------|
| ADSP-2147x | 196-Ball CSP_BGA, 12x12x1.41mm, 0.8mm pitch | 100 | SCS | UTAC | Passed | Passed |

The ADSP-2147x was qualified by running a qualification lot with 100 units both in STATS ChipPAC and UTAC.

Data between sites were analyzed as summarized in Table 1.

A passing result was recorded when the yield from receiving site met or exceeded yield from sending site as summarized in Table 2. Succeeding lots with increased quantity will be closely monitored once the device

has started production at UTAC.

Table 2. Test Product Transfer Qualification Lot Run

| GENERIC | Package | Lot Size | Test Site | Results |
|------------|---|----------|-----------|---------|
| ADSP-2147x | 196-Ball CSP_BGA, 12x12x1.41mm, 0.8mm pitch | 100 | UTAC | Passed |

No valid rejects were encountered during the said evaluation in both sending and receiving sites.

Rejects Verifications

5 valid rejects tested in STATS ChipPAC and UTAC having the same result.

Table 3. Setup verification using Reject units.

| Unit # | SCS | UTAC |
|--------|--------|--------|
| 1 | Failed | Failed |
| 2 | Failed | Failed |
| 3 | Failed | Failed |
| 4 | Failed | Failed |
| 5 | Failed | Failed |

ADSP-2147x Initial Process Study (Test Temperature = 130 degC)

| Key Datasheet Parameter | Datasheet Specs | | | | Site (STATS-ChipPac Singapore) | | | Site (UTAC Singapore) | | | | |
|-------------------------|-----------------|-----|--------|-------|--------------------------------|----------|-----|-----------------------|----------|-----|----------|------|
| | Min | Nom | Max | Units | Mean | Stdv | Cpk | Mean | Stdv | Cpk | GR&R (%) | NDC |
| SIDD | | | 0.0548 | A | 0.007 | 0.000569 | >10 | 0.009 | 0.000734 | >10 | 2.84676 | 50 |
| IIL | | | -10 | uA | -0.003 | 0.001481 | >10 | -0.012 | 0.001481 | >10 | 0.147 | 1918 |
| IiH | | | 10 | uA | 0.007 | 0.003333 | >10 | 0.015 | 0.001481 | >10 | 0.251 | 1126 |
| IOZL | | | -10 | uA | -0.002 | 0.002963 | >10 | -0.01 | 0.002222 | >10 | 0.0872 | 3245 |
| IOZH | | | 10 | uA | 0.007 | 0.004074 | >10 | 0.018 | 0.002222 | >10 | 0.105 | 2702 |
| VIL | | | 0.8 | V | 1.155 | 0.003704 | >10 | 1.16 | 0.003704 | >10 | 9.096 | 11 |
| VIH | 2 | | | V | 1.27 | 0.003704 | >10 | 1.275 | 0.003704 | >10 | 2.909 | 61 |
| VOL | | | 0.4 | V | 0.03 | 0.003704 | >10 | 0.029 | 0.003704 | >10 | 0.6212 | 228 |
| VOH | 2.4 | | | V | 3.105 | 0.002593 | >10 | 3.095 | 0.001852 | >10 | 0.1277 | 494 |