Qualification of 10-Layer Flip-Chip Package Substrate for Virtex-5

Report

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Revision History

The following table shows the revision history for this document.

Date	Version	Revision
12/14/07	1.0	Initial Xilinx release.

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Overview

This report summarizes the reliability testing results that were performed to qualify the 10-layer flip-chip package substrate for Virtex™-5 devices.

Qualification Objective

The objective of this qualification is to qualify the 10-layer flip-chip package substrate that will be used in previously qualified Virtex-5 packages.

Reliability Test Conditions and Results

The following tables provide a summary of reliability testing results, the environmental stress conditions, and the qualification vehicle information.

Based on the data gathered to date, all Virtex-5 device 10-layer flip-chip package substrates are qualified by extension, based on the satisfactory results and meeting all the qualification requirements for production releasing.

Table 1: **Reliability Test Conditions and Results for Silicon Precision Industries (SPIL) Assembly Site**

Test Vehicle (Device/Package)	Stress Conditions	Rel#	Sample Qty	Cum Device-Hr/Cyc	# of Failures
XC5VLX330T / FFG1738	TC-B: -55ºC/+125ºC, 1000 cycles; (Package level-4 preconditioning with Tpeak=245ºC performed prior to TC-B)	234907	21	159,000	0
		244607	25		
		244707	29		
		230507	20		
		230607	15		
		249007	7		
		248907	18		
		251907	8		
		251807	16		
XC5VSX95T / FFG1136	TC-B: -55ºC/+125ºC, 1000 cycles; (Package level-4 preconditioning with Tpeak=245ºC performed prior to TC-B)	244807	25	75,000	0
		244907	25		
		258907	25		
XC5VFX70T / FFG665	TC-B: -55ºC/+125ºC, 1000 cycles; (Package level-4 preconditioning with Tpeak=250ºC performed prior to TC-B)	260107	25	75,000	0
		260207	25		
		260307	25		
XC5VLX110T / FFG1136	TC-B: -55ºC/+125ºC, 1000 cycles; (Package level-4 preconditioning with Tpeak=245ºC performed prior to TC-B)	246007	25	75,000	0
		246107	25		
		248507	25		

Table 2: **Reliability Test Conditions and Results for Amkor Technology Assembly Site**

Test Vehicle (Device/Package)	Stress Conditions	Rel#	Sample Qty	Cum Device-Hr/Cyc	# of Failures
XC5VLX110T / FFG1136	TC-B: -55ºC/+125ºC, 1000 cycles; (Package level-4 preconditioning with Tpeak=245ºC performed prior to TC-B)	234507	30	155,000	0
		245807	25		
		245907	25		
		258707	25		
		258807	25		
		255507	25		