



# Reliability Report

## Reliability Data for CPC7512Z

**Report Title: CPC7512Z Qualification Report**

**Report Number: 2014-008**

**Date: 7/30/14**

**Introduction:**

This report summarizes the Reliability data of IXYS Integrated Circuits Division CPC7512Z. The Reliability data presented here were collected during IXYS IC Division product qualification. The purpose of this qualification was to verify IXYS IC Division Quality and Reliability requirements as outlined in IXYS IC Division internal specifications. The CPC7512Z is manufactured at IXYS IC Division and assembled at ATEC in the Philippines. The process is P10 and CPC7512Z is available in a 20L SOIC package type.

**Reliability Tests:**

Table 1 below provides the qualification tests that were performed. The stress tests and sample size are chosen based on IXYS IC Division internal specification and with the approval of the product development team and quality assurance.

**Table 1: CPC7512Z Reliability Tests Plan**

Product/ Package	Stress Test	Applicable Specs	Conditions	# of Lots	Sample Size (SS)	Total SS
CPC7512Z/ 20L SOIC	HTRB	Mil-Std-883 M1005 JESD22-A-108	125°C, 80% WVDC, 1000 hrs	1	111	111
CPC7512Z/ 20L SOIC	ESD	JESD22- A114-E	All Pins, 1.5kΩ, 100pF	1	9	9

**Reliability Test Results:**

The stress tests and associated results for CPC7512Z qualification are summarized in Table 2. The devices chosen for the qualification were from standard material manufactured through normal production test flow and electrically tested to datasheet limits prior to stressing. Then reliability stresses were conducted and electrically tested to datasheet limit at each interval and final readpoints.

**Table 2: CPC7512Z Reliability Tests Results**

Product/ Package	Stress/ Kits	Readpoint Final / Reject/ SS
CPC7512Z/ 20L SOIC	HTRB/ TE3424	1000 hrs. 0/111

### ESD Testing Results:

As part of this qualification, CPC7512Z was subjected to Human Body Model (HBM) ESD Sensitivity Classification testing using the KeyTek Zapmaster test system. The results are summarized in Table 3. All samples were electrically tested to data sheet limits before and after ESD stressing and they passed up to +/-1500V of HBM.

**Table 3: CPC7512Z ESD Results**

ESD Model	Product/Kit	Package	ESD Test Spec	RC Network	Highest Passed	Class
HBM	CPC7512Z/ TE3424	20L SOIC	JESD22, A114-E	1.5k $\Omega$ , 100pF	1500V	1C

### FIT (Failure in Time) Rate of CPC7512Z:

Table 4 provides sample size with testing summary for HTRB stress from this qualification. For HTRB, FIT rates were calculated based on the Acceleration Factor (AF) and equivalent device hours at 0.7eV of activation energy at 125°C test temperature and 40°C ambient use temperatures. The FIT rates came out to be 32.45 FITs for HTRB.

**Table 4: CPC7512Z FIT Rate Summary**

Qual Lot #	Stress Test	Product/Kits #	# of Devices	# of Fail	Hours Tested	Equivalent Dev. Hours	FIT Rate @ 60% CL
1	HTRB	CPC7512Z/ TE3424	111	0	1000	28,350,062	32.45

## Conclusion:

The qualification of CPC7512Z has completed and has met the FITs rate requirement for release.

## Approval:

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