IXYS
INTEGRATED CIRCUITS DIVISION

Reliability Report

Reliability Data for LBA716
8 Pin DIP Product

Report Title: **Reliability Data for LBA716 8 Pin DIP Product**

Report Number: **2012-001**

Date: **1/13/2012**

IXYS Integrated Circuits Division, 78 Cherry Hill Drive, Beverly, MA 01915, USA
Tel: 1-978-524-6700, Fax: 1-978-272-5273, WWW.IXYSIC.COM

Introduction:

This report summarizes the Reliability data of IXYS Integrated Circuits Division LBA716. The Reliability data presented here were collected during IXYS ICD's product qualification and Reliability Monitor data. The purpose of this qualification was to verify IXYS ICD Quality and Reliability requirements as outlined in IXYS ICD internal specifications. The LBA716 is manufactured at IXYS ICD and assembled at ATEC in the Philippines. The process is IXYS ICD P30.1 and LBA716 is available in a 8 Pin DIP package type.

Reliability Tests:

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

Table 1: LBA716 Reliability Tests

Product Package	Stress Test	Applicable Specs and Readpoints	Stress Conditions	# Lots	Sample Size	Total
LBA716 8 Pin DIP	HTRB	JESD22-A108	125C, 80% WVDC, 1000 hrs	2	105 150	255
LBA716 8 Pin DIP	Thermal Shock	Mil-Std-883, M1011	0 to 100°C, 10/10 dwells, 15 cycles	1	55	55
LBA716 8 Pin DIP	Temp Cycle	Mil-Std-883, N101 "B"	-55 to 125°C, 10/10 dwells, 300 cycles	1	55	55
LBA716 8 Pin DIP	MSL	J-STD-020D.1	IR Reflow, Level 1	1	50	50
LBA716 8 Pin DIP	Construction Analysis	Die Coat, Die Attach, Bondline, Bond Quality	Mechanical De Cap, SEM	1	5	5
LBA716 8 Pin DIP	ESD HBM	JESD22, A114-E	1.5kΩ, 100pF	1	3	3

Reliability Test Results:

The stress tests and associated results for LBA716 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: LBA716 Reliability Test Results

Product/ Package	Stress/ Kits	Readpoint 1 / Reject/ SS	Readpoint 2 / Reject/ SS	Readpoint 3 / Reject/ SS	Comments
LBA716 8 Pin DIP	HTRB TE2587	168 hrs. 0/105	500 hrs. 0/105	1000 hrs. 0/105	
LBA716 8 Pin DIP	HTRB TE2885	168 hrs. 0/150	500 hrs. 0/150	1000 hrs. 0/150	
LBA716 8 Pin DIP	Thermal Shock T50164	15 Cycles 0/55			
LBA716 8 Pin DIP	Temp Cycle T50164	300 Cycle 0/55			
LBA716 8 Pin DIP	MSL 1 T50164	IR Reflow Level 1 0/50			
LBA716 8 Pin DIP	Construction Analysis T50164	Die Coat 0/5	Die Attach 0/5	Bondline, Bond Quality 0/5	

ESD Testing Results:

As part of this qualification, the product LBA716 was subjected to Human Body Model (HBM) ESD Sensitivity Classification testing using a KeyTek Zapmaster 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 after +/- 8000V zapping.

Table3: Product LBA716 ESD Characterization Results

ESD Model	Kit Number	Package	ESD Test Spec	RC Network	Highest Passed	Class
HBM	LBA716 T50164	8 Pin Dip	JESD22, A114-E	1.5kΩ, 100pF	8000V	3B

FIT (Failure in Time) Rate of LBA716

Table 4 below summarizes the FIT rate from the HTRB data. Using the Reliability HTRB data, FIT rate was calculated based on the equivalent device hours at use condition of 40°C and stressed condition of 125°C at 0.7eV of activation. The FIT rate came out to be 14.13 FITs.

Table 4: LBA716 FIT Rate Summary

Product/ Stress	Lot Number	# of Devices	# of Failed	Hours Tested	Test Temp (°C)	Eq. Device Hours	FITs @ 60% CL
LBA716/ HTRB	TE2885 TE2587	255	0	1000	125	65,128,521	14.13

Conclusion:

The qualification of the product LBA716 has been successfully completed for the production release.