Reliability Report

CPC11XXN 4-Pin SOP Product
(Low Voltage 60v – 150v, Form B)

Report Title: **CPC11XXN 4-Pin SOP Product (Low Voltage 60v – 150v, Form B) Report**

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Introduction

This report summarizes the Reliability data of Clare's CPC11XXN 4-Pin SOP family products. The Reliability data presented here were collected during Clare's product qualification and ongoing monthly Reliability Monitoring Program (RMP). The silicon die level data collected on multiple product types, but share the same process technology and design rules (DMOS P27D) wafer fabrication facility and subcontract assembly location. The 4-Pin SOP package data were included from CPC1008N, CPC103XN since the package construction materials, leadframe and subcontract assembly location are the same for these 4-pin SOP products.

Reliability Tests:

Table 1 below provides the qualification tests that were performed for this qualification and as part of the Reliability Monitoring Program afterwards. The results apply to certain CPC11XXN and CPC21XXN products.

Table 1: CPC11XXN 4-Pin SOP Product Reliability Tests

Stress Test	Applicable Specs	Stress Conditions	Product/ Package	Number of Lots	Sample Size (SS)	Total SS
HTRB	Mil-Std-883	125°C, 80%	CPC1117N	1	105	105
Thermal Shock (T/S)	Mil-Std-883 M1011	0 to 100C, 10/10 dwell, 15 cycles	CPC1008N/ CPC1017N/ CPC1035N	4	55	220
Temp Cycle (T/C)	Mil-Std-883 M1011, "B"	-55 to 125C, 10/10 dwell, 300 cycles	CPC1008N/ CPC1017N/ CPC1035N	4	55	220

Reliability Test Results:

The stress tests and associated results for the CPC11XXN 4-Pin SOP Product 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: CPC11XXN 4-Pin SOP Product Reliability Test Results

Stress Test	Kits Number	Readpoint 1 / (Reject/ SS)	Readpoint 2 / (Reject/ SS)	Readpoint 3 / (Reject/ SS)	Comments
HTRB	TE2534	168 hrs.	500 hrs.	1000 hrs.	Reliability Monitor Data
		0/105	0/105	0/105	
Thermal Shock (T/S)	T38953 T21031	15 cycles			Reliability Monitor Data
		0/220			
Temp Cycle (T/C)	T38953 T21031	300 cycles			Reliability Monitor Data
		0/220			

FIT (Failure in Time) Rate on CPC11XXN 4-Pin SOP Product:

The Table 3 below summarizes the number of devices used for CPC11XXN reliability stress with associated failures. Using the HTRB data, FITs were calculated based on the Acceleration Factor (AF) and equivalent device hours at 0.7eV of activation energy according to the Clare's procedure P-04-25-WW for 125°C test temperature and 40°C ambient use temperatures. The calculated FITs from the reliability stress came out to be 34.31 for HTRB.

Table 3: CPC11XXN 4-Pin SOP Product FIT Rate Summary

Qual#	Stress	Kits	# of Devices	# of Fails	Hours Tested	Act. Energy	Acc. Factor	Equivalent Dev. Hours	FIT Rate @ 60% CL
1	HTRB	TE2534	105	0	1000	0.7	255.41	26,817,626	34.31