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Continuity of document content
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Continuity of ordering part numbers
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Cypress Semiconductor
Product Qualification Report

QTP# 95021
November 2013

Programmable Skew Clock Buffer, Fab2	
CY7B9910-SC	**Programmable Skew Clock Buffer Driver (TTL)**
CY7B9920-SC	**Programmable Skew Clock Buffer Driver (CMOS**

CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:

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PRODUCT DESCRIPTION (for Qualification)			
Information provided in this document is intended for generic qualification and technically describe the Cypress part supplied:			
Marketing Part #:	CY7B9910 and CY7B9920		
Device Description:	PROGRAMMABLE SKEW CLOCK BUFFER (PSCB) in 24 Pins SOIC Package		
Cypress Division:	Cypress Semiconductor Corporation, DataCom Division		
Overall Die (or Mask) REV Level (pre-requisite for qualification):		Rev. A	
Die Size (stepping):	110 mils x 150 mils	What ID markings on Die:	7B991A/7B992A
Cypress Qualificatior completion/Marketing Availability Dates (Current RE):			April 1995

TECHNOLOGY/FAB PROCESS DESCRIPTION S4AD-5			
Number of Metal Layers:	2	Metal Composition:	Metal1: Ti, TiW, 1%SiAl Metal2: Ti, 1% SiAl
Passivation Type and Materials:			3,000A TEOS + 15,000A Oxynitride
Free Phosphorus contents in top glass layer(%)			None
Die Coarting(s), if used:			N/A
Generic Process Technology/Design Rule (µ-drawn):			Single Poly, Double Metal / 0.8 um BiCMOS
Gate Oxide Material/Thickness (MOS):			SiO_2 - Control gate 195Å
Name/Location of Die Fab (prime) Facility:			Cypress Semiconductor, Round Rock, Tx (Fab2)
Die Fab Line ID/Wafer Process ID:			Fab2/ STARM13

PLASTIC PACKAGE / ASSEMBLY DESCRIPTION				
Package Outline, Type, or Name:	24-Pins Plastic Small Outline (SOIC)			
Die to Package edge clearance:	x = 90 mils per side; y = 223 mils per side			
Mold Compound Name/Manufacturer:	Sumitomo EME-6300H(R)			
Lead Frame material:	Copper			
Lead Finish, composition:	Solder Plated, 85%Sn, 15% Pb			
Die Attach Area Plating:	Silver		Die Attach Pad Dim:	170mils x 170 mils
Die Attach Method:	Epoxy		Die Attach Material:	Silver Epoxy
Wire Bond Method:	Thermocompression		Wire Material/Size:	Gold / 1.3 mil
Name/Location of Assembly (prime) facility:	Omedata, Indonesia			
Assembly Line ID and Process ID:	INDNS-0/S243			

OTHER INFORMATION

For approval by similarity, identify other devices using the same basic die with bonding or metal mask options or test selections and explain:

CY7B9910/CY7B9920 TTL/CMOS Level Options

If Cypress is planning any changes in the near future, identify change (Qtr/Yr) in 4Q93:

Die Design Rev/ Shrink:	None	Die Process Change	None
Fab/ Assembly site change	None	Cross License/Licensor	None

Other Devices to be qualified in this technology	
Other Packages to be qualified for this devices	
ESD Voltage Rating (per MIL-STD-008, Method 3018)	4,400V
Flammability Classification (UL-94)	Plastic: UL-94V0 1/8
Alternate Fab/Assembly Locations:	Assembly: Anam, Korea

Please attach the following Qualification / Reliability data for the die revision and Package Type, for the Fab and Assembly sites identified above (mark [X] if included):

1	X	HAST (5.5V, 140C, 85% RH, 15psig)	8	X	Operating Life at (temp)	150/125C
2	X	Temperature Cycles (-40 C to 125 C)	9	X	Steady State Life (HTSSL, 5.75V, 125/150 C)	
3	X	Temperature Cycles (-65 C to 150 C)	10		Temperature Humidity Bias (5.5V, 85 C, 85%RH)	
4		Data Retention Bake, Plastic (185 C)	11	X	Latchup Testing	
5		Data Retention Bake, Hermetic (250 C)	12	X	Other	Internal Water Vapor
6	X	Autoclave (PCT, 121 C, 100%RH)	13	X	Other	ESD-CDM
7	X	ESD Tests (MIL-STD 883, method 3015)	14		Other	

PRODUCT INFORMATION FOR QUALIFICATION BY SIMILARITY

Product Family: **BiCMOS Clock (CY7C9910/9920)**

Mfg Division: **Cypress Semiconductor**

Supplier's Part Number	Rated Speed	Pkg Size/ Type	Die Revision	Die Size mil x mil (stepping)	Design Rule ( )	Fabrication		Passivation Type	Mold Compound	Assembly Line Location	ESD Volt Rating
						Process ID	Line ID				
CY7B9910/ -**SC CY7B9220	0.5 ns to 0.7 ns	24-Pin SOIC	A	110 x 150	0.8	SM13B	2	Plasma Ox + Oxynitride	Sumitomo	Anam-Korea Alphatec-Thailand Omedata, Indonesia	>2,200V HBM

DEVICE RELIABILITY SUMMARY

Device Type(s): CY7B991/CY7B992/CY7B9910/CY7B9920

Wafer Fab: Fab 2 – Round Rock, Tx

Pkg Description: 24-pins SOIC

Assembly: Anam-Korea
Omedata - Indonesia
Alphatec - Thailand

High Temperature Dynamic Operating Life (HTCL, 5.75,150C – Early Failure Rate)						
Device	Assy Lot #	Fab lot #	48 Hours			Cumulative
CY7B991-JC	49304967	2332696	0/322			0/1430
CY7B991-JC	49304968	2332696	0/426			
CY7B991-JC	49306462	2334877	0/143			
CY7B992-LMB	21930627	2334877	0/539			

High Temperature Dynamic Operating Life (HTOL, 5.5V, 125C) – Early Failure Rate						
Device	Assy Lot #	Fab lot #	24 Hours	96 Hours		Cumulative
CY7B991-JC	89719	1222664		0/250		0/1234
CY7B991-JC	89719	1222664		0/284		
CY7B991-JC	96360	1246520	0/900	0/900		

High Temperature Dynamic Operating Life (HTOL, 6.6V, 125C) Early Failure Rate						
Device	Assy Lot #	Fab lot #	48 Hours			Cumulative
CY7B992-LC	89490	1228851	0/325			0/325

High Temperature Dynamic Operating Life (HTOL, 5.75, 150C) – Latent Failure Rate						
Device	Assy Lot #	Fab Lot #	80 Hours	500 Hours		Cumulative
CY7B991-JC	49304968	2332696	0/139	0/139		0/255
CY7B992-LMB	219306627	2334877	0/116	0/116		

High Temperature Dynamic Operating Life (HTOL, 5.5V, 125C) –Latent Failure Rate							
Device	Assy Lot #	Fab Lot #	96 Hours	168 Hours	1000 Hours	2000 Hours	Cumulative
CY7B991-JC	89719	1222664		0/250	0/250	0/250	0/572
CY7B992-LC	89490	1228851	0/322		0/210		

DEVICE RELIABILITY SUMMARY

Device Type(s): CY7B991/CY7B992/CY7B9910/CY7B9920

Wafer Fab: Fab 2 – Round Rock, Tx

Pkg Description: 24-pins SOIC

Assembly: Anam-Korea
Omedata - Indonesia
Alphatec - Thailand

Group C, Subgroup 1, Life Test (HTOL, 5.5V, 150 C)						
Device	Assy Lot#	Fab Lot#	184 Hours			Cumulative
CY7B991-LMB	97739	1228852	0/50			0/252
CY7B991-LMB	219305442	2332696	0/77			
CY7B992-LMB	89490	1228851	0/48			
CY7B992-LMB	219306627	2334877	0/77			

High Temperature Steady Life Test (HTSSL, 5.75V, 150C)						
Device	Assy Lot#	Fab Lot#	80 Hours	168 Hours		Cumulative
CY7B991-JC	49304968	2332696	0/96	0/96		0/172
CY7B992-LC	219306627	2334877	0/76			

High Temperature Steady Life Test (HTSSL, 5.75V, 125C)						
Device	Assy Lot#	Fab Lot#	168 Hours	336 Hours		Cumulative
CY7B991-JC	89719	1222664	0/76	0/75[1]		0/148
CY7B992-LC	89490	1228851	0/72[2]	0/71[3]		

Pressure Cooker Test (PCT, 121C 100%RH) – Pre-Condition 40 Temperature Cycles Condition C						
Device	Assy Lot#	Fab Lot#	168 Hours			Cumulative
CY7B991-JC	89719	1222664	0/46	0/46		0/46

[1] 1 EOS

[2] 4 EOS

[3] 1 EOS

DEVICE RELIABILITY SUMMARY

Device Type(s): CY7B991/CY7B992/CY7B9910/CY7B9920

Wafer Fab: Fab 2 – Round Rock, Tx

Pkg Description: 24-pins SOIC

Assembly: Anam - Korea
Omedata - Indonesia
Alphatec - Thailand

Temperature Cycles (TC - Condition C, -65 C to 1 0 C)						
Device	Assy Lot#	Fab Lot#	100 Hours	1000 Hours		Cumulative
CY7B991-LC	89490	1228851	0/45	0/44[4]		0/45

Temperature Cycles (TC – JEDEC22, Condition B, -40C to 125C)						
Device	Assy Lot#	Fab Lot#	300 Hours	1000 Hours		Cumulative
CY7B991-JC	89719	1222664	0/46	0/46		0/46

High Accelerated Saturation Test (HAST, 5.5V, 140C 85% RH) Pre-Condition 48hrs PCT						
Device	Assy Lot#	Fab Lot#	100 Hours			Cumulative
CY7B991-JC	89719	1222664	0/46			0/46

[4] 1 EOS.

DEVICE RELIABILITY SUMMARY

Device Type(s): CY7B991/CY7B992/CY7B9910/CY7B9920

Wafer Fab: Fab 2 – Round Rock, Tx

Pkg Description: 24-pins SOIC

Assembly: Anam - Korea
Omedata - Indonesia
Alphatec - Thailand

Device Reliability Summary

PROGRAMMABLE CLOCK SKEW B UFFER (FAB 2)		
CYB9910/9920		
Electrostatic Discharge		
Human Body Model Circuit per Mil Std 883, Method 3015		
> +4400V	Unit 1	> -4400V
> +4400V	Unit 2	> -4400V
> +4400V	Unit 3	> -4400V
Charge Device Model		
> +2000V	Unit 1	> -2000V
> +2000V	Unit 2	> -2000V
> +2000V	Unit 3	> -2000V

Latchup (FAB2)
Testing to Cypress Internal Latch-up Procedure
3 Tests: 0/3
Current Injection = 200mA Trigger
Hot Socket = V_{CC} 0 – 8V
Temp = 125 C

Document History Page

Document Title: QTP# 95021:Programmable Skew Clock Buffer "CY7B9910-SC/CY7B9920-SC", Fab2
Document Number: 001-90212

Rev.	ECN No.	Orig. of Change	Description of Change
**	4202388	HSTO	Initial Spec Release

Distribution: WEB

Posting: None