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Continuity of document content
The fact that Infineon offers the following product as part of the Infineon product portfolio does not lead to any changes to this document. Future revisions will occur when appropriate, and any changes will be set out on the document history page.

Continuity of ordering part numbers
Infineon continues to support existing part numbers. Please continue to use the ordering part numbers listed in the datasheet for ordering.

Cypress Semiconductor
Product Qualification Report

QTP#92202&93462
February 1994

Programmable Skew Clock Buffer Family	
CY7B991	TTL Programmable Skew Clock Buffer
CY7B992	CMOS Programmable Skew Clock Buffer

CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:

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PRODUCT QUALIFICATION HISTORY

Qual Report		Description of Qualification Purpose		Date Comp
92202 & 93462		Programmable skew clock buffer (PSCB) product qualification		Feb 94

PRODUCT DESCRIPTION (for qualification)			
Qualification Purpose: Qualify CY7B991 and CY7B992 product.			
Marketing Part #:	CY7B991 and CY7B992		
Device Description:	Programmable skew clock buffer (PSCB) product qualification		
Cypress Division:	Cypress Semiconductor Corporation, DataCom Group		
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

TECHNOLOGY/FAB PROCESS DESCRIPTION E3			
Number of Metal Layers:	2	**Metal Composition:**	Metal 1: 500Å Ti, 1200A TiW, 6,000A Al, 500A Ti Metal 2: 1,500A Ti, 10,000A Al
Passivation Type and Materials:	3,000A TEOS + 15,000A Oxynitride		
Free Phosphorus contents in top glass layer(%):	0% PSG		
Die Coating(s), if used:	None		
Generic Process Technology/Design Rule (□-drawn):	Single Poly, Double Metal / 0.8mm BiCMOS		
Gate Oxide Material/Thickness (MOS):	SiO2 - Control gate 195Å		
Name/Location of Die Fab (prime) Facility:	Cypress Semiconductor, San Jose, CA (Fab 1) Cypress Semiconductor, Round Rock, TX (Fab 2)		
Die Fab Line ID/Wafer Process ID:	Fab 1/STARM13 Fab 2/STARM13		

PLASTIC PACKAGE/ASSEMBLY DESCRIPTION	
Package Outline, Type, or Name:	32-pin Rectangular Plastic Leaded Chip Carrier (PLCC)
Die to Package edge clearance:	x=170 mils per side; y= 200 mils per side
Mold Compound Name/Manufacturer:	Sumitomo EME-6300H(R)
Lead Frame Material:	Copper
Lead Finish, Composition:	Solder Dipped, 63%Sn, 37%Pb
Die Attach Area Plating::	Silver
Die Attach Pad Dim:	PLCC: 200 mils x 200 mils
Die Attach Method:	Syringe dispense
Die Attach Material:	Silver Epoxy
Wire Bond Method:	Thermocompression
Wire Material/Size:	Gold / 1.3 mil
Name/Location of Assembly (prime) facility:	ANAM, Korea
Assembly Line ID and Process ID:	ANAM / J32RB

HERMETIC PACKAGE/ASSEMBLY DESCRIPTION	
Package Outline, Type, or Name:	32-pin Rectangular Leaded Chip Carrier (LCC)
Die to Package edge clearance:	x=166 mils per side; y= 195 mils per side
Mold Compound Name/Manufacturer:	N/A
Lead Frame Material:	N/A
Lead Finish, Composition:	Solder Dipped, 63%Sn, 37%Pb
Die Attach Area Plating::	None
Die Attach Pad Dim:	LCC: 250 mils x 250 mils
Die Attach Method:	Paste
Die Attach Material:	Silver Glass
Wire Bond Method:	Ultrasonic
Wire Material/Size:	Aluminum / 1.25 mil
Name/Location of Assembly (prime) facility:	Alphatec, Bangkok, Thailand
Assembly Line ID and Process ID:	Alpha-X/L32Rl

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:

None

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

Die Design Rev./Shrink:	Rev. A	Die Process Change:	None
Fab/Assembly site change:		Cross Licensee/Licensor:	None
Other Devices to be qualified in this technology:		None	
Other Packages to be qualified for this device:		LCC	
ESD Voltage Rating (per MIL STD-883, Method 3015):		> 2,200V	
Flammability Classification (UL-94V):	None		
Alternate Fab/Assembly Locations:	Fab1: San Jose, CA Fab2: Round Rock, TX		

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, 140°C, 85%RH, 15psig)	8	X	Operating Life at (temp):	125°C
2	X	Temperature Cycles (-40°C to 125°C)	9	X	Steady State Life (HTSSL, 5.25V, 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		Other:	
7	X	ESD Tests (MIL-STD 883, method 3015)	14		Other:	

PRODUCT INFORMATION FOR QUALIFICATION BY SIMILARITY

Product Family: BiCMOS Clock (CY7C991/992)
Mfg Division: Cypress Semiconductor

Supplier's Part Number		Rated Speed	Pkg Size/ Type	Die Revision	Die Size mil x mil (stepping)	Design Rule (µ)	Fabrication		Passivation Type	Mold Compound	Assembly Line Location	ESD Volt Rating	Availability (mm/yy)
							Process ID	Line ID					
CY7B991/ CY7B922 CY7B991/ CY7B922	-**JC/JI -**LC/LI/LMB	0.5 ns to 0.7 ns	32-pin PLCC 32-pin LCC	A	110 x 150	0.8µ	SM13B	1,2	Plasma Ox + Oxynitride	Sumitomo	Anam-Korea Alphatec-Thailand	>2,200V HBM	Now

DEVICE RELIABILITY SUMMARY

Device Type(s):	CY7B991/CY7B992	Wafer Fab:	Fab 1 - San Jose, CA
Pkg Description:	32-pins PLCC 32-pins LCC	Assembly:	Anam - Korea Alphatec - Thailand

High Temperature Dynamic Operating Life (HTOL, 5.5V, 125°C) - Early Failure Rate						
Device	Lot#	24 Hours	48 Hours	96 Hours		Cumulative
CY7B991-JC	1222664			0/535		0/1760
CY7B991-JC	1246520	0/900		0/900		
CY7B992-LC	1228851		0/325			

High Temperature Dynamic Operating Life (HTOL, 5.5V, 125°C) - Latent Failure Rate						
Device	Lot#	96 Hours	168 Hours	1000 Hours	2000 Hours	Cumulative
CY7B991-JC	1222664		0/250	0/250	0/250	0/572[1]
CY7B992-LC	1228851	0/322		0/210		

Group C, Subgroup 1, Life Test (HTOL, 5.5V, 150°C)						
Device	Lot#	184 Hours				Cumulative
CY7B991-LMB	1228852	0/50				0/98
CY7B992-LMB	1228851	0/48				

High Temperature Steady State Life Test (HTSSL, 5.75V, 125°C)						
Device	Lot#	168 Hours	336 Hours			Cumulative
CY7B991-JC	1222664	0/75	0/75			0/146[2]
CY7B992-LC	1228851	0/71	0/71			

Temperature Cycle (Condition B, -40°C to 125°C)						
Device	Lot#	300 Cycles	1000 Cycles			Cumulative
CY7B991-JC	1222664	0/46	0/46			0/46

Temperature Cycle (Condition C, -65°C to 150°C)						
Device	Lot#	100 Cycles	1000 Cycles			Cumulative
CY7B992-LC	1228851	0/44	0/44			0/44[3]

Autoclave (PCT, No bias, 121°C, 100% RH, 15 psig)						
Device	Lot#	168 Hours				Cumulative
CY7B991-JC	1222664	0/46				0/46

High Accelerated Saturation Test (HAST, 5.5V, 140°C, 85% RH, 15 psig)						
Device	Lot#	100 Hours				Cumulative
CY7B991-JC	1222664	0/46				0/46

[1] 3 EOS from lot # 1228851.
[2] 1 ESD from lot # 1222664. 5 EOS from lot # 1228851.
[3] 1 EOS

Device Reliability Summary

PROGRAMMABLE CLOCK SKEW BUFFER (FAB 1) CY7B992		
Electrostatic Discharge Human Body Model Circuit per Mil Std 883, Method 3015		
> +2200V	Unit 1	> -2200V
> +2200V	Unit 2	> -2200V
> +2200V	Unit 3	> -2200V
(Highest passing voltage, +10% Guard-banded)		

Latchup (FAB1)
Testing to Cypress Internal Latch-up Procedure
3 Tests: 0/3
Current Injection = 200mA Trigger
Hot Socket = V_{CC} 0 - 7V
V_{CC} Oscillation : V_{CC} = 3.5 - 7.5V at 1MHz
Temp = 150°C

Other miscellaneous tests
Input/Output capacitance : Passed
Read & Record : Passed
Current Density : Passed

DEVICE RELIABILITY SUMMARY

Device Type(s):	CY7B991/CY7B992	Wafer Fab:	Fab 2 - Round Rock, TX
Pkg Description:	32-pins PLCC 32-pins LCC	Assembly:	Anam - Korea Alphatec - Thailand

High Temperature Dynamic Operating Life (HTOL, 5.5V, 125°C) - Early Failure Rate						
Device	Lot #	48 Hours				Cumulative
CY7B991-JC	49304967	0/322				0/1429
CY7B991-JC	49304968	0/426				
CY7B991-JC	49306462	0/143				
CY7B992-LC	219306627	0/539				

High Temperature Dynamic Operating Life (HTOL, 5.5V, 125°C) - Latent Failure Rate						
Device	Lot#	80 Hours	500 Hours			Cumulative
CY7B991-JC	49304968	0/139	0/139			0/255
CY7B992-LMB	219306627	0/116	0/116			

Group C, Subgroup 1, Life Test (HTOL, 5.5V, 150°C)						
Device	Lot#	184 Hours				Cumulative
CY7B991-LMB	219305442	0/77				0/154
CY7B992-LMB	219306627	0/77				

High Temperature Steady State Life Test (HTSSL, 5.75V, 125°C)						
Device	Lot#	80 Hours	168 Hours			Cumulative
CY7B991-JC	49304968	0/96	0/96			0/172
CY7B992-LMB	219306627	0/76				

Device Reliability Summary

PROGRAMMABLE CLOCK SKEW BUFFER (FAB 2) CY7B992		
Electrostatic Discharge Human Body Model Circuit per Mil Std 883, Method 3015		
> +2200V	Unit 1	> -2200V
> +2200V	Unit 2	> -2200V
> +2200V	Unit 3	> -2200V
(Highest passing voltage, +10% Guard-banded)		

Latchup (FAB2)
Testing to Cypress Internal Latch-up Procedure
3 Tests: 0/3
Current Injection = 200mA Trigger
Hot Socket = V_{CC} 0 - 7V
V_{CC} Oscillation : V_{CC} = 3.5 - 7.5V at 1MHz
Temp = 150°C

Other qualifications that affect this product family or process	
Qual Nbr	Qualification Description
92441	64K BiCMOS SRAM/SM23B TECHNOLOGY QUALIFIED IN FAB 2

CYPRESS QUALIFICATION REPORT

Device ID:	CY7B161/162/164/166 CY7B185	Prod. Family:	64K BiCMOS SRAM	Mask ID:	6A166
Status:	FULL QUAL	Results:	PASS	FIT Rate (FITs):	7
Complete Date:	November, 1993				
Process ID:	SM23B	Technology:	BiCMOS	Process Loc:	Round Rock, TX
Package:	24-pins, 300-mil SOJ	Mold Compound:	Sumitomo EME-6300H(R)	Lead Frame:	Copper
Die Attach Mat:	Silver Epoxy	Package Loc:	Omedata, Indonesia	Test Loc:	San Jose, CA

Cypress Test No.	Stress/Test	Reference Method	Actual Conditions			Status *	Qualification Data Reference	Test Result	
			Temp/Bias	Hrs/Cyc	SS/Fail			Pass	Fail
22	Early Failure Rate	29-00020	150°C/5.75V	12 Hrs.	0/1123	C	QTP# 92441	P	
				48 Hrs.	0/2814	C	QTP# 92441	P	
22A	Latent Failure Rate	29-00020	150°C/5.75V	80 Hrs.	0/2813	C	QTP# 92441	P	
				500 Hrs.	1/2452[1]	C	QTP# 92441	P	
37A	High Temp. Steady State	29-00020	150°C/5.75V	80 Hrs.	0/151	C	QTP# 92441	P	
				168 Hrs.	0/227	C	QTP# 92441	P	
12	Temperature Cycle	JEDEC22, COND. B	40°C to 125°C	300 Cyc.	0/135	C	QTP# 92441	P	
				500 Cyc.	0/135	C	QTP# 92441	P	
24	Pressure Pot	29-00047	121°C. 100%RH, 30PSIA	168 Hrs.	0/90	C	QTP# 92441	P	
23a	HAST	29-00063	5.5V,140°C 85%RH	128 Hrs.	0/90	C	QTP# 92441	P	
22B	Long Life Verification	29-00020	150°C,5.75V	1000 Hrs.	0/332	C	QTP# 92441	P	
				2000 Hrs.	0/332	C	QTP# 92441	P	

* I - Interim, C - Complete
[1] Particle related reject.

Document History Page

Document Title: QTP 92202: PROGRAMMABLE SKEWCLOCK BUFFER PRODUCT QUALIFICATION REPORT
Document Number: 001-90729

Rev.	ECN No.	Orig. of Change	Description of Change
**	4255842	ZIJ	Initial spec release.

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Posting: None