Please note that Cypress is an Infineon Technologies Company.
The document following this cover page is marked as “Cypress” document as this is the company that originally developed the product. Please note that Infineon will continue to offer the product to new and existing customers as part of the Infineon product portfolio.

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
Qualification Report

QTP# 98266
June 2013

DEEP SYNCHRONOUS FIFOS R42HD TECHNOLOGY, FAB 4	
CY7C4255/ CY74265	8K/16K x 18 SYNCHRONOUS FIFOS
CY7C4261/ CY7C4271	16K/32K x 9 SYNCHRONOUS FIFOS

CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:

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Quality Engineering Director
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PRODUCT QUALIFICATION HISTORY

Qual Report	Description of Qualification Purpose	Date Comp
98266	QTP 98266: New Product 7042650 Deep 8yn¢ FIFO R42HD - Fab4	Dec. 1998
98064	NEW FAB PROCESS IN FAB 4, RAM 42HD- 7C1903HC	April 1998

PRODUCT DESCRIPTION (for qualification)			
Qualification Purpose:	Upgrade Deep Sync FIFOs products (CY7C4255/4265/4261/4271) from R30 Technology to R42HD Technology.		
Marketing Part #:	CY7C4265		
Package:	64-pin TQFP		
Device Description:	16K x 18 Synchronous FIFOs, R42HD Technology		
Cypress Division:	Cypress Semiconductor Corporation ... DCD Division		
Overall Die (or Mask) REV Level (pre-requisite for qualification):	Rev. C		
Die Size (stepping):	141 mils x 138 mils	What ID markings on Die:	7C4265A

TECHNOLOGY/FAB PROCESS DESCRIPTION – R42HD			
Number of Metal Layers:	2	Metal Composition:	Metal 1: .500 TiW/6000 Al -5%Cu/1200 TiW Metal 2: .500 TiW/8000 Al -5%Cu/300 TiW
Passivation Type and Materials:	7000 SiO_2 + 6000 Si_3N_4		
Free Phosphorus contents in top glass layer(%):	0%		
Die Coating(s), if used:	None		
Generic Process Technology/Design Rule (µ-drawn):	CMOS, Double Metal /0.42 µm		
Gate Oxide Material/Thickness (MOS):	SiO_2 / 110		
Name/Location of Die Fab (prime) Facility:	Cypress Semiconductor – Bloomington, MN		
Die Fab Line ID/Wafer Process ID:	Fab4/R42HD		

PLASTIC PACKAGE/ASSEMBLY DESCRIPTION			
Package Outline, Type, or Name:	64-pin TQFP		
Mold Compound Name/Manufacturer:	Nitto MP-8000		
Lead Frame material:	Copper		
Lead Finish, composition:	Solder Plated, 90%Sn, 10%Pb		
Die Attach Area Plating:	Silver Spot		
Die Attach Method:	Epoxy	Die Attach Material:	Ablestik 8361H
Wire Bond Method:	Thermosonic	Wire Material/Size:	Gold / 1.3 mil
JESD22-A112 Moisture Sensitivity Level:	Level 3 (previous qual)		
Name/Location of Assembly (prime) facility:	Anam, Korea (KOREA-Q)		

Note: Please contact a Cypress Representative for other packages availability.

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENT

Stress/Test	Test Condition (Temp/Bias)	Result P/F
High Temperature Operating Life Early Failure Rate	Dynamic Operating Condition, Vcc Max = 5.75V, 150C Dynamic	P
High Temperature Operating Life Latent Failure Rate	Dynamic Operating Condition, Vcc Max =5.5V, 150C	P
High Accelerated Saturation Test (HAST)	130C, 5.5V,85%RH Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs, 30C/60%RH+3IR-Reflow, 220C+5, 0C	P
Temperature Cycle	MIL-STD-883C, Method 1010, Condition C, -65C to 150C Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs, 30C/60%RH+3IR-Reflow, 220C+5, 0C	P
Pressure Cooker	121C, 100%RH Precondition:JESD22 Moisture Sensitivity MSL3 192 Hrs, 30C/60%RH+3IR-Reflow, 220C+5, 0C	P
High Temperature Storage	150C, No Bias	P
High Temperature Steady State life	150C, 5.75V, Vcc Max	P
Electrostatic Discharge Human Body Model (ESD-HBM)	2,200V JESD22, Method A114-B	P
Electrostatic Discharge Charge Device Model (ESD-CDM)	1000V JESD22-C101	P
Low Temperature Operating Life	-30C, 6.5V, 8MHZ	P

RELIABILITY FAILURE RATE SUMMARY

Stress/Test	Device Tested/ Device Hours	# Fails	Activation Energy	Thermal AF[4]	Failure Rate
High Temperature Operating Life Early Failure Rate[1]	1320	0	N/A	N/A	0 PPM
High Temperature Operating Life[2,3] Long Term Failure Rate	791,500DHRs	0	0.7	170	7 FIT[5]

[1] A production burn-in of 24 Hrs at 150C, 4.5V is required for the product.
[2] Assuming an ambient temperature of 55C and a junction temperature rise of 15C.
[3] Chi-squared 60% estimations used to calculate the failure rate.
[4] Thermal Acceleration Factor is calculated from the Arrhenius equation

$$AF = \exp\left[\frac{E_A}{k}\left[\frac{1}{T_2} - \frac{1}{T_1}\right]\right]$$

where:

E_A =The Activation Energy of the defect mechanism.
k = Boltzmann's constant = 8.62×10^{-5} eV/Kelvin.
T_1 is the junction temperature of the device under stress and T_2 is the junction temperature of the device at use conditions.

[5] *Long Term Failure Rate is based on R42HD Technology, 1MEG SRAM Qualification (QTP 98064)*

Reliability Test Data
QTP #: 98266

DEVICE	ASSY-LOC	FABLOT#	ASSYLOT#	DURATION	S/S	REJ	FAIL MODE
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE (150C, 5.75V)							
CY7C4265-AC	KOREA-Q	4836524	619814558	48	734	0	
CY7C4265-AC	KOREA-Q	4836524	619814558	48	595	0	
STRESS: ESD-CHARGE DEVICE MODEL (1000V)							
CY7C4265-AC	KOREA-Q	4836524	619814558	COMP	3	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER MIL STD 883, METHOD 3015 (2200V)							
CY7C4265-AC	KOREA-Q	4836524	619814558	COMP	3	0	
STRESS: PRESSURE COOKER TEST (121C, 100%RH), PRE COND 192 HR 30C/60%RH							
CY7C4265-AC	KOREA-Q	4836524	619814558	168	50	0	

Reliability Test Data
QTP #: 98064

DEVICE	ASSY-LOC	ABLOT#	ASSYLOT#	DURATION	S/S	REJ	FAIL MODE
STRESS:	***ESD-CHARGE DEVICE MODEL, 1000V***						
CY7C109-VC	INDNS-O	4738602	519712560	COMP	3	0	
STRESS:	***ESD-HUMAN BODY CIRCUIT PER MIL STD 883, METHOD 3015, 2200V***						
CY7C109-VC	INDNS-O	4738602	519712560	COMP	3	0	
STRESS:	***HI-ACCEL SATURATION TEST (140C, 5.5V), PRECOND. 192 HRS 30C/60%RH***						
CY7C109-VC	INDNS-O	4738602	519712560	128	46	0	
CY7C109-VC	INDNS-O	4738564	519712898	128	46	0	
CY7C109-VC	INDNS-O	4738564	519712898	256	46	0	
CY7C109-VC	INDNS-O	4739644	519714390	128	46	0	
STRESS:	***HIGH TEMPERATURE STORAGE (165C, NO BIAS)***						
CY7C109-VC	INDNS-O	4738602	519712560	336	46	0	
CY7C109-VC	INDNS-O	4738602	519712560	500	46	0	
CY7C109-VC	INDNS-O	4738602	519712560	1000	46	0	
STRESS:	***HIGH TEMP STEADY STATE LIFE TEST (150C, 5.75V)***						
CY7C109-VC	INDNS-O	4738602	519712560	80	78	0	
CY7C109-VC	INDNS-O	4738602	519712560	168	78	0	
CY7C109-VC	INDNS-O	4739644	519714390	80	78	0	
CY7C109-VC	INDNS-O	4739644	519714390	168	78	0	
STRESS:	***HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE (150C, 5.75V)***						
CY7C109-VC	INDNS-O	4739644	519714390	80	528	0	
CY7C109-VC	INDNS-O	4739644	519714390	500	527	0	
CY7C109-VC	INDNS-O	4745042	519800651L1	80	529	0	
CY7C109-VC	INDNS-O	4745042	519800651L1	500	529	0	
STRESS:	***EXTENDED DYNAMIC BURN-IN (150C, 5.75V)***						
CY7C109-VC	INDNS-O	4739644	519714390	1000	527	0	
STRESS:	***COLD LIFE TEST (-30C, 6.5V)***						
CY7C109-VC	INDNS-O	4738602	519712560	500	45	0	
CY7C109-VC	INDNS-O	4738602	519712560	1000	45	0	
STRESS:	***READ & RECORD LIFE TEST (150C, 5.75V)***						
CY7C109-VC	INDNS-O	4738602	519712560	48	10	0	
CY7C109-VC	INDNS-O	4738602	519712560	500	10	0	
STRESS:	***TC COND. C, -65 TO 150C, PRECOND. 192 HRS 30C/60%RH***						
CY7C109-VC	INDNS-O	4738602	519712560	300	46	0	
CY7C109-VC	INDNS-O	4738602	519712560	1000	46	0	
CY7C109-VC	INDNS-O	4738564	519712898	300	46	0	
CY7C109-VC	INDNS-O	4739644	519714390	300	46	0	

Document History Page

Document Title: QTP # 98266 : DEEP SYNCHRONOUS FIFOS (CY7C4255/ CY74265, CY7C4261/ CY7C4271) R42HD TECHNOLOGY, FAB 4
Document Number: 001-87921

Rev.	ECN No.	Orig. of Change	Description of Change
**	4026944	ILZ	Initial Spec Release Qualification report published on Cypress.com is not in spec format. Initiated spec for QTP 98266 and removed all Cypress reference spec and replaced with Industry standard. Updated package availability based on current qualified assembly

Distribution: WEB

Posting: None