

Cypress Semiconductor Qualification Report

QTP# 97344 VERSION 1.0
March, 1998

R32D Technology - Metal 2 Hot Aluminum

CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:

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PRODUCT DESCRIPTION (for qualification)	
Qualification Purpose: Replace Tungsten plug with Hot Aluminum on Metal 2	
Marketing Part #:	CY7C1049
Package:	36-pin, 400-mil SOJ
Device Description:	512K x 8 Static RAM
Cypress Division:	Cypress Semiconductor Corporation
Overall Die (or Mask) REV Level (pre-requisite for qualification):	Rev. A
What ID markings on Die:	7C1049A

TECHNOLOGY/FAB PROCESS DESCRIPTION - R32D			
Number of Metal Layers:	2	Metal Composition:	Metal 1: Al-Cu/TiW Metal 2: TiW/Al-Cu/TiW
Passivation Type and Materials:	Silicon Dioxide 7,000Å + Silicon Nitride 6,000Å		
Number of Transistors in device	26,239,686		
Number of Gates in devices	6,500,000		
Free Phosphorus contents in top glass layer(%):	0%		
Die Coating(s), if used:	N/A		
Generic Process Technology/Design Rule (μ -drawn):	CMOS, Single Local Interconnect, Double Metal /0.5 μ m		
Gate Oxide Material/Thickness (MOS):	SiO ₂ / 145Å		
Name/Location of Die Fab (prime) Facility:	Cypress Semiconductor - Bloomington, MN		
Die Fab Line ID/Wafer Process ID:	Fab4/R32D		

PLASTIC PACKAGE/ASSEMBLY DESCRIPTION			
Package Outline, Type, or Name:	36-pin, 400-mil SOJ		
Mold Compound Name/Manufacturer:	NITTO-8000CH		
Lead Frame material:	Copper Alloy 194		
Lead Finish, composition:	Solder Plated, 85%Sn, 15%Pb		
Die Attach Area Plating:	Silver Spot		
Die Attach Method:	Epoxy	Die Attach Material:	Ablestick 8361
Wire Bond Method:	Thermosonic	Wire Material/Size:	Gold / 1.3 mil
JESD22-A112 Moisture Sensitivity Level:	Level 3		
Name/Location of Assembly (prime) facility:	Anam, Korea (KOREA-L)		

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

RELIABILITY TESTS PERFORMED

Stress/Test	Test Condition (Temp/Bias)	Result P/F
High Accelerated Saturation Test (HAST)	140°C, 85%RH, 5.5V Precondition: JESD22 Moisture Sensitivity Level 3 (192 Hrs, 30C/60%RH)	P
Temperature Cycle	MIL-STD-883C, Method 1010, Condition C, -65°C to 150°C Precondition: JESD22 Moisture Sensitivity Level 3 (192 Hrs, 30C/60%RH)	P

RELIABILITY TEST DATA

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DEVICE	ASSY-LOC	FABLOT#	ASSYLOT#	DURATION	S/S	REJ	FAIL MODE
STRESS: HI-ACCEL SATURATION TEST (140C, 5.5V), PRECOND. 192 HRS 30C/60%RH							
CY7C1049-VC	SEOL-L	4726850	619707668	128	50	0	
CY7C1049-VC	SEOL-L	4726850	619707668	256	50	0	
CY7C1049-VC	SEOL-L	4731173	619708016	128	49	0	
CY7C1049-VC	SEOL-L	4731173	619708016	256	49	0	
CY7C1049-VC	SEOL-L	4731173	619708016	384	49	0	
CY7C1049-VC	SEOL-L	4731173	619708016	512	49	0	
STRESS: TC COND. C, -65 TO 150C, PRECOND. 192 HRS 30C/60%RH							
CY7C1049-VC	SEOL-L	4726850	619707668	300	49	0	
CY7C1049-VC	SEOL-L	4726850	619707668	1000	49	0	
CY7C1049-VC	SEOL-L	4731173	619708016	300	49	0	
CY7C1049-VC	SEOL-L	4731173	619708016	1000	49	0	

DEVICE RELATED RELIABILITY TEST DATA

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DEVICE	ASSY-LOC	FABLOT#	ASSYLOT#	DURATION	S/S	REJ	FAIL MODE
STRESS: ESD-CHARGE DEVICE MODEL (2,000V)							
CY7C1049-VC	SEOL-L	4714185	619702877/8	COMP	3	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER MIL STD 883, METHOD 3015 (2,200V)							
CY7C1049-VC	SEOL-L	4714185	619702877/8	COMP	3	0	
STRESS: HI-ACCEL SATURATION TEST (140C, 5.5V), PRECOND. 192 HRS 30C/60%RH							
CY7C1049-VC	SEOL-L	4714215	619702951	128	45	0	
CY7C1049-VC	SEOL-L	4714215	619702951	256	44	0	
CY7C1048-SC	TAIWN-G	4716305	619703660	128	48	0	
STRESS: HIGH TEMPERATURE STORAGE (165C, NO BIAS)							
CY7C1049-VC	SEOL-L	4714215	619702951	336	46	0	
CY7C1049-VC	SEOL-L	4714215	619702951	1000	46	0	
STRESS: HIGH TEMP STEADY STATE LIFE TEST (150C, 5.75V)							
CY7C1049-VC	SEOL-L	4714215	619702951	80	76	0	
CY7C1049-VC	SEOL-L	4714215	619702951	168	76	0	
CY7C1048-SC	TAIWN-G	4716305	619703660	80	76	0	
CY7C1048-SC	TAIWN-G	4716305	619703660	168	76	0	
CY7C1048-SC	TAIWN-G	4716305	619703660	256	76	0	
CY7C1049-VC	SEOL-L	4716328	619704042	80	73	0	
CY7C1049-VC	SEOL-L	4716328	619704042	168	77	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE (150C, 5.75V)							
CY7C1049-VC	SEOL-L	4714215	619702951	80	115	0	
CY7C1049-VC	SEOL-L	4714215	619702951	500	113	2	2 EOS
CY7C1048-SC	TAIWN-G	4716305	619703660	80	116	0	
CY7C1048-SC	TAIWN-G	4716305	619703660	500	116	1	1 NON VISUAL SINGLE BIT
CY7C1049-VC	SEOL-L	4716328	619704042	80	118	0	
CY7C1049-VC	SEOL-L	4716328	619704042	500	117	0	
STRESS: EXTENDED DYNAMIC BURN-IN (150C, 5.75V)							
CY7C1049-VC	SEOL-L	4714215	619702951	1000	111	0	
STRESS: COLD LIFE TEST (-30C, 6.5V)							
CY7C1049-VC	SEOL-L	4714185	619702877/8	500	45	0	
STRESS: READ & RECORD LIFE TEST (150C, 5.75V)							
CY7C1049-VC	SEOL-L	4714215	619702951	500	10	0	

¹ R32D Technology, Fab 4 qualification

DEVICE RELATED RELIABILITY TEST DATA

QTP#: 97118

DEVICE	ASSY-LOC	FABLOT#	ASSYLOT#	DURATION	S/S	REJ	FAIL MODE
STRESS: TC COND. C, -65 TO 150C, PRECOND. 192 HRS 30C/60%RH							
CY7C1049-VC	SEOL-L	4714185	619702877/8	300	45	0	
CY7C1049-VC	SEOL-L	4714215	619702951	300	46	0	
CY7C1049-VC	SEOL-L	4714215	619702951	1000	46	0	
CY7C1048-SC	TAIWN-G	4714185	619702975	300	45	0	
CY7C1048-SC	TAIWN-G	4714185	619702975	1000	45	0	
CY7C1049-VC	SEOL-L	4716328	619704042	300	45	0	
CY7C1049-VC	SEOL-L	4716328	619704042	1000	45	0	