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# Cypress Semiconductor Product Qualification Report

**QTP# 103005 VERSION\*F  
March 2018**

<b>Radiation Hardened 72 Meg Synchronous QDRII+ SRAM Family Technology R9QE-3R, Fab4</b>	
<b>Part Numbers</b>	<b>Die Part Number</b>
CYRS1542AV18-250GCMB (72M QDRII+, x18, Burst of 2, 250MHz)	7M1583
CYRS1543AV18-250GCMB (72M QDRII+, x18, Burst of 4, 250MHz)	7M1583
CYRS1544AV18-250GCMB (72M QDRII+, x36, Burst of 2, 250MHz)	7M1583
CYRS1545AV18-250GCMB (72M QDRII+, x36, Burst of 4, 250MHz)	7M1583
<b>QML Part Numbers</b>	<b>Die Part Number</b>
5962F1120101VXA (72M QDRII+, x18, Burst of 2, 250MHz)	7M1583
5962F1120102VXA (72M QDRII+, x18, Burst of 4, 250MHz)	7M1583
5962F1120201VXA (72M QDRII+, x36, Burst of 2, 250MHz)	7M1583
5962F1120202VXA (72M QDRII+, x36, Burst of 4, 250MHz)	7M1583
<b>Prototypes</b>	<b>Die Part Number</b>
CYPT1542AV18-250GCMB (72M QDRII+, x18, Burst of 2, 250MHz)	7M1568
CYPT1543AV18-250GCMB (72M QDRII+, x18, Burst of 4, 250MHz)	7M1568
CYPT1544AV18-250GCMB (72M QDRII+, x36, Burst of 2, 250MHz)	7M1568
CYPT1545AV18-250GCMB (72M QDRII+, x36, Burst of 4, 250MHz)	7M1568
<b>Wide Temperature</b>	<b>Die Part Number</b>
CYWT1542AV18-250GCQB (72M QDRII+, x18, Burst of 2, 250MHz)	7M1568
CYWT1543AV18-250GCQB (72M QDRII+, x18, Burst of 4, 250MHz)	7M1568
CYWT1544AV18-250GCQB (72M QDRII+, x36, Burst of 2, 250MHz)	7M1568
CYWT1545AV18-250GCQB (72M QDRII+, x36, Burst of 4, 250MHz)	7M1568
<b>Die</b>	<b>Die Part Number</b>
CYRS1543AV18-1X24M (72M QDRII+ die)	7M1583B
CYPT1543AV18-1X24M (72M QDRII+ die)	7M1568B

**FOR ANY QUESTIONS ON THIS REPORT, PLEASE CONTACT**

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## PRODUCT QUALIFICATION HISTORY

Qual Report	Description of Qualification Purpose	Date Comp
033302	New Technology R9T-3R, Fab 4, and New Device CY7C137*/138*E (18Meg) Synchronous Product Family	Sept 04
044403	New Device CY7C147*/7C148* AC (72Meg) Device Family, R9T-3R Technology @ Fab4	Nov 04
103005	R9 72M QDRII+ SRAM RadHard QML Class V Device Qualification Fabricated at Fab4	Mar 12

Cypress products are manufactured using qualified processes. The technology qualification for this product is referenced above and must be considered to get a complete and thorough evaluation of the reliability of the product.

PRODUCT DESCRIPTION (for qualification)	
Qualification Purpose:	Qualify Radiation Hardened (RH) 72 Megabit Quad Data Rate II+ (QDRII+) SRAM Product Family, R9QE-3R, Fab 4
Marketing Part #:	RadStop: CYRS1542AV18-250GCMB, CYRS1543AV18-250GCMB, CYRS1544AV18-250GCMB, CYRS1545AV18-250GCMB ProtoType: CYPT1542AV18-250GCMB, CYPT1543AV18-250GCMB, CYPT1544AV18-250GCMB, CYPT1545AV18-250GCMB, Wide Temperature: CYWT1542AV18-250GCQB, CYWT1543AV18-250GCQB, CYWT1544AV18-250GCQB, CYWT1545AV18-250GCQB Military Part#: 5962F1120101VXA, 5962F1120102VXA, 5962F1120201VXA, 5962F1120202VXA
Device Description:	72 Megabit Quad Data Rate II+ SRAM
Cypress Division:	Cypress Semiconductor Corporation – Memory Product Division (MPD)

TECHNOLOGY/FAB PROCESS DESCRIPTION – R9T-3R			
Number of Metal Layers:	Proprietary	Metal Composition:	Proprietary
Passivation Type and Materials:	Proprietary		
Generic Process Technology/Design Rule ( $\mu$ -drawn):	Proprietary		
Gate Oxide Material/Thickness (MOS):	Proprietary		
Name/Location of Die Fab (prime) Facility:	SkyWater -- Bloomington, MN		
Die Fab Line ID/Wafer Process ID:	Fab4/R9QE-3R		

### PACKAGE AVAILABILITY

PACKAGE	ASSEMBLY SITE FACILITY
165 CCGA	DPACI (Simi Valley, California)

**Note:** Package Qualification details upon request

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	165 CCGA
Package Outline, Type, or Name:	21x25x2.83mm
Package Outline Drawing	001-58969
Substrate Material Designation:	Ceramic Substrate
Lead Frame Design:	Kyocera/Ceramic Substrate Alumina A440
Lead/solder Finish Composition & Thickness	80/20 Pb/Sn Columns (SixSigma, Milpitas, CA)
Die Attach material	Silver Glass
Die Separation Method:	Wafer Saw
Solder Ball Designation:	Pitch: 1.27mm, Diameter: 0.51mm
Wire Bond Method:	Wedge Bond
Wire Material / Size	1.25mil Al
Thermal Resistance Theta JA °C/W:	8.9 °C/W
Package Cross Section Yes/No:	Yes
Name/Location of Assembly (prime) facility:	DPACI (Simi Valley, California)
MSL Level	N/A
Reflow Profile	N/A

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	DPACI (Simi Valley, California), Cypress Semiconductor (San Jose, California)

**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 = 2.4+/-0.1V, 125C JESD22-A108	P
High Temperature Operating Life Latent Failure Rate	Dynamic Operating Condition, Vcc Max= 2.4+/-0.1V, 125C JESD22-A108	P
High Temperature Steady State Life	Static Operating Condition, Vcc Max= 2.4+/-0.1V, 125C JESD22-A108	P
Low Temperature Operating Life	Dynamic Operating Condition, Vcc = 2.4V, -55C JESD22-A108	P
High Accelerated Saturation Test (HAST)	JEDEC STD 22-A110: 130°C, 85%RH, 3.63V Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 °C, 60% RH, 260°C Reflow)	P
Temperature Cycle	MIL-STD-883, Method 1010, Condition C, -65 °C to 150 °C Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 °C, 60% RH, 260°C Reflow)	P
Pressure Cooker	JESD22-A102: 121°C, 100%RH, 15 PSIG Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30°C, 60% RH, 260°C Reflow)	P
High Temperature Storage	JESD22-A103: 150°C, no bias	P
Electrostatic Discharge Human Body Model (ESD-HBM)	2,200V MIL-STD-883, Method 3015.7	P
Electrostatic Discharge Human Body Model (ESD-HBM)	2,200V JEDEC EIA/JESD22-A114	P
Electrostatic Discharge Charge Device Model (ESD-CDM)	500V JESD22-C101	P
Static Latch up	125C, ± 200mA JESD78	P

## RELIABILITY TESTS PERFORMED PER MILITARY QUALIFICATION SPECIFICATION REQUIREMENT

Stress/Test	Sample Size	V-Class Level Stress Test	Results
Physical Dimension	15	(DPA) – D1	0/15
Resistance to Solvent	3	(DPA) – B1	0/3
Solderability	2(22Lds)	(DPA) – B3	Pass
ESD-HBM (>2000V)	3	Per JEDEC Spec	Pass
ESD-CDM (>500V)	3	Per JEDEC Spec	Pass
Lead Integrity	3(15Lds)	(DPA) – D2	Pass
Salt Atmosphere	15	(DPA) – D5	0/15
Internal Water Vapor	3	(DPA) – D6 <5K ppm H <sub>2</sub> O	0/3
Temperature Cycle	10	Group D	0/10
Thermal Series	15	(DPA) – D3	0/15
Mechanical Series	15	(DPA) – D4	0/15
X-ray	100% of lot	Non-destructive required 100% in-line	Pass
Die Shear/Stud Pull	3	(DPA) – B2	0/4
Final Visual Inspection	All qual samples	Use DPA data – Non destructive	Pass
SEE/TID/Radiation	3	Group E	Pass
Military Group C 125C	45	(DPA) – C1	0/45
Baseline Spec	Memo	Per spec	001-65976
Bond Pull	4(22wires)	(DPA) – B2	0/4
Revise OBOM	Spec	Per spec	001-73649
Destructive Physical Analysis	3	Per spec	0/2
Static Latch-up	3	Per JEDEC Spec	0/3

## RELIABILITY FAILURE RATE SUMMARY

Stress/Test	Device Tested/ Device Hours	# Fails	Activation Energy	Thermal AF <sup>3</sup>	Failure Rate
High Temperature Operating Life Early Failure Rate	1840 Devices	0	N/A	N/A	0 PPM
High Temperature Operating Life <sup>1,2</sup> Long Term Failure Rate	1,229,000 DHRs	2	0.7	170/55	16 FIT

1. EFR devices number is based on QTP#044403 EFR data only
2. LFR device hours is based on QTP#033302, QTP#044403, and QTP103005 LFR data.

<sup>1</sup> Assuming an ambient temperature of 55°C and a junction temperature rise of 15°C.

<sup>2</sup> Chi-squared 60% estimations used to calculate the failure rate.

<sup>3</sup> 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 =  $8.62 \times 10^{-5}$  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.



## Reliability Test Data

**QTP #: 033302**

<i>Device</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Assy Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
<b>STRESS: ACOUSTIC-MSL3</b>							
CY7C1470V33 (7C1470A)	4330156	610417279	CML-R	COMP	15	0	
CY7C1470V33 (7C1470A)	4321389	610417280	CML-R	COMP	15	0	
CY7C1470V33 (7C1470A)	4323794	610348235	TAIWN-G	COMP	15	0	
<b>STRESS: AGE BOND STRENGTH</b>							
CY7C1370DV33 (7C1370E)	4421235	610447674	CML-R	COMP	5	0	
CY7C1370DV33 (7C1370E)	4406200	610435906	CML-R	COMP	5	0	
CY7C1370DV33 (7C1370E)	4410258	610437891	CML-R	COMP	5	0	
<b>STRESS: BALL SHEAR</b>							
CY7C1470V33 (7C1470A)	4321389	610417278	CML-R	COMP	10	0	
<b>STRESS: BOND PULL</b>							
CY7C1470V33 (7C1470A)	4321389	610417278	CML-R	COMP	10	0	
<b>STRESS: DYNAMIC LATCH-UP</b>							
CY7C1470V33 (7C1470A)	4321389	610417278	CML-R	COMP	3	0	
<b>STRESS: ESD-HUMAN BODY CIRCUIT PER MIL STD 883, METHOD 3015, 2,200V</b>							
CY7C1470V33 (7C1470A)	4352888	610425832	TAIWN-G	COMP	3	0	
CY7C1470V33 (7C1470A)	4401980	610425833	TAIWN-G	COMP	3	0	
CY7C1370DV33 (7C1370E)	4345377	610417723	CML-R	COMP	3	0	
<b>STRESS: ESD-HUMAN BODY CIRCUIT PER JEDEC EIA/JESD22-A114, 2,200V</b>							
CY7C1470V33 (7C1470A)	4352888	610425832	TAIWN-G	COMP	9	0	
CY7C1470V33 (7C1470A)	4401980	610425833	TAIWN-G	COMP	9	0	
CY7C1370DV33 (7C1370E)	4421235	610446833	CML-R	COMP	9	0	

## Reliability Test Data

**QTP #: 033302**

<i>Device</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Assy Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
<b>STRESS: ESD-CHARGE DEVICE MODEL, 500V</b>							
CY7C1470V33 (7C1470A)	4352888	610425832	TAIWN-G	COMP	9	0	
CY7C1470V33 (7C1470A)	4401980	610425833	TAIWN-G	COMP	9	0	
CY7C1370DV33 (7C1370E)	4345377	610417723	CML-R	COMP	9	0	
<b>STRESS: HIGH TEMPERATURE STORAGE, PLASTIC, 150C, no bias</b>							
CY7C1470V33 (7C1470A)	4323794	610348234	TAIWN-G	500	47	0	
CY7C1470V33 (7C1470A)	4323794	610348234	TAIWN-G	1000	47	0	
<b>STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 150C, 2.25V, Vcc Max (Core)</b>							
CY7C1370DV33 (7C1370E)	4345377	610424939	CML-R	48	193	0	
CY7C1370DV33 (7C1370E)	4345377	610422227	CML-R	48	951	0	
CY7C1370DV33 (7C1370E)	4406200	610435906	CML-R	48	1246	0	
CY7C1370DV33 (7C1370E)	4410258	610437891	CML-R	48	1382	1	Non-Visual
<b>STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 150C, 2.25V, Vcc Max (Core)</b>							
CY7C1370DV33 (7C1370E)	4345377	610424939	CML-R	500	170	0	
CY7C1370DV33 (7C1370E)	4406200	610435906	CML-R	500	400	0	
CY7C1370DV33 (7C1370E)	4410258	610437891	CML-R	500	400	0	
<b>STRESS: HIGH TEMP STEADY STATE LIFE TEST, 150C, 2.25V, Vcc Max</b>							
CY7C1470V33 (7C1470A)	4405088	610418824	TAIWN-G	80	85	0	
CY7C1470V33 (7C1470A)	4405088	610418824	TAIWN-G	168	85	0	
<b>STRESS: INTERNAL VISUAL</b>							
CY7C1470V33 (7C1470A)	4321389	610417278	CML-R	COMP	5	0	
<b>STRESS: LOW TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, -30C, 6.50V, Vcc</b>							
CY7C1470V33 (7C1470A)	4333765	610349455	CML-R	500	45	0	

## Reliability Test Data

**QTP #: 033302**

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
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**STRESS: PRESSURE COOKER TEST, 121C, 100%RH, 15 Psig, PRE COND 192 HR 30C/60%RH, MSL3**

CY7C1370DV33 (7C1370E)	4345377	610422227	CML-R	168	50	0	
CY7C1370DV33 (7C1370E)	4406200	610435906	CML-R	168	50	0	
CY7C1470V33 (7C1470A)	4321389	610417278	CML-R	168	43	0	

**STRESS: HI-ACCEL SATURATION TEST, 130C, 85%RH, 3.63V, PRE COND 192 HR 30C/60%RH, MSL3**

CY7C1370DV33 (7C1370E)	4406200	610435906	CML-R	128	50	0	
CY7C1470V33 (7C1470A)	4321389	610417278	CML-R	128	47	0	
CY7C1470V33 (7C1470A)	4330156	610417279	CML-R	128	44	0	

**STRESS: STATIC LATCH-UP TESTING, 125C, 7.5V, +/-300mA**

CY7C1470V33 (7C1470A)	4352888	610425832	TAIWN-G	COMP	3	0	
CY7C1470V33 (7C1470A)	4401980	610425833	TAIWN-G	COMP	3	0	
CY7C1370DV33 (7C1370E)	4345377	610417723	CML-R	COMP	3	0	

**STRESS: TC COND. C -65C TO 150C, PRE COND 192 HRS 30C/60%RH, MSL3**

CY7C1370DV33 (7C1370E)	4345377	610422227	CML-R	300	50	0	
CY7C1370DV33 (7C1370E)	4345377	610422227	CML-R	500	49	0	
CY7C1370DV33 (7C1370E)	4345377	610422227	CML-R	1000	49	0	
CY7C1470V33 (7C1470A)	4330156	610417279	CML-R	300	43	0	
CY7C1470V33 (7C1470A)	4330156	610417279	CML-R	500	43	0	
CY7C1470V33 (7C1470A)	4330156	610417279	CML-R	1000	42	0	
CY7C1470V33 (7C1470A)	4321389	610417280	CML-R	300	34	0	
CY7C1470V33 (7C1470A)	4321389	610417280	CML-R	500	33	0	
CY7C1470V33 (7C1470A)	4321389	610417280	CML-R	1000	33	0	

## Reliability Test Data

**QTP #: 033302**

<b>Device</b>	<b>Fab Lot #</b>	<b>Assy Lot #</b>	<b>Assy Loc</b>	<b>Duration</b>	<b>Samp</b>	<b>Rej</b>	<b>Failure Mechanism</b>
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**STRESS: THERMAL SHOCK**

CY7C1470V33 (7C1470A)	4321389	610417278	CML-R	100	46	0	
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CY7C1470V33 (7C1470A)	4321389	610417278	CML-R	200	46	0	
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**STRESS: X-RAY**

CY7C1470V33 (7C1470A)	4321389	610417278	CML-R	COMP	15	0	
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## Reliability Test Data

**QTP #: 044403**

<i>Device</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Assy Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
<b>STRESS: ACOUSTIC- MSL3</b>							
CY7C1470V33 (7C1470A)	4323794	610348323	TAIWN-G	COMP	15	0	
CY7C1470V33 (7C1470A)	4352888	610425832	TAIWN-G	COMP	15	0	
CY7C1470V33 (7C1470A)	4401980	610425833	TAIWN-G	COMP	15	0	
<b>STRESS: AGE BOND STRENGTH</b>							
CY7C1370DV33 (7C1370E)	4410258	610437891	CML-R	COMP	5	0	
CY7C1470V33 (7C1470A)	4321389	610354349	TAIWN-G	COMP	3	0	
CY7C1470V33 (7C1470A)	4323794	610348235	TAIWN-G	COMP	3	0	
<b>STRESS: DYNAMIC LATCH-UP</b>							
CY7C1470V33 (7C1470A)	4323794	610348323	TAIWN-G	COMP	3	0	
<b>STRESS: ESD-CHARGE DEVICE MODEL, 500V</b>							
CY7C1470V33 (7C1470A)	4333765	610349455	TAIWN-G	COMP	9	0	
CY7C1470V33 (7C1470A)	4401980	610425833	TAIWN-G	COMP	9	0	
CY7C1470V33 (7C1470A)	4352888	610425832	TAIWN-G	COMP	9	0	
<b>STRESS: ESD-HUMAN BODY CIRCUIT PER MIL STD 883, METHOD 3015, 2,200V</b>							
CY7C1470V33 (7C1470A)	4333765	610349455	TAIWN-G	COMP	3	0	
CY7C1470V33 (7C1470A)	4401980	610425833	TAIWN-G	COMP	3	0	
CY7C1470V33 (7C1470A)	4352888	610425832	TAIWN-G	COMP	3	0	
<b>STRESS: ESD-HUMAN BODY CIRCUIT PER JEDEC EIA/JESD22-A114, 2,200V</b>							
CY7C1470V33 (7C1470A)	4333765	610349455	TAIWN-G	COMP	9	0	
CY7C1470V33 (7C1470A)	4401980	610425833	TAIWN-G	COMP	9	0	
CY7C1470V33 (7C1470A)	4352888	610425832	TAIWN-G	COMP	9	0	

## Reliability Test Data

**QTP #: 044403**

<i>Device</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Assy Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
<b>STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 150C, 2.25V, Vcc Max (Core)</b>							
CY7C1470V33 (7C1470A)	4423022	610453316	TAIWN-G	48	447	0	
CY7C1470V33 (7C1470A)	4425478	610451858	TAIWN-G	48	833	0	
CY7C1470V33 (7C1470A)	4425554	610453022	TAIWN-G	48	560	0	
<b>STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 150C, 2.25V, Vcc Max (Core)</b>							
CY7C1470V33 (7C1470A)	4423022	610453316	TAIWN-G	500	397	0	
CY7C1470V33 (7C1470A)	4425478	610451858	TAIWN-G	500	397	0	
CY7C1470V33 (7C1470A)	4425554	610453022	TAIWN-G	500	394	0	
<b>STRESS: HIGH TEMP STEADY STATE LIFE TEST, 150C, 2.25V, Vcc Max</b>							
CY7C1470V33 (7C1470A)	4405088	610418824	TAIWN-G	80	85	0	
CY7C1470V33 (7C1470A)	4405088	610418824	TAIWN-G	168	85	0	
<b>STRESS: HI-ACCEL SATURATION TEST, 130C, 85%RH, 3.63V, PRE COND 192 HR 30C/60%RH, MSL3</b>							
CY7C1470V33 (7C1470A)	4321389	610417278	TAIWN-G	128	47	0	
CY7C1470V33 (7C1470A)	4414234	610446423	TAIWN-G	128	49	0	
CY7C1470V33 (7C1470A)	4414234	610446424	TAIWN-G	128	46	0	
<b>STRESS: HIGH TEMPERATURE STORAGE, PLASTIC, 150C</b>							
CY7C1470V33 (7C1470A)	4323794	610348234	TAIWN-G	500	47	0	
CY7C1470V33 (7C1470A)	4323794	610348234	TAIWN-G	1000	47	0	
<b>STRESS: LOW TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, -30C, 6.50V, Vcc</b>							
CY7C1470V33 (7C1470A)	4323794	610348323	TAIWN-G	500	45	0	
<b>STRESS: PRESSURE COOKER TEST, 121C, 100%RH, 15 Psig, PRE COND 192 HR 30C/60%RH, MSL3</b>							
CY7C1470V33 (7C1470A)	4321389	610417278	TAIWN-G	168	43	0	
CY7C1470V33 (7C1470A)	4414234	610446423	TAIWN-G	168	50	0	
CY7C1470V33 (7C1470A)	4414234	610446424	TAIWN-G	168	51	0	

## Reliability Test Data

**QTP #: 044403**

<i>Device</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Assy Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
<b>STRESS: STATIC LATCH-UP TESTING, 125C, 7V, +/-300mA</b>							
CY7C1470V33 (7C1470A)	4333765	610349455	TAIWN-G	COMP	3	0	
<b>STRESS: STATIC LATCH-UP TESTING, 125C, 7.5V, +/-300mA</b>							
CY7C1470V33 (7C1470A)	4401980	610425833	TAIWN-G	COMP	3	0	
CY7C1470V33 (7C1470A)	4352888	610425832	TAIWN-G	COMP	3	0	
<b>STRESS: TC COND. C -65C TO 150C, PRE COND 192 HRS 30C/60%RH, MSL3</b>							
CY7C1470V33 (7C1470A)	4323794	610348323	TAIWN-G	300	48	0	
CY7C1470V33 (7C1470A)	4323794	610348323	TAIWN-G	500	48	0	
CY7C1470V33 (7C1470A)	4323794	610348323	TAIWN-G	1000	48	0	
CY7C1470V33 (7C1470A)	4352888	610425832	TAIWN-G	300	50	0	
CY7C1470V33 (7C1470A)	4352888	610425832	TAIWN-G	500	50	0	
CY7C1470V33 (7C1470A)	4352888	610425832	TAIWN-G	1000	50	0	
CY7C1470V33 (7C1470A)	4401980	610425833	TAIWN-G	300	50	0	
CY7C1470V33 (7C1470A)	4401980	610425833	TAIWN-G	500	50	0	
CY7C1470V33 (7C1470A)	4401980	610425833	TAIWN-G	1000	50	0	

## Reliability Test Data

**QTP #: 103005**

<i>Device</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Assy Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
<b>STRESS: B1</b>							
CYRS1545AV18-250	4034627	GC 165	DP	COMP	3	0	
CYRS1545AV18-250	4034627A	GC 165	DP	COMP	3	0	
<b>STRESS: Bond Pull</b>							
CYRS1545AV18-250	4034627	GC 165	DP	COMP	4	0	
CYRS1545AV18-250	4034627A	GC 165	DP	COMP	4	0	
<b>STRESS: CONSTRUCTION ANALYSIS</b>							
CY7C1470V33 (7C1470A)	4323794	610348323	TAIWN-G	COMP	2	0	
<b>STRESS: D1</b>							
CYRS1545AV18-250	4034627	GC 165	DP	COMP	15	0	
CYRS1545AV18-250	4034627A	GC 165	DP	COMP	15	0	
<b>STRESS: D2</b>							
CYRS1545AV18-250	4034627	GC 165	DP	COMP	15	0	
CYRS1545AV18-250	4034627A	GC 165	DP	COMP	2	0	
<b>STRESS: D3</b>							
CYRS1545AV18-250	4034627	GC 165	DP	COMP	15	0	
CYRS1545AV18-250	4034627A	GC 165	DP	COMP	15	0	
<b>STRESS: D4</b>							
CYRS1545AV18-250	4034627	GC 165	DP	COMP	15	0	
CYRS1545AV18-250	4034627A	GC 165	DP	COMP	15	0	
<b>STRESS: D5</b>							
CYRS1545AV18-250	4034627	GC 165	DP	COMP	15	0	
CYRS1545AV18-250	4034627A	GC 165	DP	COMP	3	0	



## Reliability Test Data

**QTP #: 103005**

<i>Device</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Assy Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
<b>STRESS: D6</b>							
CYRS1545AV18-250	4034627	GC 165	DP	COMP	15	0	
CYRS1545AV18-250	4034627A	GC 165	DP	COMP	3	0	
<b>STRESS: DIE SHEAR</b>							
CYRS1545AV18-250	4034627	GC 165	DP	COMP	4	0	
CYRS1545AV18-250	4034627A	GC 165	DP	COMP	3	0	
<b>STRESS: ESD-CHARGE DEVICE MODEL, 500V</b>							
CYRS1545AV18-250	4034627	GC 165	DP	COMP	3	0	
<b>STRESS: ESD-HUMAN BODY MODEL, 2,000V</b>							
CYRS1545AV18-250	4034627	GC 165	DP	COMP	3	0	
<b>STRESS: GROUP E</b>							
CYRS1545AV18-250	4034627	GC 165	DP	SEE	5	0	
				TID	3	0	
				RADIATION	20	0	
CYRS1545AV18-250	4034627A	GC 165	DP	COMP	18	0	
<b>STRESS: GROUP C, 125C, Vcc = 2.4+/-0.1V</b>							
CYRS1545AV18-250	4034627	GC 165	DP	1000hrs	45	0	
CYRS1545AV18-250	4034627A	GC 165	DP	1000hrs	105	2	Single bit failures, Non-Visual
<b>STRESS: S/LATCH-UP, +/-200mA, 2.85V, 125C,</b>							
CYRS1545AV18-250	4034627	GC 165	DP	SEE	6	0	
CYRS1545AV18-250	4034627A	GC 165	DP	SEE	6	0	

## Document History Page

Document Title: QTP# 103005: RADIATION HARDENED (RH) 72 MEGABIT QUAD DATA RATE II+ (QDRII+)  
 SRAM DEVICE QUALIFICATION

Document Number: 001-86196

Rev.	ECN No.	Orig. of Change	Description of Change
**	3903595	ZIJ	Initial spec release
*A	4154640	ZIJ	Updated front page MPN table
*B	4349486	JYF	Added additional R9 72M RH data from 2014 test; Updated Reliability Tests Performed table for template alignment. Deleted the following cypress specification 25-00020, 22-00029, 25-00104 and 01-00081 and replaced with industry standard
*C	4365964	JYF	Updated front page MPN table for die category: - Updated 7M1583 to 7M1583B - Added CYPT1543AV18-1X24M (7M1568B)
*D	5199449	HRP DCON	Added column attach information to major package information pg.4.  Removed Distribution and posting information from Document history page.
*E	6094720	GRW/JYF	Updated CY logo and reference for Reliability personnel; Deleted Cypress and CMI in Product Qual History for QTP# 103005; Updated Technology/Fab Process Table: - Changed most of the data to "Proprietary" - Changed Cypress Semiconductor to SkyWater Added (4) Wide Temperature (CYWT) marketing part numbers; - CYWT1542AV18-250GCQB - CYWT1543AV18-250GCQB - CYWT1544AV18-250GCQB - CYWT1545AV18-250GCQB Removed obsolete QML-Q part numbers
*F	6103838	JYF	Minor update on format and Major information table.