

# Cypress Semiconductor Product Qualification Report

**QTP# 200401 VERSION\*\*  
March 2020**

<b>Radiation Hardened 16 Meg ASYNC SRAM Device Family LL65UP-25ODR+ Technology, UMC Fab 12A</b>	
<b>Part Numbers</b>	<b>Die Part Number</b>
CYRS1061G30-10GGMB (16M, x16 Static RAM w/ ECC, 100MHz)	7M17165A
<b>QML Part Numbers</b>	<b>Die Part Number</b>
5962R2020201VXC (16M, x16 Static RAM w/ ECC, 100MHz)	7M17165A
<b>Prototype Part Numbers</b>	<b>Die Part Number</b>
CYPT1061G30-10GGMB (16M, x16 Static RAM w/ ECC, 100MHz)	7C17165A

**FOR ANY QUESTIONS ON THIS REPORT, PLEASE CONTACT**  
[reliability@cypress.com](mailto:reliability@cypress.com)

**Prepared By:**  
Josephine Pineda (JYF)  
Reliability Engineer

**Reviewed By:**  
Sandhya Chandrashekhar (SANC)  
Reliability Manager

**Approved By:**  
David Hoffman (DHH)  
Reliability Director

### QUALIFICATION HISTORY

QTP Number	Description of Qualification Purpose	Date Comp
091706	Qualification of 65nm (LL65) Technology at UMC Fab 12A and New Device CY7C1553K Base Die Product Family	Aug 2009
124902	Qualification of 16-MBIT Asynchronous SRAM Family ,ULL65nm (LL65UP-25ODR) Technology at UMC Fab 12A	Aug 2014
144804	Qualification of 16-MBIT Asynchronous SRAM Family Rev.*D Silicon, ULL65nm (LL65UP-25ODR) Technology at UMC Fab 12A	Feb 2015
200401	LL65 16M ASYNC SRAM RadHard QML Class V Device Qualification	March 2020

<b>PRODUCT DESCRIPTION (for qualification)</b>	
Qualification Purpose:	Qualify Radiation Hardened 16Meg ASYNC SRAM Device Family LL65UP-25ODR+ Technology at UMC Fab 12A
Marketing Part #:	CYRS1061G30-10GGMB, CYPT1061G30-10GGMB, 5962R2020201VXC
Device Description:	16 Megabit ASYNC SRAM Device
Cypress Division:	Cypress Semiconductor Corporation – Memory Product Division (MPD)

<b>TECHNOLOGY/FAB PROCESS DESCRIPTION – LL65UP-25ODR+</b>			
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:	UMC, Taiwan		
Die Fab Line ID/Wafer Process ID:	Fab 12A, LL65UP-25ODR+		

<b>PACKAGE</b>	<b>ASSEMBLY SITE FACILITY</b>
54L Ceramic TSOP II	DPACI (Simi Valley, California)

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	54L Ceramic TSOP II
Package Outline, Type, or Name:	22.40 x 11.84 x 3.038 mm
Package Outline Drawing	002-18372
Substrate Material Designation:	N/A
Lead Frame Design:	Full Metal Paddle
Lead/solder Finish Composition & Thickness	Au80/Sn20
Die Attach material	JM7000/Henkel
Die Separation Method:	Laser Groove / Wafer Saw
Leadframe Paddle	8.99 x 6.198mm
Wire Bond Method:	Wedge Bond
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:	Cypress Semiconductor (San Jose, California)

**RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENT**

<b>Stress/Test</b>	<b>Test Condition (Temp/Bias)</b>	<b>Result P/F</b>
Acoustic Microscopy	J-STD-020 Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30°C, 60% RH, 260°C Reflow)	P
Age Bond Strength	200°C, 4HRS MIL-STD-883, Method 883-2011	P
Constructional Analysis	Criteria: Meet external and internal characteristics of Cypress package	P
Dynamic Latch-up	125°C , 8.25V JESD78	P
Electrostatic Discharge Charge Device Model (ESD-CDM)	500V/750V/1,000V/1,250V JESD22-C101	P
Electrostatic Discharge Human Body Model (ESD-HBM)	1,100V/2,200V/3,300V JESD22-A114	P
Electrostatic Discharge Machine Model (ESD-MM)	200V JESD22-A115	P
High Accelerated Saturation Test (HAST)	JEDEC STD 22-A110: 130°C, 85%RH, 2.25V 110°C/130°C, 85%RH, 3.65V Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30°C, 60% RH, 260°C Reflow)	P
High Temperature Steady State Life	Static Operating Condition, Vcc Max= 1.37/2.25V, 150°C JESD22-A108	P
High Temperature Storage	JESD22-A103:150°C No bias	P
High Temperature Operating Life Early Failure Rate	Dynamic Operating Condition, Vcc Max = 1.44V, 125°C JESD22-A108	P
High Temperature Operating Life Latent Failure Rate	Dynamic Operating Condition, Vcc Max = 1.44V, 125°C JESD22-A108	P
High Temperature Operating Life Latent Failure Rate	Dynamic Operating Condition, Boost Regulated at Core, 1.45V, External 2.05V, 125°C /150°C JESD22-A108	P
Low Temperature Operating Life	Dynamic Operating Condition, Vcc = 1.62V/2.25V, -30°C JESD22-A108	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
Pre/Post LFR AC/DC Char	AC/DC Critical Parameter Char at 0 hour/500/1000hrs	P
Static Latch-up	85°C/125°C , ± 140mA, 85°C , ± 180mA JESD78	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
Temperature Humidity Bias Test (THB)	JESD22-A101: 85°C/ 85% RH , 2.25V Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30°C, 60% RH, 260°C Reflow)	P
Soft Error (Alpha Particle)	JESD89	P
Soft Error (Neutron)	JESD89	P

## RELIABILITY TESTS PERFORMED PER MILITARY QUALIFICATION SPECIFICATION REQUIREMENT

Stress/Test	Sample Size	V-Class Level Stress Test	Results
Resistance to Solvent	3	(DPA) – B1	Pass
Die Shear/Stud Pull	3	(DPA) – B2	Pass
Bond Pull	4 (22 wires)	(DPA) – B2	Pass
Solderability	3 (22 leads)	(DPA) – B3	Pass
Military Group C 125C	45	(DPA) – C1	Pass
Temperature Cycle	15	(DPA) - Group D	Pass
Physical Dimension	15	(DPA) – D1	Pass
Lead Integrity	3 (45 Leads)	(DPA) – D2	Pass
Thermal Series	15	(DPA) – D3	Pass
Mechanical Series	15	(DPA) – D4	Pass
Salt Atmosphere	15	(DPA) – D5	Pass
Internal Water Vapor	3	(DPA) – D6 <5K ppm H2O	Pass
Adhesion of Lead Finish	3	(DPA) – D7	Pass
Soldering Heat	3	(DPA) – D9	Pass
ESD-HBM (>2000V)	3	Per JEDEC Spec	Pass
ESD-CDM (>500V)	3	Per JEDEC Spec	Pass
SEE/TCI/TID/DRL/Radiation	3	(JDI) - Group E	Pass
ELDRS	3	(JDI) - Group E	Pass
Static Latch-up	3	Per JEDEC Spec	Pass
X-ray	100% of lot	Non-destructive required 100% in-line	Pass
Final Visual Inspection	All qual samples	Use DPA data – Non destructive	Pass
Baseline Spec	Memo	Per spec	001-65976
Revise OBOM	Spec	Per spec	001-73649

### RELIABILITY FAILURE RATE SUMMARY

Stress/Test	Device Tested/ Device Hours	# Fails	Activation Energy	Thermal AF <sup>3</sup>	Failure Rate
High Temperature Operating Life <sup>1</sup> Early Failure Rate	1,522 Devices	0	N/A	N/A	0 PPM
High Temperature Operating Life <sup>2</sup> Long Term Failure Rate (150°C)	89,000 DHRs	0	0.7	170	14 FIT
High Temperature Operating Life <sup>2</sup> Long Term Failure Rate (125°C)	889,000 DHRs	0	0.7	55	

<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<sub>A</sub> =The Activation Energy of the defect mechanism.

k = Boltzmann's constant = 8.62x10<sup>-5</sup> eV/Kelvin.

T<sub>1</sub> is the junction temperature of the device under stress and T<sub>2</sub> is the junction temperature of the device at use conditions.

<sup>1</sup>Early Failure Rate was computed from QTP# 144804

<sup>2</sup> Long Term Failure Rate was computed from QTP# 091706 and QTP# 124902 Data.

## Reliability Test Data

QTP #: 091706

<i>Device</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Ass Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
<b>STRESS: ACOUSTIC, MSL3</b>							
CY7C1514KV18 (7C1553K)	8842022	610851583	TAIWN-G	COMP	15	0	
CY7C1514KV18 (7C1553K)	8844020	610854240	TAIWN-G	COMP	15	0	
CY7C1514KV18 (7C1553K)	8844022	610906896	TAIWN-G	COMP	15	0	
<b>STRESS: AGE BOND STRENGTH</b>							
CY7C1514KV18 (7C1553K)	8842022	610851583	TAIWN-G	COMP	5	0	
CY7C1514KV18 (7C1553K)	8844020	610854240	TAIWN-G	COMP	5	0	
CY7C1514KV18 (7C1553K)	8844022	610906896	TAIWN-G	COMP	5	0	
<b>STRESS: DYNAMIC LATCH-UP</b>							
CY7C1470V33 (7C1470A)	4321389	610417278	CML-R	COMP	3	0	
<b>STRESS: ESD-HUMAN BODY CIRCUIT PER JEDEC EIA/JESD22-A114, 2,200V</b>							
CY7C1514KV18 (7C1553K)	8842022	610852338	TAIWN-G	COMP	8	0	
CY7C1514KV18 (7C1553K)	8844020	610854240	TAIWN-G	COMP	8	0	
CY7C1514KV18 (7C1553K)	8844022	610906896	TAIWN-G	COMP	8	0	
CY7C1514KV18 (7C1553K)	8844021	610908348	TAIWN-G	COMP	8	0	
<b>STRESS: ESD-CHARGE DEVICE MODEL, 500V</b>							
CY7C1514KV18 (7C1553K)	8842022	610852338	TAIWN-G	COMP	9	0	
CY7C1514KV18 (7C1553K)	8844020	610854240	TAIWN-G	COMP	9	0	
CY7C1514KV18 (7C1553K)	8844022	610906896	TAIWN-G	COMP	9	0	
<b>STRESS: ESD-MACHINE MODEL, 200V</b>							
CY7C1514KV18 (7C1553K)	8842022	610852338	TAIWN-G	COMP	5	0	
<b>STRESS: HI-ACCEL SATURATION TEST, 130C, 85%RH, 2.25V, PRE COND 192 HR 30C/60%RH, MSL3</b>							
CY7C1514KV18 (7C1553K)	8844020	610854240	TAIWN-G	128	78	0	
CY7C1514KV18 (7C1553K)	8844022	610906896	TAIWN-G	128	77	0	
<b>STRESS: HIGH TEMPERATURE STORAGE, PLASTIC, 150C</b>							
CY7C1514KV18 (7C1553K)	8844020	610851583	TAIWN-G	1000	70	0	
<b>STRESS: HIGH TEMP STEADY STATE LIFE TEST, 150C, 2.25V, Vcc Max</b>							
CY7C1514KV18 (7C1553K)	8844020	610854240	TAIWN-G	336	77	0	



## Reliability Test Data

QTP #: 091706

<i>Device</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Ass 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, 125C, BOOST REGULATED AT CORE 1.45V, EXTERNAL 2.05V</b>							
CY7C15631KV18 (7C1553K)	8908001	610920385	TAIWN-G	96	2367	0	
CY7C15631KV18 (7C1553K)	8912000	610920386	TAIWN-G	96	2217	0	
CY7C15631KV18 (7C1553K)	8910015	610920548	TAIWN-G	96	1321	0	
<b>STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 150C, BOOST REGULATED AT CORE 1.45V, EXTERNAL 2.05V</b>							
CY7C1514KV18 (7C1553K)	8844021	610908348	TAIWN-G	500	178	0	
<b>STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 125C, BOOST REGULATED AT CORE 1.45V, EXTERNAL 2.05V</b>							
CY7C1514KV18 (7C1553K)	8844020	610854240	TAIWN-G	1000	178	0	
CY7C1514KV18 (7C1553K)	8844022	610906896	TAIWN-G	1000	178	0	
<b>STRESS: LOW TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, -30C, 2.25V Vcc</b>							
CY7C1514KV18 (7C1553K)	8842022	610852338	TAIWN-G	500	45	0	
<b>STRESS: PRESSURE COOKER TEST, 121C, 100%RH, 15 Psig, PRE COND 192 HR 30C/60%RH, MSL3</b>							
CY7C1514KV18 (7C1553K)	8842022	610851583	TAIWN-G	168	76	0	
CY7C1514KV18 (7C1553K)	8844020	610854240	TAIWN-G	168	78	0	
CY7C1514KV18 (7C1553K)	8844022	610906896	TAIWN-G	168	77	0	
<b>STRESS: Pre-/ Post HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE CHAR</b>							
CY7C1514KV18 (7C1553K)	8844020	610854240	TAIWN-G	COMP	10	0	
<b>STRESS: STATIC LATCH-UP TESTING, 125C, 3.42V, +/-240mA</b>							
CY7C1514KV18 (7C1553K)	8844020	610854680	TAIWN-G	COMP	9	0	
CY7C1514KV18 (7C1553K)	8844022	610906896	TAIWN-G	COMP	9	0	
CY7C1514KV18 (7C1553K)	8844021	610908348	TAIWN-G	COMP	9	0	
CY7C15631KV18 (7C1553K)	8911000	610922436	TAIWN-G	COMP	9	0	
<b>STRESS: TEMPERATURE CYCLE COND. C -65C TO 150C, PRE COND 192 HRS 30C/60%RH, MSL3</b>							
CY7C1514KV18 (7C1553K)	8842022	610851583	TAIWN-G	1000	77	0	
CY7C1514KV18 (7C1553K)	8844020	610854240	TAIWN-G	1000	78	0	
CY7C1514KV18 (7C1553K)	8844022	610906896	TAIWN-G	1000	77	0	
<b>STRESS: STRESS: TEMPRATURE HUMIDITY TEST, 85C, 85%RH, 2.25V, PRE COND 192 HR 30C/60%RH, MSL3</b>							
CY7C1514KV18 (7C1553K)	8842022	610851583	TAIWN-G	1000	77	0	

## Reliability Test Data

QTP #: 091706

<i>Device</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Ass Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
---------------	------------------	-------------------	----------------	-----------------	-------------	------------	--------------------------

**STRESS: SER – ALPHA PARTICLE, 3-TEMP, 3-VOLTAGE, @ 85C, Vcc Nom**

CY7C1514KV18 (7C1553K)	8842022	610851583	TAIWN-G	COMP	3	0	
------------------------	---------	-----------	---------	------	---	---	--

**STRESS: X-SECTION/STEM XY AUDIT**

CY7C1514KV18 (7C1553K)	8842022	610851583	TAIWN-G	COMP	1WF		
------------------------	---------	-----------	---------	------	-----	--	--

## Reliability Test Data

QTP #: 124902

<i>Device</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Ass Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
<b>STRESS: ACOUSTIC, MSL3</b>							
CY7C1061G30 (7CC171061A)	9313001	611348183	CML-RA	COMP	15	0	
CY7C1061G30 (7CC171061A)	9313001	611348182	CML-RA	COMP	170	0	
CY7C1061G30 (7CC171061A)	9313001	611348184	CML-RA	COMP	15	0	
<b>STRESS: AGE BOND STRENGTH</b>							
CY7C1061G30 (7CC171061A)	9313001	611348183	CML-RA	COMP	3	0	
CY7C1061G30 (7CC171061A)	9313001	611348182	CML-RA	COMP	3	0	
<b>STRESS: CONSTRUCTIONAL ANALYSIS</b>							
CY7C1061G30 (7CC171061A)	9313001	611348183	CML-RA	COMP	5	0	
CY7C1061G30 (7CC171061A)	9313001	611348182	CML-RA	COMP	5	0	
<b>STRESS: DYNAMIC LATCH-UP TESTING, 125C, 8.25V</b>							
CY7C1061G30 (7CC171061A)	9313001	611348182	CML-RA	COMP	3	0	
<b>STRESS: ESD-CHARGE DEVICE MODEL</b>							
CY7C1061G30 (7CC171061A)	9312001	611328720	CML-RA	500	9	0	
CY7C1061G30 (7CC171061A)	9312001	611328720	CML-RA	1000	3	0	
CY7C1061G30 (7CC171061A)	9312001	611328720	CML-RA	1250	3	0	
CY7C1061G30 (7CC171061A)	9324001	611342911	G-TAIWAN	500	9	0	
CY7C1061G30 (7CC171061A)	9324001	611342911	G-TAIWAN	1000	3	0	
CY7C1061G30 (7CC171061A)	9324001	611342911	G-TAIWAN	1250	3	0	
CY7C1061G30 (7CC171061A)	9302002	611320002	G-TAIWAN	500	9	0	
CY7C1061G30 (7CC171061A)	9302002	611320002	G-TAIWAN	1000	3	0	
CY7C1061G30 (7CC171061A)	9302002	611320002	G-TAIWAN	1250	3	0	
CY7C1069G30 (7CC171069A)	9302002	611320107	G-TAIWAN	500	9	0	
CY7C1069G30 (7CC171069A)	9302002	611320107	G-TAIWAN	1000	3	0	
CY7C1069G30 (7CC171069A)	9302002	611320107	G-TAIWAN	1250	3	0	

## Reliability Test Data

QTP #: 124902

<i>Device</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Ass Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
<b>STRESS: ESD-CHARGE DEVICE MODEL</b>							
CY7C1061GE30(7CC1710613A)9308001		611340082	G-TAIWAN	500	9	0	
CY7C1061GE30(7CC1710613A)9308001		611340082	G-TAIWAN	750	3	0	
CY7C1062G30 (7CC171062A) 9302002		611321701	G-TAIWAN	500	9	0	
CY7C1062G30 (7CC171062A) 9302002		611321701	G-TAIWAN	1000	3	0	
CY7C1062G30 (7CC171062A) 9302002		611321701	G-TAIWAN	1250	3	0	
<b>STRESS: ESD-HUMAN BODY CIRCUIT PER JEDEC EIA/JESD22-A114</b>							
CY7C1062G30 (7CC171062A) 9302002		611321701	G-TAIWAN	1100	3	0	
CY7C1062G30 (7CC171062A) 9302002		611321701	G-TAIWAN	2200	8	0	
CY7C1062G30 (7CC171062A) 9302002		611321701	G-TAIWAN	3300	3	0	
CY7C1061G30 (7CC171061A) 9302002		611320002	G-TAIWAN	1100	3	0	
CY7C1061G30 (7CC171061A) 9302002		611320002	G-TAIWAN	2200	8	0	
CY7C1061G30 (7CC171061A) 9302002		611320002	G-TAIWAN	3300	3	0	
CY7C1069G30 (7CC171069A) 9302002		611320107	G-TAIWAN	1100	3	0	
CY7C1069G30 (7CC171069A) 9302002		611320107	G-TAIWAN	2200	8	0	
CY7C1069G30 (7CC171069A) 9302002		611320107	G-TAIWAN	3300	3	0	
CY7C1061GE30(7CC1710613A)9308001		611340082	G-TAIWAN	1100	3	0	
CY7C1061GE30(7CC1710613A)9308001		611340082	G-TAIWAN	2200	8	0	
CY7C1061GE30(7CC1710613A)9308001		611340082	G-TAIWAN	3300	3	0	
CY7C1061G30 (7CC171061A) 9312001		611328720	CML-RA	1100	3	0	
CY7C1061G30 (7CC171061A) 9312001		611328720	CML-RA	2200	8	0	
CY7C1061G30 (7CC171061A) 9312001		611328720	CML-RA	3300	3	0	
CY7C1061G30 (7CC171061A) 9324001		611342911	G-TAIWAN	1100	3	0	
CY7C1061G30 (7CC171061A) 9324001		611342911	G-TAIWAN	2200	8	0	
CY7C1061G30 (7CC171061A) 9324001		611342911	G-TAIWAN	3300	3	0	
<b>STRESS: HI-ACCEL SATURATION TEST, 110C, 85%RH, 3.65V, PRE COND 192 HR 30C/60%RH, MSL3</b>							
CY7C1061G30 (7CC171061A) 9313001		611348182	CML-RA	264	30	0	
<b>STRESS: HI-ACCEL SATURATION TEST, 130C, 85%RH, 3.65V, PRE COND 192 HR 30C/60%RH, MSL3</b>							
CY7C1061G30 (7CC171061A) 9313001		611348183	CML-RA	128	79	0	

## Reliability Test Data

QTP #: 124902

<i>Device</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Ass 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 – REG-ON, 125C, 6.0V</b>							
CY7C1061G30 (7CC171061A)	9313001	611333269	CML-RA	96	50	0	
CY7C1061G30 (7CC171061A)	9324001	611342911	G-TAIWAN	96	50	0	
<b>STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 125C, 1.44V</b>							
CY7C1061G30 (7CC171061A)	9313001	611333269	CML-RA	96	2107	0	
CY7C1061G30 (7CC171061A)	9324001	611342911	G-TAIWAN	96	1818	0	
<b>STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 125C, 1.44V</b>							
CY7C1061G30 (7CC171061A)	9312001	611414530	CML-RA	168	179	0	
CY7C1061G30 (7CC171061A)	9312001	611414530	CML-RA	1000	175	0	
CY7C1061G30 (7CC171061A)	9313001	611333269	CML-RA	168	180	0	
CY7C1061G30 (7CC171061A)	9313001	611333269	CML-RA	1000	180	0	
CY7C1061G30 (7CC171061A)	9324001	611342911	G-TAIWAN	168	179	0	
CY7C1061G30 (7CC171061A)	9324001	611342911	G-TAIWAN	1000	178	0	
<b>STRESS: HIGH TEMP STEADY STATE LIFE TEST, 150C, 1.37V</b>							
CY7C1061G30 (7CC171061A)	9313001	611333269	CML-RA	168	80	0	
CY7C1062G30 (7CC171062A)	9302002	611321701	G-TAIWAN	168	80	0	
<b>STRESS: HIGH TEMPERATURE STORAGE, PLASTIC, 150C</b>							
CY7C1061G30 (7CC171061A)	9313001	611333088	CML-RA	500	79	0	
CY7C1061G30 (7CC171061A)	9313001	611333088	CML-RA	1000	79	0	
<b>STRESS: LOW TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, -30C, 1.62V</b>							
CY7C1061G30 (7CC171061A)	9313001	611333269	CML-RA	500	83	0	
<b>STRESS: PRE/POST LFR CRITICAL PARAMETERS</b>							
CY7C1061G30 (7CC171061A)	9312001	611414530	CML-RA	0	10+2	0	
CY7C1061G30 (7CC171061A)	9312001	611414530	CML-RA	1000	10+2	0	
CY7C1061G30 (7CC171061A)	9313001	611333269	CML-RA	0	10+2	0	
CY7C1061G30 (7CC171061A)	9313001	611333269	CML-RA	1000	10+2	0	
CY7C1061G30 (7CC171061A)	9324001	611342911	G-TAIWAN	0	10+2	0	
CY7C1061G30 (7CC171061A)	9324001	611342911	G-TAIWAN	1000	10+2	0	

## Reliability Test Data

QTP #: 124902

<i>Device</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Ass Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
<b>STRESS: PRE/POST LTOL CRITICAL PARAMETERS</b>							
CY7C1061G30 (7CC171061A)	9313001	611333269	CML-RA	0	10+2	0	
CY7C1061G30 (7CC171061A)	9313001	611333269	CML-RA	500	10+2	0	
<b>STRESS: PRESSURE COOKER TEST, 121C, 100%RH, 15 Psig, PRE COND 192 HR 30C/60%RH, MSL3</b>							
CY7C1061G30 (7CC171061A)	9313001	611348183	CML-RA	168	79	0	
CY7C1061G30 (7CC171061A)	9313001	611348183	CML-RA	288	79	0	
CY7C1061G30 (7CC171061A)	9313001	611333088	CML-RA	168	78	0	
CY7C1061G30 (7CC171061A)	9313001	611333088	CML-RA	288	78	0	
<b>STRESS: STATIC LATCH-UP TESTING, 85C, 8.25V/9.1V, +/-140mA</b>							
CY7C1062G30 (7CC171062A)	9302002	611321701	G-TAIWAN	COMP	6	0	
CY7C1061G30 (7CC171061A)	9302002	611320002	G-TAIWAN	COMP	6	0	
CY7C1069G30 (7CC171069A)	9302002	611320107	G-TAIWAN	COMP	6	0	
CY7C1061GE30(7CC1710613A)9308001		611340082	G-TAIWAN	COMP	6	0	
CY7C1061G30 (7CC171061A)	9312001	611328720	CML-RA	COMP	6	0	
CY7C1061G30 (7CC171061A)	9324001	611342911	G-TAIWAN	COMP	6	0	
<b>STRESS: STATIC LATCH-UP TESTING, 125C, 8.25V/9.1V, +/-140mA</b>							
CY7C1062G30 (7CC171062A)	9302002	611321701	G-TAIWAN	COMP	2	0	
CY7C1061G30 (7CC171061A)	9302002	611320002	G-TAIWAN	COMP	2	0	
CY7C1069G30 (7CC171069A)	9302002	611320107	G-TAIWAN	COMP	2	0	
CY7C1061GE30(7CC1710613A)9308001		611340082	G-TAIWAN	COMP	2	0	
CY7C1061G30 (7CC171061A)	9312001	611328720	CML-RA	COMP	2	0	
CY7C1061G30 (7CC171061A)	9324001	611342911	G-TAIWAN	COMP	2	0	
<b>STRESS: STATIC LATCH-UP TESTING, 85C, 8.25V/9.1V, +/-180mA</b>							
CY7C1062G30 (7CC171062A)	9302002	611321701	G-TAIWAN	COMP	2	0	
CY7C1061G30 (7CC171061A)	9302002	611320002	G-TAIWAN	COMP	2	0	
CY7C1069G30 (7CC171069A)	9302002	611320107	G-TAIWAN	COMP	2	0	
CY7C1061GE30(7CC1710613A)9308001		611340082	G-TAIWAN	COMP	2	0	
CY7C1061G30 (7CC171061A)	9312001	611328720	CML-RA	COMP	2	0	
CY7C1061G30 (7CC171061A)	9324001	611342911	G-TAIWAN	COMP	2	0	

## Reliability Test Data

QTP #: 124902

<i>Device</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Ass Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
<b>STRESS: SER – ALPHA PARTICLE SEL, 25C/85C/120C, 1.65V/3.3V/5.5V</b>							
7C1710614GE	0	0	UMC	COMP	3	0	
<b>STRESS: SER – NEUTRON SEL, 85C/125C, 5.25V</b>							
7C17165A	0	0	UMC	COMP	3	0	
<b>STRESS: TEMPERATURE CYCLE COND. C -65C TO 150C, PRE COND 192 HRS 30C/60%RH, MSL3</b>							
CY7C1061G30 (7CC171061A)	9313001	611348183	CML-RA	500	80	0	
CY7C1061G30 (7CC171061A)	9313001	611348183	CML-RA	1000	79	0	
CY7C1061G30 (7CC171061A)	9313001	611348182	CML-RA	500	80	0	
CY7C1061G30 (7CC171061A)	9313001	611348182	CML-RA	1000	78	0	
CY7C1061G30 (7CP1710612A)	9313001	611420263	CML-RA	500	80	0	
CY7C1061G30 (7CP1710612A)	9313001	611420263	CML-RA	1000	80	0	
CY7C1061G30 (7CC171061A)	9313001	611348184	CML-RA	500	80	0	
CY7C1061G30 (7CC171061A)	9313001	611348184	CML-RA	1000	80	0	
<b>STRESS: X-SECTION/STEM XY AUDIT</b>							
7C17165A	9302002	0	UMC	COMP	1WF	0	

## Reliability Test Data

QTP #: 144804

<i>Device</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Ass Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
<b>STRESS: ESD-CHARGE DEVICE MODEL</b>							
CY62167GE30 (7CC1721673A)	9423005	611500929	CML-RA	500	9	0	
CY62167GE30 (7CC1721673A)	9423005	611500929	CML-RA	1000	3	0	
CY62167GE30 (7CC1721673A)	9423005	611500929	CML-RA	1250	3	0	
<b>STRESS: ESD-HUMAN BODY CIRCUIT PER JEDEC EIA/JESD22-A114</b>							
CY62167GE30 (7CC1721673A)	9423005	611500929	CML-RA	1100	3	0	
CY62167GE30 (7CC1721673A)	9423005	611500929	CML-RA	2200	8	0	
CY62167GE30 (7CC1721673A)	9423005	611500929	CML-RA	3300	3	0	
<b>STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 125C, 1.44V</b>							
CY62167GE30 (7CC1721673A)	9423005	611500929	CML-RA	96	927	0	
CY62167G30 (7CC172167A)	9438001	611503292	G-Taiwan	96	695	0	
<b>STRESS: STATIC LATCH-UP TESTING, 85C, 8.25V, +/-140mA</b>							
CY62167GE30 (7CC1721673A)	9423005	611500929	CML-RA	COMP	3	0	
<b>STRESS: STATIC LATCH-UP TESTING, 85C, 9.1V, +/-200mA</b>							
CY62167GE30 (7CC1721673A)	9423005	611500929	CML-RA	COMP	3	0	
<b>STRESS: STATIC LATCH-UP TESTING, 125C, 8.25V, +/-140mA</b>							
CY62167GE30 (7CC1721673A)	9423005	611500929	CML-RA	COMP	3	0	
<b>YIELD: CLASS</b>							
CY62167GE30 (7CC1721673A)	9423005	611500929	CML-RA	COMP	EQUIVALENT		
<b>YIELD: E-TEST</b>							
CY62167GE30 (7CC1721673A)	9423005	611500929	CML-RA	COMP	EQUIVALENT		
<b>YIELD: SORT</b>							
CY62167GE30 (7CC1721673A)	9423005	611500929	CML-RA	COMP	EQUIVALENT		



## Reliability Test Data

QTP #: 200401

<b>Device Mechanism</b>	<b>Fab Lot #</b>	<b>Assy Lot #</b>	<b>Assy Loc</b>	<b>Duration</b>	<b>Samp</b>	<b>Rej</b>	<b>Failure</b>
<b>STRESS: B1 – RESISTANCE TO SOLVENT</b>							
CYRS1061G30 (7M171061A)	9903000	621900011	DP	COMP	3	0	
<b>STRESS: B2- BOND PULL</b>							
CYRS1061G30 (7M171061A)	9903000	621900011	DP	COMP	4	0	
<b>STRESS: B2 – DIE SHEAR</b>							
CYRS1061G30 (7M171061A)	9903000	621900011	DP	COMP	3	0	
<b>STRESS: B3 – SOLDERABILITY TEST</b>							
CYRS1061G30 (7M171061A)	9903000	621900011	DP	COMP	3	0	
<b>STRESS: D1 – PHYSICAL DIMENSION</b>							
CYRS1061G30 (7M171061A)	9903000	621900011	DP	COMP	15	0	
<b>STRESS: D2 – LEAD INTEGRITY</b>							
CYRS1061G30 (7M171061A)	9903000	621900011	DP	COMP	3	0	
<b>STRESS: D3 – THERMAL SERIES</b>							
CYRS1061G30 (7M171061A)	9903000	621900011	DP	COMP	15	0	
<b>STRESS: D4 – MECHANICAL SERIES</b>							
CYRS1061G30 (7M171061A)	9903000	621900011	DP	COMP	15	0	
<b>STRESS: D5 – SALT ATMOSPHERE</b>							
CYRS1061G30 (7M171061A)	9903000	621900011	DP	COMP	15	0	
<b>STRESS: D6 – INTERNAL WATER VAPOR</b>							
CYRS1061G30 (7M171061A)	9903000	621900011	DP	COMP	3	0	
<b>STRESS: D7 – ADHESION OF LEAD FINISH</b>							
CYRS1061G30 (7M171061A)	9903000	621900011	DP	COMP	3	0	
<b>STRES: X-RAY</b>							
CYRS1061G30 (7M171061A)	9903000	621900011	DP	COMP	156	0	

## Reliability Test Data

**QTP #: 200401**

<b>Device Mechanism</b>	<b>Fab Lot #</b>	<b>Assy Lot #</b>	<b>Assy Loc</b>	<b>Duration</b>	<b>Samp</b>	<b>Rej</b>	<b>Failure</b>
<b>STRESS: ENHANCED LOW DOSE RATE SENSITIVITY TEST (ELDRS)</b>							
CYRS1061G30 (7M171061A)	9903000	621900011	DP	COMP	4	0	
<b>STRESS: ESD-CHARGE DEVICE MODEL</b>							
CYRS1061G30 (7M171061A)	9903000	621900011	DP	500	3	0	
<b>STRESS: ESD-HUMAN BODY MODEL</b>							
CYRS1061G30 (7M171061A)	9903000	621900011	DP	1000	3	0	
CYRS1061G30 (7M171061A)	9903000	621900011	DP	2000	3	0	
<b>STRESS: GROUP C, 125C, Vcc = 3.63V</b>							
CYRS1061G30 (7M171061A)	9903000	621900011	DP	1000	45	0	
<b>STRESS: GROUP E</b>							
CYRS1061G30 (7M171061A)	9903000	621900011	DP	TCI	5	0	
CYRS1061G30 (7M171061A)	9903000	621900011	DP	TID	12	0	
CYRS1061G30 (7M171061A)	9903000	621900011	DP	Transient Ionization	5	0	
CYRS1061G30 (7M171061A)	9903000	621900011	DP	Dose Rate Latch-up	5	0	
CYRS1061G30 (7M171061A)	9903000	621900011	DP	SEE	4	0	
<b>STRESS: PRE/ POST HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE CHAR</b>							
CYRS1061G30 (7M171061A)	9903000	621900011	DP	COMP	10+2	0	
<b>STRESS: S/LATCH-UP, +/-200mA, 5.4V, 125C</b>							
CYRS1061G30 (7M171061A)	9903000	621900011	DP	COMP	6	0	

## Document History Page

Document Title: QTP# 200401: RADIATION HARDENED 16 MEG ASYNCHRONOUS SRAM DEVICE FAMILY,  
LL65UP-25ODR+ TECHNOLOGY, UMC FAB 12A  
Document Number: 002-29967

Rev.	ECN No.	Orig. of Change	Description of Change
**	6831945	JYF	Initial spec release.