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Cypress Semiconductor Product Qualification Report

QTP# 124902 VERSION*C
December 2020

16-MBIT Asynchronous SRAM Family ULL65nm (LL65UP-25ODR) Technology, UMC Fab 12A	
CY62157H*	8-MBIT (512 K WORDS X 16 BIT) STATIC RAM WITH ERROR CORRECTING CODE (ECC), VCC=1.8V, 3V AND 5V, W/ AND W/O ERR PIN
CY62156H*	8-MBIT (512 K WORDS X 16 BIT) STATIC RAM WITH ERROR CORRECTING CODE (ECC) WITH BYTE DOWN FEATURE, VCC=1.8V, 3V AND 5V, W/ AND W/O ERR PIN
CY62158H*	8-MBIT (1 M WORDS X 8 BIT) STATIC RAM WITH ERROR CORRECTING CODE (ECC), VCC=1.8V, 3V AND 5V, W/ AND W/O ERR PIN
CY62162G*	16-MBIT (512 K WORDS X 32 BITS) STATIC RAM WITH ERROR-CORRECTING CODE (ECC), VCC=1.8V, 3V AND 5V, W/ AND W/O ERR PIN
CY62167G*	16-MBIT (1 M WORDS X 16 BIT / 2 M WORDS X 8 BIT) STATIC RAM WITH ERROR-CORRECTING CODE (ECC), VCC=1.8V, 3V AND 5V, W/ AND W/O ERR PIN
CY62168G*	16-MBIT (2 M WORDS X 8 BITS) STATIC RAM WITH ERROR-CORRECTING CODE (ECC), VCC=1.8V, 3V AND 5V, W/ AND W/O ERR PIN
CY62166G*	16-MBIT (1 M WORDS X 16 BIT / 2 M WORDS X 8 BIT) STATIC RAM WITH ERROR-CORRECTING CODE (ECC) WITH BYTE DOWN FEATURE, VCC=1.8V, 3V AND 5V, W/ AND W/O ERR PIN
CY7C10612G*	16MBIT (1M WORDS X 16 BIT) STATIC RAM WITH ERROR CORRECTING CODE (ECC) WITH SINGLE CHIP ENABLE, VCC=1.8V, 3V AND 5V, W/ AND W/O ERR PIN
CY7C1061G*	16MBIT (1M WORDS X 16 BIT) STATIC RAM WITH ERROR CORRECTING CODE (ECC), VCC=1.8V, 3V AND 5V, W/ AND W/O ERR PIN
CY7C1069G*	16-MBIT (2 M WORDS X 8 BIT) STATIC RAM WITH ERROR-CORRECTING CODE(ECC), VCC=1.8V, 3V AND 5V, W/ AND W/O ERR PIN
CY7C1062G*	16-MBIT (512 K WORDS X 32 BITS) STATIC RAM WITH ERROR-CORRECTING CODE (ECC), VCC=1.8V, 3V AND 5V, W/ AND W/O ERR PIN
CY7C1051H*	8MBIT (512K WORDS X 16 BIT) STATIC RAM WITH ERROR CORRECTING CODE (ECC), VCC=1.8V, 3V AND 5V, W/ AND W/O ERR PIN
CY7C1059H*	8MBIT (1M WORDS X 8 BIT) STATIC RAM WITH ERROR CORRECTING CODE (ECC), VCC=1.8V, 3V AND 5V, W/ AND W/O ERR PIN

16-MBIT Asynchronous SRAM Family ULL65nm (LL65UP-25ODR) Technology, UMC Fab 12A	
CY7S10612G*	16MBIT (1M WORDS X 16 BIT) STATIC RAM WITH ERROR CORRECTING CODE (ECC) WITH SINGLE CHIP ENABLE & DEEP SLEEP FEATURE, VCC=1.8V, 3V AND 5V, W/ AND W/O ERR PIN
CY7S1061G*	16MBIT (1M WORDS X 16 BIT) STATIC RAM WITH ERROR CORRECTING CODE (ECC) WITH DEEP SLEEP FEATURE, VCC=1.8V, 3V AND 5V, W/ AND W/O ERR PIN
CY7S1069G*	16-MBIT (2 M WORDS X 8 BIT) STATIC RAM WITH ERROR-CORRECTING CODE(ECC) WITH DEEP SLEEP FEATURE, VCC=1.8V, 3V AND 5V, W/ AND W/O ERR PIN
CY7S1062G*	16-MBIT (512 K WORDS X 32 BITS) STATIC RAM WITH ERROR-CORRECTING CODE (ECC) WITH DEEP SLEEP FEATURE, VCC=1.8V, 3V AND 5V, W/ AND W/O ERR PIN
CY7S1051G*	8MBIT (512K WORDS X 16 BIT) STATIC RAM WITH ERROR CORRECTING CODE (ECC) WITH DEEP SLEEP FEATURE, VCC=1.8V, 3V AND 5V, W/ AND W/O ERR PIN
CY7S1059G*	8MBIT (1M WORDS X 8 BIT) STATIC RAM WITH ERROR CORRECTING CODE (ECC) WITH DEEP SLEEP FEATURE, VCC=1.8V, 3V AND 5V, W/ AND W/O ERR PIN
CY7C1061GN*	16-MBIT (1M WORDS X 16 BIT) STATIC RAM, VCC=1.8V, 3V AND 5V
CY7C1069GN*	16-MBIT (2 M WORDS X 8 BIT) STATIC RAM, VCC=1.8V, 3V AND 5V
CY7C1071G*	32MBIT (2M WORDS X 16 BIT) STATIC RAM WITH ERROR CORRECTING CODE (ECC), VCC=1.8V, 3V AND 5V, W/ AND W/O ERR PIN

FOR ANY QUESTIONS ON THIS REPORT, PLEASE CONTACT

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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

PRODUCT DESCRIPTION (for qualification)	
Qualification Purpose:	Qualify 16-MBIT Asynchronous SRAM Family ,ULL65nm (LL65UP-25ODR) Technology at UMC Fab 12A
Marketing Part #:	CY62157H*/CY62156H*/CY62158H*/CY62162G*/CY62167G*/CY62168G*/CY62166G*/ CY7C10612G*/CY7C1061G*/CY7C1069G*/CY7C1062G*/CY7C1051H*/CY7C1059H*/ CY7S10612G*/CY7S1061G*/CY7S1069G*/CY7S1062G*/CY7S1051G*/CY7S1059G*/ CY7C1061GN*/ CY7C1069GN*/ CY7C1071G*
Device Description:	16-MBIT Asynchronous SRAM Family
Cypress Division:	Cypress Semiconductor Corporation – Memory Solutions

TECHNOLOGY/FAB PROCESS DESCRIPTION – LL65P-18R			
Number of Metal Layers:	Proprietary	Metal Composition:	Proprietary
Passivation Type and Materials:	Proprietary		
Number of Transistors in Device	Proprietary		
Number of Logic Gates in Device	Proprietary		
Generic Process Technology/Design Rule (μ-drawn):	Proprietary		
Gate Oxide Material/Thickness (MOS):	Proprietary		
Name/Location of Die Fab (prime) Facility:	UMC Fab 12A		
Die Fab Line ID/Wafer Process ID:	L65LL		

PACKAGE AVAILABILITY

PACKAGE	ASSEMBLY SITE FACILITY	QTP REFERENCE
48-Ball VFBGA	CML-RA	QTP# 140204
48-Ball VFBGA	ASEK-Taiwan	QTP# 131204
119 PBGA		QTP# 131010
48L TSOP I		QTP# 131008
54L TSOP II		QTP# 131009

Note: Package Qualification details upon request

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION

Package Designation:	BZ48A
Package Outline, Type, or Name:	VFBGA (Very Fine Ball Grid Array)
Mold Compound Name/Manufacturer:	GR9810-1PLA/Henkel
Mold Compound Flammability Rating:	V-0 / UL94
Oxygen Rating Index:	54 (Typical) / 28 (Min. value)
Substrate Material:	BT resin
Lead Finish, Composition / Thickness:	SAC105
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Saw
Die Attach Supplier:	Henkel
Die Attach Material:	QMI 506
Bond Diagram Designation:	001-85195
Wire Bond Method:	Thermosonic
Package Cross Section Yes/No:	N/A
Name/Location of Assembly (prime) facility:	CML-RA
MSL Level	3
Reflow Profile	260C

ELECTRICAL TEST / FINISH DESCRIPTION

Test Location:	CML-RA
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Note: Please contact a Cypress Representative for other packages availability

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	BZ48A
Package Outline, Type, or Name:	VFBGA (Very Fine Ball Grid Array)
Mold Compound Name/Manufacturer:	KE-G2250/KYOCERA
Mold Compound Flammability Rating:	V-0 / UL94
Oxygen Rating Index:	N/A
Substrate Material:	BT resin
Lead Finish, Composition / Thickness:	SAC105
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Saw
Die Attach Supplier:	Ablestik
Die Attach Material:	Ablestik 2100A
Bond Diagram Designation:	001-85194
Wire Bond Method:	Thermosonic
Package Cross Section Yes/No:	N/A
Assembly Process Flow:	001-89076
Name/Location of Assembly (prime) facility:	ASE-Taiwan (G)
MSL Level	3
Reflow Profile	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	Chipmos (GO) -Taiwan

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	BY119
Package Outline, Type, or Name:	PBGA (Plastic Ball Grid Array)
Mold Compound Name/Manufacturer:	CEL9750ZHF10/Hitachi
Mold Compound Flammability Rating:	V-0 / UL94
Oxygen Rating Index:	N/A
Substrate Material:	BT resin
Lead Finish, Composition / Thickness:	SAC405
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Saw
Die Attach Supplier:	Ablestik
Die Attach Material:	Ablestik 2100A
Bond Diagram Designation:	001-85190
Wire Bond Method:	Thermosonic
Package Cross Section Yes/No:	N/A
Assembly Process Flow:	001-96508
Name/Location of Assembly (prime) facility:	ASE-Taiwan (G)
MSL Level	3
Reflow Profile	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	CML-RA

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION

Package Designation:	ZT48
Package Outline, Type, or Name:	TSOP I (Thin Small Outline Package)
Mold Compound Name/Manufacturer:	EME- G631SH/ Sumitomo
Mold Compound Flammability Rating:	V-0 / UL94
Oxygen Rating Index:	N/A
Substrate Material:	N/A
Lead Finish, Composition / Thickness:	Pure Sn
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Saw
Die Attach Supplier:	Sumitomo
Die Attach Material:	CRM-1076WA
Bond Diagram Designation:	001-85186
Wire Bond Method:	Thermosonic
Package Cross Section Yes/No:	N/A
Assembly Process Flow:	001-95783
Name/Location of Assembly (prime) facility:	ASE-Taiwan (G)
MSL Level	3
Reflow Profile	260C

ELECTRICAL TEST / FINISH DESCRIPTION

Test Location:	Chipmos (GO) -Taiwan
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MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	ZW54
Package Outline, Type, or Name:	TSOP II (Thin Small Outline Package Type II)
Mold Compound Name/Manufacturer:	EME- G631SH/Sumitomo
Mold Compound Flammability Rating:	V-0 / UL94
Oxygen Rating Index:	N/A
Substrate Material:	N/A
Lead Finish, Composition / Thickness:	Pure Sn
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Saw
Die Attach Supplier:	Sumitomo
Die Attach Material:	CRM-1076WA
Bond Diagram Designation:	001-85187
Wire Bond Method:	Thermosonic
Package Cross Section Yes/No:	N/A
Assembly Process Flow:	001-95783
Name/Location of Assembly (prime) facility:	ASE-Taiwan (G)
MSL Level	3
Reflow Profile	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	Test - Chipmos (GO) -Taiwan & Finish – Telford Philippines

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENT

Stress/Test	Test Condition (Temp/Bias)	Result P/F
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 FAILURE RATE SUMMARY

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

¹ Assuming an ambient temperature of 55°C and a junction temperature rise of 15°C.

² Chi-squared 60% estimations used to calculate the failure rate..

³ 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 = 8.62x10⁻⁵ eV/Kelvin.

T₁ is the junction temperature of the device under stress and T₂ is the junction temperature of the device at use conditions.

¹Early Failure Rate was computed from QTP# 144804

² Long Term Failure Rate was computed from QTP# 091706 and QTP# 124902 Data.

Reliability Test Data

QTP #: 091706

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

Reliability Test Data

QTP #: 091706

Device	Fab Lot #	Assy Lot #	Ass Loc	Duration	Samp	Rej	Failure Mechanism
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STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 125C, BOOST REGULATED AT CORE 1.45V, EXTERNAL 2.05V

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	

STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 150C, BOOST REGULATED AT CORE 1.45V, EXTERNAL 2.05V

CY7C1514KV18 (7C1553K)	8844021	610908348	TAIWN-G	500	178	0	
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STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 125C, BOOST REGULATED AT CORE 1.45V, EXTERNAL 2.05V

CY7C1514KV18 (7C1553K)	8844020	610854240	TAIWN-G	1000	178	0	
CY7C1514KV18 (7C1553K)	8844022	610906896	TAIWN-G	1000	178	0	

STRESS: LOW TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, -30C, 2.25V Vcc

CY7C1514KV18 (7C1553K)	8842022	610852338	TAIWN-G	500	45	0	
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STRESS: PRESSURE COOKER TEST, 121C, 100%RH, 15 Psig, PRE COND 192 HR 30C/60%RH, MSL3

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	

STRESS: Pre-/ Post HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE CHAR

CY7C1514KV18 (7C1553K)	8844020	610854240	TAIWN-G	COMP	10	0	
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STRESS: STATIC LATCH-UP TESTING, 125C, 3.42V, +/-240mA

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	

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

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	

STRESS: STRESS: TEMPRATURE HUMIDITY TEST, 85C, 85%RH, 2.25V, PRE COND 192 HR 30C/60%RH, MSL3

CY7C1514KV18 (7C1553K)	8842022	610851583	TAIWN-G	1000	77	0	
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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

Device	Fab Lot #	Assy Lot #	Ass Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3							
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	
STRESS: AGE BOND STRENGTH							
CY7C1061G30 (7CC171061A)	9313001	611348183	CML-RA	COMP	3	0	
CY7C1061G30 (7CC171061A)	9313001	611348182	CML-RA	COMP	3	0	
STRESS: CONSTRUCTIONAL ANALYSIS							
CY7C1061G30 (7CC171061A)	9313001	611348183	CML-RA	COMP	5	0	
CY7C1061G30 (7CC171061A)	9313001	611348182	CML-RA	COMP	5	0	
STRESS: DYNAMIC LATCH-UP TESTING, 125C, 8.25V							
CY7C1061G30 (7CC171061A)	9313001	611348182	CML-RA	COMP	3	0	
STRESS: ESD-CHARGE DEVICE MODEL							
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

Device	Fab Lot #	Assy Lot #	Ass Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ESD-CHARGE DEVICE MODEL							
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	
STRESS: ESD-HUMAN BODY CIRCUIT PER JEDEC EIA/JESD22-A114							
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	
STRESS: HI-ACCEL SATURATION TEST, 110C, 85%RH, 3.65V, PRE COND 192 HR 30C/60%RH, MSL3							
CY7C1061G30 (7CC171061A) 9313001		611348182	CML-RA	264	30	0	
STRESS: HI-ACCEL SATURATION TEST, 130C, 85%RH, 3.65V, PRE COND 192 HR 30C/60%RH, MSL3							
CY7C1061G30 (7CC171061A) 9313001		611348183	CML-RA	128	79	0	

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<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: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE – REG-ON, 125C, 6.0V							
CY7C1061G30 (7CC171061A)	9313001	611333269	CML-RA	96	50	0	
CY7C1061G30 (7CC171061A)	9324001	611342911	G-TAIWAN	96	50	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 125C, 1.44V							
CY7C1061G30 (7CC171061A)	9313001	611333269	CML-RA	96	2107	0	
CY7C1061G30 (7CC171061A)	9324001	611342911	G-TAIWAN	96	1818	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 125C, 1.44V							
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	
STRESS: HIGH TEMP STEADY STATE LIFE TEST, 150C, 1.37V							
CY7C1061G30 (7CC171061A)	9313001	611333269	CML-RA	168	80	0	
CY7C1062G30 (7CC171062A)	9302002	611321701	G-TAIWAN	168	80	0	
STRESS: HIGH TEMPERATURE STORAGE, PLASTIC, 150C							
CY7C1061G30 (7CC171061A)	9313001	611333088	CML-RA	500	79	0	
CY7C1061G30 (7CC171061A)	9313001	611333088	CML-RA	1000	79	0	
STRESS: LOW TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, -30C, 1.62V							
CY7C1061G30 (7CC171061A)	9313001	611333269	CML-RA	500	83	0	
STRESS: PRE/POST LFR CRITICAL PARAMETERS							
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	

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<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: PRE/POST LTOL CRITICAL PARAMETERS							
CY7C1061G30 (7CC171061A)	9313001	611333269	CML-RA	0	10+2	0	
CY7C1061G30 (7CC171061A)	9313001	611333269	CML-RA	500	10+2	0	
STRESS: PRESSURE COOKER TEST, 121C, 100%RH, 15 Psig, PRE COND 192 HR 30C/60%RH, MSL3							
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	
STRESS: STATIC LATCH-UP TESTING, 85C, 8.25V/9.1V, +/-140mA							
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	
STRESS: STATIC LATCH-UP TESTING, 125C, 8.25V/9.1V, +/-140mA							
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	
STRESS: STATIC LATCH-UP TESTING, 85C, 8.25V/9.1V, +/-180mA							
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>
STRESS: SER – ALPHA PARTICLE SEL, 25C/85C/120C, 1.65V/3.3V/5.5V							
7C1710614GE	0	0	UMC	COMP	3	0	
STRESS: SER – NEUTRON SEL, 85C/125C, 5.25V							
7C17165A	0	0	UMC	COMP	3	0	
STRESS: TEMPERATURE CYCLE COND. C -65C TO 150C, PRE COND 192 HRS 30C/60%RH, MSL3							
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	
STRESS: X-SECTION/STEM XY AUDIT							
7C17165A	9302002	0	UMC	COMP	1WF	0	

Reliability Test Data

QTP #: 144804

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

Document History Page

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TECHNOLOGY, UMC FAB 12A
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Rev.	ECN No.	Orig. of Change	Description of Change
**	4552381	JYF	Initial spec release.
*A	4676863	JYF	Added reliability data of QTP# 144804 and updated EFR PPM in Reliability Failure Rate Summary table ;Updated MPN coverage; Updated Major Package Information table for: <ul style="list-style-type: none"> - Package name of VFBGA to "Very Fine Ball Grid Array" - ASEK-Taiwan assembly site to ASE-Taiwan (G) - Assembly Process Flow ref. spec of CML-RA/BZ48, ASE-Taiwan/BZ48,BY119,ZT48/ZT54; Updated Electrical Test/Finish Description table for: <ul style="list-style-type: none"> - ASE-Taiwan/BZ48 test location to Chipmos-Taiwan - ASE-Taiwan/ZW54 Finish location to add Telford-Phils.
*B	4914503	JYF	Sunset review: Updated MPN coverage and reference for Reliability Director.
		DCON	Removed distribution and posting from the document history page.
*C	7041978	JYF	Updated MPN coverage and alignment of Qualification Report to current template