

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 Product Qualification Report

QTP# 121904
December 2013

LL65 144 Meg QDR-IV Flip Chip Synchronous SRAM Device Family	
65nm (LL65P-18R) Technology, UMC Fab 12A	
CY7C4121KV13	QDR-IV, B2A2, 144Mb, x18, 667MHz, 361 FCBGA
CY7C4141KV13	QDR-IV, B2A2, 144Mb, x36, 667MHz, 361 FCBGA
CY7C4122KV13	QDR-IV, B2A2b (w/ bank switching), 144Mb, x18, 1066MHz, 361 FCBGA
CY7C4142KV13	QDR-IV, B2A2b (w/ bank switching), 144Mb, x36, 1066MHz, 361 FCBGA
CY7C4021KV13	72Mb, QDR-IV, B2:A2, 4Mb X 18, 667MHz, 361 FCBGA
CY7C4041KV13	72Mb, QDR-IV, B2:A2, 2Mb X 36, 667MHz, 361 FCBGA
CY7C4022KV13	72Mb, QDR-IV, B2:A2B, 4Mb X 18, 1066MHz, 361 FCBGA
CY7C4042KV13	72Mb, QDR-IV, B2:A2B, 2Mb X 36, 1066MHz, 361 FCBGA
CY7C4121KV13	QDR-IV, B2A2, 144Mb, x18, 667MHz, 361 Flip Chip BGA
CY7C4141KV13	QDR-IV, B2A2, 144Mb, x36, 667MHz, 361 Flip Chip BGA
CY7C4122KV13	QDR-IV, B2A2b (w/ bank switching), 144Mb, x18, 1066MHz, 361 FCBGA
CY7C4142KV13	QDR-IV, B2A2b (w/ bank switching), 144Mb, x36, 1066MHz, 361 FCBGA
CY7C4021KV13	72Mb, QDR-IV, B2:A2, 4Mb X 18, 667MHz, 361 FCBGA
CY7C4041KV13	72Mb, QDR-IV, B2:A2, 2Mb X 36, 667MHz, 361 FCBGA
CY7C4022KV13	72Mb, QDR-IV, B2:A2B, 4Mb X 18, 1066MHz, 361 FCBGA
CY7C4042KV13	72Mb, QDR-IV, B2:A2B, 2Mb X 36, 933MHz, 361 FCBGA

CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:

Zhaomin Ji
Principal Reliability Engineer
(408) 432-7021

Mira Ben-Tzur
Quality Engineering Director
(408) 943-2675

Company Confidential

A printed copy of this document is considered uncontrolled. Refer to online copy for latest revision.

QUALIFICATION HISTORY

Qual Report		Description of Qualification Purpose	Date Comp
091706		Qualification of 65nm (LL65) Technology at UMC Fab 12A and New Device CY7C1553K Base Die 72M QDR Product Family	Aug 2009
093202		Qualification of UMC 65nm Process Improvement	Nov 2009
103405		LL65 144M QDR Product Family Qualification	Dec 2010
121904		LL65 144M QDR-IV Flip-Chip High Speed Product Family Qualification	Dec 2013

PRODUCT DESCRIPTION (for qualification)	
Qualification Purpose:	Qualify LL65 144M QDR-IV Flip-Chip Product Family at UMC Fab 12A
Marketing Part #:	CY7C4121KV, CY7C4122KV, CY7C4141KV, CY7C4142KV
Device Description:	1.8V Commercial and Industrial available in 361L Flip-Chip BGA
Cypress Division:	Cypress Semiconductor Corporation –Memory Product Division
Overall Die (or Mask) REV Level (pre-requisite for qualification):	
What ID markings on Die:	7C4141K

TECHNOLOGY/FAB PROCESS DESCRIPTION – LL65FH-12			
Number of Metal Layers:	6+RDL	Metal Composition:	Metal 1: Cu 0.18um Metal 2: Cu 0.22um Metal 3: Cu 0.22um Metal 4: Cu 0.36um Metal 5: Cu 1.25um Metal6: Cu 1.25um RDL: Al 2.5um
Passivation Type and Materials:	0.4um Oxide / 0.5um Nitride		
Generic Process Technology/Design Rule (□-drawn):	CMOS, 65nm		
Gate Oxide Material/Thickness (MOS):	19.5A		
Name/Location of Die Fab (prime) Facility:	UMC Fab 12		
Die Fab Line ID/Wafer Process ID:	L65LL		

PACKAGE AVAILABILITY

PACKAGE	ASSEMBLY SITE FACILITY
361 Flip-Chip BGA	ASE-Taiwan, QTP#122002

Note: Package Qualification details upon request

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	361 HFC BGA
Package Size	21mm x 21mm x 2.515mm
Substrate	NTK, 3+2+3 layers, 1.15mm
Die Size:	13.973mm x 14.301mm x 0.787mm
Substrate BT- core	R1515W/ABF-GX13
Underfill	UA32 (8410-99)
Soldermask	AUS703
Lid adhesive & TIM	SE4450
Bump source / Solder Composition	ASE Kaohsiung /LF bump (SnAg2.4+/-0.5%) ASE Chung-Li /LF bump (SnAg1.8+/-0.5%)
Bump pad pitch / Height	198um / 85um
UBM Structure /Size	Ti-1KA/Cu-5KA/plated 3um Ni / 90um
Ultra low Alpha solder bump	0.002 alpha/cm ² /hr
Bond Diagram Designation:	001-74529
MSL	3
Solder Reflow Temp	260C
Package Cross Section Yes/No:	Yes
Assembly Process Flow:	001-90343
Name/Location of Assembly (prime) facility:	ASE- G (Taiwan)

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	ASE-G (Taiwan)

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENT

Stress/Test	Test Condition (Temp/Bias)	Result P/F
High Temperature Operating Life Early Failure Rate (EFR)	Dynamic Operating Condition, Core Voltage 1.45V, 125C	P
High Temperature Operating Life Latent Failure Rate (LFR)	Dynamic Operating Condition, Core Voltage 1.45V, 125C	P
Pre/Post LFR AC/DC Char	AC/DC Critical Parameter Char at LFR 80hrs, 500hrs & 1000hrs	P
High Temperature Steady State Life (HTSSL)	Static Operating Condition, Vcc Max= 2.05V, 125C	P
Low Temperature Operating Life	Dynamic Operating Condition, Vcc = 2.05V, -30C	P
High Accelerated Saturation Test (HAST)	130°C, 2.05V, 85%RH Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs, 30C/60%RH+3IR-Reflow, 260C	P
Temperature Humidity Bias Test (THB)	85°C, 2.25V, 85%RH Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs, 30C/60%RH+3IR-Reflow, 260C	P
Temperature Cycle	MIL-STD-883C, Method 1010, Condition C, -65C to 150C MIL-STD-883C, Method 1010, Condition B, -55C to 125C Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs, 30C/60%RH+3IR-Reflow, 260C	P
Pressure Cooker	121°C, 100%RH, 15 Psig Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs, 30C/60%RH+3IR-Reflow, 260C	P
Precondition	JESD22 Moisture Sensitivity	P
High Temperature Storage	150C ± 5C, no bias	P
Electrostatic Discharge Human Body Model (ESD-HBM)	3,300V, JESD22-A114E	P
Electrostatic Discharge Charge Device Model (ESD-CDM)	500V, JESD22-C101C	P
Electrostatic Discharge Machine Model (ESD-MM)	200V, JESD22-A115-A	P
Soft Error (Alpha Particle)	JESD89A	P
Soft Error (Neutron/Proton)	JESD89A	P
Current Density	Meets the Technology Device Level Reliability Specifications	P
Age Bond Strength	200°C, 4HRS MIL-STD-883, Method 883-2011	P
Acoustic Microscopy	J-STD-020	P
Static Latchup	125C, ± 140mA In accordance with JESD78	P

RELIABILITY FAILURE RATE SUMMARY

Stress/Test	Device Tested/ Device Hours	# Fails	Activation Energy	Thermal AF ³	Failure Rate
High Temperature Operating Life Early Failure Rate	2,964 Devices	0	N/A	N/A	0 PPM
High Temperature Operating Life ^{1,2} Long Term Failure Rate (150°C)	89,000 DHRs	0	0.7	170	10 FIT
High Temperature Operating Life ^{1,2} Long Term Failure Rate (125°C)	1,366,904 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.

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-B, 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	
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	
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	

Reliability Test Data

QTP #: 091706

Device	Fab Lot #	Assy Lot #	Ass Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: LOW TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, -30C, 2.25V Vcc							
CY7C1514KV18 (7C1553K)	8842022	610852338	TAIWN-G	500	45	0	
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	
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	
STRESS: SER – ALPHA PARTICLE, 3-TEPM, 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 #: 093202

Device	Fab Lot #	Assy Lot #	Ass Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ESD-HUMAN BODY CIRCUIT PER JEDEC EIA/JESD22-A114-B, 2,200V							
CY7C15631KV18 (7C1553K)	8911000	610922435	TAIWN-G	COMP	8	0	
STRESS: HIGH TEMPERATURE STORAGE, PLASTIC, 150C							
CY7C15631KV18 (7C1553K)	8911000	610922435	TAIWN-G	1000	80	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 125C, BOOST REGULATED AT CORE 1.45V, EXTERNAL 2.05V							
CY7C15631KV18 (7C1553K)	8912000	610921675	TAIWN-G	96	596	0	
CY7C15631KV18 (7C1553K)	8910015	610921676	TAIWN-G	96	711	0	
CY7C15631KV18 (7C1553K)	8911000	610922435	TAIWN-G	96	1795	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 125C, BOOST REGULATED AT CORE 1.45V, EXTERNAL 2.05V							
CY7C15631KV18 (7C1553K)	8912000	610921675	TAIWN-G	168	190	0	
CY7C15631KV18 (7C1553K)	8911000	610922435	TAIWN-G	500	184	0	

Reliability Test Data

QTP #: 103405

Device	Fab Lot #	Assy Lot #	Ass Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3							
CY7C1612K (7C1612K)	8845001	611032553	CML-RA	COMP	15	0	
CY7C1612K (7C1612K)	8845001	611032555	CML-RA	COMP	15	0	
CY7C1612K (7C1612K)	8845001	611032554	CML-RA	COMP	15	0	
CY7C1612K (7C1612K)	8908003	611024882	CML-RA	COMP	15	0	
CY7C1612K (7C1612K)	8845001	611024890	CML-RA	COMP	15	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER JEDEC EIA/JESD22-A114-B, 2,200V							
CY7C16539K (7C16539K)	8845004	610933466	G-Taiwan	COMP	8	0	
CY7C1612K (7C1612K)	8845001	611032553	CML-RA	COMP	8	0	
STRESS: ESD-CHARGE DEVICE MODEL, 500V							
CY7C16539K (7C16539K)	8845004	610933466	G-Taiwan	COMP	9	0	
CY7C1612K (7C1612K)	8845001	611032553	CML-RA	COMP	9	0	
STRESS: ESD-MACHINE MODEL, 200V							
CY7C16539K (7C16539K)	8845004	610933466	G-Taiwan	COMP	5	0	
CY7C1612K (7C1612K)	8845001	611032553	CML-RA	COMP	5	0	
STRESS: HI-ACCEL SATURATION TEST (130C, 85%RH, 2.05V), PRE COND 192 HR 30C/60%RH, MSL3							
CY7C1612K (7C1612K)	8845001	611032553	CML-RA	264	76	0	
CY7C1612K (7C1612K)	8908003	611024882	CML-RA	264	72	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 125C, 2.05V, REG ON							
CY7C16538K (7C16538K)	8937000	610945141	G-Taiwan	96	48	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 125C, BOOST REGULATED AT CORE 1.45V, EXTERNAL 2.05V							
CY7C16538K (7C16538K)	8937000	610944083	G-Taiwan	96	1809	0	
CY7C1614K (7C1614K)	8927001	610946060	G-Taiwan	96	1224	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 125C, BOOST REGULATED AT CORE 1.45V, EXTERNAL 2.05V							
CY7C16538K (7C16538K)	8937000	610944083	G-Taiwan	168	178	0	
CY7C16538K (7C16538K)	8937000	610944083	G-Taiwan	1000	178	0	
CY7C1614K (7C1614K)	8927001	610946060	G-Taiwan	168	178	0	
CY7C1614K (7C1614K)	8927001	610946060	G-Taiwan	1000	178	0	
STRESS: HIGH TEMP STORAGE 150C							
CY7C1612K (7C1612K)	8845001	611032553	CML-RA	500	76	0	
CY7C1612K (7C1612K)	8845001	611032553	CML-RA	1000	74	0	
CY7C1612K (7C1612K)	8845001	611032553	CML-RA	1500	66	0	
CY7C1612K (7C1612K)	8908003	611024882	CML-RA	500	77	0	
CY7C1612K (7C1612K)	8908003	611024882	CML-RA	1000	76	0	
STRESS: HIGH TEMP STEADY STATE LIFE TEST, 150C, 2.05V, Vcc Max							
CY7C16539K (7C16539K)	8845004	610933941	CML-RA	168	77	0	
CY7C16539K (7C16539K)	8845004	610933941	CML-RA	336	77	0	

Reliability Test Data

QTP #: 103405

Device	Fab Lot #	Assy Lot #	Ass Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: PRESSURE COOKER TEST, 121C, 100%RH, PRE COND 192 HR 30C/60%RH, MSL3							
CY7C1612K (7C1612K)	8845001	611032553	CML-RA	168	75	0	
CY7C1612K (7C1612K)	8845001	611032553	CML-RA	288	72	0	
CY7C1612K (7C1612K)	8845001	611032555	CML-RA	168	73	0	
CY7C1612K (7C1612K)	8845001	611032555	CML-RA	288	73	0	
STRESS: Pre-/ Post HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE CHAR							
CY7C16538K (7C16538K)	8937000	610944083	G-Taiwan	COMP	10	0	
CY7C1614K (7C1614K)	8927001	610946060	G-Taiwan	COMP	10	0	
STRESS: STATIC LATCH-UP TESTING, 125C, 3.42V, +/-180mA							
CY7C16539K (7C16539K)	8845004	610933466	TAIWN-G	COMP	9	0	
CY7C1612K (7C1612K)	8845001	611032553	CML-RA	COMP	9	0	
STRESS: TC COND. B -55C TO 125C, PRE COND192 HRS 30C/60%RH, MSL3							
CY7C1614KV (7C1614K)	8945028	611036123	CML-RA	500	74	0	
CY7C1614KV (7C1614K)	8945028	611036123	CML-RA	1000	74	0	
CY7C1614KV (7C1614K)	8945028	611036123	CML-RA	1300	74	0	
CY7C1618KV (7C1618K)	8945028	611036125	CML-RA	500	76	0	
CY7C1618KV (7C1618K)	8945028	611036125	CML-RA	1000	75	0	
CY7C1618KV (7C1618K)	8945028	611036125	CML-RA	1300	75	0	
CY7C1613KV (7C1613K)	8015005	611041460	CML-RA	500	77	0	
CY7C1613KV (7C1613K)	8015005	611041460	CML-RA	1000	77	0	
CY7C1613KV (7C1613K)	8015005	611041460	CML-RA	1300	77	0	

Reliability Test Data

QTP #: 121904

Device	Fab Lot #	Assy Lot #	Ass Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3							
CY7C4141K (7C4141K)	8240014	611310662	ASE-G	COMP	15	0	
CY7C4141K (7C4141K)	9311001	611330199	ASE-G	COMP	15	0	
CY7C4141K (7C4141K)	9311001	611324142	ASE-G	COMP	15	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER JEDEC EIA/JESD22-A114-B, 2,200V							
CY7C4141K (7C4141K)	8240014	611237575	ASE-G	COMP	8	0	
CY7C4141K (7C4141K)	9311001	611330199	ASE-G	COMP	8	0	
CY7C4141K (7C4141K)	9310013	611340821	ASE-G	COMP	8	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER JEDEC EIA/JESD22-A114-B, 3,300V							
CY7C4141K (7C4141K)	8240014	611237575	ASE-G	COMP	3	0	
CY7C4141K (7C4141K)	9311001	611330199	ASE-G	COMP	3	0	
CY7C4141K (7C4141K)	9310013	611340821	ASE-G	COMP	3	0	
STRESS: ESD-CHARGE DEVICE MODEL, 500V							
CY7C4141K (7C4141K)	8240014	611237575	ASE-G	COMP	9	0	
CY7C4141K (7C4141K)	9311001	611330199	ASE-G	COMP	9	0	
CY7C4141K (7C4141K)	9310013	611340821	ASE-G	COMP	9	0	
STRESS: ESD-MACHINE MODEL, 200V							
CY7C4141K (7C4141K)	8240014	611237575	ASE-G	COMP	5	0	
STRESS: HI-ACCEL SATURATION TEST (130C, 85%RH, 2.05V), PRE COND 192 HR 30C/60%RH, MSL3							
CY7C4141K (7C4141K)	8240014	611310662	ASE-G	COMP	30	0	
CY7C4141K (7C4141K)	9311001	611324142	ASE-G	COMP	45	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 125C, BOOST REGULATED AT CORE 1.45V, EXTERNAL 2.05V							
CY7C4141K (7C4141K)	8240014	611310662	ASE-G	96	499	0	
CY7C4141K (7C4141K)	9311001	611330199	ASE-G	96	1400	0	
CY7C4141K (7C4141K)	9311001	611324141	ASE-G	96	600	0	
CY7C4141K (7C4141K)	9310013	611340821	ASE-G	96	465	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 125C, BOOST REGULATED AT CORE 1.45V, EXTERNAL 2.05V							
CY7C4141K (7C4141K)	8240014	611310662	ASE-G	168	178	0	
CY7C4141K (7C4141K)	8240014	611310662	ASE-G	1000	177	0	
CY7C4141K (7C4141K)	9311001	611330199	ASE-G	168	178	0	
CY7C4141K (7C4141K)	9311001	611330199	ASE-G	1000	178	0	
CY7C4141K (7C4141K)	9311001	611324141	ASE-G	168	178	0	
CY7C4141K (7C4141K)	9311001	611324142	ASE-G	1000	178	0	
CY7C4141K (7C4141K)	9310013	611340821	ASE-G	168	178	0	
STRESS: HIGH TEMP STORAGE 150C							
CY7C4141K (7C4141K)	8240014	611310662	ASE-G	500	77	0	
CY7C4141K (7C4141K)	8240014	611310662	ASE-G	1000	77	0	
STRESS: HIGH TEMP STEADY STATE LIFE TEST, 150C, 2.05V, Vcc Max							
CY7C4141K (7C4141K)	8240014	611310662	ASE-G	168	77	0	
CY7C4141K (7C4141K)	8240014	611310662	ASE-G	336	77	0	

Reliability Test Data

QTP #: 121904

Device	Fab Lot #	Assy Lot #	Ass Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: PRESSURE COOKER TEST, 121C, 100%RH, PRE COND 192 HR 30C/60%RH, MSL3							
CY7C4141K (7C4141K)	8240014	611310662	ASE-G	96	77	0	
CY7C4141K (7C4141K)	8240014	611310662	ASE-G	168	77	0	
CY7C4141K (7C4141K)	8240014	611310662	ASE-G	288	77	0	
CY7C4141K (7C4141K)	9311001	611330199	ASE-G	96	77	0	
CY7C4141K (7C4141K)	9311001	611330199	ASE-G	168	77	0	
CY7C4141K (7C4141K)	9311001	611330199	ASE-G	288	77	0	
CY7C4141K (7C4141K)	9311001	611324142	ASE-G	96	77	0	
CY7C4141K (7C4141K)	9311001	611324142	ASE-G	168	77	0	
CY7C4141K (7C4141K)	9311001	611324142	ASE-G	288	77	0	
STRESS: Pre-/ Post (168H/1000H) HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE CHAR							
CY7C4141K (7C4141K)	8240014	611310662	ASE-G	COMP	10	0	
CY7C4141K (7C4141K)	9311001	611330199	ASE-G	COMP	10	0	
CY7C4141K (7C4141K)	9311001	611324141	ASE-G	COMP	10	0	
STRESS: STATIC LATCH-UP TESTING, 85C, 3.42V, +/-140mA							
CY7C4141K (7C4141K)	8240014	611237575	ASE-G	COMP	6	0	
CY7C4141K (7C4141K)	9310013	611340821	ASE-G	COMP	6	0	
STRESS: STATIC LATCH-UP TESTING, 85C, 3.42V, +/-180mA							
CY7C4141K (7C4141K)	8240014	611237575	ASE-G	COMP	2	0	
CY7C4141K (7C4141K)	9310013	611340821	ASE-G	COMP	2	0	
STRESS: STATIC LATCH-UP TESTING, 125C, 3.42V, +/-140mA							
CY7C4141K (7C4141K)	8240014	611237575	ASE-G	COMP	2	0	
CY7C4141K (7C4141K)	9310013	611340821	ASE-G	COMP	2	0	
STRESS: SOFT ERROR NEUTRON TESTING							
CY7C4141K (7C4141K)	8240014	611237575	ASE-G	COMP	3	0	
STRESS: TEMPRATURE CYCLE, COND. C -65C TO 150C, PRE COND192 HRS 30C/60%RH, MSL3							
CY7C4141K (7C4141K)	8240014	611310662	ASE-G	500	77	0	
CY7C4141K (7C4141K)	9311001	611330199	ASE-G	500	77	0	
CY7C4141K (7C4141K)	9311001	611324142	ASE-G	500	77	0	

Document History Page

Document Title: QTP 121904: LL65 144 Meg QDR-IV Flip Chip Synchronous SRAM Product Qualification Report
Document Number: 001-90570

Rev.	ECN No.	Orig. of Change	Description of Change
**	4229037	ZIJ	Initial spec release.
*A	4791104	ZIJ	Changed substrate BT- core material to R1515W/ABF-GX13 2.and added ASE Chung-Li /LF bump (SnAg1.8+/-0.5%) to the Bump source / Solder Composition section to be aligned with the package spec 001-90666.
		DCON	Removed distribution and posting from document history page

Company Confidential

A printed copy of this document is considered uncontrolled. Refer to online copy for latest revision.