

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 Automotive Customer Specific Qualification Report

QTP# 091001
February 2013

2 Meg MoBL SRAM Automotive Devices	
R95LD-3R, FAB 4	
CY62136FV30	MOBL(R) 2 MBIT (128K X 16) STATIC RAM
CY62137FV30	MOBL(R) 2-MBIT (128K X 16) STATIC RAM
CY62138FV30	MOBL (R) 2-MBIT (256K X 8) STATIC RAM

CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:

Mira Ben-Tzur
Reliability Director
(408) 943-2675

Rene Rodgers
Reliability Engineer, MTS
(408) 943-2732

PRODUCT QUALIFICATION HISTORY

QTP Number	Description of Qualification Purpose	Date
071103	8 Meg MoBL SRAM Automotive Device Family & Technology (R95LD-3R) Qualification at Fab 4	Mar 07
072002	Qualify 2 Meg MoBL Static RAM Automotive device and family on R95LD-3R Technology at Fab 4	Jun 07
091001	Mask Change (CTM1: 400B, MM1: 450D, VIM: 500B, MM2: 550C) to qualified Industrial/Automotive R95 2M (7C62135GC) MoBL SRAM in R95LD-3R technology in FAB4	Dec 11

PRODUCT DESCRIPTION (for qualification)

Qualification Purpose: : Qualify new mask change for Industrial/Automotive R95 2M (7C62135GC) MoBL SRAM in R95LD-3R technology in FAB4 has passed the qualification.

Automotive Marketing Part #: CY63136FV30, CY63137FV30, CY63138FV30

Device Description: 3V Automotive

Cypress Division: Cypress Semiconductor Corporation –Memory Image Division (MID)

TECHNOLOGY/FAB PROCESS DESCRIPTION

Number of Metal Layers:	2	Metal Composition:	Metal 1: 100Å Ti / 3200Å Al / 300Å TiW Metal 2: 150Å Ti / 8000Å Al / 300Å TiW
-------------------------	---	--------------------	--

Passivation Type and Thickness:	1000Å Oxide TEOS / 9000Å Nitride
---------------------------------	----------------------------------

Generic Process Technology/Design Rule (μ-drawn):	CMOS, Double Metal, 0.09μm
---	----------------------------

Gate Oxide Material/Thickness (MOS):	28Å
--------------------------------------	-----

Name/Location of Die Fab (prime) Facility:	Cypress Semiconductor -- Bloomington, MN
--	--

Die Fab Line ID/Wafer Process ID:	Fab4/R95LD-3R
-----------------------------------	---------------

PACKAGE AVAILABILITY

PACKAGE	ASSEMBLY FACILITY SITE
44-Pin TSOP II	CML-R
32-Pin STSOP	CML-R

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	ZW44
Package Outline, Type, or Name:	44-Pin TSOPII
Mold Compound Name/Manufacturer:	Hitachi CEL9200CYRU
Mold Compound Flammability Rating:	V-O per UL94
Oxygen Rating Index:	28%
Substrate Material:	N/A
Lead Finish, Composition / Thickness:	NiPdAu
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Wafer Saw
Die Attach Supplier:	Dexter
Die Attach Material:	QMI509
Die Attach Method:	Die Attach Epoxy
Bond Diagram Designation:	001-08163
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au. 1.0mil
Thermal Resistance Theta JA °C/W:	51.42 °C/W
Package Cross Section Yes/No:	N/A
Name/Location of Assembly (prime) facility:	CML-R
MSL Level	3
Reflow Profile	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	CML-R

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

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS

Stress/Test	Test Condition (Temp/Bias)	Result P/F
High Temperature Operating Life Early Failure Rate	AEC-Q100-008 and JESD22-A108 Dynamic Operating Condition, Vcc Max = 1.85V, 125°C	P
High Temperature Operating Life Latent Failure Rate	JESD22-A108 Dynamic Operating Condition, Vcc Max = 1.85V, 150°C	P
High Accelerated Saturation Test (HAST)	JESD22-A110, 130°C, 5.5V, 85%RH Precondition: JESD22-A113 Moisture Sensitivity MSL 3 192 Hrs, 30C/60%RH+3IR-Reflow, 260°C+0, -5°C	P
Temperature Cycle	JESD22-A104, Condition C, -65°C to 150°C Precondition: JESD22-A113 Moisture Sensitivity MSL 3 192 Hrs, 30C/60%RH+3IR-Reflow, 260°C+0, -5°C	P
Pressure Cooker	JESD22-A102, 121°C, 100%RH, 15 Psig Precondition: JESD22-A113 Moisture Sensitivity MSL 3 192 Hrs, 30C/60%RH+3IR-Reflow, 260°C+0, -5°C	P
Acoustics	J-STD-020	P
Ball Shear	AEC-Q100-010	P
Bond Pull	Mil-Std 883, Method 2011	P
Constructional Analysis	Criteria: Meet external and internal characteristics of Cypress package	P
Dye Penetration Test	Test to determine the existence and extent of cracks, Criteria: No Package Crack	P
Electrostatic Discharge Human Body Model (ESD-HBM)	AEC-Q100-002	P
Electrostatic Discharge Charge Device Model (ESD-CDM)	AEC Q100-011	P
Electrical Distributions	AEC Q100-009	P
External Visual	JESD22-B100	P
High Temperature Storage	JESD22-A103, 150C	P
Physical Dimensions	JESD22B100 and B108 AEC Q100-009	P
Post Temp Cycle Bond Pull	Mil-Std 883, Method 2011	P
Solderability	JESD22-B102	P
Static Latch-up	AEC-Q100-004	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	11,356 Devices	0	N/A	N/A	0 PPM
High Temperature Operating Life ^{1,2} Long Term Failure Rate	149,568 DHRs	0	0.7	170	36 FIT**

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



where:

E_A = The Activation Energy of the defect mechanism.

K = Boltzmann's constant = 8.62×10^{-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.

**Insufficient samples to calculate FIT Rate.

**Based on Automotive qual samples size not Commercial qual sample size.



Reliability Test Data

QTP #: 071103

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: BALL SHEAR							
CY62157EV30 (7C62157F)	4622329	610650792	CML-R	COMP	5	0	
STRESS: BOND PULL							
CY62157EV30 (7C62157F)	4622329	610650792	CML-R	COMP	5	0	
STRESS: POST TEMP CYCLE BOND PULL							
CY62157EV30 (7C62157F)	4622329	610650792	CML-R	COMP	5	0	
STRESS: ESD-CHARGE DEVICE MODEL, 250V							
CY62157EV30 (7C62157F)	4622329	610650792	CML-R	COMP	3	0	
STRESS: ESD-CHARGE DEVICE MODEL, 500V							
CY62157EV30 (7C62157F)	4622329	610650792	CML-R	COMP	3	0	
STRESS: ESD-CHARGE DEVICE MODEL, 750V, Corner Pins Only							
CY62157EV30 (7C62157F)	4622329	610650792	CML-R	COMP	3	0	
STRESS: ESD-HUMAN BODY CIRCUIT, 500V							
CY62157EV30 (7C62157F)	4622329	610650792	CML-R	COMP	3	0	
STRESS: ESD-HUMAN BODY CIRCUIT, 1,000V							
CY62157EV30 (7C62157F)	4622329	610650792	CML-R	COMP	3	0	
STRESS: ESD-HUMAN BODY CIRCUIT, 1,500V							
CY62157EV30 (7C62157F)	4622329	610650792	CML-R	COMP	3	0	
STRESS: ESD-HUMAN BODY CIRCUIT, 2,000V							
CY62157EV30 (7C62157F)	4622329	610650792	CML-R	COMP	3	0	
STRESS: EXTERNAL VISUAL							
CY62157EV30 (7C62157F)	4622329	610650792	CML-R	COMP	340	0	
CY62157EV30 (7C62157F)	4641534	610700620/2/3	CML-R	COMP	4452	0	
CY62157EV30 (7C62157F)	4644874	610701731/2/3	CML-R	COMP	4292	0	
CY62157EV30 (7C62157F)	4638533	610702506/8/981	CML-R	COMP	4344	0	
CY62157EV30 (7C62157F)	4629071	610660071	CML-R	COMP	30	0	
CY62157EV30 (7C62157F)	4627156	610661704	CML-R	COMP	30	0	



Reliability Test Data

QTP #: 071103

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
--------	-----------	------------	----------	----------	------	-----	-------------------

STRESS: ELECTRICAL DISTRIBUTIONS

CY62157EV30 (7C62157F)	4622329	610650792	CML-R	COMP	30	0	
CY62157EV30 (7C62157F)	4629071	610660071	CML-R	COMP	30	0	
CY62157EV30 (7C62157F)	4627156	610661704	CML-R	COMP	30	0	

STRESS: PHYSICAL DIMENSIONS

CY62157EV30 (7C62157F)	4622329	610650792	CML-R	COMP	10	0	
CY62157EV30 (7C62157F)	4641534	610700620	CML-R	COMP	10	0	
CY62157EV30 (7C62157F)	4644874	610701731	CML-R	COMP	10	0	
CY62157EV30 (7C62157F)	4638533	610702506	CML-R	COMP	10	0	

STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 125C, 1.85V, Vcc Max

CY62157EV30 (7C62157F)	4641534	610700620	CML-R	48	1410	0	
CY62157EV30 (7C62157F)	4641534	610700622	CML-R	48	1497	0	
CY62157EV30 (7C62157F)	4641534	610700623	CML-R	48	1535	0	
CY62157EV30 (7C62157F)	4644874	610701731	CML-R	48	1427	0	
CY62157EV30 (7C62157F)	4644874	610701732	CML-R	48	1469	0	
CY62157EV30 (7C62157F)	4644874	610701733	CML-R	48	1386	0	
CY62157EV30 (7C62157F)	4638533	610702506	CML-R	48	1490	0	
CY62157EV30 (7C62157F)	4638533	610702508	CML-R	48	1444	0	
CY62157EV30 (7C62157F)	4638533	610702981	CML-R	48	1400	0	

STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 150C, 1.85V, Vcc Max

CY62157EV30 (7C62157F)	4622329	610650792	CML-R	408	50	0	
CY62177EV30LL (7A62167F)	4838611	610854900	TAIWAN-T	432	100	0	
CY62177EV30LL (7A62167F)	4836421	610854901	TAIWAN-T	432	99	0	
CY62177EV30LL (7A62167F)	4836814	610854902	TAIWAN-T	432	100	0	

STRESS: HIGH TEMPERATURE STORAGE, 150C, no bias

CY62157EV30 (7C62157F)	4622329	610650792	CML-R	1000	50	0	
------------------------	---------	-----------	-------	------	----	---	--

STRESS: HI-ACCEL SATURATION TEST, 130C, 85%RH, 5.5V, PRE COND 192 HR 30C/60%RH, MSL3

CY62157EV30 (7C62157F)	4622329	610650792	CML-R	96	45	0	
CY62157EV30 (7C62157F)	4622329	610650792	CML-R	128	45	0	



Reliability Test Data

QTP #: 071103

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
--------	-----------	------------	----------	----------	------	-----	-------------------

STRESS: HI-ACCEL SATURATION TEST, 130C, 85%RH, 3.6V, PRE COND 192 HR 30C/60%RH, MSL3

CY62177EV30LL (7A62167F)	4838611	610854900	TAIWAN-T	96	79	0	
CY62177EV30LL (7A62167F)	4836421	610854901	TAIWAN-T	96	79	0	
CY62177EV30LL (7A62167F)	4836814	610854902	TAIWAN-T	96	80	0	

STRESS: PRESSURE COOKER TEST, 121C, 100%RH, 15 Psig, PRE COND 192 HR 30C/60%RH, MSL3

CY62157EV30 (7C62157F)	4622329	610650792	CML-R	96	50	0	
CY62157EV30 (7C62157F)	4622329	610650792	CML-R	168	48	0	
CY62177EV30LL (7A62167F)	4838611	610854900	TAIWAN-T	96	80	0	
CY62177EV30LL (7A62167F)	4838611	610854900	TAIWAN-T	168	80	0	
CY62177EV30LL (7A62167F)	4836421	610854901	TAIWAN-T	96	80	0	
CY62177EV30LL (7A62167F)	4836421	610854901	TAIWAN-T	168	80	0	
CY62177EV30LL (7A62167F)	4836814	610854902	TAIWAN-T	96	80	0	
CY62177EV30LL (7A62167F)	4836814	610854902	TAIWAN-T	168	80	0	

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

CY62157EV30 (7C62157F)	4622329	610650792	CML-R	500	55	0	
CY62157EV30 (7C62157F)	4622329	610650792	CML-R	1000	50	0	
CY62177EV30LL (7A62167F)	4838611	610854900	TAIWAN-T	500	85	0	
CY62177EV30LL (7A62167F)	4838611	610854900	TAIWAN-T	1000	79	0	
CY62177EV30LL (7A62167F)	4836421	610854901	TAIWAN-T	500	85	0	
CY62177EV30LL (7A62167F)	4836421	610854901	TAIWAN-T	1000	85	0	
CY62177EV30LL (7A62167F)	4836814	610854902	TAIWAN-T	500	85	0	
CY62177EV30LL (7A62167F)	4836814	610854902	TAIWAN-T	1000	85	0	

STRESS: STATIC LATCH-UP TESTING, 125C, 8.27V, ±100mA

CY62157EV30 (7C62157F)	4622329	610650792	CML-R	COMP	6	0	
------------------------	---------	-----------	-------	------	---	---	--

STRESS: SOLDERABILITY

CY62157EV30 (7C62157F)	4622329	610650792	CML-R	COMP	15	0	
CY62157EV30 (7C62157F)	4629071	610660070	CML-R	COMP	15	0	
CY62157EV30 (7C62157F)	4627156	610661706	CML-R	COMP	15	0	



Reliability Test Data

QTP #: 072002

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ESD-CHARGE DEVICE MODEL, 250V							
CY62137FV30LL (7C62137G)	4702374	610725036	CML-R	COMP	3	0	
STRESS: ESD-CHARGE DEVICE MODEL, 500V							
CY62137FV30LL (7C62137G)	4702374	610725036	CML-R	COMP	3	0	
STRESS: ESD-HUMAN BODY CIRCUIT , 500V							
CY62137FV30LL (7C62137G)	4702374	610725036	CML-R	COMP	3	0	
STRESS: ESD-HUMAN BODY CIRCUIT , 1,000V							
CY62137FV30LL (7C62137G)	4702374	610725036	CML-R	COMP	3	0	
STRESS: ESD-HUMAN BODY CIRCUIT , 1,500V							
CY62137FV30LL (7C62137G)	4702374	610725036	CML-R	COMP	3	0	
STRESS: ESD-HUMAN BODY CIRCUIT , 2,000V							
CY62137FV30LL (7C62137G)	4702374	610725036	CML-R	COMP	3	0	
STRESS: STATIC LATCH-UP TESTING, 125C, 5.4V, ±100mA							
CY62137FV30LL (7C62137G)	4702374	610725036	CML-R	COMP	6	0	
STRESS: ELECTRICAL DISTRIBUTIONS							
CY62137FV30LL (7C62137G)	4648158	610709631	CML-R	COMP	30	0	
CY62137FV30LL (7C62137G)	4645277	610709637	CML-R	COMP	30	0	
CY62137FV30LL (7C62137G)	4646629	610709638	CML-R	COMP	30	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 125C, 1.85V, Vcc Max							
CY62137FV30LL (7C62137G)	4702374	610725036	CML-R	48	3742	0	
CY62137FV30LL (7C62137G)	4702408	610725035	CML-R	48	3792	0	
CY62137FV30LL (7C62137G)	4701014	610725034	CML-R	48	3635	0	



Reliability Test Data

QTP #: 091001

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ESD-CHARGE DEVICE MODEL, 250V							
CY62137FV33 (7A62137G)	4036279	611104404	CML-R	COMP	3	0	
STRESS: ESD-CHARGE DEVICE MODEL, 500V							
CY62137FV33 (7A62137G)	4036279	611104404	CML-R	COMP	3	0	
STRESS: ESD-HUMAN BODY CIRCUIT , 500V							
CY62137FV33 (7A62137G)	4036279	611104404	CML-R	COMP	3	0	
STRESS: ESD-HUMAN BODY CIRCUIT , 1,000V							
CY62137FV33 (7A62137G)	4036279	611104404	CML-R	COMP	3	0	
STRESS: ESD-HUMAN BODY CIRCUIT , 1,500V							
CY62137FV33 (7A62137G)	4036279	611104404	CML-R	COMP	3	0	
STRESS: ESD-HUMAN BODY CIRCUIT , 2,000V							
CY62137FV33 (7A62137G)	4036279	611104404	CML-R	COMP	3	0	
STRESS: STATIC LATCH-UP TESTING, 125C, ±140mA							
CY62137FV33 (7A62137G)	4036279	611104404	CML-R	COMP	6	0	
STRESS: ELECTRICAL CHARACTERIZATION							
CY62137FV33 (7A62137G)	4036279	611104404	CML-R	COMP	30	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 125C, 1.85V, Vcc Max							
CY62137FV33 (7A62137G)	4036279	611104404	CML-R	96	5812	0	
CY62137FV33 (7A62137G)	4043460	611104365	CML-R	96	5544	0	



Document History Page

Document Title: QTP 091001: 2 MEG MOBL SRAM AUTOMOTIVE DEVICES R95LD-3R, FAB 4, MASK
CHANGE
Document Number: 001-74849

Rev.	ECN No.	Orig. of Change	Description of Change
**	3463222	NSR	Initial Spec Release
*A	3880168	NSR	Removed Assembly Process Flow with obsolete spec 11-20047. Removed the reference Cypress spec in Reliability Tests Performed Table and replaced with industry standard. Changed spec Category from Qualification Report to Customer Specific Qualification Report.
*B	3901807	ILZ	Changed spec category from Qualification Report Category to customer specific notification report

Distribution: WEB

Posting: None