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Cypress Semiconductor Automotive Package Qualification Report

QTP# 093104 VERSION *C
August 2014

Automotive 32-Lead STSOP NiPdAu, MSL3, 260C Reflow CML-R

FOR ANY QUESTIONS ON THIS REPORT, PLEAE CONTACT
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PACKAGE QUALIFICATION HISTORY

Qual Report	Description of Qualification Purpose	Date Comp
093104	Qualify MoBL SRAM Automotive 32 STSOP Package using 7A62138G, Kyocera G6000DA Mold Compound, QMI509 epoxy, NiPdAu, MSL3/260C assembled in CML-R	July 10

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	ZB32R
Package Outline, Type, or Name:	32-Lead STSOP
Mold Compound Name/Manufacturer:	Kyocera G6000DA
Mold Compound Flammability Rating:	V-O per UL94
Mold Compound Alpha Emission Rate:	Maximum 0.002 CPH/cm2
Oxygen Rating Index:	N/A
Lead Frame Material:	C7025
Lead Finish, Composition / Thickness:	NiPdAu
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	100% Sawing
Die Attach Supplier:	Henkel
Die Attach Material:	QMI 509
Die Attach Method:	Epoxy
Bond Diagram Designation:	001-48574
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au, 1.0mil
Thermal Resistance Theta JA °C/W:	105.1
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, KYEC

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENT

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, 125C	P
High Temperature Operating Life Latent Failure Rate	JESD22-A108, 150 C Dynamic Operating Condition, Vcc = 1.85V, 150C	P
High Accelerated Saturation Test (HAST)	JESD22-A110, 130C, 3.6V, 85%RH Precondition: JESD22-A113 Moisture Sensitivity MSL 3 192 Hrs, 30C/60%RH+3IR-Reflow, 260C+0, -5C	P
High Temperature Storage Test	JESD22-A103, 150 C	P
Temperature Cycle	JESD22-A104, -65□C to 150□C Precondition: JESD22-A113 Moisture Sensitivity MSL 3 192 Hrs, 30C/60%RH+3IR-Reflow, 260C+0, -5C	P
Pressure Cooker	JESD22-A102, 121C, 100%RH, 15 Psig Precondition: JESD22-A113 Moisture Sensitivity MSL 3 192 Hrs, 30C/60%RH+3IR-Reflow, 260C+0, -5C	P
Electrostatic Discharge Human Body Model (ESD-HBM)	AEC-Q100-002 500V/1000V/1500V/2000V	P
Electrostatic Discharge Charge Device Model (ESD-CDM)	AEC-Q100-011 250V/500V/750V	P
Acoustic Microscopy	JEDEC JSTD-020	P
Ball Shear	AEC-Q100-001	P
Bond Pull	Mil-Std 883, Method 2011	P
Final Visual Inspection	JESD22-B101B	P
Physical Dimensions	JESD22-B100/108	P
Post Temp Cycle Wire Bond Pull	Mil-Std 883, Method 2011	P
Solderability	JESD22-B102	P
Static Latchup	AEC-Q100-004, 125C, 5.4V, ± 200mA	P
Constructional Analysis	Criteria: Meet external and internal characteristics of Cypress package	P
Dye Penetrant Test	Test to determine the existence and extent of cracks, Criteria: No Package Crack	P

Reliability Test Data

QTP #: 093104

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3							
CY62138FV30LL (7A62138G)	4813031	610847851	CML-R	COMP	22	0	
CY62138FV30LL (7A62138G)	4813031	610847938	CML-R	COMP	22	0	
CY62138FV30LL (7A62138G)	4813031	610848076	CML-R	COMP	22	0	
STRESS: BALL SHEAR							
CY62138FV30LL (7A62138G)	4813031	610847851	CML-R	COMP	30	0	
CY62138FV30LL (7A62138G)	4850696	610921407	CML-R	COMP	25	0	
STRESS: BOND PULL							
CY62138FV30LL (7A62138G)	4813031	610847851	CML-R	COMP	30	0	
CY62138FV30LL (7A62138G)	4850696	610921407	CML-R	COMP	25	0	
STRESS: CONSTRUCTIONAL ANALYSIS							
CY62138FV30LL (7A62138G)	4813031	610847851	CML-R	COMP	5	0	
STRESS: DYE PENETRANT TEST							
CY62138FV30LL (7A62138G)	4813031	610847851	CML-R	COMP	15	0	
CY62138FV30LL (7A62138G)	4813031	610847938	CML-R	COMP	15	0	
CY62138FV30LL (7A62138G)	4813031	610848076	CML-R	COMP	15	0	
STRESS: ESD-CHARGE DEVICE MODEL, 250V							
CY62138FV30LL (7A62138G)	4813031	610847851	CML-R	COMP	3	0	
STRESS: ESD-CHARGE DEVICE MODEL, 500V							
CY62138FV30LL (7A62138G)	4813031	610847851	CML-R	COMP	3	0	
STRESS: ESD-CHARGE DEVICE MODEL, 750V							
CY62138FV30LL (7A62138G)	4813031	610847851	CML-R	COMP	3	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22-A114-B, 500V							
CY62138FV30LL (7A62138G)	4813031	610847851	CML-R	COMP	3	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22-A114-B, 1,000V							
CY62138FV30LL (7A62138G)	4813031	610847851	CML-R	COMP	3	0	

Reliability Test Data

QTP #: 093104

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22-A114-B, 1,500V							
CY62138FV30LL (7A62138G)	4813031	610847851	CML-R	COMP	3	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22-A114-B, 2,000V							
CY62138FV30LL (7A62138G)	4813031	610847851	CML-R	COMP	3	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22-A114-B, 4,000V							
CY62138FV30LL (7A62138G)	4813031	610847851	CML-R	COMP	3	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22-A114-B, 6,000V							
CY62138FV30LL (7A62138G)	4813031	610847851	CML-R	COMP	3	0	
STRESS: STATIC LATCH-UP TESTING, 125C, 5.4V, +/-2000mA							
CY62138FV30LL (7A62138G)	4813031	610847851	CML-R	COMP	6	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 125C, 1.85V, Vcc Max							
CY62138FV30LL (7A62138G)	4813031	610847851	CML-R	48	935	0	
CY62138FV30LL (7A62138G)	4813031	610847938	CML-R	48	827	0	
CY62138FV30LL (7A62138G)	4813031	610848076	CML-R	48	812	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 150C, 1.85V, Vcc Max							
CY62138FV30LL (7A62138G)	4813031	610847851	CML-R	408	85	0	
CY62138FV30LL (7A62138G)	4813031	610847938	CML-R	408	85	0	
CY62138FV30LL (7A62138G)	4813031	610848076	CML-R	408	85	0	
STRESS: HI-ACCEL SATURATION TEST, 130C, 85%RH, 3.63V, PRE COND 192 HR 30C/60%RH, MSL3							
CY62138FV30LL (7A62138G)	4813031	610847851	CML-R	96	79	0	
CY62138FV30LL (7A62138G)	4813031	610847851	CML-R	128	79	0	
CY62138FV30LL (7A62138G)	4813031	610847938	CML-R	96	78	0	
CY62138FV30LL (7A62138G)	4813031	610848076	CML-R	96	78	0	
CY62138FV30LL (7A62138G)	4813031	610848076	CML-R	128	78	0	
STRESS: HIGH TEMP STORAGE, 150C							
CY62138FV30LL (7A62138G)	4813031	610847851	CML-R	1000	80	0	

Reliability Test Data

QTP #: 093104

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: PHYSICAL DIMENSIONS							
CY62138FV30LL (7A62138G)	4850696	610921407	CML-R	COMP	10	0	
CY62138FV30LL (7A62138G)	4850696	610921604	CML-R	COMP	10	0	
CY62138FV30LL (7A62138G)	4850696	610921935	CML-R	COMP	10	0	
STRESS: POST TEMP CYCLE BOND PULL							
CY62138FV30LL (7A62138G)	4850696	610921407	CML-R	COMP	5	0	
STRESS: PRESSURE COOKER TEST, 121C, 100%RH, 15 Psig, PRE COND 192 HR 30C/60%RH, MSL3							
CY62138FV30LL (7A62138G)	4813031	610847851	CML-R	96	79	0	
CY62138FV30LL (7A62138G)	4813031	610847851	CML-R	168	79	0	
CY62138FV30LL (7A62138G)	4813031	610847938	CML-R	96	80	0	
CY62138FV30LL (7A62138G)	4813031	610847938	CML-R	168	80	0	
CY62138FV30LL (7A62138G)	4813031	610848076	CML-R	96	80	0	
CY62138FV30LL (7A62138G)	4813031	610848076	CML-R	168	80	0	
STRESS: SOLDERABILITY							
CY62138FV30LL (7A62138G)	4813031	610847851	CML-R	COMP	15	0	
CY62138FV30LL (7A62138G)	4813031	610847938	CML-R	COMP	15	0	
CY62138FV30LL (7A62138G)	4813031	610848076	CML-R	COMP	15	0	
STRESS: TC COND. C -65C TO 150C, PRE COND 192 HRS 30C/60%RH, MSL3							
CY62138FV30LL (7A62138G)	4850696	610921407	CML-R	500	90	0	
CY62138FV30LL (7A62138G)	4850696	610921604	CML-R	500	90	0	
CY62138FV30LL (7A62138G)	4850696	610921935	CML-R	500	90	0	

History Page

Document Title: 093104: AUTOMOTIVE 32-LEAD STSOP NIPDAU, MSL3, 260C REFLOW CML-R QUALIFICATION REPORT
Document Number: 001-63310

Rev.	ECN No.	Orig. of Change	Description of Change
**	2996946	NSR	Initial spec release
*A	3702806	NSR	Removed Version 1.0 in the title page. Removed obsolete Cypress Spec 24-00002. Removed the reference Cypress Spec in Reliability Tests Performed Table and reflect the reference Industry Standard only.
*B	4092592	HSTO	Sunset Review Deleted obsolete specification in major package information used in page 3. Updated test location facility based on current qualified test site
*C	4475040	HSTO	Align qualification report based on the new template in the front page

Distribution: WEB

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