

Cypress Semiconductor Automotive Customer Specific: Package Qualification Report

**QTP# 141703 VERSION **
December 2014**

**8L SOIC (150mils)
Matte Sn, Au Wire
MSL3, 260C Reflow
UTAC-Thailand (UTL)**

**FOR ANY QUESTIONS ON THIS REPORT PLEASE CONTACT reliability@cypress.com :
OR VIA LINK A CYLINK CRM CASE**

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PACKAGE QUALIFICATION HISTORY

QTP Number	Description of Qualification Purpose	Date
141703	Qualification of 8L SOIC (150 mils) using Au wire with EME-G600 mold compound, Abletherm 8600 die attach material, Cu leadframe and Matte Sn leadfinish.	Nov 2014

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	SW815 SZ815
Package Outline, Type, or Name:	8L SOIC (150 mils)
Mold Compound Name/Manufacturer:	EME-G600 / Sumitomo
Mold Compound Flammability Rating:	V-0 UL-97
Mold Compound Alpha Emission Rate:	N/A (not low alpha mold compound)
Oxygen Rating Index: >28%	54%
Lead Frame Designation:	FMP
Lead Frame Material:	Cu
Substrate Material:	N/A
Lead Finish, Composition / Thickness:	Matte Sn
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Saw
Die Attach Supplier:	Ablestik
Die Attach Material:	Abletherm 8600
Bond Diagram Designation	001-85999, 001-86119
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au / 0.8 mil
Thermal Resistance Theta JA °C/W:	152
Package Cross Section Yes/No:	Yes
Assembly Process Flow:	001-91702 / 001-91703
Name/Location of Assembly (prime) facility:	UTAC-Thailand (UTL)
MSL LEVEL	3
REFLOW PROFILE	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	UTAC-Thailand (UTL)

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 (EFR)	AEC-Q100-008 and JESD22-A108, 125C Dynamic Operating Condition, Vcc = 3.6V,	P
High Temperature Operating Life Latent Failure Rate (LFR)	JESD22-A-108-B Dynamic Operating Condition, 125°C, 3.6V, 1000 Hours	P
Pressure Cooker Test	JESD22-A102, 121 C, 100%RH, 15 PSIG Precondition: JESD22 Moisture Sensitivity Level 3 (192 Hrs., 30 C°, 60% RH, 260C Reflow)	P
Temperature Cycle	MIL-STD-883C, Method 1010, Condition C, -65 C to 150 C Precondition: JESD22 Moisture Sensitivity Level 3 (192 Hrs., 30 C°, 60% RH, 260C Reflow)	P
Acoustic Microscopy	J-STD-020 Precondition: JESD22 Moisture Sensitivity Level 3 (192 Hrs., 30 C°, 60% RH, 260C Reflow)	P
Constructional Analysis	Criteria: Meet external and internal characteristics of package	P
High Temp Storage	JESD22-A103: 150 C, no bias	P
Final Visual Inspection	JESD22-B101B	P
Wire Bond Pull	MIL-STD-883 – Method 2011	P
Wire Ball Shear	AEC Q100-001	P
Electrical Distributions	AEC Q100-009	
High Accelerated Saturation Test (HAST)	JEDEC STD 22-A110, 130 C, 85%RH, 3.6V Precondition: JESD22 Moisture Sensitivity Level 3 (192 Hrs., 30 C°, 60% RH, 260C Reflow)	P
Electrostatic Discharge Human Body Model (ESD-HBM)	AEC-Q100-002	P
Post Stress Ball Shear	JESD22-A116	P
Post Stress Bond Pull	MIL-STD-883 – Method 2011	P
Dye Penetrant Test	No Package Crack	P
Electrostatic Discharge Charge Device Model (ESD-CDM)	AEC-Q100-011	P
Physical Dimension	JESD22B100 and B108	P
Solderability	JESD22-B102	P



Reliability Test Data

QTP #: 141703

<i>Device</i>	<i>Package</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Assy Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
STRESS: ACOUSTIC, MSL3								
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405533	UTAC-UTL	COMP	22	0	
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405534	UTAC-UTL	COMP	22	0	
FM25V01 (FM25V01AY)	SW815	2341007	611405535	UTAC-UTL	COMP	22	0	
STRESS: BALL SHEAR								
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405533	UTAC-UTL	COMP	200	0	
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405534	UTAC-UTL	COMP	200	0	
FM25V01 (FM25V01AY)	SW815	2341007	611405535	UTAC-UTL	COMP	100	0	
STRESS: BOND PULL								
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405533	UTAC-UTL	COMP	200	0	
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405534	UTAC-UTL	COMP	200	0	
FM25V01 (FM25V01AY)	SW815	2341007	611405535	UTAC-UTL	COMP	100	0	
STRESS: CONSTRUCTIONAL ANALYSIS								
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405533	UTAC-UTL	COMP	5	0	
STRESS: DYE PENETRANT								
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405533	UTAC-UTL	COMP	15	0	
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405534	UTAC-UTL	COMP	15	0	
FM25V01 (FM25V01AY)	SW815	2341007	611405535	UTAC-UTL	COMP	15	0	
STRESS: ESD-CHARGE DEVICE MODEL								
FM25V01 (FM25V01AY)	SW815	2341007	611405535	UTAC-UTL	250	3	0	
FM25V01 (FM25V01AY)	SW815	2341007	611405535	UTAC-UTL	500	3	0	
FM25V01 (FM25V01AY)	SW815	2341007	611405535	UTAC-UTL	750	3	0	



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STRESS: ESD-HUMAN BODY CIRCUIT								
FM24V02A (FM24V02BY)	SZ815	4438076	611435736	CML-RA	1100	3	0	
FM24V02A (FM24V02BY)	SZ815	4438076	611435736	CML-RA	2200	8	0	
FM24V02A (FM24V02BY)	SZ815	4438076	611435736	CML-RA	3300	3	0	
FM24V02A (FM24V02BY)	SZ815	4438076	611435736	CML-RA	4000	3	0	
FM24V02A (FM24V02BY)	SZ815	4438076	611435736	CML-RA	5000	3	0	
FM24V02A (FM24V02BY)	SZ815	4438076	611435737	CML-RA	1100	3	0	
FM24V02A (FM24V02BY)	SZ815	4438076	611435737	CML-RA	2200	8	0	
FM24V02A (FM24V02BY)	SZ815	4438076	611435737	CML-RA	3300	3	0	
STRESS: ELECTRICAL DISTRIBUTIONS								
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405533	UTAC-UTL	COMP	30	0	
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405534	UTAC-UTL	COMP	30	0	
FM25V01 (FM25V01AY)	SW815	2341007	611405535	UTAC-UTL	COMP	30	0	
STRESS: FINAL VISUAL INSPECTION								
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405533	UTAC-UTL	COMP	3000	0	
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405534	UTAC-UTL	COMP	3000	0	
FM25V01 (FM25V01AY)	SW815	2341007	611405535	UTAC-UTL	COMP	3000	0	
STRESS: HIGH ACCELERATED SATURATION TEST, 130C, 3.6V, 85%RH, PRE COND 192 HR 30C/60%RH (MSL3)								
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405533	UTAC-UTL	96	80	0	
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405534	UTAC-UTL	96	80	0	
FM25V01 (FM25V01AY)	SW815	2341007	611405535	UTAC-UTL	96	80	0	



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STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 125C, 3.6V, Vcc Max

FM24CL64B (FM24CL64BAY)	SW815	2337015	611405533	UTAC-UTL	96	800	0	
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405534	UTAC-UTL	96	800	0	
FM25V01 (FM25V01AY)	SW815	2341007	611405535	UTAC-UTL	96	798	0	

STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 150C, 3.6V, Vcc Max

FM24CL64B (FM24CL64BAY)	SW815	2337015	611405533	UTAC-UTL	1000	78	0	
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405534	UTAC-UTL	1000	78	0	
FM25V01 (FM25V01AY)	SW815	2341007	611405535	UTAC-UTL	1000	78	0	

STRESS: HIGH TEMPERATURE STORAGE

FM24CL64B (FM24CL64BAY)	SW815	2337015	611405533	UTAC-UTL	1000	80	0	
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STRESS: PHYSICAL DIMENSION

FM24CL64B (FM24CL64BAY)	SW815	2337015	611405533	UTAC-UTL	COMP	30	0	
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405534	UTAC-UTL	COMP	30	0	
FM25V01 (FM25V01AY)	SW815	2341007	611405535	UTAC-UTL	COMP	30	0	

STRESS: PRESSURE COOKER TEST, PRE COND 192 HR 30C/60%RH (MSL3)

FM24CL64B (FM24CL64BAY)	SW815	2337015	611405533	UTAC-UTL	96	80	0	
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405533	UTAC-UTL	168	70	0	
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405534	UTAC-UTL	96	80	0	
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405534	UTAC-UTL	168	70	0	
FM25V01 (FM25V01AY)	SW815	2341007	611405535	UTAC-UTL	96	80	0	
FM25V01 (FM25V01AY)	SW815	2341007	611405535	UTAC-UTL	168	70	0	



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STRESS: POST 96H PCT ACOUSTIC								
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405533	UTAC-UTL	COMP	22	0	
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405534	UTAC-UTL	COMP	22	0	
FM25V01 (FM25V01AY)	SW815	2341007	611405535	UTAC-UTL	COMP	22	0	
STRESS: POST 168H PCT ACOUSTIC								
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405533	UTAC-UTL	COMP	22	0	
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405534	UTAC-UTL	COMP	22	0	
FM25V01 (FM25V01AY)	SW815	2341007	611405535	UTAC-UTL	COMP	22	0	
STRESS: POST 96H PCT BALL SHEAR								
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405533	UTAC-UTL	COMP	5	0	
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405534	UTAC-UTL	COMP	5	0	
FM25V01 (FM25V01AY)	SW815	2341007	611405535	UTAC-UTL	COMP	5	0	
STRESS: POST 96H PCT WIRE PULL								
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405533	UTAC-UTL	COMP	5	0	
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405534	UTAC-UTL	COMP	5	0	
FM25V01 (FM25V01AY)	SW815	2341007	611405535	UTAC-UTL	COMP	5	0	
STRESS: PRE/POST LFR PARAMETER ASSESSMENT								
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405533	UTAC-UTL	0	30+2	0	
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405533	UTAC-UTL	1000	30+2	0	
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405534	UTAC-UTL	0	30+2	0	
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405534	UTAC-UTL	1000	30+2	0	
FM25V01 (FM25V01AY)	SW815	2341007	611405535	UTAC-UTL	0	30+2	0	
FM25V01 (FM25V01AY)	SW815	2341007	611405535	UTAC-UTL	10000	30+2	0	



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STRESS: SOLDERABILITY								
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405533	UTAC-UTL	COMP	15	0	
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405534	UTAC-UTL	COMP	15	0	
FM25V01 (FM25V01AY)	SW815	2341007	611405535	UTAC-UTL	COMP	15	0	
STRESS: TEMPERATURE CYCLE								
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405533	UTAC-UTL	500	80	0	
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405533	UTAC-UTL	1000	70	0	
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405534	UTAC-UTL	500	79	0	
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405534	UTAC-UTL	1000	69	0	
FM25V01 (FM25V01AY)	SW815	2341007	611405535	UTAC-UTL	500	80	0	
FM25V01 (FM25V01AY)	SW815	2341007	611405535	UTAC-UTL	1000	70	0	
STRESS: POST 500 TCT ACOUSTIC								
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405533	UTAC-UTL	COMP	22	0	
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405534	UTAC-UTL	COMP	22	0	
FM25V01 (FM25V01AY)	SW815	2341007	611405535	UTAC-UTL	COMP	22	0	
STRESS: POST 1000 TCT ACOUSTIC								
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405533	UTAC-UTL	COMP	22	0	
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405534	UTAC-UTL	COMP	22	0	
FM25V01 (FM25V01AY)	SW815	2341007	611405535	UTAC-UTL	COMP	22	0	



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STRESS: POST 500 TCT WIRE PULL								
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405533	UTAC-UTL	COMP	5	0	
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405534	UTAC-UTL	COMP	5	0	
FM25V01 (FM25V01AY)	SW815	2341007	611405535	UTAC-UTL	COMP	5	0	
STRESS: POST 500 TCT BALL SHEAR								
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405533	UTAC-UTL	COMP	5	0	
FM24CL64B (FM24CL64BAY)	SW815	2337015	611405534	UTAC-UTL	COMP	5	0	
FM25V01 (FM25V01AY)	SW815	2341007	611405535	UTAC-UTL	COMP	5	0	



Document History Page

Document Title: QTP#141703: AUTOMOTIVE 8L SOIC (150MILS) MATTE SN, AU WIRE UTAC-THAILAND (UTL)
Document Number: 001-95433

Rev.	ECN No.	Orig. of Change	Description of Change
**	4582074	HSTO	Initial spec release

Distribution: WEB

Posting: None