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Cypress Semiconductor Package Qualification Report

QTP# 160608 VERSION
May 2016**

**8-Lead SOIC (150 mils)
Pure Sn Leadfinish, CuPd Wire
MSL3, 260°C Reflow
UTAC Thailand Limited (UTL)**

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

QTP Number	Description of Qualification Purpose	Date
160608	Qualification of 8-Lead SOIC Package at UTL-Thailand using EME-G600 Mold Compound, 8600 Die Attach Epoxy, Pure Sn Leadfinish, 0.8 mil CuPd Wire at MSL3, 260C Reflow Temperature	May 2016

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	SW815, SZ815
Package Outline, Type, or Name:	8-Lead SOIC (150 mils)
Mold Compound Name/Manufacturer:	EME-G600/Sumitomo
Mold Compound Flammability Rating:	UL-94 V-0
Mold Compound Alpha Emission Rate:	>0.1
Oxygen Rating Index:	> 28%
Lead Frame Material:	Copper
Lead Finish, Composition / Thickness:	Pure Sn
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Wafer Saw
Die Attach Supplier:	Henkel
Die Attach Material:	8600
Bond Diagram Designation	001-85997
Wire Bond Method:	Thermosonic
Wire Material/Size:	CuPd/0.8 mil
Thermal Resistance Theta JA °C/W:	148 °C/W
Package Cross Section Yes/No:	Yes
Assembly Process Flow:	001-85398
Name/Location of Assembly (prime) facility:	UTL-Thailand (UT)
MSL Level	3
Reflow Profile	260C

ELECTRICAL TEST/FINISH DESCRIPTION	
Test Location	UTL-Thailand

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS

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
Ball Shear	JESD22-B116	P
Bond Pull	MIL-STD-883 – Method 2011	P
Constructional Analysis	Criteria: Meet external and internal characteristics of Cypress package	P
Data Retention	150 C, non-biased JESD22-A117 and JESD22-A103	P
Final Visual	JESD22-B101	P
High Accelerated Saturation Test (HAST)	JEDEC STD 22-A110: 130°C, 85%RH, 3.65V Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30°C, 60% RH, 260°C Reflow)	P
High Temperature Operating Life Latent Failure Rate	Dynamic Operating Condition, Vcc Max =3.65 V, 125°C JESD22-A108	P
High Temp Storage	JESD22-A103:150°C, no bias	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
Solderability, Steam Aged	J-STD-002, JESD22-B102 95% solder coverage minimum	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
X-Ray	MIL-STD-883 - 2012	P



Reliability Test Data

QTP #: 160608

<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: ACOUSTIC, MSL3							
FM24CL04B (FPP24CL04BAY)	2533006	611539601	UT-Thailand	COMP	22	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539602	UT-Thailand	COMP	22	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539603	UT-Thailand	COMP	22	0	
STRESS: BALL SHEAR							
FM24CL04B (FPP24CL04BAY)	2533006	611539601	UT-Thailand	COMP	10	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539602	UT-Thailand	COMP	10	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539603	UT-Thailand	COMP	10	0	
STRESS: BOND PULL							
FM24CL04B (FPP24CL04BAY)	2533006	611539601	UT-Thailand	COMP	10	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539602	UT-Thailand	COMP	10	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539603	UT-Thailand	COMP	10	0	
STRESS: CONSTRUCTIONAL ANALYSIS							
FM24CL04B (FPP24CL04BAY)	2533006	611539601	UT-Thailand	COMP	5	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539602	UT-Thailand	COMP	5	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539603	UT-Thailand	COMP	5	0	
STRESS: CROSS SECTION							
FM24CL04B (FPP24CL04BAY)	2533006	611539601	UT-Thailand	COMP	5	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539602	UT-Thailand	COMP	5	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539603	UT-Thailand	COMP	5	0	
STRESS: DATA RETENTION							
FM24CL04B (FM24CL04BAY)	2407008	611507307	UT-Thailand	500	80	0	
FM24CL04B (FM24CL04BAY)	2407008	611507307	UT-Thailand	1000	80	0	
FM24CL04B (FM24CL04BAY)	2407008	611507308	UT-Thailand	500	80	0	
FM24CL04B (FM24CL04BAY)	2407008	611507308	UT-Thailand	1000	80	0	
STRESS: FINAL VISUAL							
FM24CL04B (FPP24CL04BAY)	2533006	611539601	UT-Thailand	COMP	1270	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539602	UT-Thailand	COMP	2770	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539603	UT-Thailand	COMP	1270	0	

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Reliability Test Data

QTP #: 160608

<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: HI-ACCEL SATURATION TEST, 130C, 85%RH, 3.65V, PRE COND 192 HR 30C/60%RH, MSL3							
FM24CL04B (FPP24CL04BAY)	2533006	611539601	UT-Thailand	96	80	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539602	UT-Thailand	96	80	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539603	UT-Thailand	96	80	0	
STRESS: HIGH TEMP STORAGE, 150C							
FM24CL04B (FM24CL04BAY)	2407008	611507307	UT-Thailand	1000	82	0	
FM24CL04B (FM24CL04BAY)	2407008	611507308	UT-Thailand	1000	80	0	
FM24CL04B (FM24CL04BAY)	2407008	611507309	UT-Thailand	1000	80	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE (125C, 3.65V, Vcc Max)							
FM24CL04B (FPP24CL04BAY)	2533006	611539602	UT-Thailand	500	126	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539602	UT-Thailand	1000	126	0	
STRESS: POST HIGH ACCELERATED SATURATION TEST BALL SHEAR							
FM24CL04B (FPP24CL04BAY)	2533006	611539601	UT-Thailand	96	5	0	
STRESS: POST HIGH ACCELERATED SATURATION TEST BOND PULL							
FM24CL04B (FPP24CL04BAY)	2533006	611539601	UT-Thailand	96	5	0	
STRESS: POST MSL BALL SHEAR							
FM24CL04B (FPP24CL04BAY)	2533006	611539601	UT-Thailand	COMP	2	0	
STRESS: POST MSL BOND PULL							
FM24CL04B (FPP24CL04BAY)	2533006	611539601	UT-Thailand	COMP	2	0	
STRESS: POST MSL CONSTRUCTIONAL ANALYSIS							
FM24CL04B (FPP24CL04BAY)	2533006	611539601	UT-Thailand	COMP	2	0	
STRESS: POST PRESSURE COOKER TEST BALL SHEAR							
FM24CL04B (FPP24CL04BAY)	2533006	611539601	UT-Thailand	168	5	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539601	UT-Thailand	288	5	0	
STRESS: POST PRESSURE COOKER TEST BOND PULL							
FM24CL04B (FPP24CL04BAY)	2533006	611539601	UT-Thailand	168	5	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539601	UT-Thailand	288	5	0	
STRESS: POST TEMPERATURE CYCLE BALL SHEAR							
FM24CL04B (FPP24CL04BAY)	2533006	611539601	UT-Thailand	500	5	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539601	UT-Thailand	1000	5	0	



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STRESS: POST TEMPERATURE CYCLE BOND PULL							
FM24CL04B (FPP24CL04BAY)	2533006	611539601	UT-Thailand	500	5	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539601	UT-Thailand	1000	5	0	
STRESS: PRESSURE COOKER TEST, 121C, 100%RH, 15 Psig, PRE COND 192 HR 30C/60%RH, MSL3							
FM24CL04B (FPP24CL04BAY)	2533006	611539601	UT-Thailand	168	85	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539601	UT-Thailand	288	80	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539602	UT-Thailand	168	85	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539602	UT-Thailand	288	85	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539603	UT-Thailand	168	85	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539603	UT-Thailand	288	85	0	
STRESS: SOLDERABILITY							
FM24CL04B (FPP24CL04BAY)	2533006	611539601	UT-Thailand	COMP	15	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539602	UT-Thailand	COMP	15	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539603	UT-Thailand	COMP	15	0	
STRESS: TEMPERATURE CYCLE COND. C -65C TO 150C, PRE COND 192 HRS 30C/60%RH, MSL3							
FM24CL04B (FPP24CL04BAY)	2533006	611539601	UT-Thailand	500	82	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539601	UT-Thailand	1000	77	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539602	UT-Thailand	500	85	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539602	UT-Thailand	1000	85	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539603	UT-Thailand	500	85	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539603	UT-Thailand	1000	85	0	
STRESS: X-RAY							
FM24CL04B (FPP24CL04BAY)	2533006	611539601	UT-Thailand	COMP	1270	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539602	UT-Thailand	COMP	2770	0	
FM24CL04B (FPP24CL04BAY)	2533006	611539603	UT-Thailand	COMP	1270	0	



Document History Page

Document Title: QTP# 160608: 8-LEAD SOIC (150 MILS) PURE SN LEADFINISH, CUPD WIRE,MSL3, 260C
REFLOW, UTAC THAILAND LIMITED (UTL)
Document Number: 002-13214

Rev.	ECN No.	Orig. of Change	Description of Change
**	5281260	JYF	Initial spec release.