

Cypress Semiconductor Automotive Package Qualification Report

QTP# 163309 VERSION **
June 2018

48-lead TSOP I (12x18.4x1.0mm)
Pure Sn leadfinish, Cu Wire
MSL3, 260C Reflow
Bangkok-Thailand (SB)

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

QTP Number	Description of Qualification Purpose	Date
163309	Qualification of Automotive 48-lead TSOP I (12x18.4x1.0mm) in Bangkok-Thailand (SB) using 0.9mil Cu wire, CEL9200HF10-U mold compound, Ablestik 8340 die attach material, Copper leadframe and Pure Sn leadfinish	May 2018

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	ZT48A
Package Outline, Type, or Name:	48-Lead TSOP I (12x18.4x1.0mm)
Mold Compound Name/Manufacturer:	CEL9200HF10-U / Hitachi
Mold Compound Flammability Rating:	V-0 / UL94
Mold Compound Alpha Emission Rate:	Max 0.002 CPH
Oxygen Rating Index: >28%	54% (Typical)
Lead Frame Designation:	Full Metal Pad
Lead Frame Material:	Copper leadframe with Ag-spot
Substrate Material:	N/A
Lead Finish, Composition / Thickness:	Pure Sn
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Saw
Die Attach Supplier:	Ablestik
Die Attach Material:	8340
Bond Diagram Designation	002-15733
Wire Bond Method:	Thermosonic
Wire Material/Size:	Copper / 0.9mil (22.86um)
Thermal Resistance Theta JA °C/W:	68.15°C/W
Package Cross Section Yes/No:	No
Assembly Process Flow:	001-97055
Name/Location of Assembly (prime) facility:	Bangkok-Thailand (SB)
MSL LEVEL	3
REFLOW PROFILE	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	Chipmos-Taiwan

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, 125°C Dynamic Operating Condition, Vcc Max = 1.44V	P
High Temperature Operating Life Latent Failure Rate	JESD22-A108, 125°C Dynamic Operating Condition, Vcc Max = 1.44V	P
High Accelerated Saturation Test (HAST)	JESD22-A110, 130C, 3.65V, 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, -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, 121C, 100%RH, 15 Psig Precondition: JESD22-A113 Moisture Sensitivity MSL 3 192 Hrs, 30C/60%RH+3IR-Reflow, 260°C+0, -5°C	P
Acoustic	J-STD-020 Precondition: JESD22-A113 Moisture Sensitivity MSL 3 192 Hrs, 30C/60%RH+3IR-Reflow, 260C+0, -5C	P
High Temperature Storage	JESD22-A103: 150 C, no bias	P
Wire Bond Pull	Mil-Std 883, Method 2011	P
Post Temperature Cycle Wire Bond Pull	Mil-Std 883, Method 2011	P
Dye Penetrant Test	Criteria: No Package Crack	P
Electrostatic Discharge Charge Device Model (ESD-CDM)	AEC-Q100-011 250V/500V/ 750V (corner pins)	P
Electrical Distribution	AEC-Q100-009	P
Wire Ball Shear	AEC-Q100-001	P
Final Visual	JESD22-B101B	P
Physical Dimensions	JESD22B100 and B108	P
Constructional Analysis	Criteria: Meet external and internal characteristics of Cypress package	P
Solderability	JESD22-B102	P

Reliability Test Data

QTP #: 163309

<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								
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631113	BANGKOK-SB	COMP	22	0	
CY62167G30 (7AC172167AO)	ZT48A	9518003	611739807	BANGKOK-SB	COMP	22	0	
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631112	BANGKOK-SB	COMP	22	0	
CY62167G30 (7AC172167AO)	ZT48A	9518003	611739808	BANGKOK-SB	COMP	22	0	
CY7C1061G30 (7AC171061A)	ZT48A	9518009	611631251	BANGKOK-SB	COMP	22	0	
CY62167G30 (7AC172167A)	ZT48A	9517001	611739809	BANGKOK-SB	COMP	22	0	
CY7C1061G30 (7AC171061A)	ZT48A	9503006	611640795	BANGKOK-SB	COMP	22	0	
STRESS: BALL SHEAR								
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631113	BANGKOK-SB	COMP	5	0	
CY62167G30 (7AC172167AO)	ZT48A	9518003	611739807	BANGKOK-SB	COMP	5	0	
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631112	BANGKOK-SB	COMP	5	0	
CY62167G30 (7AC172167AO)	ZT48A	9518003	611739808	BANGKOK-SB	COMP	5	0	
CY7C1061G30 (7AC171061A)	ZT48A	9518009	611631251	BANGKOK-SB	COMP	5	0	
CY62167G30 (7AC172167A)	ZT48A	9517001	611739809	BANGKOK-SB	COMP	5	0	
CY7C1061G30 (7AC171061A)	ZT48A	9503006	611640795	BANGKOK-SB	COMP	5	0	
STRESS: BOND PULL								
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631113	BANGKOK-SB	COMP	5	0	
CY62167G30 (7AC172167AO)	ZT48A	9518003	611739807	BANGKOK-SB	COMP	5	0	
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631112	BANGKOK-SB	COMP	5	0	
CY62167G30 (7AC172167AO)	ZT48A	9518003	611739808	BANGKOK-SB	COMP	5	0	
CY7C1061G30 (7AC171061A)	ZT48A	9518009	611631251	BANGKOK-SB	COMP	5	0	
CY62167G30 (7AC172167A)	ZT48A	9517001	611739809	BANGKOK-SB	COMP	5	0	
CY7C1061G30 (7AC171061A)	ZT48A	9503006	611640795	BANGKOK-SB	COMP	5	0	
STRESS: CONSTRUCTIONAL ANALYSIS								
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631113	BANGKOK-SB	COMP	5	0	
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631112	BANGKOK-SB	COMP	5	0	
CY7C1061G30 (7AC171061A)	ZT48A	9518009	611631251	BANGKOK-SB	COMP	5	0	
CY62167G30 (7AC172167A)	ZT48A	9517001	611739809	BANGKOK-SB	COMP	5	0	
CY7C1061G30 (7AC171061A)	ZT48A	9503006	611640795	BANGKOK-SB	COMP	5	0	

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STRESS: DIE SHEAR								
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631113	BANGKOK-SB	COMP	5	0	
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631112	BANGKOK-SB	COMP	5	0	
CY7C1061G30 (7AC171061A)	ZT48A	9518009	611631251	BANGKOK-SB	COMP	5	0	
STRESS: DYE PENETRANT								
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631113	BANGKOK-SB	COMP	5	0	
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631112	BANGKOK-SB	COMP	5	0	
CY7C1061G30 (7AC171061A)	ZT48A	9518009	611631251	BANGKOK-SB	COMP	5	0	
CY62167G30 (7AC172167A)	ZT48A	9517001	611739809	BANGKOK-SB	COMP	5	0	
CY7C1061G30 (7AC171061A)	ZT48A	9503006	611640795	BANGKOK-SB	COMP	5	0	
STRESS: ELECTRICAL DISTRIBUTION								
CY62167G30 (7AC172167AO)	ZT48A	9518003	611739807	BANGKOK-SB	COMP	30	0	
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631112	BANGKOK-SB	COMP	30	0	
CY62167G30 (7AC172167AO)	ZT48A	9518003	611739808	BANGKOK-SB	COMP	30	0	
CY7C1061G30 (7AC171061A)	ZT48A	9518009	611631251	BANGKOK-SB	COMP	30	0	
CY62167G30 (7AC172167A)	ZT48A	9517001	611739809	BANGKOK-SB	COMP	30	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 125C, 1.44V, Vcc Max								
CY62167G30 (7AC172167AO)	ZT48A	9518003	611739807	BANGKOK-SB	96	896	0	
CY62167G30 (7AC172167AO)	ZT48A	9518003	611739808	BANGKOK-SB	96	895	0	
CY7C1061G30 (7AC171061A)	ZT48A	9518009	611631251	BANGKOK-SB	96	667	0	
CY62167G30 (7AC172167A)	ZT48A	9517001	611739809	BANGKOK-SB	96	900	0	
CY7C1061G30 (7AC171061A)	ZT48A	9503006	611640795	BANGKOK-SB	96	435	0	
CY7C1061G30 (7AC171061A)	ZT48A	9503006	611640794	BANGKOK-SB	96	192	0	
STRESS: ESD-CHARGE DEVICE MODEL								
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631113	BANGKOK-SB	500	9	0	
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631113	BANGKOK-SB	100	3	0	
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631113	BANGKOK-SB	1250	3	0	

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STRESS: FINAL VISUAL INSPECTION

CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631113	BANGKOK-SB	COMP	795	0	
CY62167G30 (7AC172167AO)	ZT48A	9518003	611739807	BANGKOK-SB	COMP	1829	0	
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631112	BANGKOK-SB	COMP	1553	0	
CY62167G30 (7AC172167AO)	ZT48A	9518003	611739808	BANGKOK-SB	COMP	1819	0	
CY7C1061G30 (7AC171061A)	ZT48A	9518009	611631251	BANGKOK-SB	COMP	1551	0	
CY62167G30 (7AC172167A)	ZT48A	9517001	611739809	BANGKOK-SB	COMP	1835	0	
CY7C1061G30 (7AC171061A)	ZT48A	9503006	611640795	BANGKOK-SB	COMP	1642	0	

STRESS: HI-ACCEL SATURATION TEST, 130C, 3.65V, 85%RH, PRE COND 192 HR 30C/60%RH, MSL3

CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631113	BANGKOK-SB	96	80	0	
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631113	BANGKOK-SB	192	80	0	
CY62167G30 (7AC172167AO)	ZT48A	9518003	611739807	BANGKOK-SB	96	80	0	
CY62167G30 (7AC172167AO)	ZT48A	9518003	611739807	BANGKOK-SB	192	80	0	
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631112	BANGKOK-SB	96	80	0	
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631112	BANGKOK-SB	192	79	0	
CY7C1061G30 (7AC171061A)	ZT48A	9518009	611631251	BANGKOK-SB	96	80	0	
CY7C1061G30 (7AC171061A)	ZT48A	9518009	611631251	BANGKOK-SB	192	80	0	
CY62167G30 (7AC172167A)	ZT48A	9517001	611739809	BANGKOK-SB	96	79	0	
CY62167G30 (7AC172167A)	ZT48A	9517001	611739809	BANGKOK-SB	192	79	0	
CY7C1061G30 (7AC171061A)	ZT48A	9503006	611640795	BANGKOK-SB	96	79	0	
CY7C1061G30 (7AC171061A)	ZT48A	9503006	611640795	BANGKOK-SB	192	79	0	

STRESS: HIGH TEMPERATURE STORAGE

CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631113	BANGKOK-SB	800	50	0	
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631113	BANGKOK-SB	1000	50	0	
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631113	BANGKOK-SB	2000	49	0	
CY62167G30 (7AC172167A)	ZT48A	9517001	611739809	BANGKOK-SB	1000	45	0	
CY7C1061G30 (7AC171061A)	ZT48A	9503006	611640795	BANGKOK-SB	1000	44	0	



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STRESS: LEAD INTEGRITY								
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631113	BANGKOK-SB	COMP	5	0	
CY62167G30 (7AC172167A)	ZT48A	9517001	611739809	BANGKOK-SB	COMP	5	0	
CY7C1061G30 (7AC171061A)	ZT48A	9503006	611640795	BANGKOK-SB	COMP	5	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 125C, 1.44V, Vcc Max								
CY62167G30 (7AC172167AO)	ZT48A	9518003	611739807	BANGKOK-SB	1000	79	0	
CY62167G30 (7AC172167AO)	ZT48A	9518003	611739808	BANGKOK-SB	1000	82	0	
CY7C1061G30 (7AC171061A)	ZT48A	9518009	611631251	BANGKOK-SB	1000	80	0	
CY62167G30 (7AC172167A)	ZT48A	9517001	611739809	BANGKOK-SB	1000	83	0	
CY7C1061G30 (7AC171061A)	ZT48A	9503006	611640795	BANGKOK-SB	1000	78	0	
STRESS: PRESSURE COOKER TEST								
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631113	BANGKOK-SB	168	80	0	
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631112	BANGKOK-SB	96	80	0	
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631112	BANGKOK-SB	168	80	0	
CY7C1061G30 (7AC171061A)	ZT48A	9518009	611631251	BANGKOK-SB	96	80	0	
CY7C1061G30 (7AC171061A)	ZT48A	9518009	611631251	BANGKOK-SB	168	79	0	
CY62167G30 (7AC172167A)	ZT48A	9517001	611739809	BANGKOK-SB	96	80	0	
CY62167G30 (7AC172167A)	ZT48A	9517001	611739809	BANGKOK-SB	168	80	0	
CY7C1061G30 (7AC171061A)	ZT48A	9503006	611640795	BANGKOK-SB	96	80	0	
CY7C1061G30 (7AC171061A)	ZT48A	9503006	611640795	BANGKOK-SB	168	79	0	
STRESS: PHYSICAL DIMENSION								
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631113	BANGKOK-SB	COMP	25	0	
CY62167G30 (7AC172167AO)	ZT48A	9518003	611739807	BANGKOK-SB	COMP	10	0	
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631112	BANGKOK-SB	COMP	25	0	
CY62167G30 (7AC172167AO)	ZT48A	9518003	611739808	BANGKOK-SB	COMP	10	0	
CY7C1061G30 (7AC171061A)	ZT48A	9518009	611631251	BANGKOK-SB	COMP	10	0	
CY62167G30 (7AC172167A)	ZT48A	9517001	611739809	BANGKOK-SB	COMP	10	0	
CY7C1061G30 (7AC171061A)	ZT48A	9503006	611640795	BANGKOK-SB	COMP	10	0	

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STRESS: POST TCT BOND PULL								
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631113	BANGKOK-SB	500	5	0	
CY7C1061G30 (7AC171061A)	ZT48A	9503006	611640795	BANGKOK-SB	500	5	0	
STRESS: SOLDERABILITY								
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631113	BANGKOK-SB	COMP	15	0	
CY62167G30 (7AC172167A)	ZT48A	9517001	611739809	BANGKOK-SB	COMP	15	0	
CY7C1061G30 (7AC171061A)	ZT48A	9503006	611640795	BANGKOK-SB	COMP	15	0	
STRESS: TC COND. C -65C TO 150C, PRECONDITION 192 HRS 30C/60%RH								
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631113	BANGKOK-SB	500	85	0	
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631113	BANGKOK-SB	1000	80	0	
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631112	BANGKOK-SB	500	79	0	
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631112	BANGKOK-SB	1000	79	0	
CY7C1061G30 (7AC171061A)	ZT48A	9518009	611631251	BANGKOK-SB	500	80	0	
CY7C1061G30 (7AC171061A)	ZT48A	9518009	611631251	BANGKOK-SB	1000	79	0	
CY62167G30 (7AC172167A)	ZT48A	9517001	611739809	BANGKOK-SB	710	83	0	
CY62167G30 (7AC172167A)	ZT48A	9517001	611739809	BANGKOK-SB	1000	83	0	
CY7C1061G30 (7AC171061A)	ZT48A	9503006	611640795	BANGKOK-SB	500	85	0	
CY7C1061G30 (7AC171061A)	ZT48A	9503006	611640795	BANGKOK-SB	1000	80	0	
STRESS: X-RAY								
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631113	BANGKOK-SB	COMP	25	0	
CY62167G30 (7AC172167AO)	ZT48A	9518003	611739807	BANGKOK-SB	COMP	25	0	
CY7C1061G30 (7AC171061A)	ZT48A	9537003	611631112	BANGKOK-SB	COMP	25	0	
CY62167G30 (7AC172167AO)	ZT48A	9518003	611739808	BANGKOK-SB	COMP	25	0	
CY7C1061G30 (7AC171061A)	ZT48A	9518009	611631251	BANGKOK-SB	COMP	25	0	
CY62167G30 (7AC172167A)	ZT48A	9517001	611739809	BANGKOK-SB	COMP	25	0	
CY7C1061G30 (7AC171061A)	ZT48A	9503006	611640795	BANGKOK-SB	COMP	25	0	



Document History Page

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Document Number: 002-24061

Rev.	ECN No.	Orig. of Change	Description of Change
**	6187553	HSTO	Initial spec release