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Cypress Semiconductor Automotive Package Qualification Report

**QTP# 150416 VERSION **
October 2015**

**44L TSOP (400mil)
NiPdAu leadfinish, Au Wire
MSL3, 260C Reflow
JCET-China (JT)**

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

QTP Number	Description of Qualification Purpose	Date
150416	Qualification of 44L TSOP II (400mil) in JCET-China (JT) using 0.8mil Au wire with KE-G6000DA mold compound, QMI-509 die attach material, Cu leadframe and Roughened NiPdAu PPF leadfinish.	Sept 2015

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	ZW44A
Package Outline, Type, or Name:	44L TSOPII (400mils)
Mold Compound Name/Manufacturer:	KE-G6000DA / Kyocera
Mold Compound Flammability Rating:	V0 UL94
Mold Compound Alpha Emission Rate:	<0.001 CPH/cm2
Oxygen Rating Index: >28%	28%
Lead Frame Designation:	FMP with thru slots
Lead Frame Material:	Cu
Substrate Material:	N/A
Lead Finish, Composition / Thickness:	Roughened NiPdAu PPF
Die Backside Preparation Method/Metallization:	Backgrind to 7mils
Die Separation Method:	Laser Groove + Mech'l Saw
Die Attach Supplier:	Ablestik
Die Attach Material:	QMI-509
Bond Diagram Designation	001-95778
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au / 0.8 mil
Thermal Resistance Theta JA °C/W:	66.82 C/W
Package Cross Section Yes/No:	Yes
Assembly Process Flow:	002-03840
Name/Location of Assembly (prime) facility:	JCET - China (JT)
MSL LEVEL	3
REFLOW PROFILE	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	Chipmos Taiwan (GO)

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, 5.55V, 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
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 (corner pins)	P
Wire Ball Shear	AEC-Q100-001	P
Wire Bond Pull	Mil-Std 883, Method 2011	P
Electrical Distribution	AEC-Q100-009	P
Latch up Sensitivity	AEC-Q100-004	P
Final Visual	JESD22-B101B	P
Physical Dimensions	JESD22-B100/108	P
Solderability	JESD22-B102	P
Solder Ball Shear	AEC Q100-010	P
Post Temperature Cycle Wire Bond Pull	Mil-Std 883, Method 2011	P
High Temperature Storage Life Test	JESD22-A103, 150 C	P
Dye Penetrant Test	Criteria: No Package Crack	P
Constructional Analysis	Criteria: Meet external and internal characteristics of Cypress package	
Acoustic	J-STD-020 Precondition: JESD22-A113 Moisture Sensitivity MSL 3 192 Hrs, 30C/60%RH+3IR-Reflow, 260C+0, -5C	P



Reliability Test Data

QTP #: 150416

Device	Package	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3								
CY62147G30 (7A172147AO)	ZW44A	9508002	611520074	JCET-JT	COMP	30	0	
CY7C1041G30 (7A171041AO)	ZW44A	9508002	611527878	JCET-JT	COMP	30	0	
CY7C1041G30 (7A171041AO)	ZW44A	9508002	611527879	JCET-JT	COMP	29	0	
STRESS: BALL SHEAR								
CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517301	JCET-JT	COMP	150	0	
CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517304	JCET-JT	COMP	150	0	
CY62147G30 (7A172147AO)	ZW44A	9507001	611517303	JCET-JT	COMP	150	0	
STRESS: BOND PULL								
CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517301	JCET-JT	COMP	150	0	
CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517304	JCET-JT	COMP	150	0	
CY62147G30 (7A172147AO)	ZW44A	9507001	611517303	JCET-JT	COMP	150	0	
STRESS: CONSTRUCTIONAL ANALYSIS								
CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517301	JCET-JT	COMP	150	0	
STRESS: DYE PENETRANT TEST								
CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517301	JCET-JT	COMP	15	0	
CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517304	JCET-JT	COMP	15	0	
CY62147G30 (7A172147AO)	ZW44A	9507001	611517303	JCET-JT	COMP	15	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 125C, 1.44V, Vcc Max								
CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517301	JCET-JT	96	3495	0	
CY62147G30 (7A172147AO)	ZW44A	9508002	611520074	JCET-JT	96	3497	0	
CY7C1041G30 (7A171041AO)	ZW44A	9507003	611519245	JCET-JT	96	3497	0	



Reliability Test Data

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<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>
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STRESS: ELECTRICAL DISTRIBUTION

CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517301	JCET-JT	COMP	30	0	
CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517304	JCET-JT	COMP	30	0	
CY62147G30 (7A172147AO)	ZW44A	9507001	611517303	JCET-JT	COMP	30	0	

STRESS: ESD-CHARGE DEVICE MODEL

CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517301	JCET-JT	250	3	0	
CY62147G30 (7A172147AO)	ZW44A	9507001	611517303	JCET-JT	250	3	0	
CY621472G30 (7A1721472AO)	ZW44A	9507003	611519244	JCET-JT	250	3	0	
CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517301	JCET-JT	500	3	0	
CY62147G30 (7A172147AO)	ZW44A	9507001	611517303	JCET-JT	500	3	0	
CY621472G30 (7A1721472AO)	ZW44A	9507003	611519244	JCET-JT	500	3	0	
CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517301	JCET-JT	750	3	0	
CY62147G30 (7A172147AO)	ZW44A	9507001	611517303	JCET-JT	750	3	0	
CY621472G30 (7A1721472AO)	ZW44A	9507003	611519244	JCET-JT	750	3	0	



Reliability Test Data

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Device	Package	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
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STRESS: ESD-HUMAN BODY MODEL

CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517301	JCET-JT	500	3	0	
CY62147G30 (7A172147AO)	ZW44A	9507001	611517303	JCET-JT	500	3	0	
CY621472G30 (7A1721472AO)	ZW44A	9507003	611519244	JCET-JT	500	3	0	
CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517301	JCET-JT	1000	3	0	
CY62147G30 (7A172147AO)	ZW44A	9507001	611517303	JCET-JT	1000	3	0	
CY621472G30 (7A1721472AO)	ZW44A	9507003	611519244	JCET-JT	1000	3	0	
CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517301	JCET-JT	2000	3	0	
CY62147G30 (7A172147AO)	ZW44A	9507001	611517303	JCET-JT	2000	3	0	
CY621472G30 (7A1721472AO)	ZW44A	9507003	611519244	JCET-JT	2000	3	0	

STRESS: FINAL VISUAL

CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517301	JCET-JT	COMP	5571	0	
CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517304	JCET-JT	COMP	2240	0	
CY62147G30 (7A172147AO)	ZW44A	9507001	611517303	JCET-JT	COMP	2252	0	

STRESS: HI-ACCEL SATURATION TEST, 130C, 5.55V, 85%RH, PRE COND 192 HR 30C/60%RH, MSL3

CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517301	JCET-JT	96	84	0	
CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517304	JCET-JT	96	84	0	
CY62147G30 (7A172147AO)	ZW44A	9507001	611517303	JCET-JT	96	85	0	

STRESS: HIGH TEMPERATURE STORAGE

CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517301	JCET-JT	1000	85	0	
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STRESS: LEAD INTEGRITY

CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517301	JCET-JT	COMP	5	0	
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Reliability Test Data

QTP #: 150416

Device	Package	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 125C, 1.44V, Vcc Max								
CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517301	JCET-JT	1000	80	0	
CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517304	JCET-JT	1000	80	0	
CY62147G30 (7A172147AO)	ZW44A	9507001	611517303	JCET-JT	1000	80	0	
STRESS: PRESSURE COOKER TEST								
CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517301	JCET-JT	96	85	0	
CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517301	JCET-JT	168	85	0	
CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517304	JCET-JT	96	85	0	
CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517304	JCET-JT	168	85	0	
CY62147G30 (7A172147AO)	ZW44A	9507001	611517303	JCET-JT	96	85	0	
CY62147G30 (7A172147AO)	ZW44A	9507001	611517303	JCET-JT	168	85	0	
STRESS: PHYSICALDIMENSION								
CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517301	JCET-JT	COMP	30	0	
CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517304	JCET-JT	COMP	30	0	
CY62147G30 (7A172147AO)	ZW44A	9507001	611517303	JCET-JT	COMP	30	0	
STRESS: POST TEMPERATURE CYCLE WIRE BOND PULL								
CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517301	JCET-JT	500	5	0	
STRESS: PRE/POST LFR CRITICAL PARAMETER								
CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517301	JCET-JT	COMP	30+2	0	
CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517304	JCET-JT	COMP	30+2	0	
CY62147G30 (7A172147AO)	ZW44A	9507001	611517303	JCET-JT	COMP	30+2	0	



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STRESS: STATIC LATCH-UP (+/-140mA 125C)

CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517301	JCET-JT	COMP	6	0	
CY62147G30 (7A172147AO)	ZW44A	9508002	611517303	JCET-JT	COMP	6	0	
CY621472G30 (7A1721472AO)	ZW44A	9507003	611519244	JCET-JT	COMP	6	0	

STRESS: SOLDERABILITY

CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517301	JCET-JT	COMP	15	0	
CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517304	JCET-JT	COMP	15	0	
CY62147G30 (7A172147AO)	ZW44A	9508002	611517303	JCET-JT	COMP	15	0	

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

CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517301	JCET-JT	500	84	0	
CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517301	JCET-JT	1000	79	0	
CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517304	JCET-JT	500	84	0	
CY7C1041G30 (7A171041AO)	ZW44A	9507001	611517304	JCET-JT	1000	84	0	
CY62147G30 (7A172147AO)	ZW44A	9507001	611517303	JCET-JT	500	85	0	
CY62147G30 (7A172147AO)	ZW44A	9507001	611517303	JCET-JT	1000	85	0	



Document History Page

Document Title: QTP#150416: AUTOMOTIVE 44L TSOP (400MIL) NIPDAU LEADFINISH, AU WIRE MSL3,
260C REFLOW JCET-CHINA (JT)
Document Number: 002-03893

Rev.	ECN No.	Orig. of Change	Description of Change
**	4949578	HSTO	Initial spec release