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# Cypress Semiconductor Automotive Package Qualification Report

QTP# 105202 VERSION \*A  
April 2014

**Automotive 28L TSOP (8x13.4mm)  
NiPdAu, MSL3, 260°C Reflow  
JCET-China (JT)**

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

<b>QTP Number</b>	<b>Description of Qualification Purpose</b>	<b>Date</b>
105202	New Assembly Site (JCET) Qual – Automotive TSOP 28ld_8 x 13.4 mm body – Pb-free (KEG6000, QMI 509, 1.0 mil Wire, NiPdAu)	Feb 2011

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	ZT28R
Package Outline, Type, or Name:	28L TSOP (8x13.4mm)
Mold Compound Name/Manufacturer:	KEG6000 / Kyocera
Mold Compound Flammability Rating:	V-O per UL94
Mold Compound Alpha Emission Rate:	0.002 CPH/cm2
Oxygen Rating Index: >28%	N/A
Lead Frame Designation:	Full Metal Pad
Lead Frame Material:	Copper
Substrate Material:	N/A
Lead Finish, Composition / Thickness:	NiPdAu
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Wafersaw
Die Attach Supplier:	Henkel
Die Attach Material:	QMI509
Bond Diagram Designation	10-06591, 10-06589
Wire Bond Method:	Thermosonic
Wire Material/Size:	1.0 mil / Au
Thermal Resistance Theta JA °C/W:	N/A
Package Cross Section Yes/No:	Yes
Assembly Process Flow:	001-67698
Name/Location of Assembly (prime) facility:	JT-JCET China
MSL LEVEL	3
REFLOW PROFILE	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	CML-R

**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
Electrostatic Discharge Human Body Model (ESD-HBM)	AEC-Q100-002	P
Electrostatic Discharge Charge Device Model (ESD-CDM)	AEC-Q100-011	P
Latch-up Sensitivity	AEC-Q100-004	P
High Temperature Operating Life Early Failure Rate	AEC-Q100-008 and JESD22-A108, 150 C Dynamic Operating Condition, Vcc = 5.75V	P
High Temperature Operating Life Latent Failure Rate	JESD22-A108, 150 C /125C Dynamic Operating Condition, Vcc = 5.75V, 150C	P
High Accelerated Saturation Test (HAST)	JESD22-A110, 130 C, 85%RH, 3.63V Precondition: JESD22-A113 Moisture Sensitivity Level (192 Hrs., 30 C°, 60% RH)	P
High Temperature Storage Life Test	JESD22-A103, 150 C	P
Temperature Cycle	JESD22- A104, -65 C to 150 C Precondition: JESD22-A113 Moisture Sensitivity Level (192 Hrs., 30 C°, 60% RH)	P
Post Temperature Cycle Wire Bond Pull	Mil-Std 883, Method 2011	P
Pressure Cooker Test	JESD22-A102, 121 C, 100%RH, 15 PSIG Precondition: JESD22-A113 Moisture Sensitivity Level (192 Hrs., 30 C°, 60% RH)	P
Wire Bond Shear	AEC Q100-001	P
Wire Bond Pull	Mil-Std 883, Method 2011	P
Solderability	JESD22-B102	P
Physical Dimensions	JESD22B100 and B108	P
Electrical Distributions	AEC Q100-009	P
Lead Integrity	JESD22-B105	P

## Reliability Test Data

**QTP #: 105202**

<b>Device</b>	<b>Fab Lot #</b>	<b>Assy Lot #</b>	<b>Assy Loc</b>	<b>Duration</b>	<b>Samp</b>	<b>Rej</b>	<b>Failure Mechanism</b>
<b>STRESS: ACOUSTIC, MSL3</b>							
CY62256VLL (7A622574NDC)	4040361	611060243	JT-CHINA	COMP	22	0	
CY62256NLL (7A622574NDC)	4013150	611058006	JT-CHINA	COMP	22	0	
CY62256NLL (7A622574NDC)	4013150	611057998	JT-CHINA	COMP	22	0	
<b>STRESS: BOND SHEAR</b>							
CY62256VLL (7A622574NDC)	4040361	611060243	JT-CHINA	COMP	30	0	
CY62256NLL (7A622574NDC)	4013150	611058006	JT-CHINA	COMP	30	0	
CY62256NLL (7A622574NDC)	4013150	611057998	JT-CHINA	COMP	30	0	
<b>STRESS: BOND PULL</b>							
CY62256VLL (7A622574NDC)	4040361	611060243	JT-CHINA	COMP	30	0	
CY62256NLL (7A622574NDC)	4013150	611058006	JT-CHINA	COMP	30	0	
CY62256NLL (7A622574NDC)	4013150	611057998	JT-CHINA	COMP	30	0	
<b>STRESS: CONSTRUCTIONAL ANALYSIS</b>							
CY62256VLL (7A622574NDC)	4040361	611060243	JT-CHINA	COMP	5	0	
<b>STRESS: DYE PENETRATION TEST</b>							
CY62256VLL (7A622574NDC)	4040361	611060243	JT-CHINA	COMP	15	0	
CY62256NLL (7A622574NDC)	4013150	611058006	JT-CHINA	COMP	15	0	
CY62256NLL (7A622574NDC)	4013150	611057998	JT-CHINA	COMP	15	0	
<b>STRESS: ESD-CHARGE DEVICE MODEL, 250V</b>							
CY62256VLL (7A622574NDC)	4040361	611060243	JT-CHINA	COMP	3	0	
<b>STRESS: ESD-CHARGE DEVICE MODEL, 500V</b>							
CY62256VLL (7A622574NDC)	4040361	611060243	JT-CHINA	COMP	3	0	
<b>STRESS: ESD-CHARGE DEVICE MODEL, 750V</b>							
CY62256VLL (7A622574NDC)	4040361	611060243	JT-CHINA	COMP	3	0	
<b>STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22, METHOD A114-E, (500V)</b>							
CY62256VLL (7A622574NDC)	4040361	611060243	JT-CHINA	COMP	3	0	
<b>STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22, METHOD A114-E, (1000V)</b>							
CY62256VLL (7A622574NDC)	4040361	611060243	JT-CHINA	COMP	3	0	
<b>STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22, METHOD A114-E, (1500V)</b>							
CY62256VLL (7A622574NDC)	4040361	611060243	JT-CHINA	COMP	3	0	

## Reliability Test Data

**QTP #: 105202**

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
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**STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22, METHOD A114-E, (2000V)**

CY62256VLL (7A622574NDC)	4040361	611060243	JT-CHINA	COMP	3	0	
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**STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 150C, 5.75V, Vcc Core**

CY62256VLL (7A622574NDC)	4040361	611060243	JT-CHINA	48	799	0	
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CY62256NLL (7A622574NDC)	4013150	611058006	JT-CHINA	48	798	0	
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CY62256NLL (7A622574NDC)	4013150	611057998	JT-CHINA	48	799	0	
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**STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 150C, 5.75V, Vcc Core**

CY62256NLL (7A62256ZEC)	4013150	611057996	JT-CHINA	408	79	0	
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CY62256VNLL (7A622574NDC)	4037633	611057997	JT-CHINA	408	80	0	
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CY62256VNLL (7A622574NDC)	4037633	611058668	JT-CHINA	408	80	0	
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**STRESS: STATIC LATCH-UP TESTING, 125C, +/-140Ma**

CY62256VLL (7A622574NDC)	4040361	611060243	JT-CHINA	COMP	6	0	
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**STRESS: HI-ACCEL SATURATION TEST, 130C, 3.63V, 85%RH, PRE COND 192 HR 30C/60%RH, MSL3**

CY62256VLL (7A622574NDC)	4040361	611060243	JT-CHINA	96	80	0	
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CY62256NLL (7A622574NDC)	4013150	611058006	JT-CHINA	96	80	0	
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CY62256NLL (7A622574NDC)	4013150	611057998	JT-CHINA	96	80	0	
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**STRESS: HIGH TEMP STORAGE**

CY62256VLL (7A622574NDC)	4040361	611060243	JT-CHINA	1000	80	0	
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**STRESS: LEAD INTEGRITY**

CY62256VLL (7A622574NDC)	4040361	611060243	JT-CHINA	COMP	5	0	
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**STRESS: PRESSURE COOKER TEST (121C, 100%RH), 15 Psig, PRE COND 192 HR 30C/60%RH (MSL3)**

CY62256VLL (7A622574NDC)	4040361	611060243	JT-CHINA	96	80	0	
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CY62256VLL (7A622574NDC)	4040361	611060243	JT-CHINA	168	80	0	
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CY62256NLL (7A622574NDC)	4013150	611058006	JT-CHINA	96	80	0	
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CY62256NLL (7A622574NDC)	4013150	611058006	JT-CHINA	168	80	0	
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CY62256NLL (7A622574NDC)	4013150	611057998	JT-CHINA	96	80	0	
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CY62256NLL (7A622574NDC)	4013150	611057998	JT-CHINA	168	80	0	
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## Reliability Test Data

**QTP #: 105202**

<i>Device</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>
<b>STRESS: PHYSICAL DIMENSION</b>							
CY62256VLL (7A622574NDC)	4040361	611060243	JT-CHINA	COMP	30	0	
CY62256NLL (7A622574NDC)	4013150	611058006	JT-CHINA	COMP	30	0	
CY62256NLL (7A622574NDC)	4013150	611057998	JT-CHINA	COMP	30	0	
<b>STRESS: DIE SHEAR</b>							
CY62256VLL (7A622574NDC)	4040361	611060243	JT-CHINA	COMP	30	0	
CY62256NLL (7A622574NDC)	4013150	611058006	JT-CHINA	COMP	30	0	
CY62256NLL (7A622574NDC)	4013150	611057998	JT-CHINA	COMP	30	0	
<b>STRESS: SOLDERABILITY</b>							
CY62256VLL (7A622574NDC)	4040361	611060243	JT-CHINA	COMP	15	0	
CY62256NLL (7A622574NDC)	4013150	611058006	JT-CHINA	COMP	15	0	
CY62256NLL (7A622574NDC)	4013150	611057998	JT-CHINA	COMP	15	0	
<b>STRESS: TC COND. C –65C TO 150C, PRE COND 192 HR 30C/60%RH, MSL3</b>							
CY62256VLL (7A622574NDC)	4040361	611060243	JT-CHINA	500	87	0	
CY62256VLL (7A622574NDC)	4040361	611060243	JT-CHINA	1000	82	0	
CY62256NLL (7A622574NDC)	4013150	611058006	JT-CHINA	500	79	0	
CY62256NLL (7A622574NDC)	4013150	611058006	JT-CHINA	1000	79	0	
CY62256NLL (7A622574NDC)	4013150	611057998	JT-CHINA	500	80	0	
CY62256NLL (7A622574NDC)	4013150	611057998	JT-CHINA	1000	80	0	
<b>STRESS: POST TC BOND PULL</b>							
CY62256VLL (7A622574NDC)	4040361	611060243	JT-CHINA	COMP	5	0	
<b>STRESS: ELECTRICAL DISTRIBUTIONS</b>							
CY62256VLL (7A622574NDC)	4040361	611060243	JT-CHINA	COMP	30	0	
CY62256NLL (7A622574NDC)	4013150	611058006	JT-CHINA	COMP	30	0	
CY62256NLL (7A622574NDC)	4013150	611057998	JT-CHINA	COMP	30	0	

## Document History Page

Document Title: QTP 105202: Automotive 28L TSOP (8x13.4mm) NiPdAu, MSL3, 260C Reflow JCET-China (JT)  
Qualification Report  
Document Number: 001-68151

Rev.	ECN No.	Orig. of Change	Description of Change
**	3178043	NRG	Initial Spec Release
*A	4363037	ILZ	Sunset spec review Updated front page to reflect new qual report template per Spec 001-57717 Page 3 – Major package information table – Replaced assembly process flow spec# 001-64159 with 001-67698

Distribution: WEB

Posting: None