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Cypress Semiconductor Automotive Package Qualification Report

QTP# 105208 VERSION *A
April 2014

Automotive 28L SNC (300 mils)
NiPdAu, MSL3, 260°C Reflow
JCET-China (JT)

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

QTP Number	Description of Qualification Purpose	Date
105208	New Assembly Site (JCET) Qual – Automotive SNC 28ld 300 mils body – Pb-Free (KEG6000, QMI 509, 1.0 mil Wire, NiPdAu)	Feb 2011

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	SY283
Package Outline, Type, or Name:	28L SNC
Mold Compound Name/Manufacturer:	KEG6000 / Kyocera
Mold Compound Flammability Rating:	V-O per UL94
Mold Compound Alpha Emission Rate:	0.002 CPH/cm ²
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	10-06638, 10-06639
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, 5.50V 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 #: 105208

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3							
CY62256NLL (7A62256ZEC)	4013150	611057996	JT-CHINA	COMP	22	0	
CY62256VNLL (7A622574NDC)	4037633	611057997	JT-CHINA	COMP	22	0	
CY62256VNLL (7A622574NDC)	4037633	611058668	JT-CHINA	COMP	22	0	
STRESS: BOND SHEAR							
CY62256NLL (7A62256ZEC)	4013150	611057996	JT-CHINA	COMP	30	0	
CY62256VNLL (7A622574NDC)	4037633	611057997	JT-CHINA	COMP	30	0	
CY62256VNLL (7A622574NDC)	4037633	611058668	JT-CHINA	COMP	30	0	
STRESS: BOND PULL							
CY62256NLL (7A62256ZEC)	4013150	611057996	JT-CHINA	COMP	30	0	
CY62256VNLL (7A622574NDC)	4037633	611057997	JT-CHINA	COMP	30	0	
CY62256VNLL (7A622574NDC)	4037633	611058668	JT-CHINA	COMP	30	0	
STRESS: CONSTRUCTIONAL ANALYSIS							
CY62256NLL (7A62256ZEC)	4013150	611057996	JT-CHINA	COMP	5	0	
STRESS: DYE PENETRATION TEST							
CY62256NLL (7A62256ZEC)	4013150	611057996	JT-CHINA	COMP	15	0	
CY62256VNLL (7A622574NDC)	4037633	611057997	JT-CHINA	COMP	15	0	
CY62256VNLL (7A622574NDC)	4037633	611058668	JT-CHINA	COMP	15	0	
STRESS: ESD-CHARGE DEVICE MODEL, 250V							
CY62256NLL (7A62256ZEC)	4013150	611057996	JT-CHINA	COMP	3	0	
STRESS: ESD-CHARGE DEVICE MODEL, 500V							
CY62256NLL (7A62256ZEC)	4013150	611057996	JT-CHINA	COMP	3	0	
STRESS: ESD-CHARGE DEVICE MODEL, 750V							
CY62256NLL (7A62256ZEC)	4013150	611057996	JT-CHINA	COMP	3	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22, METHOD A114-E, (500V)							
CY62256NLL (7A62256ZEC)	4013150	611057996	JT-CHINA	COMP	3	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22, METHOD A114-E, (1000V)							
CY62256NLL (7A62256ZEC)	4013150	611057996	JT-CHINA	COMP	3	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22, METHOD A114-E, (1500V)							
CY62256NLL (7A62256ZEC)	4013150	611057996	JT-CHINA	COMP	3	0	

Reliability Test Data

QTP #: 105208

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)

CY62256NLL (7A62256ZEC)	4013150	611057996	JT-CHINA	COMP	3	0	
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STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 150C, 5.75V, Vcc Core

CY62256NLL (7A62256ZEC)	4013150	611057996	JT-CHINA	48	799	0	
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CY62256VNL (7A622574NDC)	4037633	611057997	JT-CHINA	48	798	0	
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CY62256VNL (7A622574NDC)	4037633	611058668	JT-CHINA	48	800	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	77	0	
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CY62256VNL (7A622574NDC)	4037633	611057997	JT-CHINA	408	80	0	
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CY62256VNL (7A622574NDC)	4037633	611058668	JT-CHINA	408	80	0	
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STRESS: STATIC LATCH-UP TESTING, 125C, +/-140Ma

CY62256NLL (7A62256ZEC)	4013150	611057996	JT-CHINA	COMP	6	0	
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STRESS: HI-ACCEL SATURATION TEST, 130C, 5.50V, 85%RH, PRE COND 192 HR 30C/60%RH, MSL3

CY62256NLL (7A62256ZEC)	4013150	611057996	JT-CHINA	96	77	0	
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CY62256VNL (7A622574NDC)	4037633	611057997	JT-CHINA	96	75	0	
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CY62256VNL (7A622574NDC)	4037633	611058668	JT-CHINA	96	78	0	
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STRESS: HIGH TEMP STORAGE

CY62256NLL (7A62256ZEC)	4013150	611057996	JT-CHINA	1000	77	0	
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STRESS: LEAD INTEGRITY

CY62256NLL (7A62256ZEC)	4013150	611057996	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)

CY62256NLL (7A62256ZEC)	4013150	611057996	JT-CHINA	96	77	0	
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CY62256NLL (7A62256ZEC)	4013150	611057996	JT-CHINA	168	77	0	
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CY62256VNL (7A622574NDC)	4037633	611057997	JT-CHINA	96	77	0	
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CY62256VNL (7A622574NDC)	4037633	611057997	JT-CHINA	168	77	0	
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CY62256VNL (7A622574NDC)	4037633	611058668	JT-CHINA	96	80	0	
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CY62256VNL (7A622574NDC)	4037633	611058668	JT-CHINA	168	80	0	
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Reliability Test Data

QTP #: 105208

<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>
STRESS: PHYSICAL DIMENSION							
CY62256NLL (7A62256ZEC)	4013150	611057996	JT-CHINA	COMP	30	0	
CY62256VNLL (7A622574NDC)	4037633	611057997	JT-CHINA	COMP	30	0	
CY62256VNLL (7A622574NDC)	4037633	611058668	JT-CHINA	COMP	30	0	
STRESS: DIE SHEAR							
CY62256NLL (7A62256ZEC)	4013150	611057996	JT-CHINA	COMP	30	0	
CY62256VNLL (7A622574NDC)	4037633	611057997	JT-CHINA	COMP	30	0	
CY62256VNLL (7A622574NDC)	4037633	611058668	JT-CHINA	COMP	30	0	
STRESS: SOLDERABILITY							
CY62256NLL (7A62256ZEC)	4013150	611057996	JT-CHINA	COMP	15	0	
CY62256VNLL (7A622574NDC)	4037633	611057997	JT-CHINA	COMP	15	0	
CY62256VNLL (7A622574NDC)	4037633	611058668	JT-CHINA	COMP	15	0	
STRESS: TC COND. C –65C TO 150C, PRE COND 192 HR 30C/60%RH, MSL3							
CY62256NLL (7A62256ZEC)	4013150	611057996	JT-CHINA	500	87	0	
CY62256NLL (7A62256ZEC)	4013150	611057996	JT-CHINA	1000	85	0	
CY62256VNLL (7A622574NDC)	4037633	611057997	JT-CHINA	500	90	0	
CY62256VNLL (7A622574NDC)	4037633	611057997	JT-CHINA	1000	90	0	
CY62256VNLL (7A622574NDC)	4037633	611058668	JT-CHINA	500	89	0	
CY62256VNLL (7A622574NDC)	4037633	611058668	JT-CHINA	1000	89	0	
STRESS: POST TCT BOND PULL							
CY62256NLL (7A62256ZEC)	4013150	611057996	JT-CHINA	COMP	5	0	
STRESS: ELECTRICAL DISTRIBUTIONS							
CY62256NLL (7A62256ZEC)	4013150	611057996	JT-CHINA	COMP	30	0	
CY62256VNLL (7A622574NDC)	4037633	611057997	JT-CHINA	COMP	30	0	
CY62256VNLL (7A622574NDC)	4037633	611058668	JT-CHINA	COMP	30	0	

Document History Page

Document Title: QTP 105208: Automotive 28L SNC (300 mils) NiPdAu, MSL3, 260C Reflow JCET-China (JT)
Qualification Report
Document Number: 001-68149

Rev.	ECN No.	Orig. of Change	Description of Change
**	3178043	NRG	Initial Spec Release
*A	4364770	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

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