

Cypress Semiconductor Package Qualification Report

**QTP# 053005 VERSION 1.0
November 2005**

**≤28-Lead Shrunk Small Outline Package
(SSOP), (209mils)
NiPdAu Lead Finish
MSL3, 260C Solder Reflow
OSE-Taiwan**

CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:

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PRODUCT QUALIFICATION HISTORY

Qual Report	Description of Qualification Purpose	Date Comp.
053005	Qualify OSE-Taiwan for ≤28-Lead SSOP (209mils), NiPdAu lead Finish, MSL3, 260C Solder Reflow using Hitachi CEL9220HF Mold Compound, Hitachi EN4900G Epoxy	Oct 05

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	SP28
Package Outline, Type, or Name:	28-Lead SSOP (209 Mils)
Mold Compound Name/Manufacturer:	CEL 9220HF / Hitachi
Mold Compound Flammability Rating:	UL94 – V0
Oxygen Rating Index: >28%	None
Leadframe Material:	Cu
Lead Finish, Composition / Thickness:	NiPdAu - Ni -20-80uinch, Pd – 0.8-6.0uinch, Au – 0.1-0.6uinch
Die Backside Preparation Method/Metallization:	Grinding
Die Separation Method:	Sawing
Die Attach Supplier:	Hitachi
Die Attach Material:	EN 4900G
Die Attach Method:	Epoxy
Bond Diagram Designation	10-06973
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au /1.0 mil
Thermal Resistance Theta JA □C/W:	89 °C/W
Package Cross Section Yes/No:	N/A
Assembly Process Flow:	49-35999M
Name/Location of Assembly (prime) facility:	OSE, Taiwan (T)

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	CML-R
Fault Coverage:	N/A

Note: Please contact a Cypress Representative for other packages availability.

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS

Stress/Test	Test Condition (Temp/Bias)	Result P/F
Temperature Cycle	MIL-STD-883C, Method 1010, Condition C, -65 C to 150 C Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs 30°C/60%RH+3IR-Reflow, 260°C+0, -5°C	P
Pressure Cooker Test	121°C, 100% RH Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs 30°C/60%RH+3IR-Reflow, 260°C+0, -5°C	P
High Accelerated Saturation Test (HAST)	130°C, 3.8V, 85%RH Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs 30°C/60%RH+3IR-Reflow, 260°C+0, -5°C	P
Acoustics Microscopy	Cypress Spec. 25-00104	P
Solderability	Cypress Spec 25-00018	P
Internal Visual	Cypress Spec 12-00292/25-00017	P
X-ray	Cypress Spec, 12-00149	P
Ball Shear	Cypress Spec 24-00018	P
External Visual	Cypress Specification 12-00292/25-00103	P
Bond Pull	Cypress Spec 12-00292	P
Physical Dimension	Cypress Spec 25-00031	P
Cross Section	Cypress Spec 12-00292	P
Lead Integrity	Cypress Spec 25-00004	P
Lead Finish Adhesion	Cypress Spec 25-00029	P
Wetting Balance	Cypress Spec 25-20037	P

Reliability Test Data

QTP #: 053005

<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: ACOUSTIC, MSL3							
CY28400OXC (7C828400B)	4450673	610515315	TAIWN-T	COMP	25	0	
CY28400OXC (7C828400B)	4450673	610515317	TAIWN-T	COMP	25	0	
CY28400OXC (7C828400B)	4450673	610515318	TAIWN-T	COMP	25	0	
STRESS: ADHESION OF LEAD FINISH							
CY28400OXC (7C828400B)	4450673	610515315	TAIWN-T	COMP	5	0	
CY28400OXC (7C828400B)	4450673	610515317	TAIWN-T	COMP	5	0	
CY28400OXC (7C828400B)	4450673	610515318	TAIWN-T	COMP	5	0	
STRESS: BALL SHEAR							
CY28400OXC (7C828400B)	4450673	610515315	TAIWN-T	COMP	10	0	
STRESS: BOND PULL							
CY28400OXC (7C828400B)	4450673	610515315	TAIWN-T	COMP	10	0	
STRESS: CROSS SECTION							
CY28400OXC (7C828400B)	4450673	610515315	TAIWN-T	COMP	5	0	
CY28400OXC (7C828400B)	4450673	610515317	TAIWN-T	COMP	5	0	
CY28400OXC (7C828400B)	4450673	610515318	TAIWN-T	COMP	5	0	
STRESS: EXTERNAL VISUAL							
CY28400OXC (7C828400B)	4450673	610515315	TAIWN-T	COMP	15	0	
CY28400OXC (7C828400B)	4450673	610515317	TAIWN-T	COMP	15	0	
CY28400OXC (7C828400B)	4450673	610515318	TAIWN-T	COMP	15	0	
STRESS: INTERNAL VISUAL							
CY28400OXC (7C828400B)	4450673	610515315	TAIWN-T	COMP	5	0	
STRESS: LEAD INTERGIRTY							
CY28400OXC (7C828400B)	4450673	610515315	TAIWN-T	COMP	5	0	
CY28400OXC (7C828400B)	4450673	610515317	TAIWN-T	COMP	5	0	
CY28400OXC (7C828400B)	4450673	610515318	TAIWN-T	COMP	5	0	
STRESS: PHYSICAL DIMENSIONS							
CY28400OXC (7C828400B)	4450673	610515315	TAIWN-T	COMP	5	0	
CY28400OXC (7C828400B)	4450673	610515317	TAIWN-T	COMP	5	0	
CY28400OXC (7C828400B)	4450673	610515318	TAIWN-T	COMP	5	0	

Reliability Test Data

QTP #: 053005

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: HI-ACCEL SATURATION TEST, 130C, 85%RH, 3.63V, 168 HRS. 85C/85%RH, MSL1							
CY28400OXC (7C828400B)	4450673	610515315	TAIWN-T	128	48	0	
STRESS: PRESSURE COOKER TEST, 121C, 100%RH, 168 Hrs., 85C/85%RH, MSL1							
CY28400OXC (7C828400B)	4450673	610515315	TAIWN-T	176	50	0	
STRESS: SOLDERABILITY							
CY28400OXC (7C828400B)	4450673	610515315	TAIWN-T	COMP	5	0	
CY28400OXC (7C828400B)	4450673	610515317	TAIWN-T	COMP	5	0	
CY28400OXC (7C828400B)	4450673	610515318	TAIWN-T	COMP	5	0	
STRESS: TC CONDITION C, -65C TO 150C, PRE COND. 168 HRS. 85C/85%RH, MSL1							
CY28400OXC (7C828400B)	4450673	610515315	TAIWN-T	300	50	0	
CY28400OXC (7C828400B)	4450673	610515315	TAIWN-T	500	50	0	
CY28400OXC (7C828400B)	4450673	610515315	TAIWN-T	1000	50	0	
CY28400OXC (7C828400B)	4450673	610515317	TAIWN-T	300	49	0	
CY28400OXC (7C828400B)	4450673	610515317	TAIWN-T	500	49	0	
CY28400OXC (7C828400B)	4450673	610515317	TAIWN-T	1000	49	0	
CY28400OXC (7C828400B)	4450673	610515318	TAIWN-T	300	50	0	
CY28400OXC (7C828400B)	4450673	610515318	TAIWN-T	500	50	0	
CY28400OXC (7C828400B)	4450673	610515318	TAIWN-T	1000	50	0	
STRESS: WETTING BALANCE							
CY28400OXC (7C828400B)	4450673	610515315	TAIWN-T	COMP	5	0	
CY28400OXC (7C828400B)	4450673	610515317	TAIWN-T	COMP	5	0	
CY28400OXC (7C828400B)	4450673	610515317	TAIWN-T	COMP	5	0	
STRESS: X-RAY							
CY28400OXC (7C828400B)	4450673	610515315	TAIWN-T	COMP	15	0	