

# **Cypress Semiconductor Package Qualification Report**

**QTP# 002605 VERSION 1.0  
December, 2000**

**32.45-lead Plastic Small Outline Package (SOIC)  
MSL3  
Cypress Philippines (CSPI-R)**

## **CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:**

Ed Russell  
Reliability Director  
(408) 432-7069

Kim-Ngan Nguyen  
Staff Reliability Engineer  
(408) 943-2136

### PACKAGE QUALIFICATION HISTORY

<b>Qual Report</b>	<b>Description of Qualification Purpose</b>	<b>Date Comp.</b>
99412	32.45-lead SOIC Package Qualification ( $\leq 183.9 \times 207.1$ die size)	Oct 99
002605	32.45-lead SOIC Package Qualification (202 x 635 die size)	Sep 00

<b>MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION</b>	
<b>Package Designation:</b>	S32456
<b>Package Outline, Type, or Name:</b>	32-lead Plastic Small Outline IC (SOIC)
<b>Mold Compound Name/Manufacturer:</b>	NITTO MP8000CH4-A2
<b>Mold Compound Flammability Rating:</b>	V-O per UL94
<b>Oxygen Rating Index:</b>	> 28%
<b>Lead Frame Material:</b>	Copper
<b>Lead Finish, Composition / Thickness:</b>	Solder Plated 85%Sn - 15% Pb)
<b>Die Backside Preparation Method/Metallization:</b>	N/A
<b>Die Separation Method:</b>	Wafer Saw
<b>Die Attach Supplier:</b>	Ablestik
<b>Die Attach Material:</b>	Ablestik 8361H
<b>Bond Diagram Designation</b>	10-03242
<b>Wire Bond Method:</b>	Gold Wire Bonding
<b>Wire Material/Size:</b>	Gold/ 1.30mil
<b>Thermal Resistance Theta JA °C/W:</b>	56°C/W
<b>Package Cross Section Yes/No:</b>	N/A
<b>Assembly Process Flow:</b>	11-21000
<b>Name/Location of Assembly (prime) facility:</b>	Cypress Philippines (CSPI-R)

<b>ELECTRICAL TEST / FINISH DESCRIPTION</b>	
<b>Test Location:</b>	Cypress Philipines (CSPI-R)
<b>Fault Coverage:</b>	100%

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

**RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENT**

Stress/Test	Test Condition (Temp/Bias)	Result
Temperature Cycle	1) QTP 002605, QTP #99412 MIL-STD-883C, Method 1010, Condition C, -65°C to 150°C Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs., 30°C/60%RH+ 3IR-Reflow, 220°C+ 5, -0°C	P
High Accelerated Saturation Test	1) QTP 002605 130°C, 5.5V, 85%RH 2) QTP #99412 140°C, 5.5V, 85%RH Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs., 30°C/60%RH+ 3IR-Reflow, 220°C+ 5, -0°C	P
Pressure Cooker Test	1) QTP 002605, QTP #99412 Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs., 30°C/60%RH+ 3IR-Reflow, 220°C+ 5, -0°C	P
Internal Visual	1) QTP #99412 Cypress Specification 25-00017	P
External Visual	1) QTP #99412 Cypress Specification 12-00292/12-00103	P
Solderability	1) QTP #99412 Cypress Specification 25-00018	P
High Temp Storage	1) QTP #99412 150°C, no bias	P
Ball Shear	1) QTP #99412 Cypress Spec 24-00018	P
Bond Pull	1) QTP #99412 Cypress Spec 24-00002	P
Thermal Shock	1) QTP #99412 2) Cypress Spec 25-00014	P
X-Ray	1) QTP #99412 MIL-STD-883-2012	P
Acoustic Microscopy Test (C-SAM)	1) QTP # 002605, QTP #99412 Cypress Spec 25-00104	P

## Reliability Test Data

QTP #: 002605

<i>Device</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Assy Loc</i>	<i>Duration</i>	<i>Samp Rej</i>	<i>Failure Mechanism</i>
<b>STRESS: HI-ACCEL SATURATION TEST, 130C, 85%RH, 5.5V, PRE COND 192 HR 30C/60%RH, MSL3</b>						
CY62148-SC	4009115	610018219	CSPI-R	128	45	0
CY62148-SC	4009115	610018219N	CSPI-R	128	45	0
CY62148-SC	4009115	610018219N1	CSPI-R	128	45	0
CY62148-SC	4009115	610018219N2	CSPI-R	128	45	0
<b>STRESS: PRESSURE COOKER TEST, 121C, 100%RH, PRE COND 192HRS 30C/60%RH, MSL3</b>						
CY62148-SC	4009115	610018219	CSPI-R	168	45	0
CY62148-SC	4009115	610018219N	CSPI-R	168	45	0
CY62148-SC	4009115	610018219N1	CSPI-R	168	45	0
CY62148-SC	4009115	610018219N2	CSPI-R	168	45	0
<b>STRESS: TC CONDITION C, -65C TO 150C, PRE COND. 192 HRS 30C/60% RH, MSL3</b>						
CY62148-SC	4009115	610018219	CSPI-R	300	45	0
CY62148-SC	4009115	610018219	CSPI-R	500	45	0
CY62148-SC	4009115	610018219	CSPI-R	1000	45	0
CY62148-SC	4009115	610018219N	CSPI-R	300	45	0
CY62148-SC	4009115	610018219N	CSPI-R	500	45	0
CY62148-SC	4009115	610018219N	CSPI-R	1000	45	0
CY62148-SC	4009115	610018219N1	CSPI-R	300	45	0
CY62148-SC	4009115	610018219N1	CSPI-R	500	45	0
CY62148-SC	4009115	610018219N1	CSPI-R	1000	45	0
CY62148-SC	4009115	610018219N2	CSPI-R	300	45	0
CY62148-SC	4009115	610018219N2	CSPI-R	500	45	0
CY62148-SC	4009115	610018219N2	CSPI-R	1000	45	0
CY62148-SC	4009115	610018219N3	CSPI-R	300	37	0
CY62148-SC	4009115	610018219N3	CSPI-R	500	37	0
CY62148-SC	4009115	610018219N3	CSPI-R	1000	37	0

## Reliability Test Data

QTP #: 99412

DEVICE	ASSY-LOC	FABLOT#	ASSYLOT#	DURATION	S/S	REJ	FAIL MODE
<b>STRESS: ACOUSTIC MSL3, PRECOND. 192 HRS 30C/60%RH</b>							
CY62128-SC	CSPI-R	4920722	619922743	COMP	15	0	
CY62128-SC	CSPI-R	4920722	619922743M	COMP	15	0	
CY62128-SC	CSPI-R	4920722	619922743M2	COMP	15	0	
<b>STRESS: AGE BALL SHEAR</b>							
CY62128-SC	CSPI-R	4920722	619922743	COMP	10	0	
<b>STRESS: BOND PULL</b>							
CY62128-SC	CSPI-R	4920722	619922743	COMP	10	0	
<b>STRESS: PHYSICAL DIMENSIONS</b>							
CY62128-SC	CSPI-R	4920722	619922743	COMP	5	0	
<b>STRESS: EXTERNAL VISUAL</b>							
CY62128-SC	CSPI-R	4920722	619922743	COMP	15	0	
<b>STRESS: HI-ACCEL SATURATION TEST, 140C/85%RH/5.5V, PRECOND. 192 HRS 30C/60%RH, MSL3</b>							
CY62128-SC	CSPI-R	4920722	619922743	128	50	0	
<b>STRESS: HIGH TEMP STORAGE, 150C, NO BIAS</b>							
CY62128-SC	CSPI-R	4920722	619922743	500	50	0	
CY62128-SC	CSPI-R	4920722	619922743	1000	50	0	
<b>STRESS: INTERNAL VISUAL</b>							
CY62128-SC	CSPI-R	4920722	619922743	COMP	5	0	
<b>STRESS: PRESSURE COOKER TEST, 121C, 100%RH, 30PSIA, PRECOND. 192 HRS 30C/60%RH, MSL3</b>							
CY62128-SC	CSPI-R	4920722	619922743	PCT	49	0	
<b>STRESS: SOLDERABILITY</b>							
CY62128-SC	CSPI-R	4920722	619922743	COMP	3	0	
<b>STRESS: TC COND. C, -65 TO 150C, PRECOND. 192 HRS 30C/60%RH, MSL 3</b>							
CY62128-SC	CSPI-R	4920722	619922743	300	50	0	
CY62128-SC	CSPI-R	4920722	619922743	500	50	0	
CY62128-SC	CSPI-R	4920722	619922743M	300	50	0	
CY62128-SC	CSPI-R	4920722	619922743M	500	50	0	
CY62128-SC	CSPI-R	4920722	619922743M2	300	50	0	
<b>STRESS: THERMAL SHOCK, CONDITION B, 150C /-</b>							
CY62128-SC	CSPI-R	4920722	619922743	100	50	0	
CY62128-SC	CSPI-R	4920722	619922743	200	50	0	
<b>STRESS: X-RAY INSPECTION</b>							
CY62128-SC	CSPI-R	4920722	619922743	COMP	15	0	