CYPRESS SEMICONDUCTOR
PRODUCT CHANGE NOTIFICATION

PCN: 020038 **DATE:** December 11, 2002

Subject: CYNSE70256 Package Conversion

To:

Description of change:

Cypress has changed the package type on the CYNSE70256 device from 388 BGA to 388 Heat-Sink BGA for enhancements in the thermal characteristics of the device. To reflect this change, Cypress has changed the part number to CYNSE70256-**BHC. The CYNSE70256-**BHC is functionally and pin-out identical to the CYNSE70256-**BGC.

The package thermal characteristic value for Theta JA at 2 m/s airflow will become 3.7C/W, versus the previous value of 4.4C/W with the BGC package. The Moisture Sensitivity Level will be changed from 5 to 3. With these changes, the package will meet Level 3 Moisture Sensitivity and provide better Thermal Performance. Body size dimensions, package height, pin diameter, and pin to pin pitch will remain the same.

Benefit of change:

This change will improve quality and reliability. The new values for Theta JA and Moisture Sensitivity Level are 3.7C/W and 3, respectively.

Qualification status:

Complete; Qualification Report #023304 is attached.

Sample status:

Samples are available by contacting our local sales office.

CYPRESS SEMICONDUCTOR
PRODUCT CHANGE NOTIFICATION

PCN: 020038 **DATE:** December 11, 2002

Subject: CYNSE70256 Package Conversion

Cypress part numbers affected:
CYNSE70256-66BGC, CYNSE70256-83BGC.

Customer part numbers affected:

Approximate Implementation Date:
Product release of new material is immediate.

Response Required:
This PCN is for information only.

Sincerely,

Mike Burke
Director of Quality

Al Laxman
PCN Process Manager

Cypress Semiconductor
Qualification Report

QTP# 023304 VERSION 1.0
October, 2002

388-ball Heat Slug Ball Grid Array (HSBGA)
MSL 3
35 x 35 x 2.3 mm

ASE Taiwan (TAIWN-G)

CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:

Ed Russell
Reliability Director
(408) 432–7069

Al Laxman
Quality Engineering
(408) 545–7120

PACKAGE QUALIFICATION HISTORY

Qual Report		Description of Qualification Purpose		Date Comp
023304		388-ball (35 x 35 x 2.3mm) HSBGA with die size ≤ 513 x 455 mils assembled at ASE Taiwan		Oct 02

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	BH388
Package Outline, Type, or Name:	388-ball (35 x 35 x 2.3mm) ball Heat Slug Ball Grid Array (HSBGA)
Mold Compound Name/Manufacturer:	Plaskon SMT-B-1LV
Mold Compound Flammability Rating:	V-O per UL94
Oxygen Rating Index:	>28%
Substrate Material:	BT Resin
Lead Finish, Composition / Thickness:	Solder Ball, 63%Sn, 37%Pb
Die Backside Preparation Method/Metallization:	N/A
Die Separation Method:	Wafer Saw
Die Attach Supplier:	Ablestik
Die Attach Material:	QMI 8355F
Die Attach Method:	Epoxy
Bond Diagram Designation:	10-04857
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au, 1.0um
Thermal Resistance Theta JA °C/W:	< 4°C/W with Fansink
Package Cross Section Yes/No:	N/A
Assembly Process Flow:	49-41030
Name/Location of Assembly (prime) facility:	ASE Taiwan (TAIWN-G)

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	ASE Taiwan (TAIWN-G)
Fault Coverage:	100%

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS

Stress/Test	Test Condition (Temp/Bias)	Result P/F
High Temperature Operating Life Latent Failure Rate	Dynamic Operating Condition, Vcc Max =1.725V, 125C	P
High Temperature Operating Life Early Failure Rate	Dynamic Operating Condition, Vcc Max =1.725V, 125C	P
Temperature Cycle	JEDEC22, 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	130°C, 1.58V, 85%RH Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs., 30°C/60%RH+3IR-Reflow, 220°C+5, -0°C	P
Pressure Cooker	121C, 100%RH Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs., 30°C/60%RH+3IR-Reflow, 220°C+5, -0°C	P
High Temperature Storage	150C, no bias	P
Thermal Shock	125C, -55C	P
Internal Visual	Cypress Spec 25-00017	P
External Visual	Cypress Spec 25-00038	P
Die Shear	Cypress Spec 12-00292	P
Ball Shear	Cypress Spec 24-00018	P
Bond Pull	Cypress Spec 24-00002	P
X-Ray	Cypress Spec 12-00292	P
Acoustic Microscopy, MSL3	Cypress Spec 25-000104	P

Reliability Test Data

QTP #: 023304

Device Mechanism	Fab Lot #	Assy Lot #	Ass Loc	Duration	Samp	Rej	Failure
STRESS: ACOUSTIC, MSL3							
CYNSE70256-BHC (7C7080A)	9229169	*610234339*	TAIWN-G	COMP	15	0	
CYNSE70256-BHC (7C7080A)	9230203	*610234337*	TAIWN-G	COMP	15	0	
CYNSE70256-BHC (7C7080A)	9230203	*610234338*	TAIWN-G	COMP	15	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE (125C, 1.725V, Vcc Max)							
CYNSE70256-BHC (7C7080A)	9205908	*610206052*	TAIWN-G	48	119	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE (125C, 1.725V, Vcc Max)							
CYNSE70256-BHC (7C7080A)	9205908	*610206052*	TAIWN-G	168	119	0	
CYNSE70256-BHC (7C7080A)	9205908	*610206052*	TAIWN-G	1000	119	0	
STRESS: HI-ACCEL SATURATION TEST, 130C, 85%RH, 1. 58V, PRE COND 192 HR 30C/60%RH, MSL3							
CYNSE70256-BHC (7C7080A)	9205908	*610206052*	TAIWN-G	128	42	0	
STRESS: PRESSURE COOKER TEST, 121C, 100%RH, PRE COND 192 HR 30C/60%RH, MSL3							
CYNSE70256-BHC (7C7080A)	9229169	*610234339*	TAIWN-G	168	48	0	
STRESS: EXTERNAL VISUAL							
CYNSE70256-BHC (7C7080A)	9229169	*610234339*	TAIWN-G	COMP	15	0	
CYNSE70256-BHC (7C7080A)	9230203	*610234337*	TAIWN-G	COMP	15	0	
CYNSE70256-BHC (7C7080A)	9230203	*610234338*	TAIWN-G	COMP	15	0	
STRESS: INTERNAL VISUAL							
CYNSE70256-BHC (7C7080A)	9205908	*610206052*	TAIWN-G	COMP	20	0	
STRESS: X-RAY							
CYNSE70256-BHC (7C7080A)	9205908	*610206052*	TAIWN-G	COMP	15	0	
STRESS: THERMAL SHOCK, 125C / -55C							
CYNSE70256-BHC (7C7080A)	9205908	*610206052*	TAIWN-G	100	48	0	
CYNSE70256-BHC (7C7080A)	9205908	*610206052*	TAIWN-G	200	48	0	
STRESS: HIGH TEMPERATURE STORAGE, PLASTIC, 150C							
CYNSE70256-BHC (7C7080A)	9205908	*610206052*	TAIWN-G	500	48	0	
CYNSE70256-BHC (7C7080A)	9205908	*610206052*	TAIWN-G	1000	48	0	
STRESS: BALL SHEAR							
CYNSE70256-BHC (7C7080A)	9205908	*610206052*	TAIWN-G	COMP	50	0	
STRESS: DIE SHEAR							
CYNSE70256-BHC (7C7080A)	9205908	*610206052*	TAIWN-G	COMP	15	0	
STRESS: BOND PULL							
CYNSE70256-BHC (7C7080A)	9205908	*610206052*	TAIWN-G	COMP	50	0	

Reliability Test Data

QTP #: 023304

Device	Fab Lot #	Assy Lot #	Ass Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: TC COND. C -65C TO 150C, PRECONDITION 192 HRS 30C/60%RH, MSL3							
CYNSE70256-BHC (7C7080A)	9229169	*610234339*	TAIWN-G	300	46	0	
CYNSE70256-BHC (7C7080A)	9229169	*610234339*	TAIWN-G	500	38	0	
CYNSE70256-BHC (7C7080A)	9230203	*610234337*	TAIWN-G	300	48	0	
CYNSE70256-BHC (7C7080A)	9230203	*610234338*	TAIWN-G	300	48	0	
CYNSE70256-BHC (7C7080A)	9230203	*610234338*	TAIWN-G	500	45	0	