S71GL-P Based MCPs

Stacked Multi-Chip Product (MCP) Flash Memory and RAM

128 Megabit (8 M x 16-bit) CMOS 3.0 Volt-only Page Mode Flash Memory and 64 Megabit (4M x 16-bit) Pseudo Static RAM

Data Sheet *(Advance Information)*

Notice to Readers: This document states the current technical specifications regarding the Spansion product(s) described herein. Each product described herein may be designated as Advance Information, Preliminary, or Full Production. See *Notice On Data Sheet Designations* for definitions.

Publication Number S71GL-P_00 **Revision** 03 **Issue Date** February 3, 2009

Notice On Data Sheet Designations

Spansion Inc. issues data sheets with Advance Information or Preliminary designations to advise readers of product information or intended specifications throughout the product life cycle, including development, qualification, initial production, and full production. In all cases, however, readers are encouraged to verify that they have the latest information before finalizing their design. The following descriptions of Spansion data sheet designations are presented here to highlight their presence and definitions.

Advance Information

The Advance Information designation indicates that Spansion Inc. is developing one or more specific products, but has not committed any design to production. Information presented in a document with this designation is likely to change, and in some cases, development on the product may discontinue. Spansion Inc. therefore places the following conditions upon Advance Information content:

> "This document contains information on one or more products under development at Spansion Inc. The information is intended to help you evaluate this product. Do not design in this product without contacting the factory. Spansion Inc. reserves the right to change or discontinue work on this proposed product without notice."

Preliminary

The Preliminary designation indicates that the product development has progressed such that a commitment to production has taken place. This designation covers several aspects of the product life cycle, including product qualification, initial production, and the subsequent phases in the manufacturing process that occur before full production is achieved. Changes to the technical specifications presented in a Preliminary document should be expected while keeping these aspects of production under consideration. Spansion places the following conditions upon Preliminary content:

> "This document states the current technical specifications regarding the Spansion product(s) described herein. The Preliminary status of this document indicates that product qualification has been completed, and that initial production has begun. Due to the phases of the manufacturing process that require maintaining efficiency and quality, this document may be revised by subsequent versions or modifications due to changes in technical specifications."

Combination

Some data sheets contain a combination of products with different designations (Advance Information, Preliminary, or Full Production). This type of document distinguishes these products and their designations wherever necessary, typically on the first page, the ordering information page, and pages with the DC Characteristics table and the AC Erase and Program table (in the table notes). The disclaimer on the first page refers the reader to the notice on this page.

Full Production (No Designation on Document)

When a product has been in production for a period of time such that no changes or only nominal changes are expected, the Preliminary designation is removed from the data sheet. Nominal changes may include those affecting the number of ordering part numbers available, such as the addition or deletion of a speed option, temperature range, package type, or V_{IO} range. Changes may also include those needed to clarify a description or to correct a typographical error or incorrect specification. Spansion Inc. applies the following conditions to documents in this category:

> "This document states the current technical specifications regarding the Spansion product(s) described herein. Spansion Inc. deems the products to have been in sufficient production volume such that subsequent versions of this document are not expected to change. However, typographical or specification corrections, or modifications to the valid combinations offered may occur."

Questions regarding these document designations may be directed to your local sales office.

S71GL-P Based MCPs

Stacked Multi-Chip Product (MCP) Flash Memory and RAM

128 Megabit (8 M x 16-bit) CMOS 3.0 Volt-only Page Mode Flash Memory and 64 Megabit (4M x 16-bit) Pseudo Static RAM

Data Sheet *(Advance Information)*

Distinctive Characteristics

MCP Features

- **Power supply voltage of 2.7 to 3.1 volt**
- **High performance**
  - 100 ns access time (100 ns Flash, 70 ns pSRAM/SRAM)
  - 25 ns page read times
- **Packages**
  - 8 x 11.6 x 1.2 mm 84 ball FBGA (TLA084)
- **Operating Temperature**
  - –25°C to +85°C

General Description

The S71GL-P product series consists of S29GL-P Flash memory with pSRAM combinations defined as:

		Flash Memory Density
		128 Mb
pSRAM Density	64 Mb	S71GL128PC0

For detailed specifications, please refer to the individual data sheets.

Document	Publication Identification Number (PID)
S29GL-P	S29GL-P_00
64 Mb pSRAM Type 7	pSRAM_38

Publication Number S71GL-P_00 **Revision** 03 **Issue Date** February 3, 2009

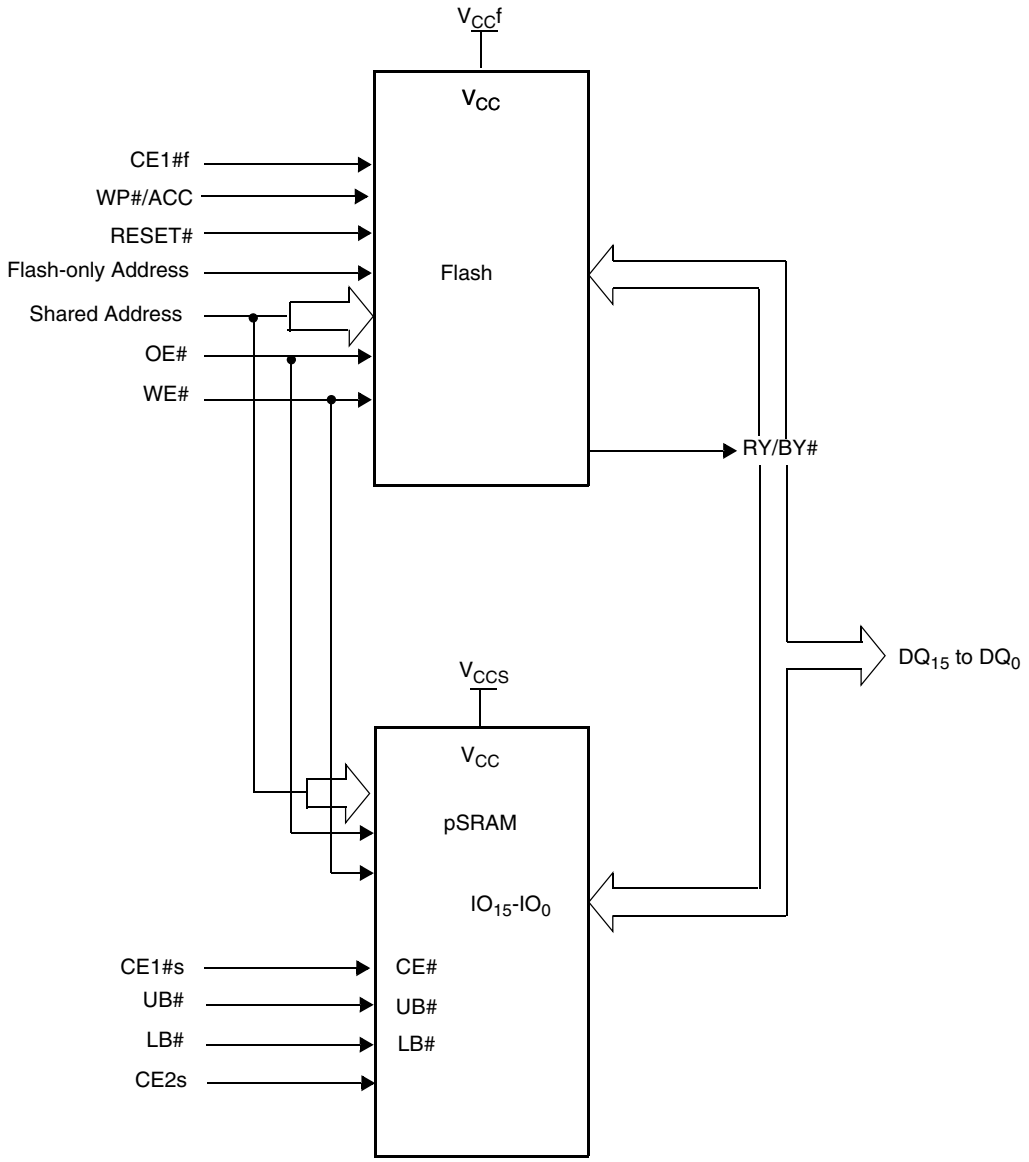
1. Product Selector Guide

1.1 128 Mb Flash Memory

Device-Model# (Note)	Flash Access time (ns)	(p)SRAM density	(p)SRAM Access time (ns)	(p)SRAM type	Package	Sector Protect
S71GL128PC0-0Y	100	64 Mb	70	pSRAM 7	TSB084	Low
S71GL128PC0-1Y						High

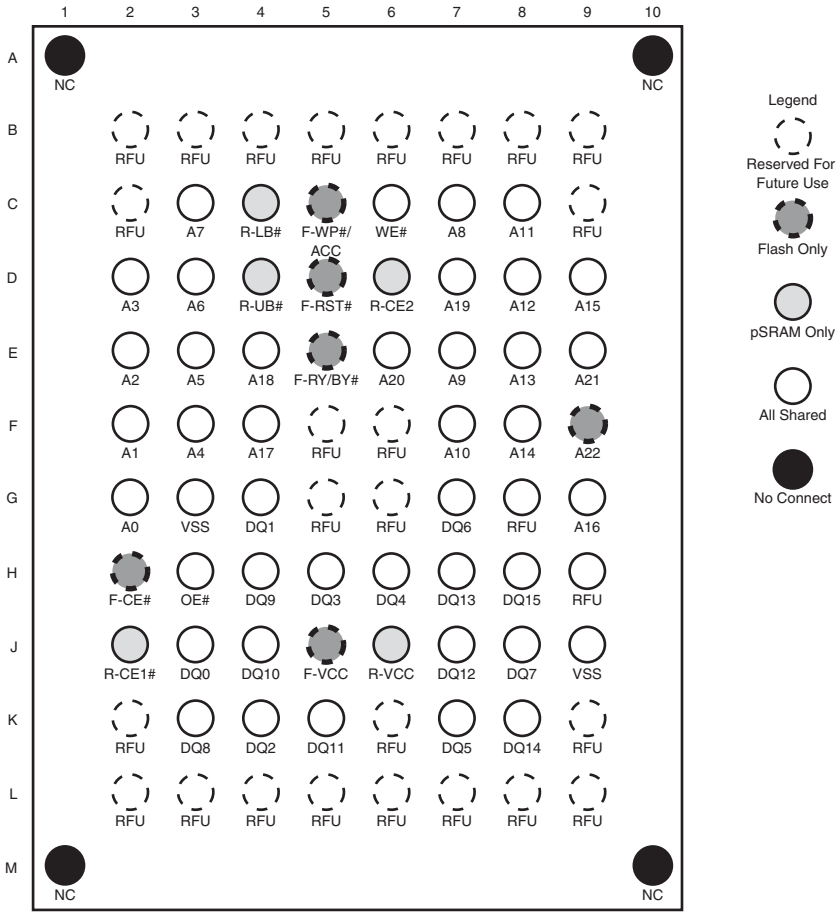
Note
Please see the valid combinations table for the model# description.

2. MCP Block Diagram



3. Connection Diagram

84-ball Fine-Pitch Ball Grid Array
(Top View, Balls Facing Down)



Note
May be shared depending on density.

MCP	Flash-only Addresses	Shared Addresses
S71GL128PC0	A22	A21-A0

3.1 Special Handling Instructions For FBGA Package

Special handling is required for Flash Memory products in FBGA packages.

Flash memory devices in FBGA packages may be damaged if exposed to ultrasonic cleaning methods. The package and/or data integrity may be compromised if the package body is exposed to temperatures above 150°C for prolonged periods of time.

4. Pin Description

Pin	Description
A22–A0	23 Address Inputs (Common and Flash only)
DQ15–DQ0	16 Data Inputs/Outputs (Common)
CE1#f	Chip Enable (Flash)
CE1#s	Chip Enable 1 (pSRAM/SRAM)
CE2s	Chip Enable 2 (pSRAM/SRAM)
OE#	Output Enable (Common)
WE#	Write Enable (Common)
RY/BY#	Ready/Busy Output (Flash 1)
UB#	Upper Byte Control (pSRAM/SRAM)
LB#	Lower Byte Control (pSRAM/SRAM)
RESET#	Hardware Reset Pin, Active Low (Flash)
WP#/ACC	Hardware Write Protect/Acceleration Pin (Flash)
$V_{CC}f$	Flash 3.0 volt-only single power supply (see *Product Selector Guide* for speed options and voltage supply tolerances)
V_{CCS}	pSRAM/SRAM Power Supply
V_{SS}	Device Ground (Common)
NC	Pin Not Connected Internally

5. Ordering Information

The order number is formed by a valid combinations of the following:

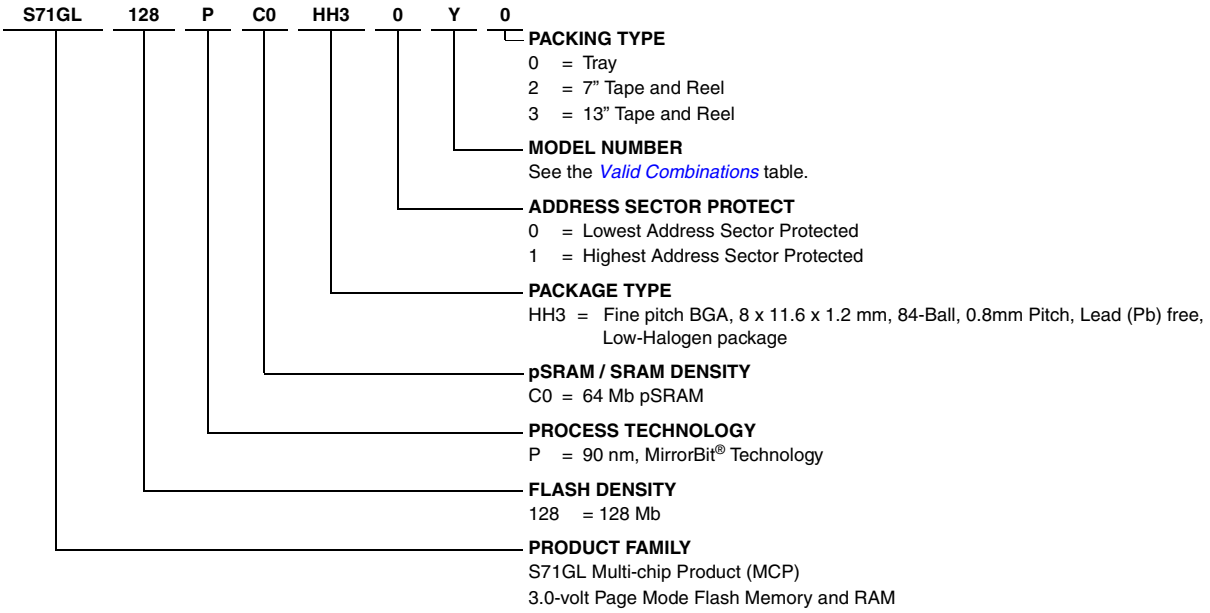


Table 5.1 Valid Combinations

S71GL128P Valid Combinations				Speed Options (ns)/ Address Sector Protection	(p)SRAM Type/ Access Time (ns)	Package Marking
Base Ordering Part Number	Package & Temperature	Package Modifier/Model Number	Packing Type			
S71GL128PC0	HH3	0Y	0, 2, 3 (1)	100 / Low Protect	pSRAM9 / 70	TSB084
		1Y		100 / High Protect		

Note

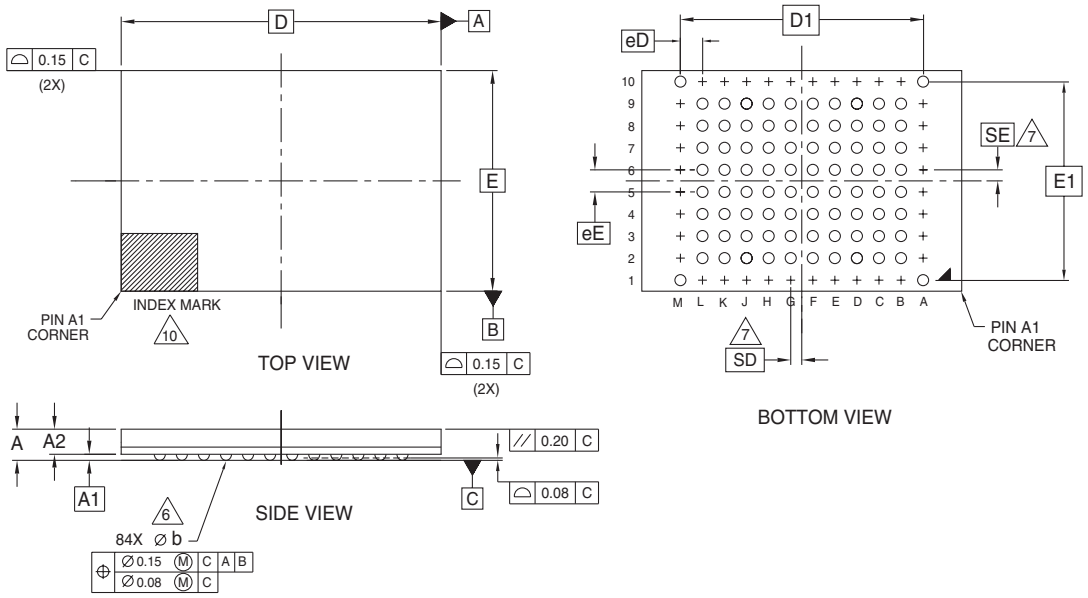
1. Type 0 is standard. Specify other options as required.

Valid Combinations

Valid Combinations list configurations planned to be supported in volume for this device. Consult your local sales office to confirm availability of specific valid combinations and to check on newly released combinations.

6. Physical Dimensions

6.1 TSB084—84-ball Fine-Pitch Ball Grid Array (FBGA) 11.6 x 8 mm Package



PACKAGE	TSB 084			
JEDEC	N/A			
D x E	11.60 mm x 8.00 mm PACKAGE			
SYMBOL	MIN	NOM	MAX	NOTE
A	---	---	1.20	PROFILE
A1	0.17	---	---	BALL HEIGHT
A2	0.81	---	0.97	BODY THICKNESS
D	11.60 BSC.			BODY SIZE
E	8.00 BSC.			BODY SIZE
D1	8.80 BSC.			MATRIX FOOTPRINT
E1	7.20 BSC.			MATRIX FOOTPRINT
MD	12			MATRIX SIZE D DIRECTION
ME	10			MATRIX SIZE E DIRECTION
n	84			BALL COUNT
ϕb	0.35	0.40	0.45	BALL DIAMETER
eE	0.80 BSC			BALL PITCH
eD	0.80 BSC			BALL PITCH
SD / SE	0.40 BSC			SOLDER BALL PLACEMENT
	A2,A3,A4,A5,A6,A7,A8,A9 B1,B10,C1,C10,D1,D10 E1,E10,F1,F10,G1,G10 H1,H10,J1,J10,K1,K10,L1,L10 M2,M3,M4,M5,M6,M7,M8,M9			DEPOPULATED SOLDER BALLS

NOTES:

1. DIMENSIONING AND TOLERANCING METHODS PER ASME Y14.5M-1994.
2. ALL DIMENSIONS ARE IN MILLIMETERS.
3. BALL POSITION DESIGNATION PER JESD 95-1, SPP-010.
4. e REPRESENTS THE SOLDER BALL GRID PITCH.
5. SYMBOL "MD" IS THE BALL MATRIX SIZE IN THE "D" DIRECTION.

   SYMBOL "ME" IS THE BALL MATRIX SIZE IN THE "E" DIRECTION.

   n IS THE NUMBER OF POPULTED SOLDER BALL POSITIONS FOR MATRIX SIZE MD X ME.

6. DIMENSION "b" IS MEASURED AT THE MAXIMUM BALL DIAMETER IN A PLANE PARALLEL TO DATUM C.
7. SD AND SE ARE MEASURED WITH RESPECT TO DATUMS A AND B AND DEFINE THE POSITION OF THE CENTER SOLDER BALL IN THE OUTER ROW.

   WHEN THERE IS AN ODD NUMBER OF SOLDER BALLS IN THE OUTER ROW SD OR SE = 0.000.

   WHEN THERE IS AN EVEN NUMBER OF SOLDER BALLS IN THE OUTER ROW, SD OR SE = e/2
8. "+" INDICATES THE THEORETICAL CENTER OF DEPOPULATED BALLS.
9. N/A
10. A1 CORNER TO BE IDENTIFIED BY CHAMFER, LASER OR INK MARK, METALLIZED MARK INDENTATION OR OTHER MEANS.

3439 \ 16-038.22 \ 01.04.05

7. Revision History

Section	Description
Revision 01 (May 5, 2008)	
	Initial release.
Revision 02 (May 23, 2008)	
General Information	Updated 64 Mb pSRAM Type 7 Publication ID to psram_38
Revision 03 (February 3, 2009)	
Product Selector Guide	Changed flash density to 128 Mb Changed package to TSB084
Valid Combinations Table	Changed S71GL064N to S71GL128P Changed package to TSB084
Physical Dimensions	Changed package to TSB084

Colophon

The products described in this document are designed, developed and manufactured as contemplated for general use, including without limitation, ordinary industrial use, general office use, personal use, and household use, but are not designed, developed and manufactured as contemplated (1) for any use that includes fatal risks or dangers that, unless extremely high safety is secured, could have a serious effect to the public, and could lead directly to death, personal injury, severe physical damage or other loss (i.e., nuclear reaction control in nuclear facility, aircraft flight control, air traffic control, mass transport control, medical life support system, missile launch control in weapon system), or (2) for any use where chance of failure is intolerable (i.e., submersible repeater and artificial satellite). Please note that Spansion will not be liable to you and/or any third party for any claims or damages arising in connection with above-mentioned uses of the products. Any semiconductor devices have an inherent chance of failure. You must protect against injury, damage or loss from such failures by incorporating safety design measures into your facility and equipment such as redundancy, fire protection, and prevention of over-current levels and other abnormal operating conditions. If any products described in this document represent goods or technologies subject to certain restrictions on export under the Foreign Exchange and Foreign Trade Law of Japan, the US Export Administration Regulations or the applicable laws of any other country, the prior authorization by the respective government entity will be required for export of those products.

Trademarks and Notice

The contents of this document are subject to change without notice. This document may contain information on a Spansion product under development by Spansion. Spansion reserves the right to change or discontinue work on any product without notice. The information in this document is provided as is without warranty or guarantee of any kind as to its accuracy, completeness, operability, fitness for particular purpose, merchantability, non-infringement of third-party rights, or any other warranty, express, implied, or statutory. Spansion assumes no liability for any damages of any kind arising out of the use of the information in this document.