



# DDR3(L) SODIMM Product Datasheet

廣穎電通股份有限公司  
Silicon Power Computer & Communications Inc.  
TEL: 886-2 8797-8833 FAX: 886-2 8751-6595  
台北市114內湖區洲子街106號7樓  
7F, No.106, ZHO-Z ST. NEIHU DIST, 114, TAIPEI, TAIWAN,

## RESTRICTIONS OF DATASHEET USE

- This document is proprietary, confidential and intended solely for the recipient. No part of this document may be disclosed in any manner to a third party or reproduced without the prior written consent of Silicon Power. No implied, by estoppel or otherwise, to any intellectual property rights is granted by this document.
- Except as provided in any term and conditions, and/or any agreements in written by Silicon Power , Silicon Power assumes no responsibility whatever, including but not limited to, indirect, consequential, special, punitive, incidental damages, loss, loss of profits, loss of opportunities, business interruption and data. Silicon Power disclaims any express or implies warranty and conditions related to sale, use of product, or information, including warranty or conditions of merchantability, fitness for a particular purpose, accuracy of information or non-infringement.
- Moreover, Silicon Power may reserve the right to make change to the information of this document at any time without notice.

© 2016 Silicon Power Computer & Communications Inc.. All rights reserved.



SP Silicon  
Power  
CONFIDENTIAL

## Description

The Silicon Power Computer & Communications STU series products are 204-Pin Double Data Rate 3 (DDR3) Synchronous DRAM Small Outline Dual In-Line Memory Module (SODIMM), organized as a one rank 128Mx64, 256Mx64 or 512Mx64, high-speed memory array or two ranks 128Mx64, 256Mx64, 512Mx64, 1024Mx64 high-speed memory array, The module uses four 128x16(1GB), 256x16(2GB) eight 64Mx16(1GB), 128Mx8 (1GB), 128Mx16(2GB), 256Mx8 (2GB), 256Mx16 (4GB), 512Mx8 (4GB), sixteen 128Mx8 (2GB), 256Mx8 (4GB), 512Mx8 (8GB) DDR3 SDRAMs in BGA packages

This DIMM are manufactured using raw cards developed for broad industry use as reference designs. The use of these common design files minimizes electrical variation between suppliers.

DDR3 SDRAM DIMM provide a high-performance, flexible 8-byte interface in a space-saving footprint.

The DIMM is intended for use in applications operating of 533MHz, 667MHz, 800MHz clock speeds and achieves high-speed data transfer rates of 1066, 1333, 1600Mbps. Prior to any access operation, the device CAS latency and burst/length/operation type must be programmed into the DIMM by address inputs A0-A12(64Mx16), A0-A13(128Mx8 or 128Mx16), A0-A14(256Mx8 or 256Mx16), A0-A15 (512Mx8) and I/O inputs BA0~BA2 using the mode register set cycle.

The DIMM uses serial presence-detect implemented via a serial EEPROM using a standard IIC protocol.

CONFIDENTIAL

## Features

- DDR3 functionality and operations supported as defined in the component data sheet
- 204pin, small-outline dual in-line memory module (SODIMM)
- Fast data transfer rates:
  - DDR3-1066(PC3-8500)
  - DDR3-1333(PC3-10600)
  - DDR3-1600(PC3-12800)
- Single or Dual rank
- 1GB (128 Meg x 64), 2GB (256 Meg x 64), 4GB (512Meg x 64), 8GB (1Giga x 64)
- DDR3 Normal Power  $V_{DD} = V_{DDQ} = 1.5V \pm 0.075V$
- DDR3L Low Power  $V_{DD} = V_{DDQ} = 1.35V (+0.1 \sim -0.067V)$
- $V_{DDSPD} = 3.0V$  to  $3.6V$
- Reset pin for improved system stability
- Nominal and dynamic on-die termination (ODT) for data, strobe, and mask signals
- Fixed burst chop (BC) of 4 and burst length (BL) of 8 via the mode register set (MRS)
- Adjustable data-output drive strength
- Fly-by topology
- Terminated control, command, and address bus
- Serial presence-detect (SPD) EEPROM
- Gold edge contacts
- Pb-free

CONFIDENTIAL

## DDR3 STU Series Module Specification ( Single DIMM Package)

| Part Number         | Module Density & Configuration  | Bandwidth | Data Rate | Timing       | Operator Voltage |
|---------------------|---------------------------------|-----------|-----------|--------------|------------------|
|                     |                                 |           |           | tCL-tRCD-tRP |                  |
| SP001GBSTU106S01(2) | 1GB (128Mx64)                   | PC3-8500  | DDR3-1066 | 7-7-7        | 1.5V             |
| SP001GBSTU133S01(2) | 128Mx8 1Rank                    | PC3-10600 | DDR3-1333 | 9-9-9        | 1.5V             |
| SP001GBSTU106T01(2) | 1GB (128Mx64)<br>128Mx16 1Rank  | PC3-8500  | DDR3-1066 | 7-7-7        | 1.5V             |
| SP001GBSTU133T01(2) |                                 | PC3-10600 | DDR3-1333 | 9-9-9        | 1.5V             |
| SP001GBSTU160T01(2) |                                 | PC3-12800 | DDR3-1600 | 11-11-11     | 1.5V             |
| SP001GBSTU106Q01(2) | 1GB (128Mx64)                   | PC3-8500  | DDR3-1066 | 7-7-7        | 1.5V             |
| SP001GBSTU133Q01(2) | 64Mx16 2Ranks                   | PC3-10600 | DDR3-1333 | 9-9-9        | 1.5V             |
| SP002GBSTU106V01(2) | 2GB (256Mx64)<br>256Mx8 1Rank   | PC3-8500  | DDR3-1066 | 7-7-7        | 1.5V             |
| SP002GBSTU133V01(2) |                                 | PC3-10600 | DDR3-1333 | 9-9-9        | 1.5V             |
| SP002GBSTU160V01(2) |                                 | PC3-12800 | DDR3-1600 | 11-11-11     | 1.5V             |
| SP002GBSTU106W01(2) | 2GB (256Mx64)<br>256Mx16 1Rank  | PC3-8500  | DDR3-1066 | 7-7-7        | 1.5V             |
| SP002GBSTU133W01(2) |                                 | PC3-10600 | DDR3-1333 | 9-9-9        | 1.5V             |
| SP002GBSTU160W01(2) |                                 | PC3-12800 | DDR3-1600 | 11-11-11     | 1.5V             |
| SP002GBSTU106S01(2) | 2GB (256Mx64)<br>128Mx8 2Ranks  | PC3-8500  | DDR3-1066 | 7-7-7        | 1.5V             |
| SP002GBSTU133S01(2) |                                 | PC3-10600 | DDR3-1333 | 9-9-9        | 1.5V             |
| SP002GBSTU160S01(2) |                                 | PC3-12800 | DDR3-1600 | 9-9-9        | 1.5V             |
| SP002GBSTU106T01(2) | 2GB (256Mx64)<br>128Mx16 2Ranks | PC3-8500  | DDR3-1066 | 7-7-7        | 1.5V             |
| SP002GBSTU133T01(2) |                                 | PC3-10600 | DDR3-1333 | 9-9-9        | 1.5V             |
| SP002GBSTU160T01(2) |                                 | PC3-12800 | DDR3-1600 | 11-11-11     | 1.5V             |
| SP004GBSTU106V01(2) | 4GB (512Mx64)<br>256Mx8 2Ranks  | PC3-8500  | DDR3-1066 | 7-7-7        | 1.5V             |
| SP004GBSTU133V01(2) |                                 | PC3-10600 | DDR3-1333 | 9-9-9        | 1.5V             |
| SP004GBSTU160V01(2) |                                 | PC3-12800 | DDR3-1600 | 11-11-11     | 1.5V             |
| SP004GBSTU160N02DA  | 4GB (512Mx64)<br>512Mx8 1Ranks  | PC3-12800 | DDR3-1600 | 11-11-11     | 1.5V             |
| SP004GBSTU106W01(2) | 4GB (512Mx64)<br>256Mx16 2Ranks | PC3-8500  | DDR3-1066 | 7-7-7        | 1.5V             |
| SP004GBSTU133W01(2) |                                 | PC3-10600 | DDR3-1333 | 9-9-9        | 1.5V             |
| SP004GBSTU160W01(2) |                                 | PC3-12800 | DDR3-1600 | 11-11-11     | 1.5V             |
| SP004GBSTU133N01(2) | 4GB (512Mx64)                   | PC3-10600 | DDR3-1333 | 9-9-9        | 1.5V             |
| SP004GBSTU160N01(2) | 512Mx8 1Rank                    | PC3-12800 | DDR3-1600 | 11-11-11     | 1.5V             |
| SP008GBSTU133N01(2) | 8GB (1Gx64)                     | PC3-10600 | DDR3-1333 | 9-9-9        | 1.5V             |
| SP008GBSTU160N01(2) | 512Mx8 2Ranks                   | PC3-12800 | DDR3-1600 | 11-11-11     | 1.5V             |
| SP008GBSTU160N02DA  | 8GB (1Gx64)<br>512Mx8 2Ranks    | PC3-12800 | DDR3-1600 | 11-11-11     | 1.5V             |

## DDR3 STU Series Module Specification ( Kit Package )

| Part Number         | Module Density & Configuration | Bandwidth | Data Rate | Timing       | Operator Voltage |
|---------------------|--------------------------------|-----------|-----------|--------------|------------------|
|                     |                                |           |           | tCL-tRCD-tRP |                  |
| SP002GBSTU106T21(2) | 1GB x 2<br>Kit Package         | PC3-8500  | DDR3-1066 | 7-7-7        | 1.5V             |
| SP002GBSTU133T21(2) |                                | PC3-10600 | DDR3-1333 | 9-9-9        | 1.5V             |
| SP002GBSTU160T21(2) |                                | PC3-12800 | DDR3-1600 | 11-11-11     | 1.5V             |
| SP004GBSTU106T21(2) | 2GB x 2<br>Kit Package         | PC3-8500  | DDR3-1066 | 7-7-7        | 1.5V             |
| SP004GBSTU133T21(2) |                                | PC3-10600 | DDR3-1333 | 9-9-9        | 1.5V             |
| SP004GBSTU160T21(2) |                                | PC3-12800 | DDR3-1600 | 11-11-11     | 1.5V             |
| SP004GBSTU106W21(2) | 2GB x 2<br>Kit Package         | PC3-8500  | DDR3-1066 | 7-7-7        | 1.5V             |
| SP004GBSTU133W21(2) |                                | PC3-10600 | DDR3-1333 | 9-9-9        | 1.5V             |
| SP004GBSTU160W21(2) |                                | PC3-12800 | DDR3-1600 | 11-11-11     | 1.5V             |
| SP008GBSTU106V21(2) | 4GB x 2<br>Kit Package         | PC3-8500  | DDR3-1066 | 7-7-7        | 1.5V             |
| SP008GBSTU133V21(2) |                                | PC3-10600 | DDR3-1333 | 9-9-9        | 1.5V             |
| SP008GBSTU160V21(2) |                                | PC3-12800 | DDR3-1600 | 11-11-11     | 1.5V             |
| SP008GBSTU106W21(2) | 4GB x 2<br>Kit Package         | PC3-8500  | DDR3-1066 | 7-7-7        | 1.5V             |
| SP008GBSTU133W21(2) |                                | PC3-10600 | DDR3-1333 | 9-9-9        | 1.5V             |
| SP008GBSTU160W21(2) |                                | PC3-12800 | DDR3-1600 | 11-11-11     | 1.5V             |
| SP008GBSTU160N22DA  | 4GB x 2<br>Kit Package         | PC3-12800 | DDR3-1600 | 11-11-11     | 1.5V             |
| SP016GBSTU133N21(2) | 8GB x 2<br>Kit Package         | PC3-10600 | DDR3-1333 | 9-9-9        | 1.5V             |
| SP016GBSTU160N21(2) |                                | PC3-12800 | DDR3-1600 | 11-11-11     | 1.5V             |
| SP016GBSTU160N22DA  | 8GB x 2<br>Kit Package         | PC3-12800 | DDR3-1600 | 11-11-11     | 1.5V             |

### Note:

- This document supports all STU Series DDR3 204Pin SODIMM products.
- Some item was being EOL in this list, Please contact with our sales Dep.
- All part numbers end with a double-digit code is for customize use only.  
Example: SP001GBSTU133S02XX
- There are two solutions (SDP & DDP) for each 2 ranks module.  
SDP: DRAM use Single DIE Package. In this solution, there are 16 DRAM chips on module.  
DDP: DRAM use Single DIE Package. In this solution, there are 8 DRAM chips on module.

## DDR3L STU Series Module Specification ( Single DIMM Package)

| Part Number         | Module Density & Configuration  | Bandwidth  | Data Rate  | Timing         | Operator Voltage |
|---------------------|---------------------------------|------------|------------|----------------|------------------|
|                     |                                 |            |            | (tCL-tRCD-tRP) |                  |
| SP001GLSTU106T01(2) | 1GB (128Mx64)<br>128Mx16 1Rank  | PC3L-8500  | DDR3L-1066 | 7-7-7          | 1.35V            |
| SP001GLSTU133T01(2) |                                 | PC3L-10600 | DDR3L-1333 | 9-9-9          | 1.35V            |
| SP001GLSTU160T01(2) |                                 | PC3L-12800 | DDR3L-1600 | 11-11-11       | 1.35V            |
| SP002GLSTU106T01(2) | 2GB (256Mx64)<br>128Mx16 2Ranks | PC3L-8500  | DDR3L-1066 | 7-7-7          | 1.35V            |
| SP002GLSTU133T01(2) |                                 | PC3L-10600 | DDR3L-1333 | 9-9-9          | 1.35V            |
| SP002GLSTU160T01(2) |                                 | PC3L-12800 | DDR3L-1600 | 11-11-11       | 1.35V            |
| SP002GLSTU106W01(2) | 2GB (256Mx64)<br>256Mx16 1Rank  | PC3L-8500  | DDR3L-1066 | 7-7-7          | 1.35V            |
| SP002GLSTU133W01(2) |                                 | PC3L-10600 | DDR3L-1333 | 9-9-9          | 1.35V            |
| SP002GLSTU160W01(2) |                                 | PC3L-12800 | DDR3L-1600 | 11-11-11       | 1.35V            |
| SP004GLSTU106W01(2) | 4GB (512Mx64)<br>256Mx16 2Ranks | PC3L-8500  | DDR3L-1066 | 7-7-7          | 1.35V            |
| SP004GLSTU133W01(2) |                                 | PC3L-10600 | DDR3L-1333 | 9-9-9          | 1.35V            |
| SP004GLSTU160W01(2) |                                 | PC3L-12800 | DDR3L-1600 | 11-11-11       | 1.35V            |
| SP002GLSTU133V01(2) | 2GB (256Mx64)<br>256Mx8 1Rank   | PC3L-10600 | DDR3L-1333 | 9-9-9          | 1.35V            |
| SP002GLSTU160V01(2) |                                 | PC3L-12800 | DDR3L-1600 | 11-11-11       | 1.35V            |
| SP004GLSTU133V01(2) | 4GB (512Mx64)<br>256Mx8 2Ranks  | PC3L-10600 | DDR3L-1333 | 9-9-9          | 1.35V            |
| SP004GLSTU160V01(2) |                                 | PC3L-12800 | DDR3L-1600 | 11-11-11       | 1.35V            |
| SP004GLSTU133N01(2) | 4GB (512Mx64)<br>512Mx8 1Rank   | PC3L-10600 | DDR3L-1333 | 9-9-9          | 1.35V            |
| SP004GLSTU160N01(2) |                                 | PC3L-12800 | DDR3L-1600 | 11-11-11       | 1.35V            |
| SP004GLSTU160N02DA  | 4GB (512Mx64)<br>512Mx8 1Rank   | PC3L-12800 | DDR3L-1600 | 11-11-11       | 1.35V            |
| SP008GLSTU133N01(2) | 8GB (1Gx64)<br>512Mx8 2Ranks    | PC3L-10600 | DDR3L-1333 | 9-9-9          | 1.35V            |
| SP008GLSTU160N01(2) |                                 | PC3L-12800 | DDR3L-1600 | 11-11-11       | 1.35V            |
| SP008GLSTU160N02DA  | 8GB (1Gx64)<br>512Mx8 2Ranks    | PC3L-12800 | DDR3L-1600 | 11-11-11       | 1.35V            |

Note:

1. This document supports all LSTU Series DDR3L 204Pin SODIMM products.
2. Some item was being EOL in this list, Please contact with our sales Dep.
3. There are two solutions (SDP & DDP) for each 2 ranks module.

SDP: DRAM use Single DIE Package. In this solution, there are 16 DRAM chips on module.

DDP: DRAM use Single DIE Package. In this solution, there are 8 DRAM chips on module.

## DDR3L STU Series Module Specification ( Kit Package )

| Part Number         | Module Density & Configuration | Bandwidth      | Data Rate  | Timing         | Operator Voltage |
|---------------------|--------------------------------|----------------|------------|----------------|------------------|
|                     |                                |                |            | (tCL-tRCD-tRP) |                  |
| SP002GLSTU106T21(2) | 1GB x 2 Kit Package            | PC3L-8500      | DDR3L-1066 | 7-7-7          | 1.35V            |
| SP002GLSTU133T21(2) |                                | PC3L-10600     | DDR3L-1333 | 9-9-9          | 1.35V            |
| SP002GLSTU160T21(2) |                                | 128Mx16 1Rank  | PC3L-12800 | DDR3L-1600     | 11-11-11         |
| SP004GLSTU106T21(2) | 2GB x 2 Kit Package            | PC3L-8500      | DDR3L-1066 | 7-7-7          | 1.35V            |
| SP004GLSTU133T21(2) |                                | PC3L-10600     | DDR3L-1333 | 9-9-9          | 1.35V            |
| SP004GLSTU160T21(2) |                                | 128Mx16 2Ranks | PC3L-12800 | DDR3L-1600     | 11-11-11         |
| SP004GLSTU106W21(2) | 2GB x 2 Kit Package            | PC3L-8500      | DDR3L-1066 | 7-7-7          | 1.35V            |
| SP004GLSTU133W21(2) |                                | PC3L-10600     | DDR3L-1333 | 9-9-9          | 1.35V            |
| SP004GLSTU160W21(2) |                                | 256Mx16 1Rank  | PC3L-12800 | DDR3L-1600     | 11-11-11         |
| SP008GLSTU106W21(2) | 4GB x 2 Kit Package            | PC3L-8500      | DDR3L-1066 | 7-7-7          | 1.35V            |
| SP008GLSTU133W21(2) |                                | PC3L-10600     | DDR3L-1333 | 9-9-9          | 1.35V            |
| SP008GLSTU160W21(2) |                                | 256Mx16 2Ranks | PC3L-12800 | DDR3L-1600     | 11-11-11         |
| SP004GLSTU133V21(2) | 2GB x 2 Kit Package            | PC3L-10600     | DDR3L-1333 | 9-9-9          | 1.35V            |
| SP004GLSTU160V21(2) |                                | PC3L-12800     | DDR3L-1600 | 11-11-11       | 1.35V            |
| SP008GLSTU133V21(2) | 4GB x 2 Kit Package            | PC3L-10600     | DDR3L-1333 | 9-9-9          | 1.35V            |
| SP008GLSTU160V21(2) |                                | PC3L-12800     | DDR3L-1600 | 11-11-11       | 1.35V            |
| SP008GLSTU133N21(2) | 4GB x 2 Kit Package            | PC3L-10600     | DDR3L-1333 | 9-9-9          | 1.35V            |
| SP008GLSTU160N21(2) |                                | PC3L-12800     | DDR3L-1600 | 11-11-11       | 1.35V            |
| SP008GLSTU160N22DA  | 4GB x 2 Kit Package            | PC3L-12800     | DDR3L-1600 | 11-11-11       | 1.35V            |
| SP016GLSTU133N21(2) | 8GB x 2 Kit Package            | PC3L-10600     | DDR3L-1333 | 9-9-9          | 1.35V            |
| SP016GLSTU160N21(2) |                                | PC3L-12800     | DDR3L-1600 | 11-11-11       | 1.35V            |
| SP016GLSTU160N22DA  | 8GB x 2 Kit Package            | PC3L-12800     | DDR3L-1600 | 11-11-11       | 1.35V            |

Note:

1. This document supports all LSTU Series DDR3L 204Pin SODIMM products.
2. Some item was being EOL in this list, Please contact with our sales Dep.
3. There are two solutions (SDP & DDP) for each 2 ranks module.

SDP: DRAM use Single DIE Package. In this solution, there are 16 DRAM chips on module.

DDP: DRAM use Single DIE Package. In this solution, there are 8 DRAM chips on module.