

# TS64MSQ64V5J

200PIN DDR2 533 SO-DIMM  
512MB With 64Mx8 CL4

## Description

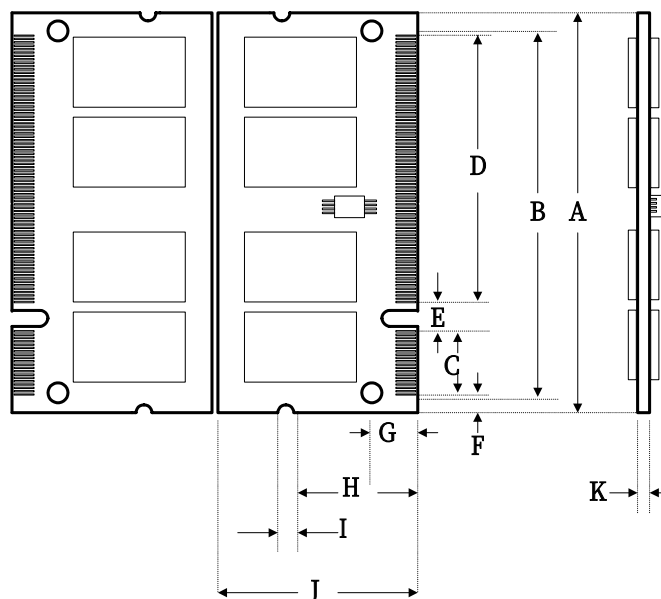
The TS64MSQ64V5J is a 64M x 64bits DDR2-533 SO-DIMM. The TS64MSQ64V5J consists of 8pcs 64Mx8 bits DDR2 SDRAMs in 60 ball FBGA packages and a 2048 bits serial EEPROM on a 200-pin printed circuit board. The TS64MSQ64V5J is a Dual In-Line Memory Module and is intended for mounting into 200-pin edge connector sockets.

Synchronous design allows precise cycle control with the use of system clock. Data I/O transactions are possible on both edges of DQS. Range of operation frequencies, programmable latencies allow the same device to be useful for a variety of high bandwidth, high performance memory system applications.

## Features

- RoHS compliant products.
- JEDEC standard 1.8V  $\pm$  0.1V Power supply
- VDDQ=1.8V  $\pm$  0.1V
- Max clock Freq: 267MHZ; 533Mb/s/Pin.
- Posted CAS
- Programmable CAS Latency: 3,4,5
- Programmable Additive Latency :0, 1,2,3 and 4
- Write Latency (WL) = Read Latency (RL)-1
- Burst Length: 4,8(Interleave/nibble sequential)
- Programmable sequential / Interleave Burst Mode
- Bi-directional Differential Data-Strobe (Single-ended data-strobe is an optional feature)
- Off-Chip Driver (OCD) Impedance Adjustment
- MRS cycle with address key programs.
- On Die Termination
- Serial presence detect with EEPROM

## Placement



**PCB: 09-2300**

## Dimensions

| Side | Millimeters | Inches      |
|------|-------------|-------------|
| A    | 67.60±0.15  | 2.661±0.006 |
| B    | 63.60       | 2.503       |
| C    | 11.40       | 0.449       |
| D    | 47.40       | 1.866       |
| E    | 4.20        | 0.165       |
| F    | 2.15±0.15   | 0.085±0.006 |
| G    | 6.00        | 0.236       |
| H    | 18.00       | 0.709       |
| I    | 4.00        | 0.157       |
| J    | 30.00       | 1.181       |
| K    | 1.00±0.075  | 0.039±0.003 |

(Refer Placement)

## Pin Identification

| Symbol          | Function                            |
|-----------------|-------------------------------------|
| A0~A15, BA0~BA2 | Address input                       |
| DQ0~DQ63        | Data Input / Output.                |
| DQS0~DQS7       | Data strobe                         |
| /DQS0~/DQS7     | Differential Data strobe            |
| CK0, /CK0       | Clock Input.                        |
| CK1, /CK1       |                                     |
| CKE0, CKE1      | Clock Enable Input.                 |
| ODT0, ODT1      | On-die termination control line     |
| /CS0, /CS1      | Chip Select Input.                  |
| /RAS            | Row Address Strobe                  |
| /CAS            | Column Address Strobe               |
| /WE             | Write Enable                        |
| DM0~DM7         | Data-in Mask                        |
| VDD             | +1.8 Voltage power supply           |
| VDDQ            | +1.8 Voltage Power Supply for DQS   |
| VREF            | Power Supply for Reference          |
| VDDSPD          | Serial EEPROM Positive Power Supply |
| SA0~SA2         | Address select for EEPROM           |
| SCL             | Serial PD Clock                     |
| SDA             | Serial PD Add/Data input/output     |
| VSS             | Ground                              |
| NC              | No Connection                       |

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## Pinouts:

| Pin No | Pin Name | Pin No | Pin Name | Pin No | Pin Name | Pin No | Pin Name | Pin No | Pin Name | Pin No | Pin Name |
|--------|----------|--------|----------|--------|----------|--------|----------|--------|----------|--------|----------|
| 01     | VREF     | 69     | NC       | 137    | DQ35     | 02     | VSS      | 70     | DQS3     | 138    | VSS      |
| 03     | VSS      | 71     | VSS      | 139    | VSS      | 04     | DQ4      | 72     | VSS      | 140    | DQ44     |
| 05     | DQ0      | 73     | DQ26     | 141    | DQ40     | 06     | DQ5      | 74     | DQ30     | 142    | DQ45     |
| 07     | DQ1      | 75     | DQ27     | 143    | DQ41     | 08     | VSS      | 76     | DQ31     | 144    | VSS      |
| 09     | VSS      | 77     | VSS      | 145    | VSS      | 10     | DM0      | 78     | VSS      | 146    | /DQS5    |
| 11     | /DQS0    | 79     | CKE0     | 147    | DM5      | 12     | VSS      | 80     | *CKE1    | 148    | DQS5     |
| 13     | DQS0     | 81     | VDD      | 149    | VSS      | 14     | DQ6      | 82     | VDD      | 150    | VSS      |
| 15     | VSS      | 83     | */CS2    | 151    | DQ42     | 16     | DQ7      | 84     | *A15     | 152    | DQ46     |
| 17     | DQ2      | 85     | *BA2     | 153    | DQ43     | 18     | VSS      | 86     | *A14     | 154    | DQ47     |
| 19     | DQ3      | 87     | VDD      | 155    | VSS      | 20     | DQ12     | 88     | VDD      | 156    | VSS      |
| 21     | VSS      | 89     | A12      | 157    | DQ48     | 22     | DQ13     | 90     | A11      | 158    | DQ52     |
| 23     | DQ8      | 91     | A9       | 159    | DQ49     | 24     | VSS      | 92     | A7       | 160    | DQ53     |
| 25     | DQ9      | 93     | A8       | 161    | VSS      | 26     | DM1      | 94     | A6       | 162    | VSS      |
| 27     | VSS      | 95     | VDD      | 163    | NC, TEST | 28     | VSS      | 96     | VDD      | 164    | CK1      |
| 29     | /DQS1    | 97     | A5       | 165    | VSS      | 30     | CK0      | 98     | A4       | 166    | /CK1     |
| 31     | DQS1     | 99     | A3       | 167    | /DQS6    | 32     | /CK0     | 100    | A2       | 168    | VSS      |
| 33     | VSS      | 101    | A1       | 169    | DQS6     | 34     | VSS      | 102    | A0       | 170    | DM6      |
| 35     | DQ10     | 103    | VDD      | 171    | VSS      | 36     | DQ14     | 104    | VDD      | 172    | VSS      |
| 37     | DQ11     | 105    | A10/AP   | 173    | DQ50     | 38     | DQ15     | 106    | BA1      | 174    | DQ54     |
| 39     | VSS      | 107    | BA0      | 175    | DQ51     | 40     | VSS      | 108    | /RAS     | 176    | DQ55     |
| 41     | VSS      | 109    | /WE      | 177    | VSS      | 42     | VSS      | 110    | /CS0     | 178    | VSS      |
| 43     | DQ16     | 111    | VDD      | 179    | DQ56     | 44     | DQ20     | 112    | VDD      | 180    | DQ60     |
| 45     | DQ17     | 113    | /CAS     | 181    | DQ57     | 46     | DQ21     | 114    | ODT0     | 182    | DQ61     |
| 47     | VSS      | 115    | */CS1    | 183    | VSS      | 48     | VSS      | 116    | *A13     | 184    | VSS      |
| 49     | /DQS2    | 117    | VDD      | 185    | DM7      | 50     | NC       | 118    | VDD      | 186    | /DQS7    |
| 51     | DQS2     | 119    | *ODT1    | 187    | VSS      | 52     | DM2      | 120    | */CS3    | 188    | DQS7     |
| 53     | VSS      | 121    | VSS      | 189    | DQ58     | 54     | VSS      | 122    | VSS      | 190    | VSS      |
| 55     | DQ18     | 123    | DQ32     | 191    | DQ59     | 56     | DQ22     | 124    | DQ36     | 192    | DQ62     |
| 57     | DQ19     | 125    | DQ33     | 193    | VSS      | 58     | DQ23     | 126    | DQ37     | 194    | DQ63     |
| 59     | VSS      | 127    | VSS      | 195    | SDA      | 60     | VSS      | 128    | VSS      | 196    | VSS      |
| 61     | DQ24     | 129    | /DQS4    | 197    | SCL      | 62     | DQ28     | 130    | DM4      | 198    | SA0      |
| 63     | DQ25     | 131    | DQS4     | 199    | VDDSPD   | 64     | DQ29     | 132    | VSS      | 200    | SA1      |
| 65     | VSS      | 133    | VSS      |        |          | 66     | VSS      | 134    | DQ38     |        |          |
| 67     | DM3      | 135    | DQ34     |        |          | 68     | /DQS3    | 136    | DQ39     |        |          |