

TS128MLQ64V8U

240PIN DDR2 800 Unbuffered DIMM 0.72"
1024MB With 128Mx8 CL6

Description

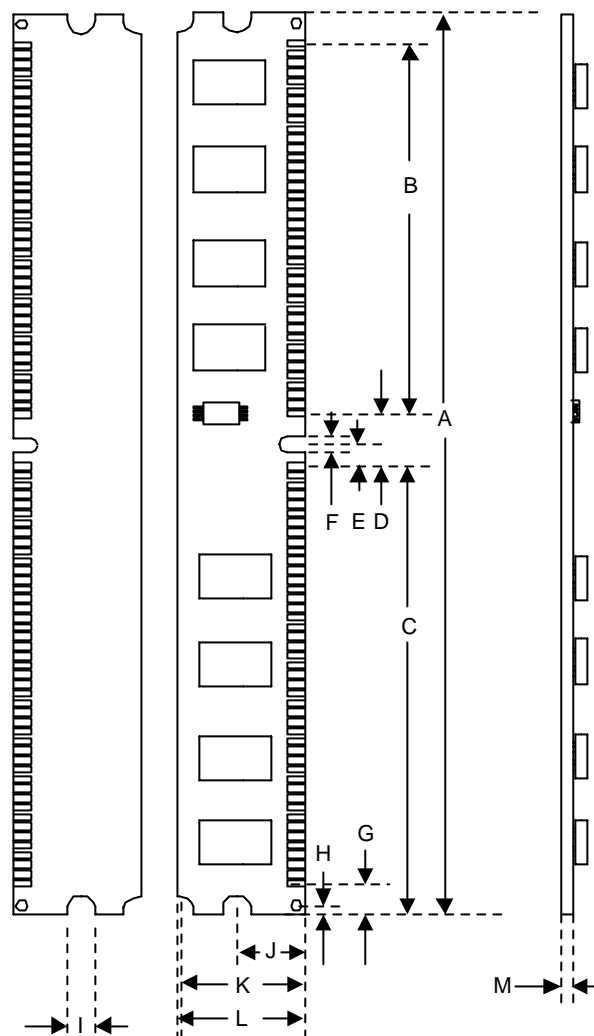
The TS128MLQ64V8U is a 128M x 64bits DDR2-800 Unbuffered DIMM. The TS128MLQ64V8U consists of 8 pcs 128Mx8bits DDR2 SDRAMs FBGA packages and a 2048 bits serial EEPROM on a 240-pin printed circuit board. The TS128MLQ64V8U is a Dual In-Line Memory Module and is intended for mounting into 240-pin edge connector 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: 400MHZ; 800Mb/S/Pin.
- Posted CAS
- Programmable CAS Latency: 4, 5, 6
- Programmable Additive Latency :0, 1, 2, 3, 4 and 5
- 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
- Refresh: Auto Refresh and Self Refresh
Average Refresh Period:
7.8us at lower then T_{CASE} 85 °C
- Serial presence detect with EEPROM

Placement



PCB: 09-2960

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Dimensions

| Side | Millimeters | Inches |
|------|-------------|-------------|
| A | 133.35±0.15 | 5.250±0.006 |
| B | 55 | 2.165 |
| C | 63 | 2.480 |
| D | 5 | 0.197 |
| E | 2.5 | 0.098 |
| F | 1.5±0.10 | 0.059±0.039 |
| G | 5.175 | 0.204 |
| H | 2.2 | 0.867 |
| I | 4 | 0.157 |
| J | 10 | 0.394 |
| K | 17.8 | 0.701 |
| L | 18.3±0.15 | 0.72±0.006 |
| M | 1.27±0.10 | 0.050±0.004 |

(Refer Placement)

Pin Identification

| Symbol | Function |
|-----------------|-------------------------------------|
| A0~A13, BA0~BA2 | Address input |
| DQ0~DQ63 | Data Input / Output. |
| DQS0~DQS7 | Data strobe |
| /DQS0~/DQS7 | Differential Data strobe |
| CK0, /CK0 | |
| CK1, /CK1 | Clock Input. |
| CK2, /CK2 | |
| CKE0, CKE1 | Clock Enable Input. |
| ODT0 | On-die termination control line |
| /CS0 | 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 | 41 | VSS | 81 | DQ33 | 121 | VSS | 161 | NC | 201 | VSS |
| 02 | VSS | 42 | NC | 82 | VSS | 122 | DQ4 | 162 | NC | 202 | DM4 |
| 03 | DQ0 | 43 | NC | 83 | /DQS4 | 123 | DQ5 | 163 | VSS | 203 | NC |
| 04 | DQ1 | 44 | VSS | 84 | DQS4 | 124 | VSS | 164 | NC | 204 | VSS |
| 05 | VSS | 45 | NC | 85 | VSS | 125 | DM0 | 165 | NC | 205 | DQ38 |
| 06 | /DQS0 | 46 | NC | 86 | DQ34 | 126 | NC | 166 | VSS | 206 | DQ39 |
| 07 | DQS0 | 47 | VSS | 87 | DQ35 | 127 | VSS | 167 | NC | 207 | VSS |
| 08 | VSS | 48 | NC | 88 | VSS | 128 | DQ6 | 168 | NC | 208 | DQ44 |
| 09 | DQ2 | 49 | NC | 89 | DQ40 | 129 | DQ7 | 169 | VSS | 209 | DQ45 |
| 10 | DQ3 | 50 | VSS | 90 | DQ41 | 130 | VSS | 170 | VDDQ | 210 | VSS |
| 11 | VSS | 51 | VDDQ | 91 | VSS | 131 | DQ12 | 171 | NC | 211 | DM5 |
| 12 | DQ8 | 52 | CKE0 | 92 | /DQS5 | 132 | DQ13 | 172 | VDD | 212 | NC |
| 13 | DQ9 | 53 | VDD | 93 | DQS5 | 133 | VSS | 173 | NC | 213 | VSS |
| 14 | VSS | 54 | BA2 | 94 | VSS | 134 | DM1 | 174 | NC | 214 | DQ46 |
| 15 | /DQS1 | 55 | NC | 95 | DQ42 | 135 | NC | 175 | VDDQ | 215 | DQ47 |
| 16 | DQS1 | 56 | VDDQ | 96 | DQ43 | 136 | VSS | 176 | A12 | 216 | VSS |
| 17 | VSS | 57 | A11 | 97 | VSS | 137 | CK1 | 177 | A9 | 217 | DQ52 |
| 18 | NC | 58 | A7 | 98 | DQ48 | 138 | /CK1 | 178 | VDD | 218 | DQ53 |
| 19 | NC | 59 | VDD | 99 | DQ49 | 139 | VSS | 179 | A8 | 219 | VSS |
| 20 | VSS | 60 | A5 | 100 | VSS | 140 | DQ14 | 180 | A6 | 220 | CK2 |
| 21 | DQ10 | 61 | A4 | 101 | SA2 | 141 | DQ15 | 181 | VDDQ | 221 | /CK2 |
| 22 | DQ11 | 62 | VDDQ | 102 | NC | 142 | VSS | 182 | A3 | 222 | VSS |
| 23 | VSS | 63 | A2 | 103 | VSS | 143 | DQ20 | 183 | A1 | 223 | DM6 |
| 24 | DQ16 | 64 | VDD | 104 | /DQS6 | 144 | DQ21 | 184 | VDD | 224 | NC |
| 25 | DQ17 | 65 | VSS | 105 | DQS6 | 145 | VSS | 185 | CK0 | 225 | VSS |
| 26 | VSS | 66 | VSS | 106 | VSS | 146 | DM2 | 186 | /CK0 | 226 | DQ54 |
| 27 | /DQS2 | 67 | VDD | 107 | DQ50 | 147 | NC | 187 | VDD | 227 | DQ55 |
| 28 | DQS2 | 68 | NC | 108 | DQ51 | 148 | VSS | 188 | A0 | 228 | VSS |
| 29 | VSS | 69 | VDD | 109 | VSS | 149 | DQ22 | 189 | VDD | 229 | DQ60 |
| 30 | DQ18 | 70 | A10/AP | 110 | DQ56 | 150 | DQ23 | 190 | BA1 | 230 | DQ61 |
| 31 | DQ19 | 71 | BA0 | 111 | DQ57 | 151 | VSS | 191 | VDDQ | 231 | VSS |
| 32 | VSS | 72 | VDDQ | 112 | VSS | 152 | DQ28 | 192 | /RAS | 232 | DM7 |
| 33 | DQ24 | 73 | /WE | 113 | /DQS7 | 153 | DQ29 | 193 | /CS0 | 233 | NC |
| 34 | DQ25 | 74 | /CAS | 114 | DQS7 | 154 | VSS | 194 | VDDQ | 234 | VSS |
| 35 | VSS | 75 | VDDQ | 115 | VSS | 155 | DM3 | 195 | ODT0 | 235 | DQ62 |
| 36 | /DQS3 | 76 | NC | 116 | DQ58 | 156 | NC | 196 | A13 | 236 | DQ63 |
| 37 | DQS3 | 77 | NC | 117 | DQ59 | 157 | VSS | 197 | VDD | 237 | VSS |
| 38 | VSS | 78 | VDDQ | 118 | VSS | 158 | DQ30 | 198 | VSS | 238 | VDDSPD |
| 39 | DQ26 | 79 | VSS | 119 | SDA | 159 | DQ31 | 199 | DQ36 | 239 | SA0 |
| 40 | DQ27 | 80 | DQ32 | 120 | SCL | 160 | VSS | 200 | DQ37 | 240 | SA1 |