

Product Specification | Rev. 1.0 | 2015

IMM64M72D1SCS8AG (Die Revision D)

512MByte (64M x 72 Bit)

512MB DDR ECC Unbuffered SO-CDIMM
RoHS Compliant Product

Version: Rev. 1.0, MAY 2015

1.0 - Initial release

Remark:

Please refer to the last page of the i) Contents ii) List of Table iii) List of Figures .

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Features

- 200-Pin Unbuffered with PLL Small Outline Dual-In-Line Memory Module
- Capacity: 512MB
- Power Supply:
 - DDR 400: VDD, VDDQ = 2.6 ± 0.1 V
 - DDR 333, 266: VDD, VDDQ = 2.5 ± 0.2 V
- Two Data Transfer per Clock Cycle
- Differential Clock Input (CK and /CK)
- 72 Bit Data Bus Width with ECC
- Programmable CAS Latency (CL):
 - PC-3200: 2.5, 3
 - PC-2700: 2.5
- Burst Type (Sequential & Interleave)
- Burst Length: 2, 4, 8
- Refresh Mode: Auto and Self
- 8192 Refresh Cycles / 64ms
- Serial Presence Detect (SPD) with EEPROM
- Double Sided Components
- 100% RoHS-Compliant
- Gold Edge Contacts
- Standard Module Height: 31.75mm (1.25 inch)

Table 1 - Ordering Information for RoHS Compliant Product

| Part Number | Module Density | Configuration | # of Ranks | Module Type |
|------------------------|----------------|---------------|------------|-------------------------------|
| IMM64M72D1SCS8AG-Dzzzy | 512MB | 64Mx72 | 1 | 512MB DDR Unbuffered SO-CDIMM |

Notes:

- y: Operating Temperature
- zzz: Speed Grade

Table 2 - Temperature Grade

| Part Number | Temperature Grade | T _a |
|-------------|------------------------|----------------|
| Blank | Commercial temperature | 0°C to 70°C |
| I | Industrial temperature | -40°C to 85°C |

Table 3 - Speed Grade

| Part Number | Speed Grade | Max Clock Frequency (min. Clock Cycle time @ min. CAS Latency) |
|-------------|-------------|--|
| 5 | PC3200 | 200MHz (5.0ns@CL=3) |
| 6 | PC2700 | 166MHz (6.0ns@CL=2.5) |

Table 4 - Memory Chip Information

| Part Number | Base Device Brand | Base Device | Voltage | Type | Chip Packing |
|------------------------|-------------------|--------------|---------|-------|--------------|
| IMM64M72D1SCS8AG-Dzzzy | I'M | IM5108D1CDTG | 2.5V | 64Mx8 | Lead Free |

Part Number Decoder

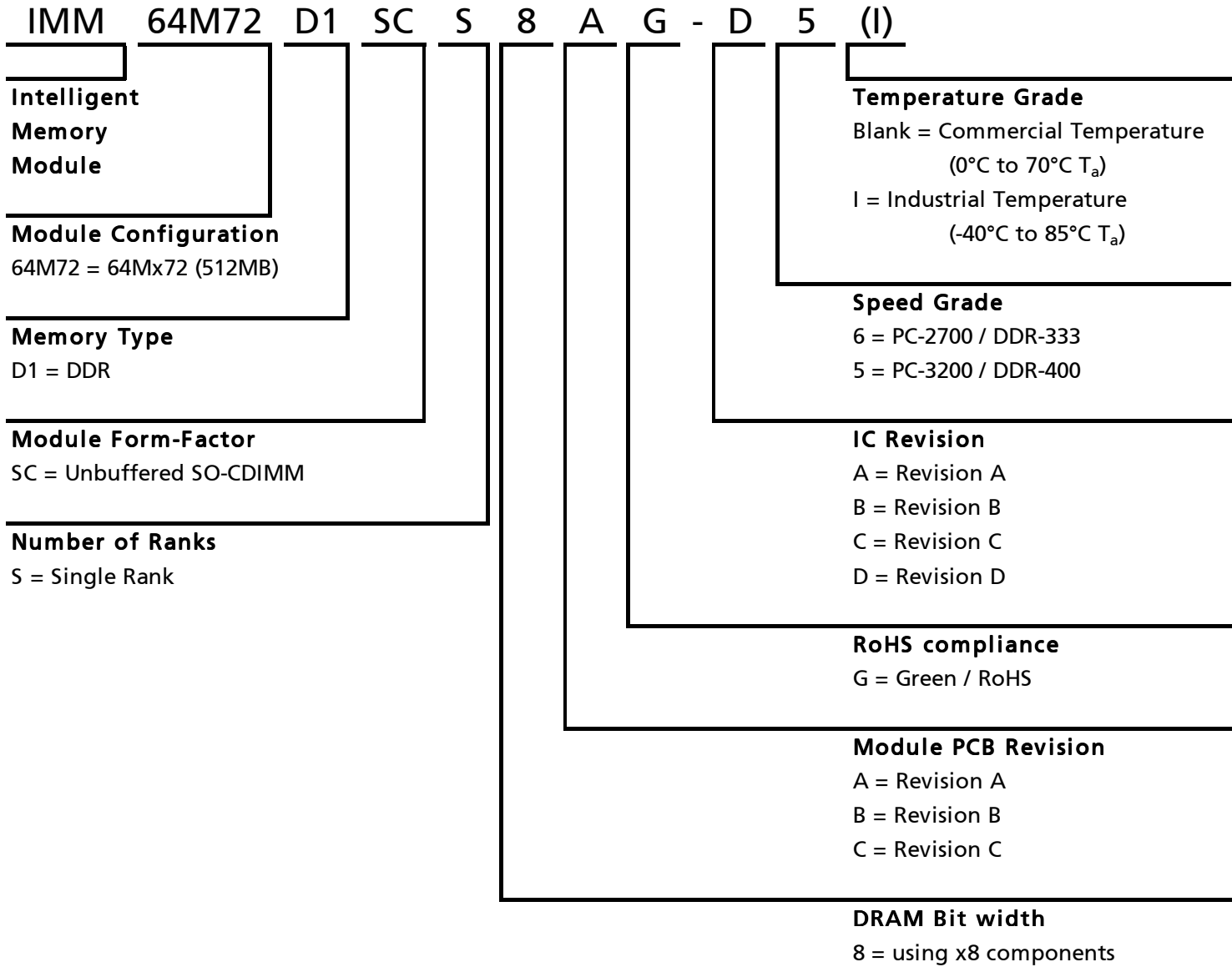


Table 5 – Addressing

| Parameter | 512MB |
|----------------------|----------------|
| Refresh count | 8K |
| Row address | 8K A[12:0] |
| Device bank address | 4 BA[1:0] |
| Device configuration | 512Mb (64Mx8) |
| Column address | 2K A[9:0], A11 |
| Module rank address | 1 /S[0] |
| Number of devices | 9 |

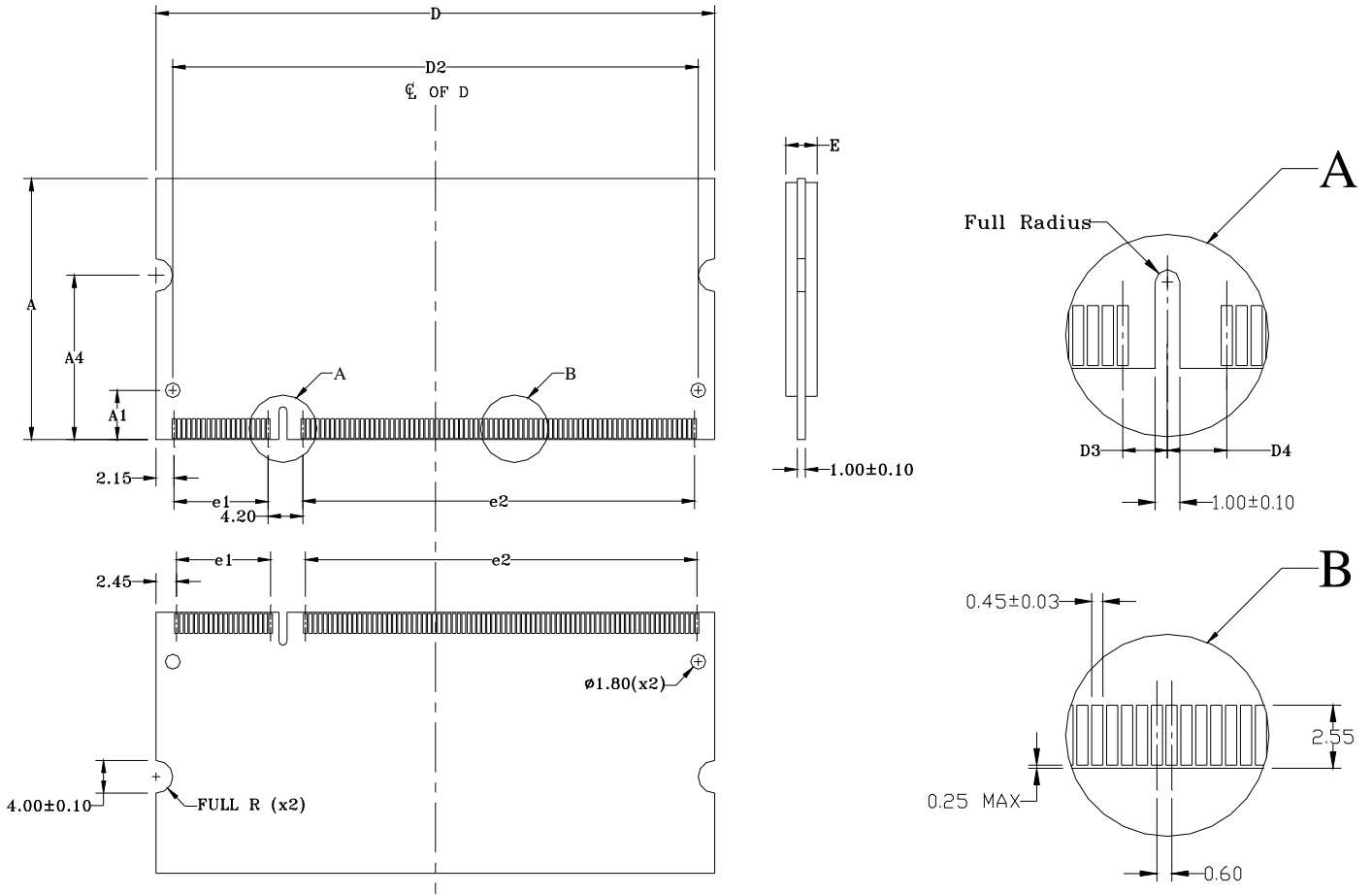
Table 6 - Pin Assignment

| Pin | Name | Pin | Name | Pin | Name | Pin | Name |
|-----|------|-----|------|-----|---------|-----|------|
| 1 | VREF | 2 | VREF | 101 | A9 | 102 | A8 |
| 3 | VSS | 4 | VSS | 103 | VSS | 104 | VSS |
| 5 | D0 | 6 | D4 | 105 | A7 | 106 | A6 |
| 7 | D1 | 8 | D5 | 107 | A5 | 108 | A4 |
| 9 | VDD | 10 | VDD | 109 | A3 | 110 | A2 |
| 11 | DQS0 | 12 | DM0 | 111 | A1 | 112 | A0 |
| 13 | D2 | 14 | D6 | 113 | VDD | 114 | VDD |
| 15 | VSS | 16 | VSS | 115 | A10, AP | 116 | BA1 |
| 17 | D3 | 18 | D7 | 117 | BA0 | 118 | /RAS |
| 19 | D8 | 20 | D12 | 119 | /WE | 120 | /CAS |
| 21 | VDD | 22 | VDD | 121 | /S0 | 122 | NC |
| 23 | D9 | 24 | D13 | 123 | NC | 124 | NC |
| 25 | DQS1 | 26 | DM1 | 125 | VSS | 126 | VSS |
| 27 | VSS | 28 | VSS | 127 | D32 | 128 | D36 |
| 29 | D10 | 30 | D14 | 129 | D33 | 130 | D37 |
| 31 | D11 | 32 | D15 | 131 | VDD | 132 | VDD |
| 33 | VDD | 34 | VDD | 133 | DQS4 | 134 | DM4 |
| 35 | CK0 | 36 | VDD | 135 | D34 | 136 | D38 |
| 37 | /CK0 | 38 | VSS | 137 | VSS | 138 | VSS |
| 39 | VSS | 40 | VSS | 139 | D35 | 140 | D39 |
| 41 | D16 | 42 | D20 | 141 | D40 | 142 | D44 |
| 43 | D17 | 44 | D21 | 143 | VDD | 144 | VDD |
| 45 | VDD | 46 | VDD | 145 | D41 | 146 | D45 |
| 47 | DQS2 | 48 | DM2 | 147 | DQS5 | 148 | DM5 |
| 49 | D18 | 50 | D22 | 149 | VSS | 150 | VSS |
| 51 | VSS | 52 | VSS | 151 | D42 | 152 | D46 |
| 53 | D19 | 54 | D23 | 153 | D43 | 154 | D47 |
| 55 | D24 | 56 | D28 | 155 | VDD | 156 | VDD |
| 57 | VDD | 58 | VDD | 157 | VDD | 158 | NC |
| 59 | D25 | 60 | D29 | 159 | VSS | 160 | NC |
| 61 | DQS3 | 62 | DM3 | 161 | VSS | 162 | VSS |
| 63 | VSS | 64 | VSS | 163 | D48 | 164 | D52 |
| 65 | D26 | 66 | D30 | 165 | D49 | 166 | D53 |
| 67 | D27 | 68 | D31 | 167 | VDD | 168 | VDD |
| 69 | VDD | 70 | VDD | 169 | DQS6 | 170 | DM6 |
| 71 | CB0 | 72 | CB4 | 171 | D50 | 172 | D54 |
| 73 | CB1 | 74 | CB5 | 173 | VSS | 174 | VSS |
| 75 | VSS | 76 | VSS | 175 | D51 | 176 | D55 |
| 77 | DQS8 | 78 | DM8 | 177 | D56 | 178 | D60 |
| 79 | CB2 | 80 | CB6 | 179 | VDD | 180 | VDD |
| 81 | VDD | 82 | VDD | 181 | D57 | 182 | D61 |
| 83 | CB3 | 84 | CB7 | 183 | DQS7 | 184 | DM7 |
| 85 | NC | 86 | NC | 185 | VSS | 186 | VSS |
| 87 | VSS | 88 | VSS | 187 | D58 | 188 | D62 |
| 89 | NC | 90 | VSS | 189 | D59 | 190 | D63 |
| 91 | NC | 92 | VDD | 191 | VDD | 192 | VDD |
| 93 | VDD | 94 | VDD | 193 | SDA | 194 | SA0 |
| 95 | NC | 96 | CKE0 | 195 | SCL | 196 | SA1 |
| 97 | NC | 98 | NC | 197 | VDDSPD | 198 | SA2 |
| 99 | A12 | 100 | A11 | 199 | VDDID | 200 | NC |

Table 7 - Pin Description

| Pin Name | Description | Pin Name | Description |
|-----------|----------------------------------|----------|------------------------------|
| VDD | SDRAM positive power supply | VSS | Power supply return (ground) |
| VREF | Input or Output reference supply | VDDSPD | EEPROM power |
| VDDID | Voltage Identification Flag | /S0 | Chip Select |
| A0-A12 | Address Input | BA0-BA1 | SDRAM Bank Address |
| DQS0-DQS8 | Data Strobe | DM0-DM8 | Data Mask |
| D0-D63 | Data Bus | CB0-CB7 | Data check bit |
| /RAS | Row address strobe | /WE | Write Enable |
| CKE0 | Clock Enable | /CAS | Column address strobe |
| CK0 | Clock Input (Positive) | /CK0 | Clock Input (Negative) |
| SA0-SA2 | EEPROM slave address select | SCL | EEPROM Clock Input |
| NC | Spare Pin (no connect) | SDA | EEPROM Data Input or Output |

Figure 1 –Module Dimension 200 Pin DDR SDRAM Unbuffered SO-CDIMM



| Symbol | MIN | NOM | MAX |
|--------|-----------|-------|-------|
| A | 31.60 | 31.75 | 31.90 |
| A1 | 6.00 BSC | | |
| A4 | 20.00 BSC | | |
| D | 67.45 | 67.60 | 67.75 |
| D2 | 63.60 BSC | | |
| D3 | 1.80 BSC | | |
| D4 | 1.50 BSC | | |
| e1 | 11.40 BSC | | |
| e2 | 47.40 BSC | | |
| E | | | 3.80 |

Notes:

- 1 All dimensioning and tolerance conform to ASME Y14.5M-1994.
- 2 Tolerance on all dimensions ± 0.15 unless otherwise specified.
- 3 All dimensions are in millimeters.