

RoHS Compliant

32GB DDR4 SDRAM SO-DIMM

Halogen free

Product Specifications

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Version 0.4



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General Description

Apacer **D22.23308S.001** is a 4096M x 64 DDR4 SDRAM (Synchronous DRAM) SO-DIMM. This high-density memory module consists of 16 pieces 2048M x 8 bits DDR4 synchronous DRAMs in FBGA packages and a 4K Bits EEPROM. The module is a 260-pins dual in-line memory module and is intended for mounting into a connector socket. The following provides general specifications of this module.

Ordering Information

| Part Number | Bandwidth | Speed Grade | Max Frequency | CAS Latency |
|----------------|-------------|-------------|---------------|-------------|
| D22.23308S.001 | 21.3 GB/sec | 2666 Mbps | 1333 MHz | CL19 |

| Density | Organization | Component | Rank |
|---------|--------------|-------------|------|
| 32GB | 4096M x 64 | 2048M x8*16 | 2 |

Key Parameters

| MT/s | DDR4-1866 | DDR4-2133 | DDR4-2400 | DDR4-2666 | Unit |
|-------------|-----------|-----------|-----------------|-----------|------|
| Grade | -CL13 | -CL15 | -CL17 | -CL19 | |
| tCK (min) | 1.07 | 0.93 | 0.83 | 0.75 | ns |
| CAS latency | 13 | 15 | 17 | 19 | tCK |
| tRCD (min) | 13.92 | 14.06 | 14.16 | 14.25 | ns |
| tRP (min) | 13.92 | 14.06 | 14.16 | 14.25 | ns |
| tRAS (min) | 34 | 33 | 32 | 32 | ns |
| tRC (min) | 47.92 | 47.05 | 46.16 | 46.25 | ns |
| CL-tRCD-tRP | 13-13-13 | 15-15-15 | 17-17-17 | 19-19-19 | tCK |

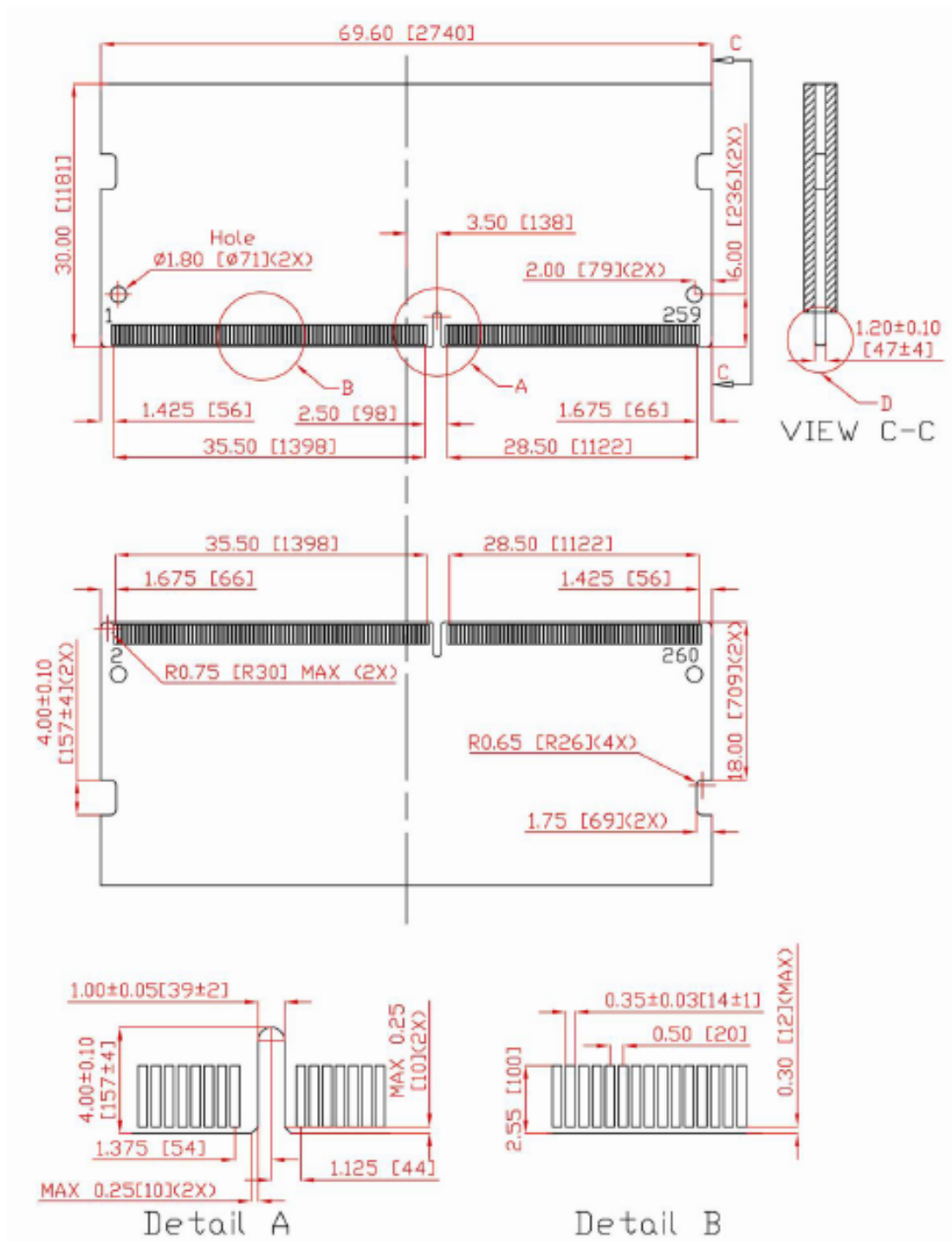
Specifications:

- ◆ On-DIMM thermal sensor : No
- ◆ Organization: 4096 words x 64 bits, 2 ranks
- ◆ Integrating 16 pieces of 16G bits DDR4 SDRAM sealed FBGA
- ◆ Package: 260-pin socket type small outline dual in-line memory module (SO-DIMM)
- ◆ PCB: height 30.00 mm, lead pitch 0.50 mm (pin),
- ◆ Serial Presence Detect (SPD)
- ◆ Power Supply: VDD=1.2V (1.14V to 1.26V)
- ◆ VDDQ = 1.2V (1.14V to 1.26V)
- ◆ VPP = 2.5V (2.375V to 2.75V)
- ◆ VDDSPD = 2.2V to 3.6V
- ◆ 16 internal banks
- ◆ CAS Latency (CL): 10, 11, 12, 13, 14, 15,16,17,18,19,20
- ◆ CAS Write Latency (CWL): 14,18
- ◆ Average refresh period
7.8us at 0°C ≤ TC ≤ 85°C
3.9us at 85°C ≤ TC ≤ 95°C
- ◆ Lead-free (RoHS compliant)
- ◆ Halogen free

Features:

- ◆ Functionality and operations comply with the DDR4 SDRAM datasheet
- ◆ Bank Grouping is applied, and CAS to CAS latency (tCCD_L, tCCD_S) for the banks in the same or different bank group accesses are available
- ◆ Bi-Directional Differential Data Strobe
- ◆ 8 bit pre-fetch
- ◆ Burst Length (BL) switch on-the-fly BL8 or BC4(Burst Chop)
- ◆ Per DRAM Addressability is supported
- ◆ Internal Vref DQ level generation is available
- ◆ Write CRC is supported at all speed grades
- ◆ DBI (Data Bus Inversion) is supported(x8)
- ◆ CA parity (Command/Address Parity) mode is supported

Mechanical Drawing



(All dimensions are in millimeters with ± 0.15 mm tolerance unless specified otherwise.)

Revision History

| Revision | Date | Description | Remark |
|-----------------|-------------|---|---------------|
| 0.1 | 5/5/2014 | Initial release | |
| 0.2 | 11/2/2015 | Updated VDDSPD | |
| 0.3 | 03/15/2017 | Add Environmental Requirements | |
| 0.4 | 09/04/2017 | Remove TOPR (Operating Temperature (ambient)) | |

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