

RoHS Compliant

2GB DDR4 SDRAM SO-DIMM **Halogen free**

Product Specifications

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Version 0.4



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General Description

Apacer **78.A2GG4.4000B** is a 256M x 64 DDR4 SDRAM (Synchronous DRAM) SO-DIMM. This high-density memory module consists of 4 pieces 256M x 16 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
78.A2GG4.4000B	21.3 GB/sec	2666 Mbps	1333 MHz	CL19

Density	Organization	Component	Rank
2GB	256M x 64	256M x16*4	1

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:

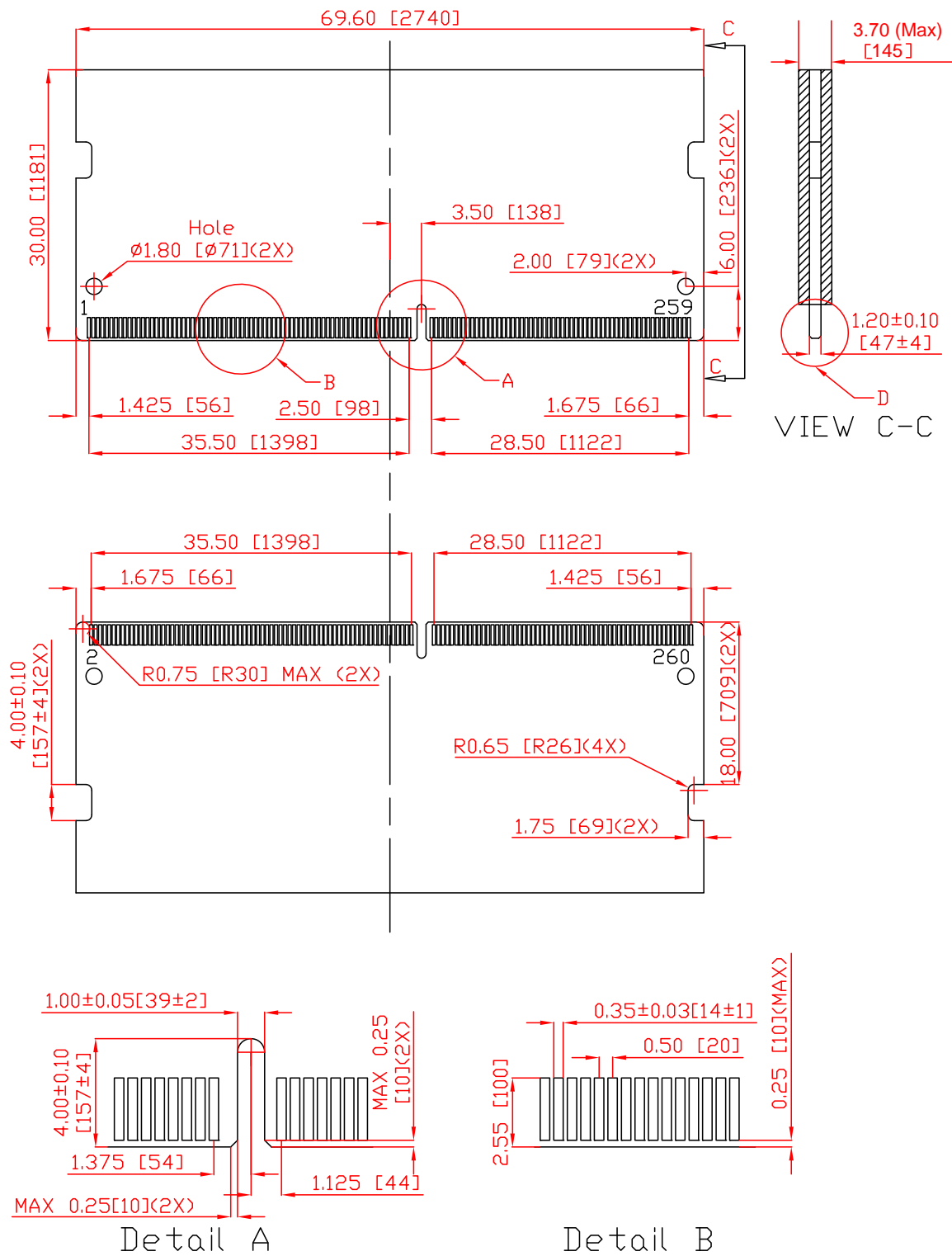
- ◆ On-DIMM thermal sensor : No
- ◆ Organization: 256 words x 64 bits, 1 rank
- ◆ Integrating 4 pieces of 4G bits DDR4 SDRAM sealed FBGA
- ◆ Package: 260-pin socket type small outline dual in-line memory module (SO-DIMM)
- ◆ PCB: height 30.00 mm, lead pitch 0.50 mm (pin),
- ◆ Serial Presence Detect (SPD)
- ◆ 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

Unit: mm



(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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