

RoHS Compliant

8GB DDR5 SDRAM UDIMM

Halogen free

Product Specifications

April 20, 2022

Version 1.0



Apacer Technology Inc.

1F., No.32, Zhongcheng Rd., Tucheng Dist., New Taipei City 236, Taiwan

Tel: +886-2-2267-8000 Fax: +886-2-2267-2261

www.apacer.com

Table of Contents

| | |
|---|----|
| General Description | 2 |
| Ordering Information | 2 |
| Key Parameters | 2 |
| Features: | 3 |
| Pin Assignments | 4 |
| Pin Descriptions | 6 |
| INPUT/OUTPUT FUNCTIONAL DESCRIPTION..... | 7 |
| Functional Block Diagram..... | 10 |
| Absolute Maximum Ratings | 11 |
| DRAM Component Operating Temperature Range..... | 12 |
| AC & DC OPERATING CONDITION..... | 13 |
| DIMM Voltage Requirements | 13 |
| Mechanical Drawing..... | 14 |

General Description

Apacer **D12.31492S.001** is a 8GB DDR5 SDRAM (Synchronous DRAM) DIMM. This memory module consists of 4 pieces 1G x 16 bits DDR5 synchronous DRAMs in FBGA packages and 8K Bits EEPROM. The module is a 288-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 | Density | Speed | Organization | DRAM Composition | Rank |
|----------------|---------|-----------|--------------|------------------|------|
| D12.31492S.001 | 8GB | 4800 Mbps | 1Gx64 | 1Gx16 *4 | 1 |

Key Parameters

| Speed | DDR5-4800 | Unit |
|-------------|-----------|------|
| | -CL40 | |
| tCK (min) | 0.416 | ns |
| CAS latency | 40 | nCK |
| tRCD (min) | 16 | ns |
| tRP (min) | 16 | ns |
| tRAS (min) | 32 | ns |
| tRC (min) | 48 | ns |
| CL-tRCD-tRP | 40-39-39 | nCK |

Features:

- ◆ JEDEC standard compliant
- ◆ On-DIMM thermal sensor : Yes
- ◆ PCB: height 31.25 mm, lead pitch 0.85 mm (pin),
- ◆ VDD = VDDQ= 1.1V (1.067V to 1.166V)
- ◆ VPP = 1.8V (1.746V to 1.908V) 、 VDDSPD = 1.8V
- ◆ 32 internal banks (x4, x8): 8 groups of 4 banks each
- ◆ 16 internal banks (x16): 4 groups of 4 banks each
- ◆ CAS Latency (CL): 22,26,28,30,32,36,40,42
- ◆ CAS Write Latency (CWL): RL-2
- ◆ Operating temperature Tcase-(0°C ~85°C)
- ◆ Average Refresh period 3.9us at lower than Tcase 85°C, 1.95us at 85°C < Tcase < 95 °C.
- ◆ All bank and same bank refresh
- ◆ Bi-Directional Differential Data Strobe
- ◆ 16-bit prefetch architecture
- ◆ On-die ECC
- ◆ ECC transparency and error scrub
- ◆ sPPR and hPPR capability
- ◆ Halogen free 、 Lead-free (RoHS compliant)

Pin Assignments

| Pin No. | Front Side | Pin No. | Back Side | Pin No. | Front Side | Pin No. | Back Side |
|---------|------------|---------|------------|---------|------------|---------|-----------|
| 1 | VIN_BULK | 145 | VIN_BULK | 74 | VSS | 218 | VSS |
| 2 | RFU | 146 | VIN_BULK | 75 | RFU | 219 | RFU |
| 3 | RFU | 147 | PWR_- GOOD | 76 | RFU | 220 | RFU |
| 4 | HSC_L | 148 | HSA | 77 | VSS | 221 | VSS |
| 5 | HSDA | 149 | RFU | 78 | CK0_B_t | 222 | CK1_B_t |
| 6 | VSS | 150 | VSS | 79 | CK0_B_c | 223 | CK1_B_c |
| 7 | RFU | 151 | PWR_EN | 80 | VSS | 224 | VSS |
| 8 | VSS | 152 | RFU | 81 | RFU | 225 | RFU |
| 9 | DQ0_A | 153 | VSS | 82 | CA12_B | 226 | RFU |
| 10 | VSS | 154 | DQ2_A | 83 | VSS | 227 | VSS |
| 11 | DQ1_A | 155 | VSS | 84 | CA10_B | 228 | CA11_B |
| 12 | VSS | 156 | DQ3_A | 85 | CA8_B | 229 | CA9_B |
| 13 | DQS0_A_c | 157 | VSS | 86 | VSS | 230 | VSS |
| 14 | DQS0_A_t | 158 | DM0_A_n | 87 | CA6_B | 231 | CA7_B |
| 15 | VSS | 159 | VSS | 88 | CA4_B | 232 | CA5_B |
| 16 | DQ4_A | 160 | DQ6_A | 89 | VSS | 233 | VSS |
| 17 | VSS | 161 | VSS | 90 | CA2_B | 234 | CA3_B |
| 18 | DQ5_A | 162 | DQ7_A | 91 | CA0_B | 235 | CA1_B |
| 19 | VSS | 163 | VSS | 92 | VSS | 236 | VSS |
| 20 | DQ8_A | 164 | DQ10_A | 93 | CS0_B_n | 237 | CS1_B_n |
| 21 | VSS | 165 | VSS | 94 | VSS | 238 | VSS |
| 22 | DQ9_A | 166 | DQ11_A | 95 | RESET_n | 239 | DQS4_B_c |
| 23 | VSS | 167 | VSS | 96 | VSS | 240 | DQS4_B_t |
| 24 | DM1_A_n | 168 | DQS1_A_c | 97 | CB0_B | 241 | VSS |
| 25 | VSS | 169 | DQS1_A_t | 98 | VSS | 242 | CB2_B |
| 26 | DQ12_A | 170 | VSS | 99 | CB1_B | 243 | VSS |
| 27 | VSS | 171 | DQ14_A | 100 | VSS | 244 | CB3_B |
| 28 | DQ13_A | 172 | VSS | 101 | DQ0_B | 245 | VSS |
| 29 | VSS | 173 | DQ15_A | 102 | VSS | 246 | DQ2_B |
| 30 | DQ16_A | 174 | VSS | 103 | DQ1_B | 247 | VSS |
| 31 | VSS | 175 | DQ18_A | 104 | VSS | 248 | DQ3_B |
| 32 | DQ17_A | 176 | VSS | 105 | DQS0_B_c | 249 | VSS |
| 33 | VSS | 177 | DQ19_A | 106 | DQS0_B_t | 250 | DM0_B_n |
| 34 | DQS2_A_c | 178 | VSS | 107 | VSS | 251 | VSS |
| 35 | DQS2_A_t | 179 | DM2_A_n | 108 | DQ4_B | 252 | DQ6_B |
| 36 | VSS | 180 | VSS | 109 | VSS | 253 | VSS |
| 37 | DQ20_A | 181 | DQ22_A | 110 | DQ5_B | 254 | DQ7_B |
| 38 | VSS | 182 | VSS | 111 | VSS | 255 | VSS |
| 39 | DQ21_A | 183 | DQ23_A | 112 | DQ8_B | 256 | DQ10_B |

| Pin No. | Front Side | Pin No. | Back Side | Pin No. | Front Side | Pin No. | Back Side |
|---------|------------|---------|-----------|---------|------------|---------|-----------|
| 40 | VSS | 184 | VSS | 113 | VSS | 257 | VSS |
| 41 | DQ24_A | 185 | DQ26_A | 114 | DQ9_B | 258 | DQ11_B |
| 42 | VSS | 186 | VSS | 115 | VSS | 259 | VSS |
| 43 | DQ25_A | 187 | DQ27_A | 116 | DM1_B_n | 260 | DQS1_B_c |
| 44 | VSS | 188 | VSS | 117 | VSS | 261 | DQS1_B_t |
| 45 | DM3_A_n | 189 | DQS3_A_c | 118 | DQ12_B | 262 | VSS |
| 46 | VSS | 190 | DQS3_A_t | 119 | VSS | 263 | DQ14_B |
| 47 | DQ28_A | 191 | VSS | 120 | DQ13_B | 264 | VSS |
| 48 | VSS | 192 | DQ30_A | 121 | VSS | 265 | DQ15_B |
| 49 | DQ29_A | 193 | VSS | 122 | DQ16_B | 266 | VSS |
| 50 | VSS | 194 | DQ31_A | 123 | VSS | 267 | DQ18_B |
| 51 | CB0_A | 195 | VSS | 124 | DQ17_B | 268 | VSS |
| 52 | VSS | 196 | CB2_A | 125 | VSS | 269 | DQ19_B |
| 53 | CB1_A | 197 | VSS | 126 | DQS2_B_c | 270 | VSS |
| 54 | VSS | 198 | CB3_A | 127 | DQS2_B_t | 271 | DM2_B_n |
| 55 | DQS4_A_c | 199 | VSS | 128 | VSS | 272 | VSS |
| 56 | DQS4_A_t | 200 | ALERT_n | 129 | DQ20_B | 273 | DQ22_B |
| 57 | VSS | 201 | VSS | 130 | VSS | 274 | VSS |
| 58 | CS0_A_n | 202 | CS1_A_n | 131 | DQ21_B | 275 | DQ23_B |
| 59 | VSS | 203 | VSS | 132 | VSS | 276 | VSS |
| 60 | CA0_A | 204 | CA1_A | 133 | DQ24_B | 277 | DQ26_B |
| 61 | CA2_A | 205 | CA3_A | 134 | VSS | 278 | VSS |
| 62 | VSS | 206 | VSS | 135 | DQ25_B | 279 | DQ27_B |
| 63 | CA4_A | 207 | CA5_A | 136 | VSS | 280 | VSS |
| 64 | CA6_A | 208 | CA7_A | 137 | DM3_B_n | 281 | DQS3_B_c |
| 65 | VSS | 209 | VSS | 138 | VSS | 282 | DQS3_B_t |
| 66 | CA8_A | 210 | CA9_A | 139 | DQ28_B | 283 | VSS |
| 67 | CA10_A | 211 | CA11_A | 140 | VSS | 284 | DQ30_B |
| 68 | VSS | 212 | VSS | 141 | DQ29_B | 285 | VSS |
| 69 | CA12_A | 213 | RFU | 142 | VSS | 286 | DQ31_B |
| 70 | RFU | 214 | RFU | 143 | RFU | 287 | VSS |
| 71 | VSS | 215 | VSS | 144 | RFU | 288 | RFU |
| 72 | CK0_A_t | 216 | CK1_A_t | | | | |
| 73 | CK0_A_c | 217 | CK1_A_c | | | | |

Pin Descriptions

| Pin Name | Descripti |
|---|--|
| CA0_A – CA12_A, CA0_B – CA12_B | SDRAM Command/Address bus |
| CS0_A_n – CS1_A_n, CS0_B_n – CS1_B_n | SDRAM Chip Select |
| DQ0_A – DQ31_A, DQ0_B – DQ31_B | DIMM memory data bus |
| CB0_A – CB3_A, CB0_B – CB3_B | DIMM ECC check bits (Only applicable on ECC SODIMM or ECC UDIMM) |
| DQS0_A_t – DQS4_A_t, DQS0_B_t – DQS4_B_t | SDRAM data strobes (positive line of differential pair) |
| DQS0_A_c – DQS4_A_c, DQS0_B_c – DQS4_B_c | SDRAM data strobes (negative line of differential pair) |
| DM0_A_n – DM3_A_n, DM0_B_n – DM3_B_n | SDRAM data masks |
| CK0_A_t, CK1_A_t, CK0_B_t, CK1_B_t | SDRAM clocks (positive line of differential pair) |
| CK0_A_c, CK1_A_c, CK0_B_c, CK1_B_c | SDRAM clocks (negative line of differential pair) |
| HSC_L | Side Band bus clock |
| HSD_A | Side Band bus data |
| HSA | Side Band bus address |
| ALERT_n | SDRAM ALERT_n |
| RESET_n | Set DRAMs to a Known State |
| VIN_BULK | 5 V power input supply to the PMIC for analog circuits |
| VSS | Power supply return (ground) |
| PWR_GOOD | Power good indicator |
| PWR_EN | PMIC Enable |
| RFU | Reserved for future use |

*Notes:

DDR5 UDIMM has 2 channels (channel-A and channel-B) of signal bus.

The signals with suffix: _A (e.g. DQ0_A) are for channel-A, and the signals with suffix: _B (e.g. DQ0_B) are for channel-B

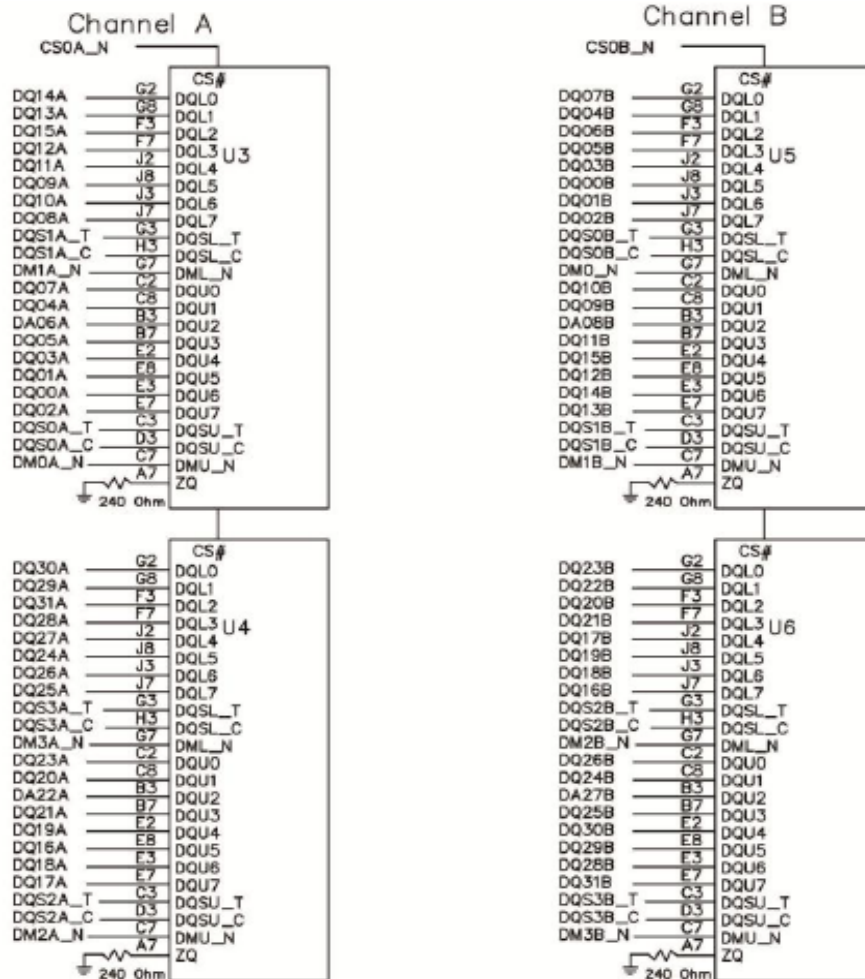
INPUT/OUTPUT FUNCTIONAL DESCRIPTION

| Symbol | Type | I/O Levels | Description |
|------------------------------|------------|-----------------|--|
| CK[1:0]_A_t, CK[1:0]_B_t, | Input | V _{DD} | Clock: CK_t and CK_c are differential clock inputs. All address and control input signals are sampled on the crossing of the positive edge of CK_t and negative edge of CK_c. |
| CK[1:0]_A_c, CK[1:0]_B_c | | | |
| CA[12:0]_A CA[12:0]_B | Input | V _{DD} | Command/Address Inputs: CA signals provide the command and address inputs according to the Command Truth Table. Note: Since some commands are multi-cycle, the pins may not be interchanged between devices on the same bus. |
| CS[1:0]_A_n CS[1:0]_B_n | Input | V _{DD} | Chip Select: All commands are masked when CS_n is registered HIGH. CS_n provides for external rank selection on systems with multiple ranks. |
| ALERT_n | Output | V _{DD} | Alert: If there is an error in CRC, then ALERT_n drives LOW for the period time interval and returns HIGH. During connectivity test mode, this pin functions as an input. Usage of this signal is system-dependent. In the case where this pin is not connected, ALERT_n must be bonded to V _{DDQ} on the system board. |
| RESET_n | CMOS Input | V _{DD} | Active Low Asynchronous Reset: Reset is active when RESET_n is LOW, and inactive when RESET_n is HIGH. RESET_n must be HIGH during normal operation. RESET_n is a CMOS rail-to-rail signal with DC HIGH and LOW at 80% and 20% of V _{DDQ} . |

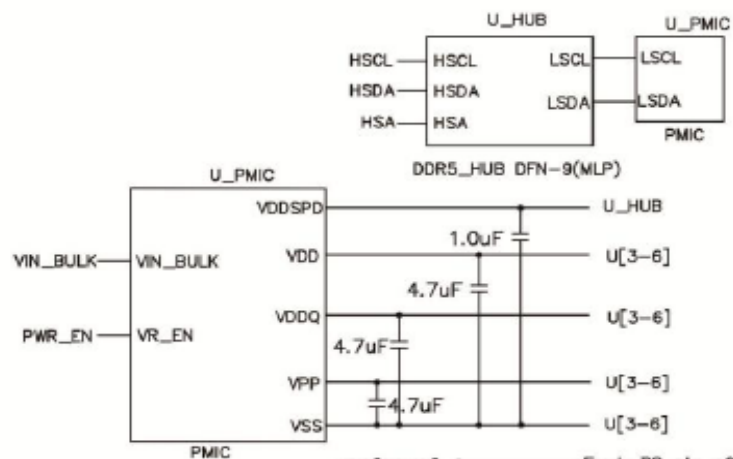
| Symbol | Type | I/O Levels | Description |
|--------------------------|----------------|-----------------|--|
| PWR_GOOD | Input / Output | V _{DD} | Power Good Indicator: Open drain output. The PMIC ensures this pin HIGH when VIN_Bulk input supply, as well as all enabled output buck regulators and all LDO regulators tolerance threshold is maintained as configured in the appropriate register. The PMIC drives this pin LOW when VIN_Bulk input goes below the threshold or when any of the enabled output buck regulator exceeds the thresholds configured in the appropriate register or when any LDO output regulator exceeds the threshold configured in the appropriate register. As an input, the PMIC disables its output regulator when this pin is LOW. The LDO outputs remain on. |
| HSCL | Input | | Host Sideband Bus Clock: Bus clock used to strobe data into HUB device. When open drain, a pull-up resistor is required on the system motherboard. |
| HSDA | Input / Output | | Host Sideband Bus Data: I2C/I3C-Basic data. When open drain, a pull-up resistor is required on the system motherboard. |
| HSA | Input | | Host Sideband Bus Device ID: Address input to a hub or other client device to distinguish between identical devices in the I3C basic address range. Tied to GND, HSA has different resistor values on the motherboard to identify DIMM slot address. Refer to the SPD Hub spec for more information. |
| DQ[31:0]_A DQ[31:0]_B | Input / Output | VDD | Data Input/ Output: Bi-directional data bus. If CRC is enabled via Mode register then CRC code is added at the end of Data Burst. |
| CB[3:0]_A CB[3:0]_B | Input / Output | VDD | DIMM ECC check bits. (Only applicable on ECC SODIMM or ECC UDIMM) |

| Symbol | Type | I/O Levels | Description |
|------------------------------|-------------------|------------|---|
| DQS[4:0]_A_t DQS[4:0]_B_t | Input / Output | VDD | Data Strobe: Output with read data, input with write data. Edge-aligned with read data, centered in write data. The data strobe DQS_t is paired with differential signals DQS_c, respectively, to provide differential pair signaling to the system during reads and writes. DDR5 SDRAM only supports differential data strobe. It does not support single-ended strobe. |
| DQS[4:0]_A_c DQS[4:0]_B_c | | | |
| DM[3:0]_A_n DM[3:0]_B_n | Input | VDD | Input Data Mask: DM_n is an input mask signal for write data. Input data is masked when DM_n is sampled LOW coincident with that input data during a write access. DM_n is sampled on both edges of DQS. DM function is shared with TDQS on x8 devices. The function of DM_n is enabled by MR5:OP[5] = 1. Refer to Micron DDR5 component data sheet specification for further detail. |
| VIN_BULK | Supply | | External Power Supply: 5V, 4.25V (min), 5.5V (max) |
| PWR_EN | Input | | PMIC Enable: When this pin is HIGH, the PMIC turns on the regulator. When this pin is LOW, the PMIC turns off the regulator. This signal is connected to the PMIC's VR_EN pin. |
| VSS | Supply | | Ground |
| RFU | | | Reserved for future use. No on DIMM electrical connection is present. |
| NC | | | No connect: No internal electrical connection is present. |
| NF | | | No function: May have internal connection present, but has no function. |

Functional Block Diagram



CA_A[00:12] ——— DDRV SDRAM U3,U4
CA_B[00:12] ——— DDRV SDRAM U5,U6
CS0A_N ——— DDRV SDRAM U3,U4
CS0B_N ——— DDRV SDRAM U5,U6
CK0_A_C ——— DDRV SDRAM U3,U4
CK0_A_T ——— DDRV SDRAM U3,U4
CK0_B_C ——— DDRV SDRAM U5, U6
CK0_B_T ——— DDRV SDRAM U5, U6



Alert_n ——— DDRV SDRAM ——— 47 Ohm ——— VDDQ_1P1V
RESET_n ——— DDRV SDRAM U[3-6]

DQA[00:31] ——— Each DQ pin of DDRV SDRAM
DQSA_C[00:03] ——— Each DQS_C pin of DDRV SDRAM
DQSA_T[00:03] ——— Each DQS_T pin of DDRV SDRAM
DMA_N[00:03] ——— Each DQM_N pin of DDRV SDRAM
DQB[00:31] ——— Each DQ pin of DDRV SDRAM
DQSB_C[00:03] ——— Each DQS_C pin of DDRV SDRAM
DQSB_T[00:03] ——— Each DQS_T pin of DDRV SDRAM
DMB_N[00:03] ——— Each DQM_N pin of DDRV SDRAM

Absolute Maximum Ratings

| Parameter | Symbol | Rating | Units | Notes |
|-------------------------------------|------------------------------------|--------------|-------|-------|
| Voltage on VDD pin relative to Vss | V _{DD} | - 0.3 ~ 1.4 | V | 1 |
| Voltage on VDDQ pin relative to Vss | V _{DDQ} | - 0.3 ~ 1.4 | V | 1 |
| Voltage on VPP pin relative to Vss | V _{PP} | - 0.3 ~ 2.1 | V | |
| Voltage on any pin relative to Vss | V _{IN} , V _{OUT} | - 0.3 ~ 1.4 | V | 1 |
| Storage temperature | TSTG | - 55 to +100 | °C | 1,2 |

Notes:

1. Stresses greater than those listed in this table may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability.
2. Storage temperature is the case surface temperature on the center/top side of the device. For the measurement conditions, refer to JESD51-2 standard.

DRAM Component Operating Temperature Range

| Symbol | Parameter | Temperature Range (Units : °C) | | Grade | Notes |
|----------------|--------------------------------|-----------------------------------|-----|-------|-----------|
| | | Min | Max | | |
| Toper normal | Normal Operating Temperature | 0 | 85 | NT | 1,2,3,4 |
| Toper extended | Extended Operating Temperature | 0 | 95 | XT | 1,2,3,4,5 |

Notes:

1. All operating temperature symbols, ranges, acronyms are referred from JESD402-1.
2. Operating Temperature is the case surface temperature on the center/top side of the DRAM. For the measurement conditions, please refer to JESD51-2 standard.
3. All DDR5 SDRDAMs are required to operate in NT and XT temperature ranges.
4. If TC exceeds 85°C, the DRAM must be refreshed externally at 2X refresh, which is a 1.95µs interval refresh rate.
5. Operating Temperature for 3DS needs to be derated by the number of DRAM dies as: $[TOPER - (2.5^{\circ}\text{C} \times \log_2 N)]$, where N is the number of the stacked dies.

AC & DC OPERATING CONDITION

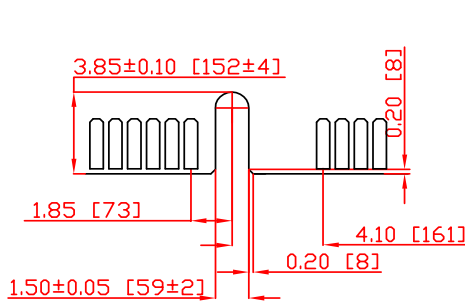
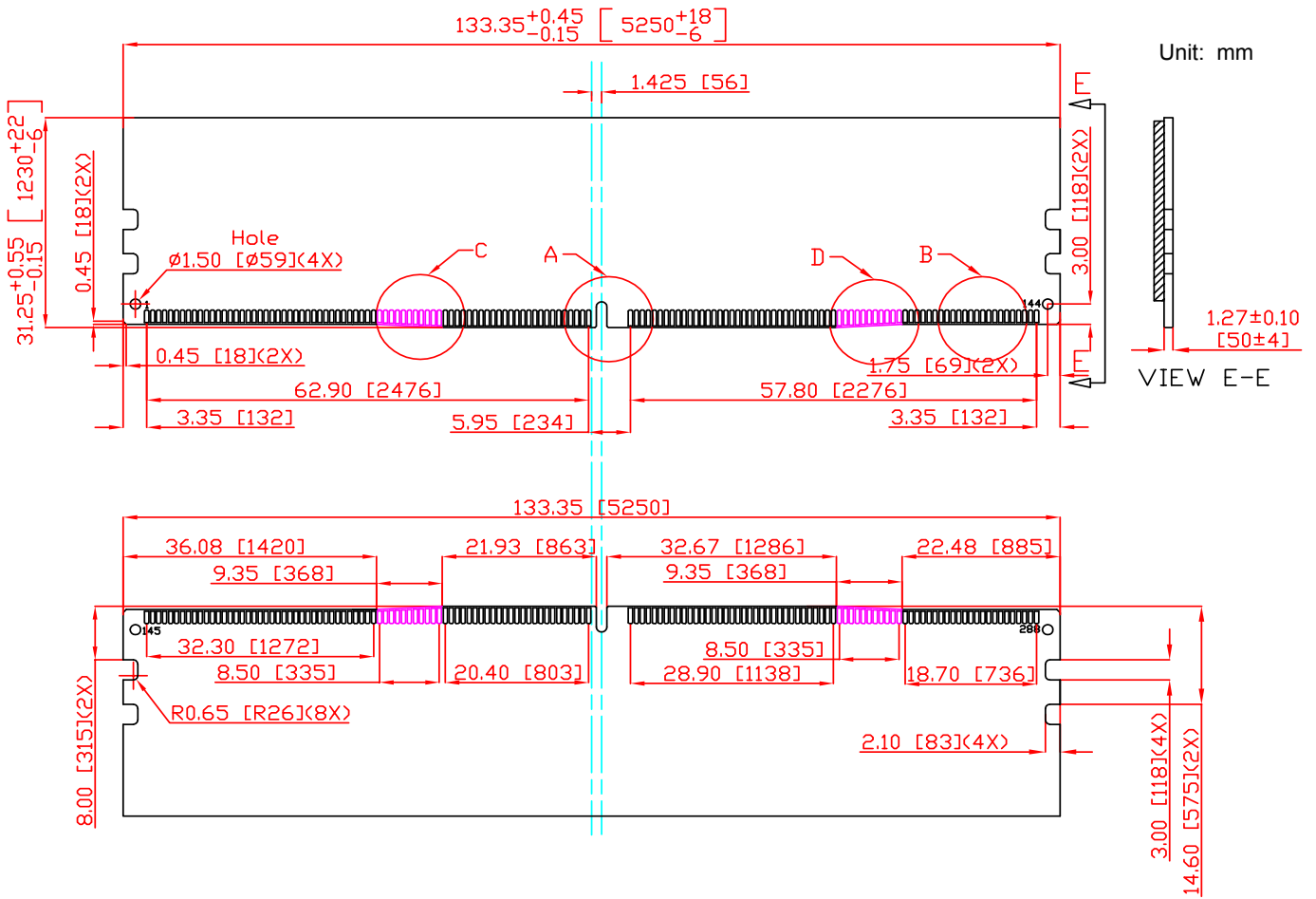
DIMM Voltage Requirements

| Symbol | Parameter | Voltage Rating (Volts) | | | Maximum Expected Current (Amps) | Power State |
|----------|----------------------------|------------------------|---------|---------|---------------------------------|-------------|
| | | Minimum | Typical | Maximum | | |
| VIN_BULK | Host Supply Voltage | 4.25 | 5.0 | 5.5 | 2.A | Operational |
| SWA,SWB | PMIC Output Supply Voltage | - | 1.1 | - | 6 | Operational |
| SWA+SWB | PMIC Output Supply Voltage | - | 1.1 | - | 12 | Operational |
| SWC | PMIC Output Supply Voltage | - | 1.8 | - | 2 | Operational |
| 1.8V LDO | PMIC Output Supply Voltage | - | 1.8 | - | 0.025(maximum) | Operational |
| 1.0V LDO | PMIC Output Supply Voltage | - | 1.0 | - | 0.020(maximum) | Operational |

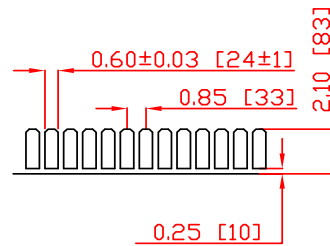
NOTE :

1. Input supplies referenced in this table are VIN_BULK and VIN.
2. During first power-on, the input voltage supply must reach a minimum of 4.25V for the PMIC to detect a valid input supply.
3. The ramp up rate is between 300mV and 4.0V.
4. The ramp down rate is between 4.0V and 300mV.
5. The area under the curve and above VIN_Bulk = TBD. The VIN_Bulk_AC spec must also be satisfied.
6. The minimum input current requirement is equal to the maximum output current on VOUT_1.8V and VOUT_1.0V LDO, plus the current required by the PMIC for its own use. The maximum input current is equal to the all VIN_Bulk input on the PMIC.
7. VIN_Bulk = 5.0V measured at room temperature. All circuitry, including output regulators and LDOs are off. The VR_EN signal is static LOW or HIGH. The GSI_n signal is pulled HIGH. I2C or 13C basic interface access is not allowed, and the bus is pulled HIGH. The PID signal is pulled either HIGH or LOW
8. VIN_Bulk = 5.0V measured at room temperature. All output regulators and LDOs are on the 0A output load. The VR_EN signal is static LOW or HIGH. The GSI_n signal is pulled HIGH. I2C or 13C basic interface access is not allowed, and the bus is pulled HIGH. The PID signal is pulled either HIGH or LOW.

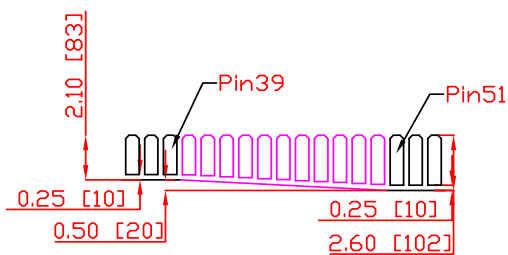
Mechanical Drawing



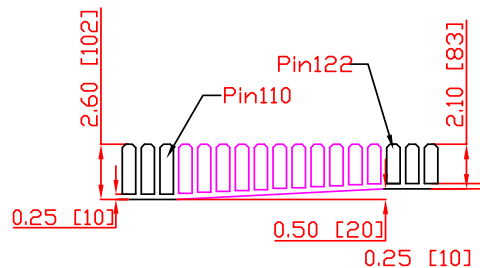
Detail A



Detail B



Detail C



Detail D

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

Revision History

| Revision | Date | Description | Remark |
|-----------------|-------------|--------------------|---------------|
| 1.0 | 4/12/2022 | Initial release | |

Global Presence

Taiwan (Headquarters)

Apacer Technology Inc.

1F., No.32, Zhongcheng Rd., Tucheng Dist.,
New Taipei City 236, Taiwan R.O.C.

Tel: +886-2-2267-8000

Fax: +886-2-2267-2261

amtsales@apacer.com

U.S.A.

Apacer Memory America, Inc.

46732 Lakeview Blvd., Fremont, CA 94538

Tel: 1-408-518-8699

Fax: 1-510-249-9568

sa@apacerus.com

Japan

Apacer Technology Corp.

5F, Matsura Bldg., Shiba, Minato-Ku

Tokyo, 105-0014, Japan

Tel: 81-3-5419-2668

Fax: 81-3-5419-0018

jpservices@apacer.com

Europe

Apacer Technology B.V.

Science Park Eindhoven 5051 5692 EB Son,
The Netherlands

Tel: 31-40-267-0000

Fax: 31-40-290-0686

sales@apacer.nl

China

Apacer Electronic (Shanghai) Co., Ltd.

Room D, 22/FL, No.2, Lane 600, Jieyun Plaza,

Tianshan RD, Shanghai, 200051, China

Tel: 86-21-6228-9939

Fax: 86-21-6228-9936

sales@apacer.com.cn

India

Apacer Technologies Pvt Ltd.

1874, South End C Cross, 9th Block Jayanagar,

Bangalore-560069, INDIA.

Tel: 91-80-4152-9061/62

Fax: 91-80-4170-0215

sales_india@apacer.com

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [Memory Modules](#) category:

Click to view products by [Apacer](#) manufacturer:

Other Similar products are found below :

[RAM-SD4-R-08](#) [MT18HVF25672PDZ-667H1](#) [MT8HTF12864HTZ-667H1](#) [MT16VDDT12864AY-335F2](#) [MT9KSF25672PZ-1G4K1](#) [96SD3-4G1600NN-AP](#) [SQR-SD3I-16G1K6MLB](#) [AQD-D3L2GN16-SQ1](#) [AGIGA8803-160BCA](#) [AGIGA8801-800CCA](#) [79B00-G004-025-RS](#) [SQR-SD4I16G2K4SEBB](#) [SQR-SD3N4G1K6SEEEB](#) [MTA18ADF2G72PDZ-3G2E1](#) [97015-4096-16-2](#) [SQR-SD1M-1G333MNJB](#)
[A32.A15HHB.00125](#) [MT9VDDT3272HG-40BG2](#) [SQR-SD3I-4G1K6SNLB](#) [78.A2GDA.4010C](#) [78.D1GMM.4010B](#) [78.C1GMM.AF50B](#)
[78.C1GMM.4050B](#) [78.A1GG3.4020C](#) [75.B93H7.G000B](#) [MT16HTF25664AZ-800H1](#) [MT4HTF6464HZ-667H1](#) [G2B](#) [96D2-2G800NN-AP](#)
[AQD-SD4U16N24-SE](#) [SQR-SD3M-8G1K6SNLB](#) [SQR-UD4N8G2K4SNBBB](#) [75.B93GJ.G010B](#) [75.C93H7.G000B](#) [75.DA4GJ.G010B](#)
[78.02G63.405](#) [78.A2GCL.4000C](#) [78.A2GCR.4000C](#) [78.B1GDE.40F0C](#) [78.B1GM4.4020B](#) [78.B2GCZ.4000C](#) [78.C1GMP.4000B](#)
[78.C1GQB.4040B](#) [78.C2GCM.AT30C](#) [D22.27247S.001](#) [78.D1GNS.4010B](#) [78.D1GSC.4010B](#) [78.D2GF2.4010B](#) [A4S08G32CLYBDAA-1](#)
[A4S16G32CLYBDAA-1](#)