KVR1333D3N9K2/4G
4GB (2GB 2Rx8 256M x 64-Bit x 2 pcs.)
PC3-10600 CL9 240-Pin DIMM Kit

Important Information: The module defined in this data sheet is one of several configurations available under this part number. While all configurations are compatible, the DRAM combination and/or the module height may vary from what is described here.

DESCRIPTION
ValueRAM's KVR1333D3N9K2/4G is a kit of two 256M x 64-bit (2GB) DDR3-1333 CL9 SDRAM (Synchronous DRAM), 2Rx8 memory modules, based on sixteen 128M x 8-bit DDR3-1333 FBGA components per module. Total kit capacity is 4GB. The SPD’s are programmed to JEDEC standard latency DDR3-1333 timing of 9-9-9 at 1.5V. Each 240-pin DIMM uses gold contact fingers. The electrical and mechanical specifications are as follows:

FEATURES
- JEDEC standard 1.5V (1.425V ~1.575V) Power Supply
- VDDQ = 1.5V (1.425V ~ 1.575V)
- 667MHz fCK for 1333Mb/sec/pin
- 8 independent internal bank
- Programmable CAS Latency: 9, 8, 7, 6
- Programmable Additive Latency: 0, CL - 2, or CL - 1 clock
- Programmable CAS Write Latency(CWL) = 7 (DDR3-1333)
- 8-bit pre-fetch
- Burst Length: 8 (Interleave without any limit, sequential with starting address "000" only), 4 with tCCD = 4 which does not allow seamless read or write [either on the fly using A12 or MRS]
- Bi-directional Differential Data Strobe
- Internal(self) calibration: Internal self calibration through ZQ pin (RZQ : 240 ohm ± 1%)
- On Die Termination using ODT pin
- Average Refresh Period 7.8us at lower than TCASE 85°C, 3.9us at 85°C < TCASE ≤ 95°C
- Asynchronous Reset
- PCB: Height 1.18" (30mm), double sided component

SPECIFICATIONS

<table>
<thead>
<tr>
<th>CL(IDD)</th>
<th>9 cycles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Row Cycle Time (tRCmin)</td>
<td>49.5ns (min.)</td>
</tr>
<tr>
<td>Refresh to Active/Refresh Command Time (tRFCmin)</td>
<td>110ns (min.)</td>
</tr>
<tr>
<td>Row Active Time (tRASmin)</td>
<td>36ns (min.)</td>
</tr>
<tr>
<td>Power (Operating)</td>
<td>1.620 W* (per module)</td>
</tr>
<tr>
<td>UL Rating</td>
<td>94 V - 0</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>0° C to 85° C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-55° C to +100° C</td>
</tr>
</tbody>
</table>

*Power will vary depending on the SDRAM used.