# KVR16LS11/4

4GB 1Rx8 512M x 64-Bit PC3L-12800
CL11 204-Pin SODIMM

## DESCRIPTION

This document describes ValueRAM's 512M x 64-bit (4GB) DDR3L-1600 CL11 SDRAM (Synchronous DRAM), 1Rx8, low voltage, memory module, based on eight 512M x 8-bit FBGA components. The SPD is programmed to JEDEC standard latency DDR3-1600 timing of 11-11-11 at 1.35V or 1.5V. This 204-pin SODIMM uses gold contact fingers. The electrical and mechanical specifications are as follows:

## FEATURES

- JEDEC standard 1.35V (1.28V ~ 1.45V) and 1.5V (1.425V ~ 1.575V) Power Supply
- VDDQ = 1.35V (1.28V ~ 1.45V) and 1.5V (1.425V ~ 1.575V)
- 800MHz fCK for 1600Mb/sec/pin
- 8 independent internal bank
- Programmable CAS Latency: 11, 10, 9, 8, 7, 6
- Programmable Additive Latency: 0, CL - 2, or CL - 1 clock
- 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

| | |
|---|---|
| CL(IDD) | 11 cycles |
| Row Cycle Time (tRCmin) | 48.125ns (min.) |
| Refresh to Active/Refresh Command Time (tRFCmin) | 260ns (min.) |
| Row Active Time (tRASmin) | 35ns (min.) |
| Maximum Operating Power | (1.35V) = 2.376 W* |
| UL Rating | 94 V - 0 |
| Operating Temperature | 0º C to 85º C |
| Storage Temperature | -55º C to +100º C |

*Power will vary depending on the SDRAM.

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## MODULE DIMENSIONS:





