

# Memory Module Specifications

## KVR21R15D4/16

16GB 2Rx4 2G x 72-Bit PC4-2133

CL15 Registered w/Parity 288-Pin DIMM

### DESCRIPTION

ValueRAM's KVR21R15D4/16 is a 2G x 72-bit (16GB) DDR4-2133 CL15 SDRAM (Synchronous DRAM) registered w/ parity, 2Rx4, ECC, memory module, based on thirty-six 1G x 4-bit FBGA components. The SPD is programmed to JEDEC standard latency DDR4-2133 timing of 15-15-15 at 1.2V. Each 288-pin DIMM uses gold contact fingers. The electrical and mechanical specifications are as follows:

### FEATURES

- 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=2.25V to 2.75V
- Functionality and operations comply with the DDR4 SDRAM datasheet
- 16 internal banks
- 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
- Data transfer rates: PC4-2133, PC4-1866, PC4-1600
- Bi-Directional Differential Data Strobe
- 8 bit pre-fetch
- Burst Length (BL) switch on-the-fly BL8 or BC4(Burst Chop)
- Supports ECC error correction and detection
- On-Die Termination (ODT)
- Temperature sensor with integrated SPD
- This product is in compliance with the RoHS directive.
- 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

### SPECIFICATIONS

CL(IDD)	15 cycles
Row Cycle Time (tRCmin)	47.05ns(min.)
Refresh to Active/Refresh Command Time 1x mode (tRFCmin)	260ns(min.)
Row Active Time (tRASmin)	33.00ns(min.)
Maximum Operating Power	TBD W*
UL Rating	94 V - 0
Operating Temperature	0° C to +85° C
Storage Temperature	-55° C to +100° C

\*Power will vary depending on the SDRAM used.

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### MODULE DIMENSIONS

