

# Memory Module Specifications

## KSM29RD4/32MRR

32GB 2Rx4 4G x 72-Bit PC4-2933

CL21 Registered w/Parity 288-Pin DIMM

### DESCRIPTION

Kingston's KSM29RD4/32MRR is a 4G x 72-bit (32GB) DDR4-2933 CL21 SDRAM (Synchronous DRAM) registered w/ parity, 2Rx4, ECC, memory module, based on thirty-six 2G x 4-bit FBGA components. The SPD is programmed to JEDEC standard latency DDR4-2933 timing of 21-21-21 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
- VDDQ = 1.2V
- VPP = 2.5V
- VDDSPD = 2.41V 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: PC4-2933, PC4-2666, PC4-2400, 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
- CA parity (Command/Address Parity) mode is supported

### SPECIFICATIONS

CL(IDD)	21 cycles
Row Cycle Time (tRCmin)	46.32ns(min.)
Refresh to Active/Refresh Command Time (tRFCmin)	350ns(min.)
Row Active Time (tRASmin)	32ns(min.)
Maximum Operating Power	*
UL Rating	94 V - 0
Operating Temperature	0° C to +85° C
Storage Temperature	-55° C to +100° C

\* See IDD Table (page2)

### Module Assembly

<b>DRAM:</b> MICRON (R-DIE)
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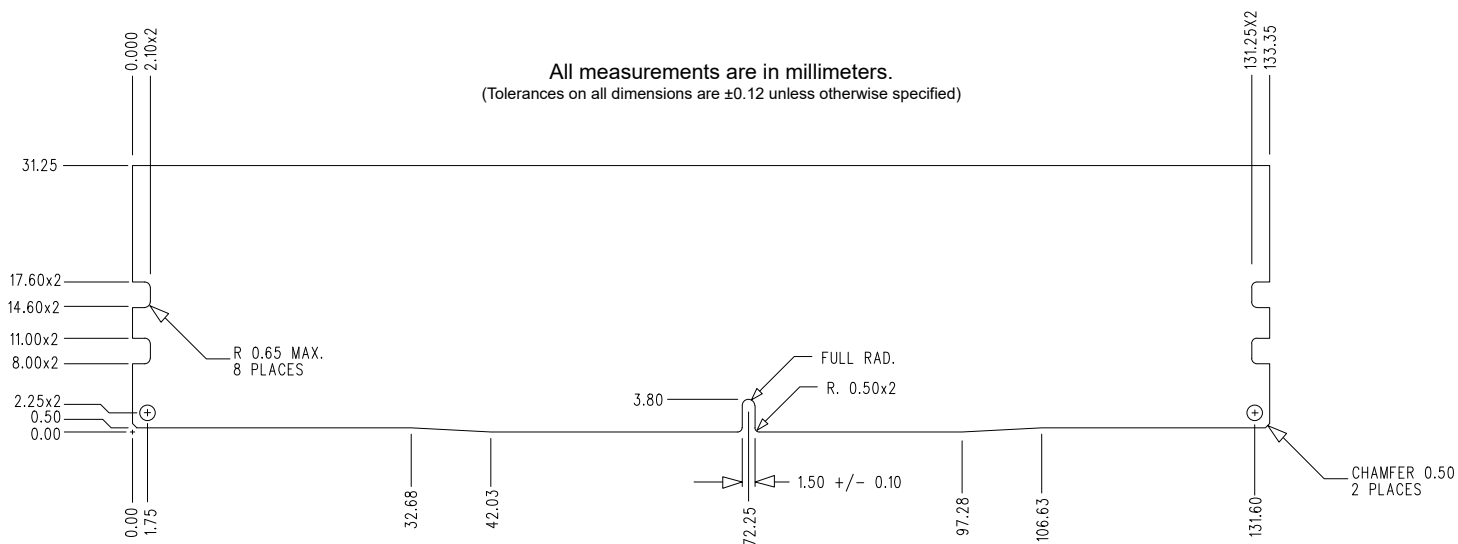
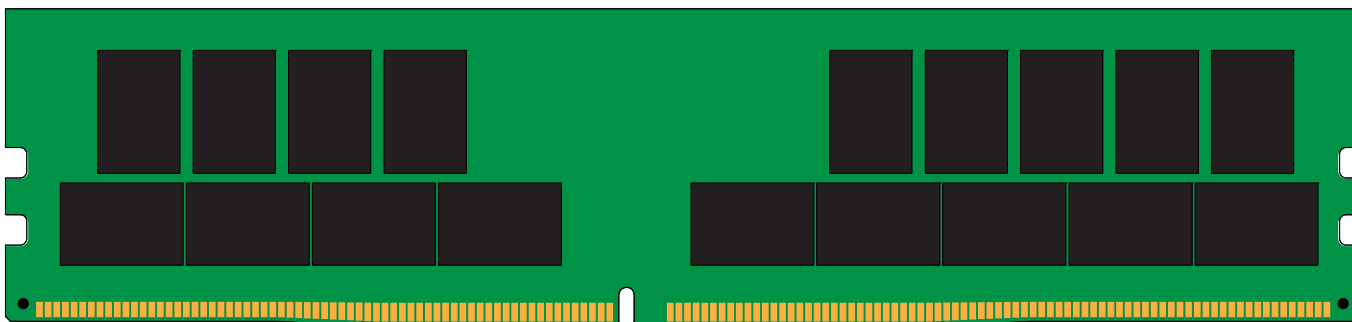
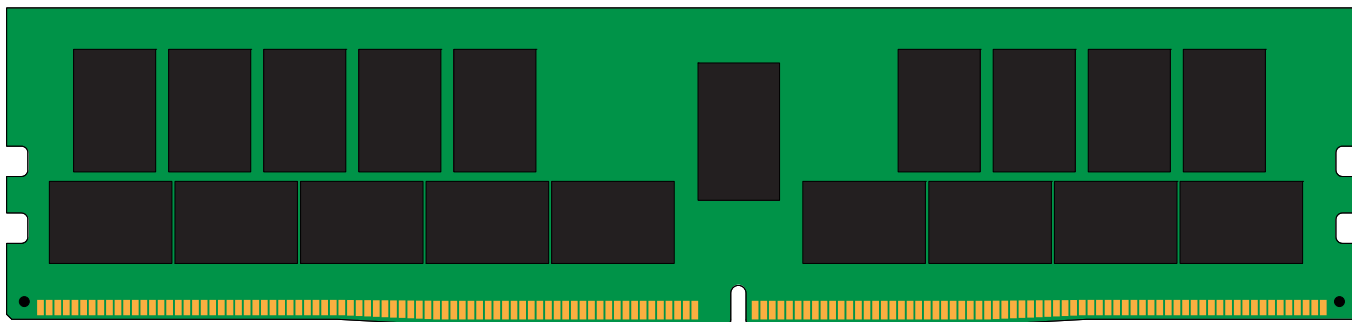
<b>RCD:</b> Rambus
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## IDD Specifications

Symbol	2933	Units
I <sub>DD0</sub>	1476	mA
I <sub>PP0</sub>	108	mA
I <sub>DD1</sub>	1566	mA
I <sub>DD2N</sub>	1332	mA
I <sub>DD2NT</sub>	1386	mA
I <sub>DD2P</sub>	1080	mA
I <sub>DD2Q</sub>	1224	mA
I <sub>DD3N</sub>	1440	mA
I <sub>PP3N</sub>	108	mA
I <sub>DD3P</sub>	1116	mA
I <sub>DD4R</sub>	1394	mA
I <sub>DD4W</sub>	2052	mA
I <sub>DD5R</sub>	1512	mA
I <sub>PP5R</sub>	126	mA
I <sub>DD6N</sub>	1152	mA
I <sub>DD6E</sub>	1872	mA
I <sub>DD6R</sub>	684	mA
I <sub>DD6A</sub>	288	mA
I <sub>DD6A</sub>	684	mA
I <sub>DD6A</sub>	1044	mA
I <sub>DD6A</sub>	1872	mA
I <sub>PP6X</sub>	180	mA
I <sub>DD7</sub>	4284	mA
I <sub>PP7</sub>	468	mA
I <sub>DD8</sub>	864	mA

## MODULE DIMENSIONS



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