

# Memory Module Specifications

## KSM29RD4/32HDR

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

CL21 Registered w/Parity 288-Pin DIMM

### DESCRIPTION

Kingston's KSM29RD4/32HDR 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

**DRAM:** HYNIX (D-DIE)

**RCD:** Rambus

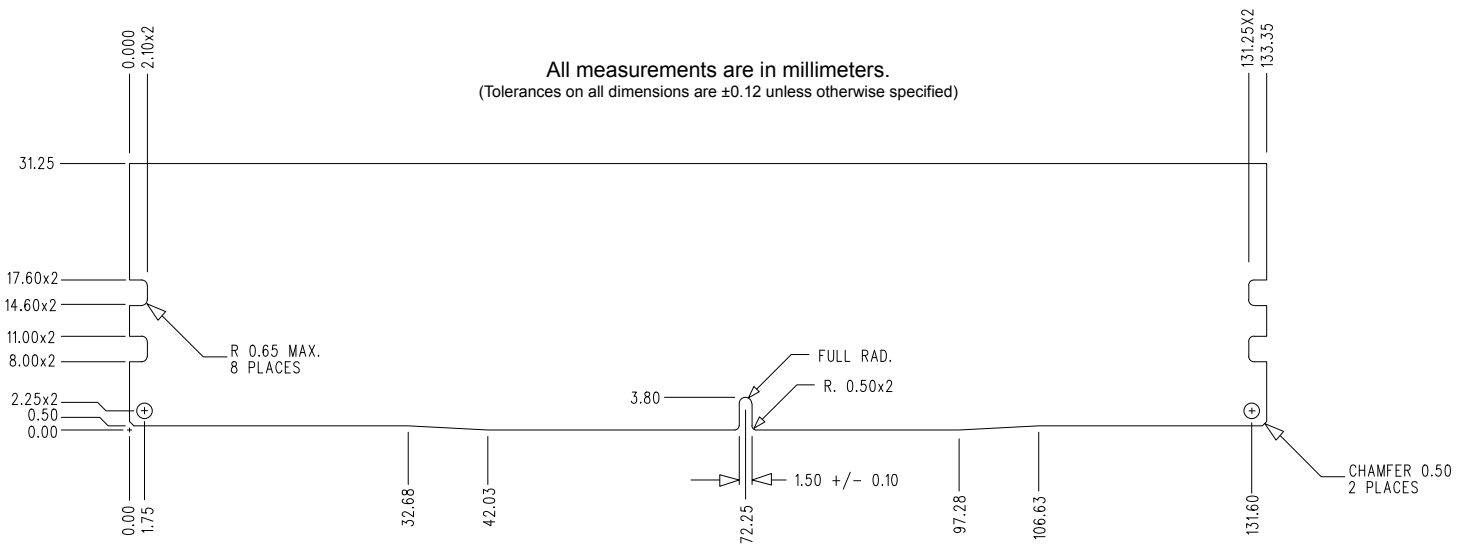
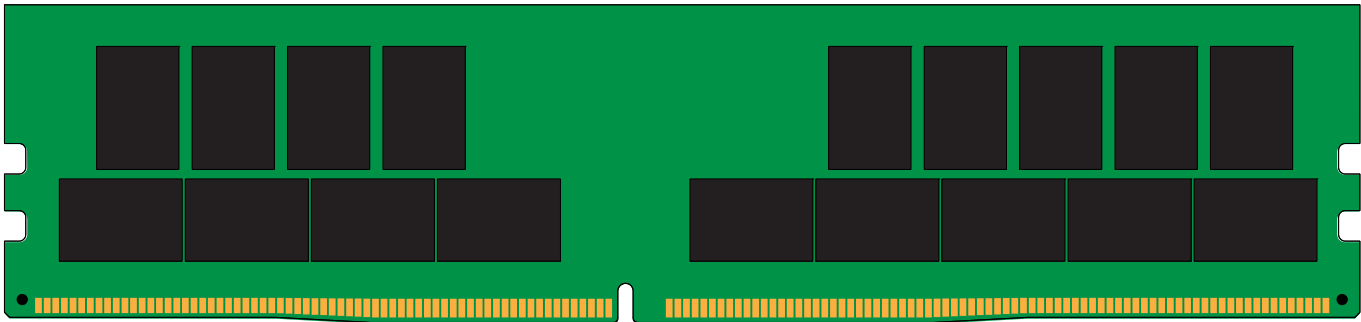
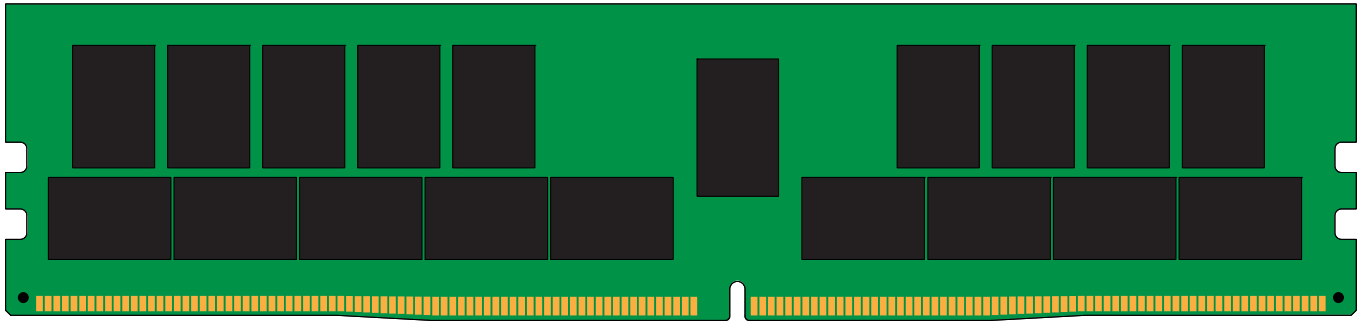
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## IDD Specifications

IDD		unit
Symbol	2933	
IDD0	1493	mA
IDD0A	1493	mA
IDD1	1651	mA
IDD1A	1709	mA
IDD2N	1375	mA
IDD2NA	1376	mA
IDD2NT	1546	mA
IDD2NL	1109	mA
IDD2NG	1368	mA
IDD2ND	1340	mA
IDD2NP	1393	mA
IDD2P	870	mA
IDD2Q	1263	mA
IDD3N	1438	mA
IDD3NA	1438	mA
IDD3P	1005	mA
IDD4R	2529	mA
IDD4RA	2579	mA
IDD4RB	2546	mA
IDD4W	2565	mA
IDD4WA	2635	mA
IDD4WB	2381	mA
IDD4WC	2556	mA
IDD4WP	2892	mA
IDD5B	4424	mA
IDD5F2	3425	mA
IDD5F4	3111	mA
IDD6N	623	mA
IDD6E	882	mA
IDD6R	384	mA
IDD6A	882	mA
IDD7	4243	mA
IDD8	290	mA

IPP		unit
Symbol	2933	
IPP0	112	mA
IPP1	121	mA
IPP2N	84	mA
IPP2P	67	mA
IPP3N	398	mA
IPP3P	384	mA
IPP4R	297	mA
IPP4W	293	mA
IPP5B	1017	mA
IPP5F2	687	mA
IPP5F4	567	mA
IPP6N	146	mA
IPP6E	207	mA
IPP6R	99	mA
IPP6A	204	mA
IPP7	521	mA
IPP8	70	mA

## MODULE DIMENSIONS



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