

# Memory Module Specifications

## KSM32LQ4/128HC

128GB 4Rx4 16G x 72-Bit PC4-3200

CL22 Load Reduced 288-Pin DIMM

### DESCRIPTION

Kingston's KSM32LQ4/128HC is a 16G x 72-bit (128GB) DDR4-3200 CL22 SDRAM (Synchronous DRAM), Load Reduced, 4Rx4, ECC, memory module, based on thirty-six 8G x 4-bit FBGA components. The SPD is programmed to JEDEC standard latency DDR4-3200 timing of 22-22-22 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 = 2.25V to 2.75V
- Functionality and operations comply with the DDR4 SDRAM/3DS 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: PC4-3200, PC4-2933, PC4-2666, PC4-2400, PC4-2133
- 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.
- MBIST PPR is supported

### SPECIFICATIONS

|                                                  |                   |
|--------------------------------------------------|-------------------|
| CL(IDD)                                          | 22 cycles         |
| Row Cycle Time (tRCmin)                          | 45.75ns(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 Specifications (page 2)

### Module Assembly

**DRAM:** Hynix (C-DIE)

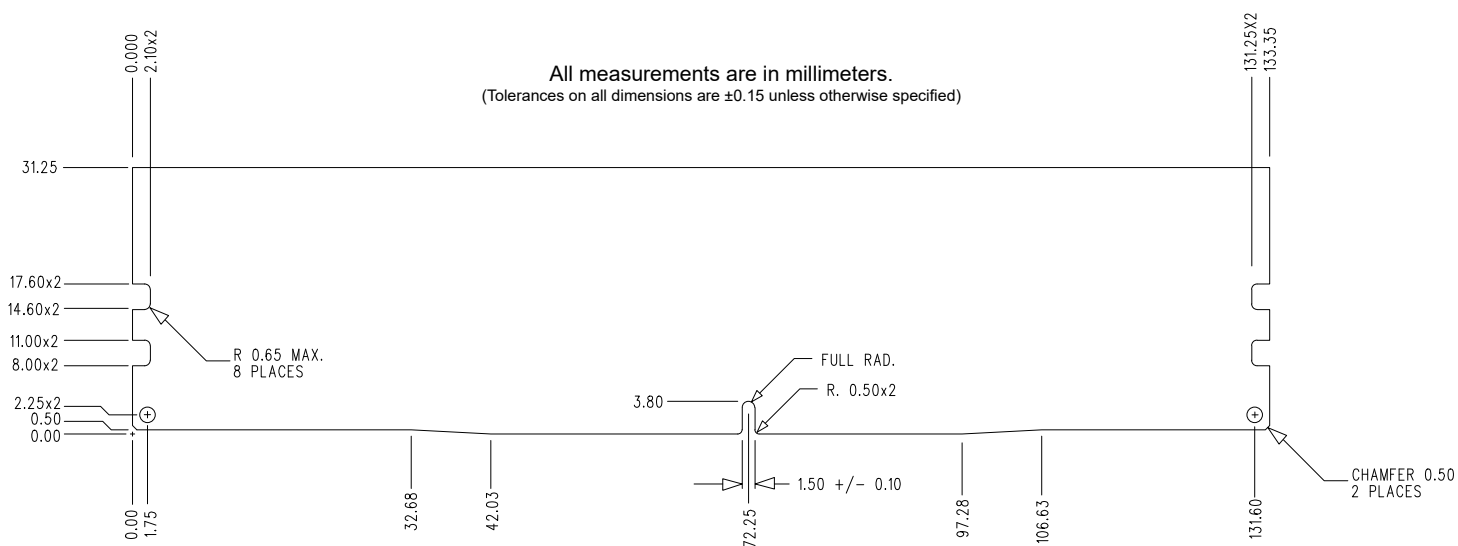
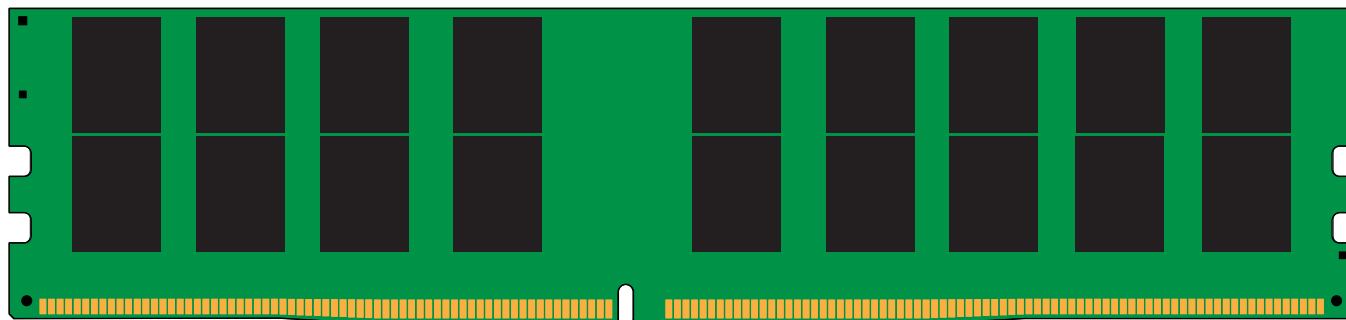
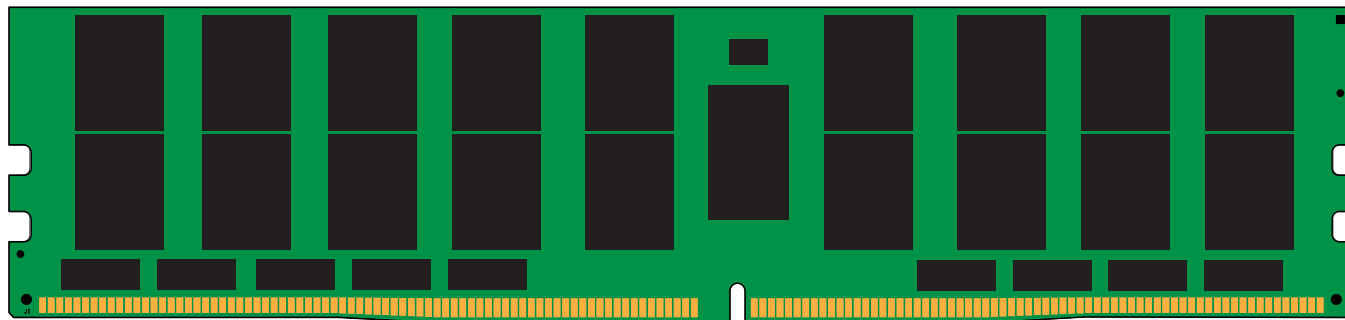
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## IDD Specifications

| IDD    |       | unit |
|--------|-------|------|
| Symbol | 3200  |      |
| IDD0   | 3627  | mA   |
| IDD0A  | 3628  | mA   |
| IDD1   | 3801  | mA   |
| IDD1A  | 3877  | mA   |
| IDD2N  | 3564  | mA   |
| IDD2NA | 3565  | mA   |
| IDD2NT | 3882  | mA   |
| IDD2NL | 2956  | mA   |
| IDD2NG | 3548  | mA   |
| IDD2ND | 3420  | mA   |
| IDD2NP | 3674  | mA   |
| IDD2P  | 2699  | mA   |
| IDD2Q  | 3412  | mA   |
| IDD3N  | 4099  | mA   |
| IDD3NA | 4244  | mA   |
| IDD3P  | 3315  | mA   |
| IDD4R  | 4665  | mA   |
| IDD4RA | 4714  | mA   |
| IDD4RB | 4665  | mA   |
| IDD4W  | 4719  | mA   |
| IDD4WA | 4805  | mA   |
| IDD4WB | 4611  | mA   |
| IDD4WC | 4734  | mA   |
| IDD4WP | 5183  | mA   |
| IDD5B  | 12016 | mA   |
| IDD5F2 | 9207  | mA   |
| IDD5F4 | 8159  | mA   |
| IDD6N  | 2484  | mA   |
| IDD6E  | 4184  | mA   |
| IDD6R  | 1180  | mA   |
| IDD6A  | 4184  | mA   |
| IDD7   | 6237  | mA   |
| IDD8   | 727   | mA   |
| IDD9   | 7892  | mA   |

| IPP    |      | unit |
|--------|------|------|
| Symbol | 3200 |      |
| IPP0   | 122  | mA   |
| IPP1   | 123  | mA   |
| IPP2N  | 95   | mA   |
| IPP2P  | 95   | mA   |
| IPP3N  | 112  | mA   |
| IPP3P  | 112  | mA   |
| IPP4R  | 137  | mA   |
| IPP4W  | 137  | mA   |
| IPP5B  | 1046 | mA   |
| IPP5F2 | 744  | mA   |
| IPP5F4 | 662  | mA   |
| IPP6N  | 290  | mA   |
| IPP6E  | 481  | mA   |
| IPP6R  | 154  | mA   |
| IPP6A  | 428  | mA   |
| IPP7   | 496  | mA   |
| IPP8   | 95   | mA   |
| IPP9   | 635  | mA   |

## MODULE DIMENSIONS



The product images shown are for illustration purposes only and may not be an exact representation of the product.  
Kingston reserves the right to change any information at anytime without notice.

| Revision No.                                                                                                                                                                                                                             | History         | Release Date | Remark | Editor   | Approved |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------|--------|----------|----------|
| A                                                                                                                                                                                                                                        | Initial Release | 03/19/24     |        | David Y. | Henry N. |
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