

# Memory Module Specifications

## KSM29ED8/32HC

32GB 2Rx8 4G x 72-Bit PC4-2933

CL21 288-Pin DIMM

### DESCRIPTION

Kingston's KSM29ED8/32HC is a 4G x 72-bit (32GB) DDR4-2933 CL21 SDRAM (Synchronous DRAM), 2Rx8, ECC, memory module, based on eighteen 2G x 8-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 Typical
- VDDQ = 1.2V Typical
- VPP = 2.5V Typical
- VDDSPD = 2.2V to 3.6V
- Nominal and dynamic on-die termination (ODT) for data, strobe, and mask signals
- Data transfer rates: PC4-2933, PC4-2666, PC4-2400, PC4-2133, PC4-1866, PC4-1600
- Low-power auto self refresh (LPASR)
- Data bus inversion (DBI) for data bus
- On-die VREFDQ generation and calibration
- Dual-rank
- On-board I2 serial presence-detect (SPD) EEPROM
- Temperature sensor with integrated SPD
- 16 internal banks; 4 groups of 4 banks each
- Fixed burst chop (BC) of 4 and burst length (BL) of 8 via the mode register set (MRS)
- Selectable BC4 or BL8 on-the-fly (OTF)
- Fly-by topology
- Terminated control command and address bus
- PCB: Height 1.23" (31.25mm)
- RoHS Compliant and Halogen-Free

### SPECIFICATIONS

CL(IDD)	21 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

<b>DRAM: HYNIX (C-DIE)</b>
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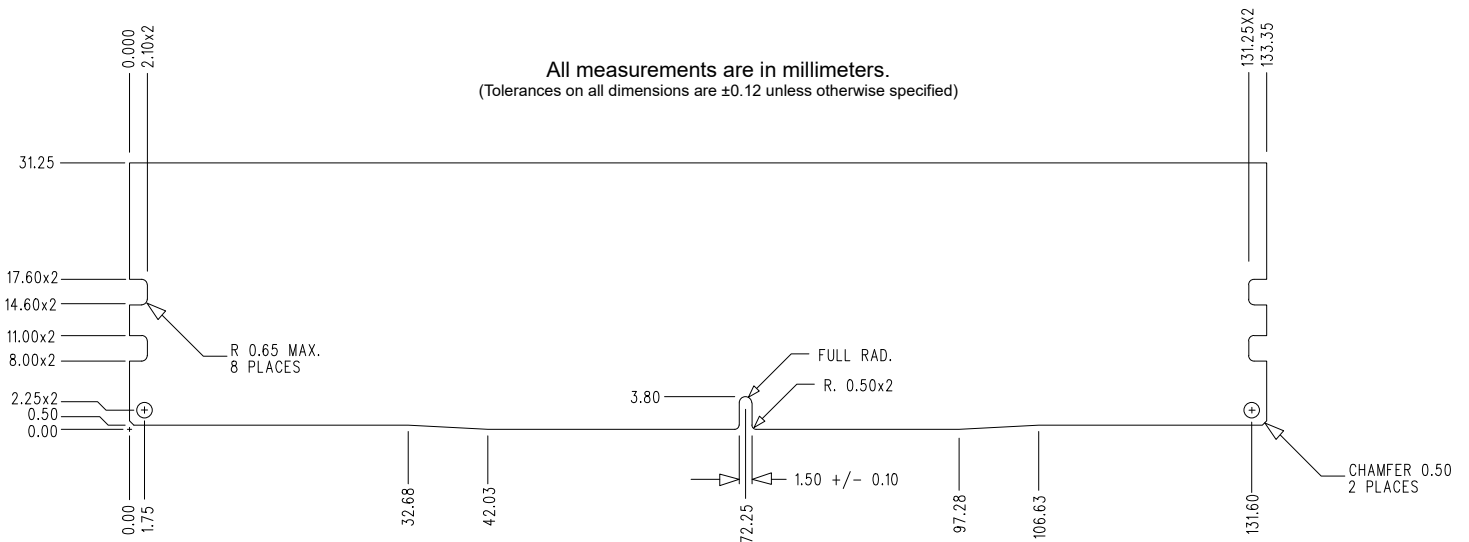
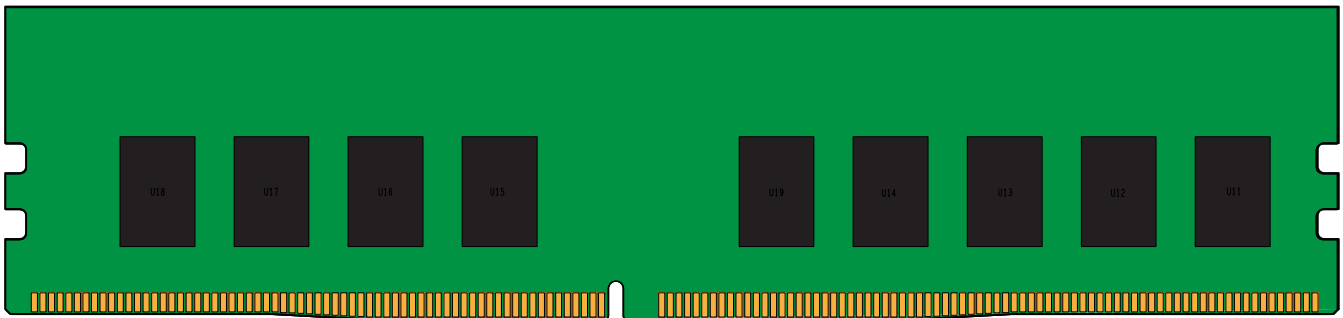
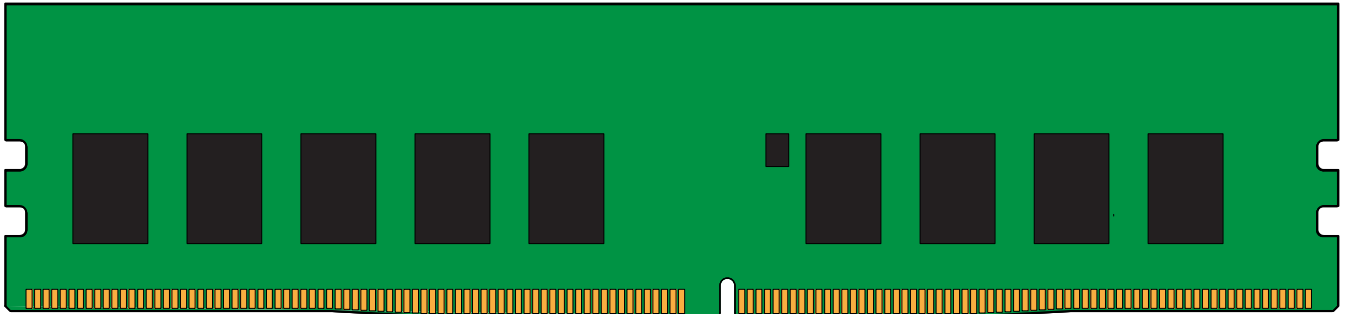
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## IDD Specifications

IDD		unit
Symbol	2933	
IDD0	600	mA
IDD0A	600	mA
IDD1	663	mA
IDD1A	693	mA
IDD2N	511	mA
IDD2NA	511	mA
IDD2NT	578	mA
IDD2NL	356	mA
IDD2NG	510	mA
IDD2ND	466	mA
IDD2NP	522	mA
IDD2P	348	mA
IDD2Q	473	mA
IDD3N	950	mA
IDD3NA	949	mA
IDD3P	808	mA
IDD4R	1331	mA
IDD4RA	1346	mA
IDD4RB	1340	mA
IDD4W	1289	mA
IDD4WA	1325	mA
IDD4WB	1224	mA
IDD4WC	1281	mA
IDD4WP	1447	mA
IDD5B	4995	mA
IDD5F2	3498	mA
IDD5F4	2867	mA
IDD6N	679	mA
IDD6E	1083	mA
IDD6R	290	mA
IDD6A	1151	mA
IDD7	1542	mA
IDD8	179	mA

IPP		unit
Symbol	2933	
IPP0	29	mA
IPP1	33	mA
IPP2N	16	mA
IPP2P	16	mA
IPP3N	19	mA
IPP3P	19	mA
IPP4R	53	mA
IPP4W	53	mA
IPP5B	491	mA
IPP5F2	323	mA
IPP5F4	269	mA
IPP6N	65	mA
IPP6E	115	mA
IPP6R	28	mA
IPP6A	101	mA
IPP7	139	mA
IPP8	16	mA

# MODULE DIMENSIONS



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