

# Memory Module Specifications

## KSM32SES8/16MF

16GB 1Rx8 2G x 72-Bit PC4-3200  
CL22 260-Pin ECC SODIMM

### DESCRIPTION

Kingston's KSM32SES8/16MF is a 2G x 72-bit (16GB) DDR4-3200 CL22 SDRAM (Synchronous DRAM) w/ parity, 1Rx8, ECC, memory module, based on nine 2G x 8-bit FBGA components. The SPD is programmed to JEDEC standard latency DDR4-3200 timing of 22-22-22 at 1.2V. Each 260-pin SODIMM 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 = 2.20V to 3.60V
- 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: PC4-3200, 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
- RoHS Compliant and Halogen-Free

### 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

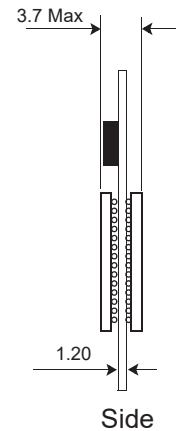
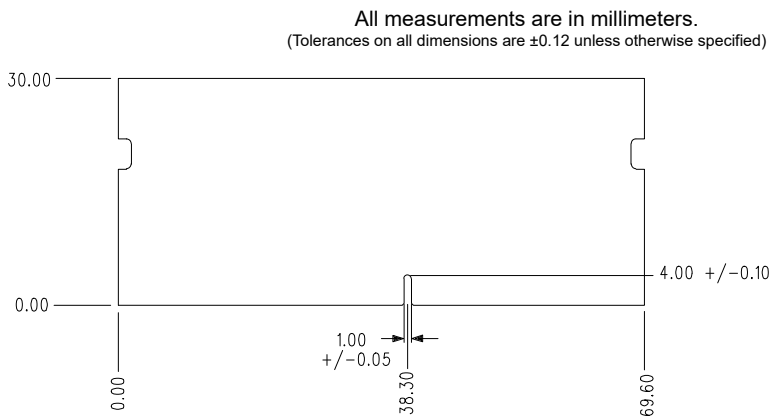
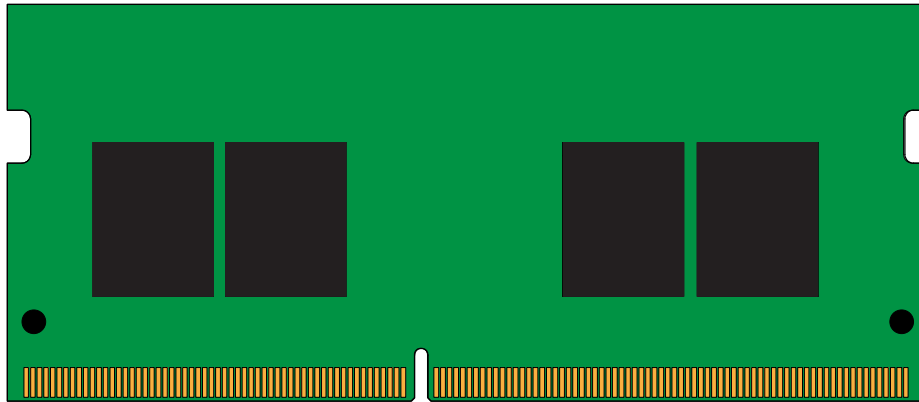
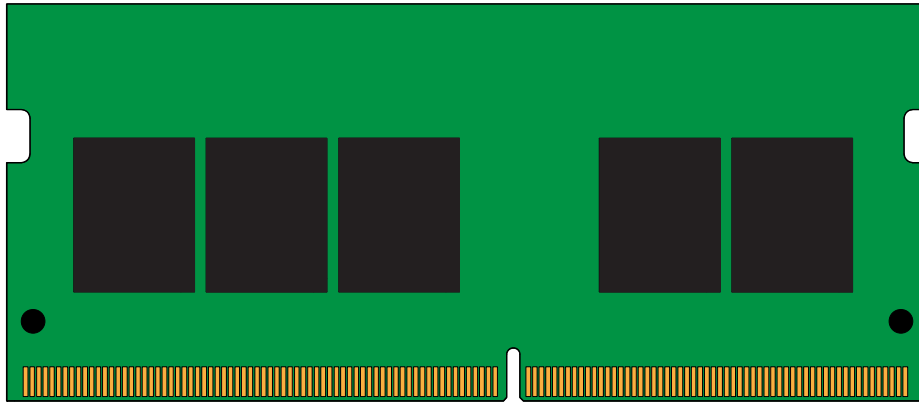
DRAM: MICRON (F-DIE)
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## IDD Specifications

Symbol	3200	Units
I <sub>DD0</sub>	540	mA
I <sub>PP0</sub>	27	mA
I <sub>DD1</sub>	639	mA
I <sub>DD2N</sub>	405	mA
I <sub>DD2NT</sub>	459	mA
I <sub>DD2P</sub>	342	mA
I <sub>DD2Q</sub>	378	mA
I <sub>DD3N</sub>	549	mA
I <sub>PP3N</sub>	18	mA
I <sub>DD3P</sub>	450	mA
I <sub>DD4R</sub>	1260	mA
I <sub>DD4W</sub>	1008	mA
I <sub>DD5R</sub>	612	mA
I <sub>PP5R</sub>	36	mA
I <sub>DD6N</sub>	477	mA
I <sub>DD6E</sub>	810	mA
I <sub>DD6R</sub>	180	mA
I <sub>DD6A (25°C)</sub>	99	mA
I <sub>DD6A (45°C)</sub>	180	mA
I <sub>DD6A (75°C)</sub>	459	mA
I <sub>DD6A (95°C)</sub>	810	mA
I <sub>PP6X</sub>	54	mA
I <sub>DD7</sub>	1503	mA
I <sub>PP7</sub>	72	mA
I <sub>DD8</sub>	324	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.