

**MANUFACTURING DESCRIPTION**

Module Manufacturer:	Corsair
Module Part Number:	CMK16GX4M2B3200C16
Module Series:	Vengeance LPX
DRAM Manufacturer:	Samsung
DRAM Components:	K4A4G085WE-BCPB
DRAM Die Revision / Process Node:	E / 20 nm
Module Manufacturing Date:	Undefined
Module Manufacturing Location:	Taiwan
Module Serial Number:	00000000h
Module PCB Revision:	00h

**PHYSICAL & LOGICAL ATTRIBUTES**

Fundamental Memory Class:	DDR4 SDRAM
Module Speed Grade:	DDR4-2133P downbin
Base Module Type:	UDIMM (133,35 mm)
Module Capacity:	8 GB
Reference Raw Card:	B0 (8 layers)
JEDEC Raw Card Designer:	Micron Technology
Module Nominal Height:	31 < H <= 32 mm
Module Thickness Maximum, Front:	1 < T <= 2 mm
Module Thickness Maximum, Back:	1 < T <= 2 mm
Number of DIMM Ranks:	2
Address Mapping from Edge Connector to DRAM:	Mirrored
DRAM Device Package:	Standard Monolithic
DRAM Device Package Type:	78-ball FBGA
DRAM Device Die Count:	Single die
Signal Loading:	Not specified
Number of Column Addresses:	10 bits
Number of Row Addresses:	15 bits
Number of Bank Addresses:	2 bits (4 banks)
Bank Group Addressing:	2 bits (4 groups)
DRAM Device Width:	8 bits
Programmed DRAM Density:	4 Gb
Calculated DRAM Density:	4 Gb
Number of DRAM components:	16
DRAM Page Size:	1 KB
Primary Memory Bus Width:	64 bits
Memory Bus Width Extension:	0 bits
DRAM Post Package Repair:	Not supported
Soft Post Package Repair:	Not supported

**DRAM TIMING PARAMETERS**

Fine Timebase:	0,001 ns
Medium Timebase:	0,125 ns
CAS Latencies Supported:	9T, 10T, 11T, 12T, 13T, 14T, 15T, 16T
Minimum Clock Cycle Time (tCK min):	0,938 ns (1066,10 MHz)
Maximum Clock Cycle Time (tCK max):	1,500 ns (666,67 MHz)
CAS# Latency Time (tAA min):	13,500 ns
RAS# to CAS# Delay Time (tRCD min):	13,500 ns
Row Precharge Delay Time (tRP min):	13,500 ns
Active to Precharge Delay Time (tRAS min):	33,000 ns
Act to Act/Refresh Delay Time (tRC min):	46,500 ns
Normal Refresh Recovery Delay Time (tRFC1 min):	260,000 ns
2x mode Refresh Recovery Delay Time (tRFC2 min):	160,000 ns
4x mode Refresh Recovery Delay Time (tRFC4 min):	110,000 ns
Short Row Active to Row Active Delay (tRRD_S min):	3,701 ns
Long Row Active to Row Active Delay (tRRD_L min):	5,300 ns

Long CAS to CAS Delay Time (tCCD_L min):	5,356 ns
Four Active Windows Delay (tFAW min):	23,000 ns
Maximum Active Window (tMAW):	8192*tREFI
Maximum Activate Count (MAC):	Unlimited MAC
DRAM VDD 1,20 V operable/endurant:	Yes/Yes

THERMAL PARAMETERS

Module Thermal Sensor:	Not Incorporated
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SPD PROTOCOL

SPD Revision:	1.0
SPD Bytes Total:	512
SPD Bytes Used:	384
SPD Checksum (Bytes 00h-7Dh):	3AC9h (OK)
SPD Checksum (Bytes 80h-FDh):	27DEh (OK)

PART NUMBER DETAILS

JEDEC DIMM Label:	8GB 2Rx8 PC4-2133P-UB0-10
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Frequency	CAS	RCD	RP	RAS	RC	RRDS	RRDL	CCDL	FAW
1067 MHz	16	15	15	36	50	4	6	6	25
1067 MHz	15	15	15	36	50	4	6	6	25
933 MHz	14	13	13	31	44	4	5	5	22
933 MHz	13	13	13	31	44	4	5	5	22
800 MHz	12	11	11	27	38	3	5	5	19
800 MHz	11	11	11	27	38	3	5	5	19
667 MHz	10	9	9	22	31	3	4	4	16
667 MHz	9	9	9	22	31	3	4	4	16

INTEL EXTREME MEMORY PROFILES

Profiles Revision: 2.0  
Profile 1 (Certified) Enables: Yes  
Profile 2 (Extreme) Enables: No  
Profile 1 Channel Config: 1 DIMM/channel

XMP PARAMETER	PROFILE 1	PROFILE 2
Speed Grade:	DDR4-3200	N/A
DRAM Clock Frequency:	1600 MHz	N/A
Module VDD Voltage Level:	1,35 V	N/A
Minimum DRAM Cycle Time (tCK):	0,625 ns	N/A
CAS Latencies Supported:	20T,19T,18T,17T,16T,15T,14T,13T,12T,11T,10T,9T	N/A
CAS Latency Time (tAA):	9,990 ns	N/A
RAS# to CAS# Delay Time (tRCD):	11,240 ns	N/A
Row Precharge Delay Time (tRP):	11,240 ns	N/A
Active to Precharge Delay Time (tRAS):	22,375 ns	N/A
Active to Active/Refresh Delay Time (tRC):	33,740 ns	N/A
Four Activate Window Delay Time (tFAW):	22,000 ns	N/A
Short Activate to Activate Delay Time (tRRD_S):	3,740 ns	N/A
Long Activate to Activate Delay Time (tRRD_L):	5,620 ns	N/A
Normal Refresh Recovery Delay Time (tRFC1):	259,000 ns	N/A
2x mode Refresh Recovery Delay Time (tRFC2):	159,000 ns	N/A
4x mode Refresh Recovery Delay Time (tRFC4):	109,000 ns	N/A

Show delays in clock cycles