

Manufacturing Description

Module Manufacturer:	Crucial Technology
Module Part Number:	BLS8G4D240FSB.16FBD
Module Series:	Ballistix Sport
DRAM Manufacturer:	Micron Technology
DRAM Components:	D9TGG (MT40A512M8RH-083E:B)
Component Design ID:	Z90B
DRAM Die Revision / Process Node:	B / 25 nm
Module Manufacturing Date:	Undefined
Module Manufacturing Location:	Boise, USA (SIG)
Module Serial Number:	526103E7h
Module PCB Revision:	00h

Physical & Logical Attributes

Fundamental Memory Class:	DDR4 SDRAM
Module Speed Grade:	DDR4-2400R
Base Module Type:	UDIMM (133,35 mm)
Module Capacity:	8192 MB
Reference Raw Card:	B0 (8 layers)
Initial 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, 18T, 20T
Minimum Clock Cycle Time (tCK min):	0,833 ns (1200,48 MHz)
Maximum Clock Cycle Time (tCK max):	1,500 ns (666,67 MHz)
CAS# Latency Time (tAA min):	13,321 ns
RAS# to CAS# Delay Time (tRCD min):	13,321 ns
Row Precharge Delay Time (tRP min):	13,321 ns

Active to Precharge Delay Time (tRAS min):	32,000 ns
Act to Act/Refresh Delay Time (tRC min):	45,321 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):	3,300 ns
Long Row Active to Row Active Delay (tRRD_L min):	4,901 ns
Long CAS to CAS Delay Time (tCCD_L min):	4,981 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):	48D3h (OK)
SPD Checksum (Bytes 80h-FDh):	27DEh (OK)

Part number details

JEDEC DIMM Label:	8GB 2Rx8 PC4-2400R-UB0-10
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Frequency	CAS	RCD	PRAS	RC	RRDS	RRDL	CCDL	FAW
1200 MHz	20	16	16	39	55	4	6	28
1200 MHz	18	16	16	39	55	4	6	28
1200 MHz	16	16	16	39	55	4	6	28
1067 MHz	15	15	15	35	49	4	6	25
933 MHz	14	13	13	30	43	4	5	22
933 MHz	13	13	13	30	43	4	5	22
800 MHz	12	11	11	26	37	3	4	19
800 MHz	11	11	11	26	37	3	4	19
667 MHz	10	9	9	22	31	3	4	16
667 MHz	9	9	9	22	31	3	4	16

Intel Extreme Memory Profiles

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

XMP Parameter	Profile 1	Profile 2
Speed Grade:	DDR4-2400	N/A
DRAM Clock Frequency:	1200 MHz	N/A
Module VDD Voltage Level:	1,20 V	N/A
Minimum DRAM Cycle Time (tCK):	0,833 ns	N/A
CAS Latencies Supported:	20T,19T,18T,17T,16T,15T,14T,13T,12T,11T,10T,9T,8T,7T	N/A
CAS Latency Time (tAA):	16T	N/A
RAS# to CAS# Delay Time (tRCD):	16T	N/A
Row Precharge Delay Time (tRP):	16T	N/A

Active to Precharge Delay Time (tRAS):	39T	N/A
Active to Active/Refresh Delay Time (tRC):	55T	N/A
Four Activate Window Delay Time (tFAW):	28T	N/A
Short Activate to Activate Delay Time (tRRD_S):	5T	N/A
Long Activate to Activate Delay Time (tRRD_L):	7T	N/A
Normal Refresh Recovery Delay Time (tRFC1):	313T	N/A
2x mode Refresh Recovery Delay Time (tRFC2):	193T	N/A
4x mode Refresh Recovery Delay Time (tRFC4):	133T	N/A

[Show delays in nanoseconds](#)

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Component Design ID:	Z90B
DRAM Die Revision / Process Node:	B / 25 nm
Module Manufacturing Date:	Week 43, 2016
Module Manufacturing Location:	Xian, China (MXA)
Module Serial Number:	434619C0h
Manufacturing Identification Label:	DPAGX3F002
Module PCB Revision:	00h

Physical & Logical Attributes

Fundamental Memory Class:	DDR4 SDRAM
Module Speed Grade:	DDR4-2400R
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Soft Post Package Repair:	Not supported

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Minimum Clock Cycle Time (tCK min):	0,833 ns (1200,48 MHz)
Maximum Clock Cycle Time (tCK max):	1,600 ns (625,00 MHz)
CAS# Latency Time (tAA min):	13,321 ns
RAS# to CAS# Delay Time (tRCD min):	13,321 ns

Row Precharge Delay Time (tRP min):	13,321 ns
Active to Precharge Delay Time (tRAS min):	32,000 ns
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4x mode Refresh Recovery Delay Time (tRFC4 min):	110,000 ns
Short Row Active to Row Active Delay (tRRD_S min):	3,300 ns
Long Row Active to Row Active Delay (tRRD_L min):	4,901 ns
Write Recovery Time (tWR min):	15,000 ns
Short Write to Read Command Delay (tWTR_S min):	2,500 ns
Long Write to Read Command Delay (tWTR_L min):	7,500 ns
Long CAS to CAS Delay Time (tCCD_L min):	4,981 ns
Four Active Windows Delay (tFAW min):	21,000 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:	1.1
SPD Bytes Total:	512
SPD Bytes Used:	384
SPD Checksum (Bytes 00h-7Dh):	6FF6h (OK)
SPD Checksum (Bytes 80h-FDh):	27DEh (OK)

Part number details

JEDEC DIMM Label:	8GB 2Rx8 PC4-2400R-UB0-11
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Frequency	CAS	RCD	RP	RAS	RC	RRDS	RRDL	WR	WTRS	WTRL	FAW
1200 MHz	20	16	16	39	55	4	6	18	3	9	26
1200 MHz	18	16	16	39	55	4	6	18	3	9	26
1200 MHz	16	16	16	39	55	4	6	18	3	9	26
1067 MHz	15	15	15	35	49	4	6	16	3	8	23
933 MHz	14	13	13	30	43	4	5	14	3	7	20
933 MHz	13	13	13	30	43	4	5	14	3	7	20
800 MHz	12	11	11	26	37	3	4	12	2	6	17
800 MHz	11	11	11	26	37	3	4	12	2	6	17
667 MHz	10	9	9	22	31	3	4	10	2	5	14
667 MHz	9	9	9	22	31	3	4	10	2	5	14

Intel Extreme Memory Profiles

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

XMP Parameter	Profile 1	Profile 2
Speed Grade:	DDR4-2400	N/A
DRAM Clock Frequency:	1200 MHz	N/A
Module VDD Voltage Level:	1,20 V	N/A
Minimum DRAM Cycle Time (tCK):	0,833 ns	N/A
CAS Latencies Supported:	20T,19T,18T,17T, 16T,15T,14T,13T, 12T,11T,10T,9T,	N/A

	8T,7T	
CAS Latency Time (tAA):	16T	N/A
RAS# to CAS# Delay Time (tRCD):	16T	N/A
Row Precharge Delay Time (tRP):	16T	N/A
Active to Precharge Delay Time (tRAS):	39T	N/A
Active to Active/Refresh Delay Time (tRC):	55T	N/A
Four Activate Window Delay Time (tFAW):	26T	N/A
Short Activate to Activate Delay Time (tRRD_S):	4T	N/A
Long Activate to Activate Delay Time (tRRD_L):	6T	N/A
Normal Refresh Recovery Delay Time (tRFC1):	313T	N/A
2x mode Refresh Recovery Delay Time (tRFC2):	193T	N/A
4x mode Refresh Recovery Delay Time (tRFC4):	133T	N/A

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