

## X99 Series Memory Qualified Vendors List (QVL)

### X99 Series Motherboard U-DIMM Qualified Vendors Lists (QVL)

#### DDR4 3333 U-DIMM Qualified Vendors List (QVL)

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)		
								2 DIMM	4 DIMM	8 DIMM
<b>G.SKILL</b>	F4-3333C16Q-16GRK	16GB(4GB*4)	SS	SK hynix	H5AN4G8NMFR	16-16-16-36	1.35V	●	●	
<b>A_DATA</b>	AX4U3333W4G16	16GB(4GB*4)	SS	SK hynix		16-16-16-36	1.35V	●	●	

#### DDR4 3300 U-DIMM Qualified Vendors List (QVL)

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)		
								2 DIMM	4 DIMM	8 DIMM
<b>G.SKILL</b>	F4-3300C16Q-16GRK	16GB(4GB*4)	SS	SK hynix	H5AN4G8NMFR	16-16-16-36	1.35V	●	●	

#### DDR4 3200 U-DIMM Qualified Vendors List (QVL)

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)		
								2 DIMM	4 DIMM	8 DIMM
<b>G.SKILL</b>	F4-3200C16Q-16GRR	16GB(4GB*4)	SS	SK hynix	H5AN4G8NMFR	16-16-16-36	1.35V	●	●	
<b>G.SKILL</b>	F4-3200C16Q-16GRB	16GB(4GB*4)	SS	SK hynix	H5AN4G8NMFR	16-16-16-36	1.35V	●	●	
<b>G.SKILL</b>	F4-3200C16Q-16GRRK	16GB(4GB*4)	SS	SK hynix	H5AN4G8NMFR	16-16-16-36	1.35V	●	●	
<b>AVEXIR</b>	AVD4U32001604G-4BZ1	16GB(4GB*4)	SS	SK hynix	H5AN4G8NMFR	16-18-18-36	1.35V	●	●	
<b>AVEXIR</b>	AVD4U32001604G-4CIR	16GB(4GB*4)	SS			16-18-18-36	1.35V	●	●	
<b>CORSAIR</b>	CMD16GX4M4A3200C16	16GB(4GB*4)	SS			16-18-18-36	1.35V	●	●	
<b>GEIL</b>	GPR416GB3200C15QC	16GB(4GB*4)	SS			15-15-15-35	1.35V	●	●	
<b>GEIL</b>	GPR416GB3200C15QC	16GB(4GB*4)	SS	SK hynix	H5AN4G8NMFR	15-15-15-35	1.35V	●	●	

#### DDR4 3000 U-DIMM Qualified Vendors List (QVL)

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)		
								2 DIMM	4 DIMM	8 DIMM
<b>G.SKILL</b>	F4-3000C15Q-32GRR	32GB(8GB*4)	DS	SK hynix	H5AN4G8NMFR	15-15-15-35	1.35V	●	●	
<b>G.SKILL</b>	F4-3000C15Q-32GRB	32GB(8GB*4)	DS	SK hynix	H5AN4G8NMFR	15-15-15-35	1.35V	●	●	
<b>G.SKILL</b>	F4-3000C15Q-32GRK	32GB(8GB*4)	DS	SK hynix	H5AN4G8NMFR	15-15-15-35	1.35V	●	●	
<b>G.SKILL</b>	F4-3000C16Q-32GRR	32GB(8GB*4)	DS	SK hynix	H5AN4G8NMFR	16-16-16-36	1.35V	●	●	
<b>G.SKILL</b>	F4-3000C16Q-32GRB	32GB(8GB*4)	DS	SK hynix	H5AN4G8NMFR	16-16-16-36	1.35V	●	●	
<b>G.SKILL</b>	F4-3000C16Q-32GRK	32GB(8GB*4)	DS	SK hynix	H5AN4G8NMFR	16-16-16-36	1.35V	●	●	
<b>G.SKILL</b>	F4-3000C15Q-16GRR	16GB(4GB*4)	SS	SK hynix	H5AN4G8NMFR	15-15-15-35	1.35V	●	●	
<b>G.SKILL</b>	F4-3000C15Q-16GRB	16GB(4GB*4)	SS	SK hynix	H5AN4G8NMFR	15-15-15-35	1.35V	●	●	
<b>G.SKILL</b>	F4-3000C15Q-16GRK	16GB(4GB*4)	SS	SK hynix	H5AN4G8NMFR	15-15-15-35	1.35V	●	●	
<b>G.SKILL</b>	F4-3000C15Q2-32GRK	32GB(4GB*8)	SS	SK hynix	H5AN4G8NMFR	15-15-15-35	1.35V	●	●	●
<b>AVEXIR</b>	AVD4U30001604G-4CI	16GB(4GB*4)	SS	SK hynix	H5AN4G8NMFR	16-18-18-36	1.35V	●	●	
<b>AVEXIR</b>	AVD4U30001504G-4BZ1	16GB(4GB*4)	SS	SK hynix	H5AN4G8NMFR	15-15-15-35	1.35V	●	●	
<b>AVEXIR</b>	AVD4U30001608G-4CI	32GB(8GB*4)	DS	SK hynix	H5AN4G8NMFR	16-18-18-36	1.35V	●	●	
<b>Kingston</b>	HX430C15PB2K4/16	16GB(4GB*4)	SS			15-16-16-39	1.35V	●	●	
<b>CORSAIR</b>	CMD16GX4M4B3000C15	16GB(4GB*4)	SS	Samsung	K4A4G085WD	15-17-17-35	1.35V	●	●	

CORSAIR	CMK16GX4M4B3000C15	16GB(4GB*4)	SS	Samsung	K4A4G085WD	15-17-17-35	1.35V	●	●
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#### DDR4 2800 U-DIMM Qualified Vendors List (QVL)

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Option)		
								2 DIMM	4 DIMM	8 DIMM
A_DATA	AX4U2800W8G17-DRZ	8GB	DS	SK hynix	H5AN4G8NMFR	17-18-18-36	1.2V	●	●	
A_DATA	AX4U2800W4G17	16GB(4GB*4)	SS	SK hynix	H5AN4G8NMFR	17-17-17-36	1.2V	●	●	
A_DATA	AX4U2800W4G17	32GB(4GB*8)	SS	SK hynix	H5AN4G8NMFR	17-17-17-36	1.2V	●	●	●
A_DATA	AX4U2800W8G17	32GB(8GB*4)	DS	SK hynix	H5AN4G8NMFR	17-17-17-36	1.2V	●	●	
AVEXIR	AVD4U28001604G-4CI	16GB(4GB*4)	SS	SK hynix	H5AN4G8NMFR	16-16-16-36	1.2V	●	●	
AVEXIR	AVD4U28001504G-4BZ1	16GB(4GB*4)	SS	SK hynix	H5AN4G8NMFR	15-15-15-35	1.35V	●	●	
AVEXIR	AVD4U28001608G-4CI	32GB(8GB*4)	DS	SK hynix	H5AN4G8NMFR	16-16-16-36	1.2V	●	●	
AVEXIR	AVD4U28001508G-4BZ1	32GB(8GB*4)	DS	SK hynix	H5AN4G8NMFR	15-15-15-35	1.35V	●	●	
Apacer	78.B1GM8.AF20B	4GB	SS	-	-	17-17-17-36	1.2V	●	●	
Apacer	78.C1GM8.AF30B	8GB	DS	-	-	17-17-17-36	1.2V	●	●	
CORSAIR	CMD16GX4M4A2800C16	16GB(4GB*4)	SS	-	-	16-18-18-36	1.2V	●	●	
CORSAIR	CMD32GX4M4A2800C16	32GB(8GB*4)	DS	-	-	16-18-18-36	1.2V	●	●	
CORSAIR	CMD64GX4M8A2800C16	64GB(8GB*8)	DS	-	-	16-18-18-36	1.2V	●	●	●
CORSAIR	CMD16GX4M4A2800C15	16GB(4GB*4)	SS	-	-	15-17-17-36	1.2V	●	●	
CORSAIR	CMD32GX4M4A2800C15	32GB(8GB*4)	DS	-	-	15-17-17-36	1.2V	●	●	
CORSAIR	CMK16GX4M4A2800C16	16GB(4GB*4)	SS	-	-	16-18-18-36	1.2V	●	●	
CORSAIR	CMK32GX4M4A2800C16	32GB(8GB*4)	DS	-	-	16-18-18-36	1.2V	●	●	
CORSAIR	CMK64GX4M8A2800C16	64GB(8GB*8)	DS	-	-	16-18-18-36	1.2V	●	●	●
CORSAIR	CMK16GX4M4A2800C15R	16GB(4GB*4)	SS	-	-	15-17-17-36	1.2V	●	●	
CORSAIR	CMK32GX4M4A2800C15R	32GB(8GB*4)	DS	-	-	15-17-17-36	1.2V	●	●	
CORSAIR	CMK16GX4M4A2800C16	16GB(4GB*4)	SS	Samsung	K4A4G085WD	16-18-18-36	1.2V	●	●	
G.SKILL	F4-2800C16Q-16GRR	16GB(4GB*4)	SS	-	-	16-16-16-36	1.2V	●	●	
G.SKILL	F4-2800C16Q-16GRB	16GB(4GB*4)	SS	-	-	16-16-16-36	1.2V	●	●	
G.SKILL	F4-2800C16Q-16GRK	16GB(4GB*4)	SS	-	-	16-16-16-36	1.2V	●	●	
G.SKILL	F4-2800C16Q-32GRR	32GB(8GB*4)	DS	-	-	16-16-16-36	1.2V	●	●	
G.SKILL	F4-2800C16Q-32GRB	32GB(8GB*4)	DS	-	-	16-16-16-36	1.2V	●	●	
G.SKILL	F4-2800C16Q-32GRK	32GB(8GB*4)	DS	-	-	16-16-16-36	1.2V	●	●	
Kingston	HX428C14PB2K4/16	16GB(4GB*4)	SS	-	-	14-15-15-40	1.35V	●	●	

#### DDR4 2666 U-DIMM Qualified Vendors List (QVL)

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Option)		
								2 DIMM	4 DIMM	8 DIMM
CORSAIR	CMD16GX4M4A2666C14	16GB(4GB*4)	SS	-	-	14-16-16-35	1.2V	●	●	
CORSAIR	CMD32GX4M4A2666C14	32GB(8GB*4)	DS	-	-	14-16-16-35	1.2V	●	●	
CORSAIR	CMK16GX4M4A2666C15	16GB(4GB*4)	SS	-	-	15-17-17-35	1.2V	●	●	
CORSAIR	CMK32GX4M4A2666C15	32GB(8GB*4)	DS	-	-	15-17-17-35	1.2V	●	●	
CORSAIR	CMK16GX4M4A2666C14R	16GB(4GB*4)	SS	-	-	14-16-16-35	1.2V	●	●	
CORSAIR	CMK32GX4M4A2666C14R	32GB(8GB*4)	DS	-	-	14-16-16-35	1.2V	●	●	

<b>CORSAIR</b>	CMK16GX4M4A2666C16(Ver5.29)	16GB ( 4x 4GB )	SS	-	-	16-18-18-35	1.2V	●	●
<b>CORSAIR</b>	CMD16GX4M4A2666C16(Ver5.29)	16GB ( 4x 4GB )	SS	-	-	16-18-18-35	1.2V	●	●
<b>CORSAIR</b>	CMK32GX4M4A2666C16(Ver5.29)	32GB(8GB*4)	DS	-	-	16-18-18-35	1.2V	●	●
<b>CORSAIR</b>	CMD32GX4M4A2666C16(Ver4.23)	32GB(8GB*4)	DS	-	-	16-18-18-35	1.2V	●	●
<b>CORSAIR</b>	CMK32GX4M4A2666C15(Ver5.29)	32GB(8GB*4)	DS	-	-	15-17-17-35	1.2V	●	●
<b>CORSAIR</b>	CMK32GX4M4A2666C16R	32GB (4x 8GB)	DS	-	-	16-18-18-35	1.2V	●	●
<b>AVEXIR</b>	AVD4U26661704G-4M	16GB(4GB*4)	SS	SK hynix	H5AN4G8NMFR	16-16-16-36	1.2V	●	●
<b>AVEXIR</b>	AVD4U26661504G-4CI	16GB(4GB*4)	SS	SK hynix	H5AN4G8NMFR	15-15-15-35	1.2V	●	●
<b>AVEXIR</b>	AVD4U26661708G-4M	32GB(8GB*4)	DS	SK hynix	H5AN4G8NMFR	16-16-16-36	1.2V	●	●
<b>AVEXIR</b>	AVD4U26661508G-4CI	32GB(8GB*4)	DS	SK hynix	H5AN4G8NMFR	15-15-15-35	1.2V	●	●
<b>Apacer</b>	78.B1GM7.AF20B	4GB	SS	-	-	16-16-16-36	1.2V	●	●
<b>Apacer</b>	78.C1GM7.AF30B	8GB	DS	-	-	16-16-16-36	1.2V	●	●
<b>Kingston</b>	HX426C13PB2K4/16	16GB(4GB*4)	SS	-	-	13-14-14-39	1.35V	●	●
<b>G.SKILL</b>	F4-2666C15Q-16GRR	16GB(4GB*4)	SS	-	-	15-15-15-35	1.2V	●	●
<b>G.SKILL</b>	F4-2666C15Q-16GRB	16GB(4GB*4)	SS	-	-	15-15-15-35	1.2V	●	●
<b>G.SKILL</b>	F4-2666C15Q-16GRK	16GB(4GB*4)	SS	-	-	15-15-15-35	1.2V	●	●
<b>G.SKILL</b>	F4-2666C15Q-32GRR	32GB(8GB*4)	DS	-	-	15-15-15-35	1.2V	●	●
<b>G.SKILL</b>	F4-2666C15Q-32GRB	32GB(8GB*4)	DS	-	-	15-15-15-35	1.2V	●	●
<b>G.SKILL</b>	F4-2666C15Q-32GRK	32GB(8GB*4)	DS	-	-	15-15-15-35	1.2V	●	●
<b>ISDT</b>	IMA41GU6MFR8N-CF0	8GB	DS	-	-	15-15-15-35	1.2V	●	●
<b>ISDT</b>	IMA451U6MFR8N-CF0	4GB	SS	-	-	15-15-15-35	1.2V	●	●

#### DDR4 2400 U-DIMM Qualified Vendors List (QVL)

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Option)		
								2 DIMM	4 DIMM	8 DIMM
<b>A DATA</b>	AX4U2400W8G16-DRZ	8GB	SS	SK hynix	H5AN4G8NMFR	16-16-16-39	1.2V	●	●	
<b>AVEXIR</b>	AVD4U24001604G-4M	16GB(4GB*4)	SS	SK hynix	H5AN4G8NMFR	16-16-16-36	1.2V	●	●	●
<b>AVEXIR</b>	AVD4U24001504G-4CI	16GB(4GB*4)	SS	SK hynix	H5AN4G8NMFR	15-15-15-35	1.2V	●	●	●
<b>AVEXIR</b>	AVD4U24001608G-4M	32GB(8GB*4)	DS	SK hynix	H5AN4G8NMFR	16-16-16-36	1.2V	●	●	
<b>AVEXIR</b>	AVD4U24001508G-4CI	32GB(8GB*4)	DS	SK hynix	H5AN4G8NMFR	15-15-15-35	1.2V	●	●	
<b>Apacer</b>	78.B1GM6.AF20B	4GB	SS	-	-	16-16-16-36	1.2V	●	●	●
<b>Apacer</b>	78.C1GM6.AF30B	8GB	DS	-	-	16-16-16-36	1.2V	●	●	
<b>CORSAIR</b>	CMD16GX4M4A2400C14	16GB(4GB*4)	SS	-	-	14-16-16-31	1.2V	●	●	
<b>CORSAIR</b>	CMD32GX4M4A2400C14	32GB(8GB*4)	DS	-	-	14-16-16-31	1.2V	●	●	
<b>CORSAIR</b>	CMD64GX4M8A2400C14	64GB(8GB*8)	DS	-	-	14-16-16-31	1.2V	●	●	●
<b>CORSAIR</b>	CMD16GX4M4A2400C13	16GB(4GB*4)	SS	-	-	13-15-15-31	1.2V	●	●	
<b>CORSAIR</b>	CMD32GX4M4A2400C13	32GB(8GB*4)	DS	-	-	13-15-15-31	1.2V	●	●	
<b>CORSAIR</b>	CMK16GX4M4A2400C14B	16GB(4GB*4)	SS	-	-	14-16-16-31	1.2V	●	●	
<b>CORSAIR</b>	CMK16GX4M4A2400C14R	16GB(4GB*4)	SS	-	-	14-16-16-31	1.2V	●	●	
<b>CORSAIR</b>	CMK16GX4M4A2400C14	16GB(4GB*4)	SS	-	-	14-16-16-31	1.2V	●	●	
<b>CORSAIR</b>	CMK32GX4M4A2400C14	32GB(8GB*4)	DS	-	-	14-16-16-31	1.2V	●	●	
<b>CORSAIR</b>	CMK64GX4M8A2400C14	64GB(8GB*8)	DS	-	-	14-16-16-31	1.2V	●	●	●
<b>CORSAIR</b>	CMK16GX4M4A2400C13R	16GB(4GB*4)	SS	-	-	13-15-15-31	1.2V	●	●	

CORSAIR	CMK32GX4M4A2400C13R	32GB(8GB*4)	DS	-	-	13-15-15-31	1.2V	●	●	
G.SKILL	F4-2400C15Q-32GRR	32GB(8GB*4)	DS	-	-	15-15-15-35	1.2V	●	●	
G.SKILL	F4-2400C15Q-32GRB	32GB(8GB*4)	DS	-	-	15-15-15-35	1.2V	●	●	
G.SKILL	F4-2400C15Q-32GRK	32GB(8GB*4)	DS	-	-	15-15-15-35	1.2V	●	●	
G.SKILL	F4-2400C15Q-16GRR	16GB(4GB*4)	SS	-	-	15-15-15-35	1.2V	●	●	
G.SKILL	F4-2400C15Q-16GRB	16GB(4GB*4)	SS	-	-	15-15-15-35	1.2V	●	●	
G.SKILL	F4-2400C15Q-16GRK	16GB(4GB*4)	SS	-	-	15-15-15-35	1.2V	●	●	
G.SKILL	F4-2400C15Q-32GNT	32GB(8GB*4)	DS	-	-	15-15-15-35	1.2V	●	●	
G.SKILL	F4-2400C15Q-16GNT	16GB(4GB*4)	SS	-	-	15-15-15-35	1.2V	●	●	
Crucial	BLS4G4D240FSA.8FAD	4GB	SS	-	-	16-16-16-40	1.2V	●	●	●
Crucial	BLS8G4D240FSA.16FAD	8GB	DS	-	-	16-16-16-40	1.2V	●	●	●
Crucial	BLS4G4D240FSA.8FAR	4GB	SS	-	-	16-16-16-40	1.2V	●	●	●
Crucial	BLS8G4D240FSA.16FAR	8GB	DS	-	-	16-16-16-40	1.2V	●	●	●
Kingston	HX424C12PB2K4/16	16GB(4GB*4)	SS	-	-	12-13-13-35	1.35V	●	●	●
Team	TED44GM2400C16BK	4GB	SS	Samsung	K4A4G085WD	16-16-16-39	1.2V	●	●	●
Team	TED48GM2400C16BK	8GB	DS	Samsung	K4A4G085WD	16-16-16-39	1.2V	●	●	●
panram	PUD42400C154GNJK	4GB	SS	-	-	15-15-15-36	1.2V	●	●	●
panram	PUD42400C158GNJK	8GB	DS	-	-	15-15-15-36	1.2V	●	●	●
panram	PUD42400C154G2NJK	8GB(4GB*2)	SS	-	-	15-15-15-36	1.2V	●	●	●
panram	PUD42400C158G2NJK	16GB(8GB*2)	DS	-	-	15-15-15-36	1.2V	●	●	●

#### DDR4 2133 U-DIMM Qualified Vendors List (QVL)

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Option)		
								2 DIMM	4 DIMM	8 DIMM
Micron	MTA8ATF51264AZ-2G1A1	4GB	SS	Micron	D9RGQ	15-15-15-37	1.2V	●	●	●
Micron	MTA16ATF1G64AZ-2G1A1	8GB	DS	Micron	D9RGQ	15-15-15-37	1.2V	●	●	●
Crucial	CT4G4DFS8213.8FA1	4GB	SS	Micron	D9RGQ	15-15-15-37	1.2V	●	●	●
Crucial	CT8G4DFD8213.16FA1	8GB	DS	Micron	D9RGQ	15-15-15-37	1.2V	●	●	●
Samsung	M378A5143DB0-CPB	4GB	SS	Samsung	K4A4G085WD	15-15-15-36	1.2V	●	●	●
Samsung	M378A1G43DB0-CPB	8GB	DS	Samsung	K4A4G085WD	15-15-15-36	1.2V	●	●	●
SK hynix	HMA451U6MFR8N-TF	4GB	SS	SK hynix	H5AN4G8NMFRTFC	15-15-15-37	1.2V	●	●	●
SK hynix	HMA41GU6MFR8N-TF	8GB	DS	SK hynix	H5AN4G8NMFRTFC	15-15-15-37	1.2V	●	●	●
A_DATA	AX4U2133W4G13-DRZ	4GB	SS	SK hynix	H5AN4G8NMFR	13-13-13-36	1.2V	●	●	●
A_DATA	AX4U2133W8G13-DRZ	8GB	DS	SK hynix	H5AN4G8NMFR	13-13-13-36	1.2V	●	●	●
A_DATA	AX4U2133W4G15-DRZ	4GB	SS	SK hynix	H5AN4G8NMFR	15-15-15-37	1.2V	●	●	●
A_DATA	AX4U2133W8G15-DRZ	8GB	DS	SK hynix	H5AN4G8NMFR	15-15-15-37	1.2V	●	●	●
A_DATA	AD4U2133W4G15-B	4GB	SS	SK hynix	H5AN4G8NMFRTFC	15-15-15-36	1.2V	●	●	●
AVEXIR	AVD4U21331504G-4M	16GB(4GB*4)	SS	SK hynix	H5AN4G8NMFR	15-15-15-35	1.2V	●	●	●
AVEXIR	AVD4U21331508G-4M	32GB(8GB*4)	DS	SK hynix	H5AN4G8NMFR	15-15-15-35	1.2V	●	●	●
Apacer	78.B1GM3.AF00B	4GB	SS	SK hynix	H5AN4G8NMFRTFC	15-15-15-36	1.2V	●	●	●
Apacer	78.C1GM3.AF10B	8GB	DS	SK hynix	H5AN4G8NMFRTFC	15-15-15-36	1.2V	●	●	●
CORSAIR	CMK8GX4M2A2133C15	8GB(4GB*2)	SS	-	-	15-15-15-36	1.2V	●	●	●
CORSAIR	CMK16GX4M2A2133C15	16GB(8GB*2)	DS	-	-	15-15-15-36	1.2V	●	●	●

CORSAIR	CMK8GX4M2A2133C15R	8GB(4GB*2)	SS	-	-	15-15-15-36	1.2V	●	●	
CORSAIR	CMK16GX4M4A2133C13B	16GB(4GB*4)	SS	-	-	13-15-15-28	1.2V	●	●	
CORSAIR	CMK16GX4M4A2133C13R	16GB(4GB*4)	SS	-	-	13-15-15-28	1.2V	●	●	
CORSAIR	CMK16GX4M4A2133C13	16GB(4GB*4)	SS	-	-	13-15-15-28	1.2V	●	●	
CORSAIR	CMK32GX4M4A2133C13	32GB(8GB*4)	DS	-	-	13-15-15-28	1.2V	●	●	
CORSAIR	CMK64GX4M8A2133C13	64GB(8GB*8)	DS	-	-	13-15-15-28	1.2V	●	●	●
CORSAIR	CMK16GX4M4A2133C12R	16GB(4GB*4)	SS	-	-	12-14-14-27	1.2V	●	●	
CORSAIR	CMK32GX4M4A2133C12R	32GB(8GB*4)	DS	-	-	12-14-14-27	1.2V	●	●	
CORSAIR	CMD16GX4M4A2133C12	16GB(4GB*4)	SS	-	-	12-14-14-27	1.2V	●	●	
CORSAIR	CMD32GX4M4A2133C12	32GB(8GB*4)	DS	-	-	12-14-14-27	1.2V	●	●	
G.SKILL	F4-2133C15Q-16GRR	16GB(4GB*4)	SS	-	-	15-15-15-35	1.2V	●	●	
G.SKILL	F4-2133C15Q-16GRB	16GB(4GB*4)	SS	-	-	15-15-15-35	1.2V	●	●	
G.SKILL	F4-2133C15Q-16GRK	16GB(4GB*4)	SS	-	-	15-15-15-35	1.2V	●	●	
G.SKILL	F4-2133C15Q-32GRR	32GB(8GB*4)	DS	-	-	15-15-15-35	1.2V	●	●	
G.SKILL	F4-2133C15Q-32GRB	32GB(8GB*4)	DS	-	-	15-15-15-35	1.2V	●	●	
G.SKILL	F4-2133C15Q-32GRK	32GB(8GB*4)	DS	-	-	15-15-15-35	1.2V	●	●	
G.SKILL	F4-2133C15Q2-64GRR	64GB(8GB*8)	DS	-	-	15-15-15-35	1.2V	●	●	●
G.SKILL	F4-2133C15Q-16GNT	16GB(4GB*4)	SS	-	-	15-15-15-35	1.2V	●	●	
G.SKILL	F4-2133C15Q-32GNT	32GB(8GB*4)	DS	-	-	15-15-15-35	1.2V	●	●	
Kingston	HX421C13PBK4/16	16GB(4GB*4)	DS	-	-	13-13-13-36	1.2V	●	●	
panram	PUD42133C154GNJK	4GB	SS	-	-	15-15-15-36	1.2V	●	●	
panram	PUD42133C158GNJK	8GB	DS	-	-	15-15-15-36	1.2V	●	●	
panram	PUD42133C154G2NJK	8GB(4GB*2)	SS	-	-	15-15-15-36	1.2V	●	●	
panram	PUD42133C158G2NJK	16GB(8GB*2)	DS	-	-	15-15-15-36	1.2V	●	●	
SUPER TALENT	FBU2B008GM	8GB	DS	-	-	15-15-15-36	1.2V	●	●	●
SanMax	SMD-4G28HP-21P	4GB	SS	SK hynix	H5AN4G8NMFRTFC	15-15-15-36	1.2V	●	●	●
SanMax	SMD-4G28HP-21P	8GB	DS	SK hynix	H5AN4G8NMFRTFC	15-15-15-36	1.2V	●	●	●
Transcend	TS512MLH64V1H	4GB	SS	Micron	Z9RGR	15-15-15-36	1.2V	●	●	●
Transcend	TS1GLH64V1H	8GB	DS	Micron	Z9RGR	15-15-15-36	1.2V	●	●	●
ISDT	IMA451U6MFR8N-TF0	4GB	SS	ISDT	I5AN4G8NMFR	15-15-15-35	1.2V	●	●	●
ISDT	IMA41GU6MFR8N-TF0	8GB	DS	ISDT	I5AN4G8NMFR	15-15-15-35	1.2V	●	●	●
UMAX	84G48G93MC-21OMCGNGF15	4GB	SS	Micron	D9RGQ	15-15-15-36	1.2V	●	●	●
UMAX	84G44G93MC-21OMCALGF15	8GB	DS	Micron	D9RGQ	15-15-15-36	1.2V	●	●	●
Team	TED48GM2133C15BK	8GB	DS	Micron	D9RGQ	15-15-15-36	1.2V	●	●	●
Team	TED44GM2133C15ABK	4GB	SS	SK hynix	H5AN4G8NMFRTFC	15-15-15-36	1.2V	●	●	●

#### X99 Series Motherboard R-DIMM Qualified Vendors Lists (QVL)

##### DDR4 2133 R-DIMM Qualified Vendors List (QVL)

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)		
								2 DIMM	4 DIMM	8 DIMM
Micron	MTA36ASF2G72PZ-2G1A2IG	16GB	DS	Micron	D9RGV	15-15-15-36	1.2V	●	●	●
Micron	MTA18ASF1G72PDZ-2G1A1HG	8GB	DS	Micron	D9RGQ	15-15-15-36	1.2V	●	●	●
Micron	MTA18ASF1G72PZ-2G1A2IG	8GB	DS	Micron	D9RGV	15-15-15-36	1.2V	●	●	●

Micron	MTA9ASF51272PZ-2G1A2IG	4GB	DS	Micron	D9RGQ	15-15-15-36	1.2V	●	●	●
Crucial	CT16G4RFD4213.36FA2	16GB	DS	Micron	D9RGV	15-15-15-36	1.2V	●	●	●
Crucial	CT8G4RFD8213.18FA1	8GB	DS	Micron	D9RGQ	15-15-15-36	1.2V	●	●	●
Crucial	CT8G4RF84213.18FA2	8GB	DS	Micron	D9RGV	15-15-15-36	1.2V	●	●	●
Crucial	CT4G4RFS8213.9FA2	4GB	DS	Micron	D9RGQ	15-15-15-36	1.2V	●	●	●
Kingston	KVR21R15S4/8	8GB	DS	Samsung	K4A4G045WD	15-15-15-36	1.2V	●	●	●
Samsung	M393A1G40DB0-CPB	8GB	DS	Samsung	K4A4G045WD	15-15-15-36	1.2V	●	●	●
Samsung	M393A2G40DB0-CPB	16GB	DS	Samsung	K4A4G045WD	15-15-15-36	1.2V	●	●	●
Team	T4E1R10S62000	16GB	DS	Samsung	K4A4G045WD	15-15-15-36	1.2V	●	●	●

#### 8 DIMM Slots

For **each** DRAM channel (A,B,C,D), make sure to install the DRAM module to **dark gray slot** first.

- **1 DIMM:** Supports one (1) module inserted into any dark gray slot as Single-channel memory configuration. **Install the module into the D1 slot for better compatibility.**
- **2 DIMMs:** Supports two (2) modules inserted into one pair of dark gray slots as one pair of Dual-channel memory configuration. **Install the modules into slots B1 and D1 for better compatibility.**
- **4 DIMMs:** Supports four (4) modules inserted into four dark gray slots as two pairs of Quad-channel memory configuration. **Install the modules into slots A1/B1/C1/D1 for better compatibility.**
- **6 DIMMs:** Supports six (6) modules inserted into four dark gray slots and one pair of black slots as three pairs of Quad-channel memory configurations. **Install the modules into slots A1/B1/B2/ C1/D1/D2 for better compatibility.**
- **8 DIMMs:** Supports eight (8) modules inserted into **all the slots** as fully-loaded Quad-channel memory configurations.

- Make sure to install the memory modules from the **dark gray** slots first when your platform is 8-DIMM design.

- **Memory module with memory frequency higher than DDR4 2133MHz** and its corresponding timing or the loaded XMP Profile is not the JEDEC memory standard. The stability and compatibility of these memory modules depend on the CPU's capabilities and other installed devices.

- When installing total memory of 4GB capacity or more, Windows 32-bit operation system may only recognize less than 3GB. Hence, a total installed memory of less than 3GB is recommended.

- **The default DIMM frequency depends on its Serial Presence Detect (SPD), which is the standard way of accessing information from a memory module. Under the default state, some memory modules for overclocking may operate at a lower frequency than the vendor-marked value.**

- **Always install DIMMs with the same CAS latency. For optimal compatibility, we recommend that you install memory modules of the same version or date code (D/C) from the same vendor. Check with the retailer to get the correct memory modules.**

- DIMM fan design may vary, make sure the fan can fit into the motherboard.

- **U-DIMM MEMORY:** Unbuffered DIMM that doesn't include a register or buffer chip.

- **R-DIMM MEMORY:** Registered DIMM that provides parity checking or error-correcting code (ECC) to detect improper addresses or commands.

- Parity checking and error-correcting code (ECC) support depends on CPU types.