

**DDR4 2133 Qualified Vendors List (QVL)**

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)	
								1 DIMM	2 DIMM
SAMSUNG	M378A5143DB0--CPB	4G	SS	SEC 428	K4A4G085WD	13-13-13-39	1.5V	•	•
SAMSUNG	M378A1G43DB0--CPB	8G	DS	SEC 428	K4A4G085WD	13-13-13-33	1.5V	•	•
G.SKILL	F4-2133C15Q-32GRK	8G	DS	N/A	Heat-Sink Package	15-15-15-35	1.2V	•	•
G.SKILL	F4-2133C15Q-16GRB	4G	SS	N/A	Heat-Sink Package	15-15-15-35	1.2V	•	•
GLOWAY	PC4-17000	4G	SS	N/A	Heat-Sink Package	15-15-15-35	1.2V	•	•
KINGSTON	HX421C13PBK4/16	4G	SS	N/A	Heat-Sink Package		1.2V	•	•
KINGSTON	HX421C14FB/8	8G	DS	N/A	Heat-Sink Package	14-14-14-35	1.2V	•	•
KINGSTON	HX421C14FBK4/32	8G	DS	N/A	Heat-Sink Package		1.2V	•	•
KINGSTON	KVR21N15S8/4	4G	SS	SK HYNIX	H5AN4G8NMFR		1.2V	•	•
KINGSTON	KVR21N15D8/8	8G	DS	SK HYNIX	H5AN4G8NMFR		1.2V	•	•
PANRAM	PUD42133C138G4NJW	8G	DS	N/A	Heat-Sink Package	13-13-13-35	1.2V	•	•
PANRAM	PUD42133C134G4NJW	4G	SS	N/A	Heat-Sink Package	13-13-13-35	1.2V	•	•
CORSAIR	CMK16GX4M4A2133C15	4G	SS	N/A	Heat-Sink Package	15-15-15-36	1.2V	•	•
CORSAIR	CMV4GX4M1A2133C15	4G	SS	N/A	4GA72Z9RGR	13-13-13-33	1.5V	•	•
CORSAIR	CMV8GX4M1A2133C15	8G	DS	SEC 446	K4A4G085WD	13-13-14-33	1.5V	•	•
CRUCIAL	MTA8ATF51264AZ-2G1A1	4G	SS	MICRON	4QA77D9RCQ	13-13-13-33	1.2V	•	•
CENTURY	PX4-17000	8G	DS	SK HYNIX	H5AN4G8NMFR		1.2V	•	•
TEAM	TED48GM2133C15BK	8G	DS	SEC	E3 1240V5	15-15-15-36	1.2V	•	•
TEAM	TED44GM2133C15BK	4G	SS	SEC 443	K4A4G085WD	15-15-15-36	1.2V	•	•
APACER	78.C1GM3.AF10B	8G	DS	SK HYNIX	H5AN4G8NMFR	14-14-14-33	1.5V	•	•
APACER	AU04GGB13CDBGC	4G	SS	SK HYNIX	H5AN4G8NMFR	14-14-14-33	1.5V	•	•
TEKISM	T4U2133B8G15-SAD	8G	DS	SEC 446	K4A4G085WD		1.2V	•	•
APACER	AHU08GGB13CGT7G	8G	DS	N/A	N/A		1.2V	•	•
TEAM	TED48GM2133C15BK	8GB	DS	SK HYNIX	H5AN4G8NMFR	15-15-15-36	1.2V	•	•
KINGSTON	HX421C14FB/8	8G	DS	N/A	Heat-Sink Package		1.2V	•	•
KINGSTON	HX421C13SBK4/32	32GB (4x 8G)	DS	N/A	Heat-Sink Package	15-15-15-36	1.2V	•	•
KINGSTON	HX421C13SBK4/16	16GB (4x 4G)	SS	N/A	Heat-Sink Package	15-15-15-36	1.2V	•	•
KINGSTON	KVR21N15D8/8	8G	DS	SK HYNIX	H5AN4G8NAFR	15-15-15-36	1.2V	•	•
GALAXY	GAM4DBLBM2133D15IE041C	4G	DS	N/A	Heat-Sink Package	15-15-15-36	1.2V	•	•
Silicon Power	SP004GBLFU213N02	4G	SS	SP	4N4083HMBE S1543X	15-15-15-36	1.2V	•	•
GALAXY	GAM4DBLBM213315IE081C	8G	DS	N/A	Heat-Sink Package	15-15-15-35	1.2V	•	•
AVEXIR	AVD4U21331508G-1COB	8G	DS	N/A	Heat-Sink Package	15-15-15-36	1.2V	•	•
AMD	R748G2133U2S	4G	DS	N/A	Heat-Sink Package	15-15-15-36	1.2V	•	•
TEAM	T4D4C10S61163	4G	DS	SEC 446	K4A4G085WD	15-15-15-36	1.2V	•	•
TEAM	TED48GM2133C15BK	8G	DS	SK HYNIX	H5AN4G8NMFR	15-15-15-36	1.2V	•	•
CUSO	PC4-17000	4G	SS	CUSO	512X8DDR4	15-15-15-35	1.2V	•	•
TEANSCEND	TS1GLH72V1H (ECC)	8G	DS	SEC552	K4A4G085WEBCPB		1.2V	•	•
ADATA	AD4U2133W8G15-B	128GB/ 16x	DS	SK HYNIX	H5AN4G8NAFR		1.2V	•	•

**DDR4 2400 Qualified Vendors List (QVL)**

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)	
								1 DIMM	2 DIMM
ADATA	AX4U2400W8G16-DRZ	8G	DS	N/A	Heat-Sink Package	16-16-16	1.2V	•	•
G.SKILL	F4-2400C15Q-32GRB	8G	DS	N/A	Heat-Sink Package	15-15-15-35	1.2V	•	•
G.SKILL	F4-2400C14Q2-128GRK	16G	DS	N/A	Heat-Sink Package	14-14-14-34	1.2V	•	•
G.SKILL	F4-2400C14Q-16GRK	4G	SS	N/A	Heat-Sink Package	14-14-14-34	1.2V	•	•
G.SKILL	F4-2400C15Q-16GRR	4G	SS	N/A	Heat-Sink Package	15-15-15-35	1.2V	•	•
G.SKILL	F4-2400C15S-8GRK	8G	DS	N/A	Heat-Sink Package	15-15-15-35	1.2V	•	•
PATRIOT	PX416G240C5QK	4G	SS	N/A	Heat-Sink Package	15-15-15-35	1.2V	•	•
GLOWAY	PC4-19200	4G	SS	GLOWAY	512X8DDR4	16-16-16-35	1.2V	•	•
TEAM	TED44GM2400C16BK	4G	SS	SEC 437	K4A4G085WD	16-16-16-39	1.2V	•	•
TEAM	TED48GM2400C16BK	8G	DS	SEC 443	K4A4G085WD	16-16-16-39	1.2V	•	•
PANRAM	PUD42400C154G4NJW	4G	SS	N/A	Heat-Sink Package	15-15-15-35	1.2V	•	•
PANRAM	PUD42400C158G4NJW	8G	DS	N/A	Heat-Sink Package	15-15-15-35	1.2V	•	•
CORSAIR	CMK32GX4M4A2400C14	8G	DS	N/A	Heat-Sink Package	14-16-16-31	1.2V	•	•
CRUCIAL	BLS4K4G4D240FSA	4G	SS	N/A	Heat-Sink Package	16-16-16-39	1.2V	•	•
ADATA	AX4U2400W4G16-DRZ	4G	SS	N/A	Heat-Sink Package	16-16-16	1.2V	•	•
GEIL	GPR416GB2400C15QC	4G	SS	N/A	Heat-Sink Package	15-15-15-35	1.2V	•	•
MUSHKIN	997199F	8G	DS	N/A	Heat-Sink Package	15-15-15-35-50	1.2V	•	•
KINGSTON	HX424C15FBK4/32	8G	DS	N/A	Heat-Sink Package	15-15-15-35-57	1.2V	•	•
KINGSTON	HX424C15FBK4/16	4G	SS	N/A	Heat-Sink Package		1.2V	•	•
APACER	78.C1GMA.AF30B	8G	DS	SK HYNIX	H5AN4G8NMFR	16-16-16-36	1.2V	•	•
APACER	78.B1GMA.AF20B	4G	SS	SK HYNIX	H5AN4G8NMFR	16-16-16-36	1.2V	•	•
AVEXIR	AVD4UZ124001608G-4COR	8G	DS	N/A	Heat-Sink Package		1.2V	•	•
AVEXIR	AVD4UZ124001604G-4COB	4G	SS	N/A	Heat-Sink Package		1.2V	•	•
CRUCIAL	BLS8G4D240FSA.16FADG	8G	DS	N/A	Heat-Sink Package	16-16-16-39	1.2V	•	•
TEAM	TED48G2400C16BK	8GB	DS	TEAM	T4D5128HT-24	16-16-16-39	1.2V	•	•
KINGSTON	HX424C15FB/8	8G	DS	N/A	Heat-Sink Package		1.2V	•	•
TEAM	TED48G2400C16BK	8G	DS	TEAM	T4D5128HT-24	16-16-16-39	1.2V	•	•
KINGSTON	HX424C12PBK4/32	32GB (4x 8G)	DS	N/A	Heat-Sink Package		1.35V	•	•
CUSO	PC4-19200	4G	SS	CUSO	512X8DDR4	16-16-16-35	1.2V	•	•
G.SKILL	F4-2400C15Q-32GRR	8G	DS	N/A	Heat-Sink Package	15-15-15-35	1.2V	•	•
CORSAIR	CMD32GX4M4A2400C14	8G	DS	N/A	Heat-Sink Package	14-16-16-31	1.2V	•	•
AMD	R748G2400U2S	4G	DS	N/A	Heat-Sink Package	15-15-15-36	1.2V	•	•
MICRON	MTA16ATF2G64AZ-2G3B1	4G	SS	MICRON	5WB47D9TBH		1.2V	•	•
MICRON	MTA8ATF1G64AZ-2G3B1	4G	SS	MICRON	5WB47D9TBH	17-17-17-39-55	1.2V	•	•
KINGSTON	HX424C12SBK4/32	32GB (4x 8G)	DS	N/A	Heat-Sink Package		1.35V	•	•
GALAXY	GAM4BXLBS240016JE164C	16GB (4x 4G)	SS	N/A	Heat-Sink Package	16-16-16-36	1.2V	•	•
APACER	AH08GGB24CDDT5H	16GB (2x 8G)	DS	N/A	Heat-Sink Package	16-16-16-36	1.2V	•	•
CORSAIR	CMK8GX4M2A2400C14	8GB (2x 4G)	SS	N/A	Heat-Sink Package	14-16-16-31	1.2V	•	•
CORSAIR	CMK16GX4M2A2400C14	16GB (2x 8G)	DS	N/A	Heat-Sink Package	14-16-16-31	1.2V	•	•
CRUCIAL	BLS8G4D240FSA.16FADG	8G	DS	N/A	Heat-Sink Package	16-16-16-39	1.2V	•	•
APACER	AHU08GGB13CGT7G	8G	DS	N/A	N/A		1.2V	•	•

**DDR4 2666 Qualified Vendors List (QVL)**

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)	
								1 DIMM	2 DIMM
CORSAIR	CMK16GX4M4A2666C16	4G	SS	N/A	Heat-Sink Package	16-16-18-35	1.2V	•	•
CORSAIR	CMD32GX4M4A2666C15(Ver5.29)	8G	DS	N/A	Heat-Sink Package	15-17-17-35	1.2V	•	•
CORSAIR	CMD128GX4MM8A2666C15	16G	DS	N/A	Heat-Sink Package	15-18-18-35	1.2V	•	•
CRUCIAL	BLE4G4D26AFEA.8FAD	8G	SS	N/A	Heat-Sink Package	16-16-17-36	1.2V	•	•
CRUCIAL	BLE8G4D26AFEA.16FAD	8G	DS	N/A	Heat-Sink Package	16-16-17-36	1.2V	•	•
G.SKILL	F4-2666C15Q-16GRR	4G	SS	N/A	Heat-Sink Package	15-15-15-35	1.2V	•	•
PATRIOT	PX416G266C5QK	4G	SS	N/A	Heat-Sink Package	15-15-15-35	1.2V	•	•
G.SKILL	F4-2666C16Q2-64GRB	8G	DS	N/A	Heat-Sink Package	16-16-16-36	1.2V	•	•
TEAM	TCD48G2666C15ABK	8G	DS	SK HYNIX	H5AN4G8NMFR	15-15-15-35	1.2V	•	•
TEAM	TCD44G2666C15ABK	4G	SS	SEC 443	K4A4G085WD	15-15-15-35	1.2V	•	•

MUSHKIN	997192F	4G	SS	N/A	Heat-Sink Package	15-15-15-35-50	1.2V	•	•
KINGSTON	HX426C13PBK4/32	8G	DS	N/A	Heat-Sink Package	13-14-14-39-60	1.35V	•	•
KINGSTON	HX426C15FBK4/32	8G	DS	N/A	Heat-Sink Package		1.2V	•	•
AVEXIR	AVD4UZ126661504G-4COB	4G	SS	N/A	Heat-Sink Package		1.2V	•	•
AVEXIR	AVD4UZ126661508G-4COB	8G	DS	N/A	Heat-Sink Package		1.2V	•	•
CRUCIAL	BLT4G4D26AFTA.8FADG	4G	SS	N/A	Heat-Sink Package	16-17-17-36	1.2V	•	•
CRUCIAL	BLT8G4D26AFTA.16FAD	8G	DS	N/A	Heat-Sink Package	16-17-17-36	1.2V	•	•
KLEVV	IMA41GU6MFR8N-C F0		DS	N/A	Heat-Sink Package	15-15-15	1.2V	•	•
KINGSTON	HX426C13SB2K4/32	32GB (4x 8G)	DS	N/A	Heat-Sink Package	15-15-15-36	1.35V	•	•
KINGSTON	HX426C13SB2K4/16	16GB (4x 4G)	SS	N/A	Heat-Sink Package	15-15-15-36	1.35V	•	•
TEAM	TCD48G2666C15ABK	8G	SS	TEAM	T4D10248HT-266	15-15-15-35	1.2V	•	•
CRUCIAL	BLT4G4D26AFTA.8FADG		SS	N/A	Heat-Sink Package	16-17-17-36	1.2V	•	•
CRUCIAL	BLT8G4D26AFTA.16FAD		DS	N/A	Heat-Sink Package	16-17-17-36	1.2V	•	•

#### DDR4 2800 Qualified Vendors List (QVL)

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)	
								1 DIMM	2 DIMM
CORSAIR	CMK16GX4M4A2800C16	4G	SS	N/A	Heat-Sink Package	16-18-18-36	1.2V	•	•
G.SKILL	HX428C14PB2K4/16	4G	SS	N/A	Heat-Sink Package		1.35V	•	•
G.SKILL	F4-2800C6Q-16GRK	4G	SS	N/A	Heat-Sink Package	16-16-16-36	1.2V	•	•
PATRIOT	PX416G280C6QK	4G	SS	N/A	Heat-Sink Package	16-18-18-36	1.2V	•	•
GLOWAY	PC4-22400	4G	SS	SK HYNIX	H5AN4G8NMFR	16-16-16-36	1.2V	•	•
PANRAM	PUD42800C164G4NJW	4G	SS	N/A	Heat-Sink Package	16-18-18-36	1.25V	•	•
MUSHKIN	994207F	4G	SS	N/A	Heat-Sink Package	16-16-16-36-52	1.2V	•	•
KINGSTON	HX428C14PBK/32	8G	DS	N/A	Heat-Sink Package	14-15-15-39-63	1.35V	•	•
AVEXIR	AVD4UZ128001604G-4COB	4G	SS	N/A	Heat-Sink Package		1.2V	•	•
AVEXIR	AVD4UZ128001608G-4COB	8G	DS	N/A	Heat-Sink Package		1.2V	•	•
CORSAIR	CMK32GX4M4A2800C16	32GB (4x 8G)	DS	N/A	Heat-Sink Package	16-18-18-36	1.2V	•	•
KINGSTON	HX428C14SB2K4/16	16GB (4x 4G)	SS	N/A	Heat-Sink Package	15-15-15-36-50	1.35V	•	•

#### DDR4 3000 Qualified Vendors List (QVL)

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)	
								1 DIMM	2 DIMM
KINGSTON	HX430C15PB2K4/16	4G	SS	N/A	Heat-Sink Package		1.35V	•	•
G.SKILL	F4-3000C15Q-16GRR	4G	SS	N/A	Heat-Sink Package	15-15-15-35	1.35V	•	•
TEAM	TCD48G3000C16ABK	8G	DS	TEAM	T4D5128HT-30	16-16-16-36	1.35V	•	•
TEAM	TCD44G3000C16ABK	4G	SS	TEAM	T4D5128HT-30	16-16-16-36	1.35V	•	•
PANRAM	PUD43000C154G4NJW	4G	SS	N/A	Heat-Sink Package	15-17-17-35	1.35V	•	•
KINGSTON	HX430C15PBK4/32	8G	DS	N/A	Heat-Sink Package	15-16-16-39-65	1.35V	•	•
AVEXIR	AVD4UZ130001604G-4COB	4G	SS	N/A	Heat-Sink Package		1.35V	•	•
AVEXIR	AVD4UZ130001608G-4COB	8G	DS	N/A	Heat-Sink Package		1.35V	•	•
Kingston	HX430C16PBK4/64	16G	DS	N/A	Heat-Sink Package		1.35V	•	•
Kingston	HX430C15SBK2/16	8G	DS	N/A	Heat-Sink Package		1.35V	•	•
TEAM	TCD48G3000C15ABK	8GB	DS	SK HYNIX	H5AN4G8NMFR	15-15-15-35	1.35V	•	•
CORSAIR	CMD32GX4M2B3000C15	32GB (2x 16G)	DS	N/A	Heat-Sink Package	15-17-17-35	1.35V	•	•
KINGSTON	HX430C15SB2K4/32	32GB (4x 8G)	DS	N/A	Heat-Sink Package	15-15-15-36-50	1.35V	•	•
TEAM	TCD48G3000C15ABK		DS	SK HYNIX	H5AN4G8NMFR	15-15-15-35	1.35V	•	•
KLEVV	IM44GU48A30-GIIHMC	16GB (4x 4G)	SS	N/A	Heat-Sink Package	16-18-18	1.35V	•	•
CORSAIR	CMK16GX4M2B3000C15	16GB (2x 8G)	DS	N/A	Heat-Sink Package	15-17-17-35	1.35V	•	•
KINGSTON	HX430C15SB2K4/16	16GB (4x 4G)	SS	N/A	Heat-Sink Package	15-15-15-36-50	1.35V	•	•
Kingston	HX430C16PBK4/64	64GB (4x 16G)	DS	N/A	Heat-Sink Package	15-15-15-36-50	1.35V	•	•
Kingston	HX430C15SBK2/16	16GB (2x 8G)	DS	N/A	Heat-Sink Package	15-15-15-36-50	1.35V	•	•

#### DDR4 3200 Qualified Vendors List (QVL)

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)	
								1 DIMM	2 DIMM
PANRAM	PUD43200C164G4NJW	4G	SS	N/A	Heat-Sink Package	16-18-18-39	1.35V	•	•
MUSHKIN	997202F(3200)	4G	SS	N/A	Heat-Sink Package	16-16-16-36-50	1.35V	•	•
G.SKILL	F4-3200C16D-8GVKB	8GB (2x 4G)	SS	N/A	Heat-Sink Package	16-18-18-38	1.35V	•	•

#### DDR4 3300 Qualified Vendors List (QVL)

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)	
								1 DIMM	2 DIMM
G.SKILL	F4-3300C16Q-16GRKD	4G	SS	N/A	Heat-Sink Package	16-16-16-36	1.35V	•	•

#### DDR4 3333 Qualified Vendors List (QVL)

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)	
								1 DIMM	2 DIMM
ADATA	AX4U3333W4G16-QGZ	4G	SS	N/A	Heat-Sink Package	161-16-16	1.35V	•	•

#### DDR4 3400 Qualified Vendors List (QVL)

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)	
								1 DIMM	2 DIMM
GEIL	GLWR416GB3400C16AQC	4GB	SS	N/A	Heat-Sink Package	16-18-18-36	1.35V	•	•
G.SKILL	F4-3400C16Q-16GRBD	4G	SS	N/A	Heat-Sink Package	16-18-18-38	1.35V	•	•
G.SKILL	F4-3400C16D-16GVK	16GB (4x 8G)	DS	N/A	Heat-Sink Package	16-18-18-38	1.35V	•	•

#### DDR4 3466 Qualified Vendors List (QVL)

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)	
								1 DIMM	2 DIMM
G.SKILL	F4-3466C16Q-16GVK	4G	SS	N/A	Heat-Sink Package	16-18-18-38	1.35V	•	•
CORSAIR	CMD16GX4M4B3466C18	4G	SS	N/A	Heat-Sink Package		1.35V	•	•

#### DDR4 3600 Qualified Vendors List (QVL)

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)	
								1 DIMM	2 DIMM
G.SKILL	F4-3600-C17Q-16GVK	4G	SS	N/A	Heat-Sink Package	17-18-18-38	1.35V	•	•

#### DDR4 4000 Qualified Vendors List (QVL)

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)	
								1 DIMM	2 DIMM
G.SKILL	F4-4000C19D-8GTZ	4G	SS	N/A	Heat-Sink Package	19-21-21-41	1.35V	•	•
G.SKILL	F4-4000C19D-8GTZ	8GB (2x 4G)	SS	N/A	Heat-Sink Package	19-21-21-41	1.35V	•	•

2 DIMM Slots

• 1 DIMM: Supports one module inserted in any slot as Single-channel memory configuration

- **2 DIMM:** Supports 2 modules inserted into both the **blue** or **black** slots as two pairs of Dual-channel memory configuration

- \*Supports Intel® Extreme Memory Profile (XMP)

- \*Due to Intel® chipset limitation, DDR4 2133 MHz and higher memory modules on XMP mode will run at the maximum transfer rate of DDR4 2133 Mhz.

- \*The maximum memory frequency supported varies by processor

- 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.

- It is recommended to install the memory modules from the slots for better overclocking capability.

- 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.