ASRock

Z170M OC FORMULA

Intel® Z170 Chipset

OC FORMULA

Product Brief

- · ASRock Super Alloy
- · OC Formula Kit : Power / Connector / Cooling
- · 10 Layer PCB
- · Supports 6th Generation Intel® Core Processors (Socket 1151)
- · Digi Power, 14 Power Phase design
- · Supports Dual Channel DDR4 4500+(OC)
- · Hyper BCLK Engine Integrated
- · 3 PCIe 3.0 x16
- · AMD Quad CrossFireX™, NVIDIA® Quad SLI™
- · 7.1 CH HD Audio (Realtek ALC1150 Audio Codec), Supports Purity Sound™ 3 & DTS Connect
- · Intel® Gigabit LAN
- · 8 SATA3, 2 SATA Express, 1 Ultra M.2
- · 2 USB 3.1 10Gb/s (1 Type-A + 1 Type-C), 6 USB 3.0 (2 Front, 4 Rear), 6 USB 2.0 (4 Front, 2 Rear)

Super Alloy — Motherboard — Stable and Reliable

Ultra M.2 GEN3 X4 & SATA3 | 14 PHASE DESIGN | OC FORMULA Kit | DDR4 4500+ OC | 3 PCIe 3.0 x16 | USB3.1 Type-C | Purity Sound 3

Detail Specification

Platform	- Micro ATX Form Factor: 9.6-in x 9.6-in, 24.4 cm x 24.4 cm
Unique Feature	ASRock USB 3.1 - ASRock USB 3.1 Type-A Port (10 Gb/s) - ASRock USB 3.1 Type-C Port (10 Gb/s) ASRock Super Alloy - XXL Aluminum Alloy Heatsink - Premium 60A Power Choke - Premium Memory Alloy Choke (Reduces 70% core loss compared to iron powder choke) - Dual-Stack MOSFET (DSM) - Combo Caps - Nichicon 12K Platinum Caps (100% Japan made high quality conductive polymer capacitors) - I/O Armor - Matte Black PCB - High Density Glass Fabric PCB ASRock IR PowIRStage PWM ASRock CPU Cold Bug Killer ASRock Ultra M.2 (PCIe Gen3 x4 & SATA3) ASRock Full Spike Protection ASRock Live Update & APP Shop
OC Formula Kit	OC Formula Power Kit - 14 Phase CPU Power design + 2 Phase Memory Power design - Digi Power (CPU and Memory) - Dual-Stack MOSFET (DSM) - Multiple Filter Cap (MFC) (Filter different noise by 3 different capacitors: DIP solid cap, POSCAP and MLCC) OC Formula Connector Kit - Hi-Density Power Connector (8 pin) - 15μGold Contact (CPU socket, memory sockets and PCIE1) OC Formula Cooling Kit - 10 Layer PCB - Heat Pipe Design
CPU	- Supports 6th Generation Intel® Core™ i7/i5/i3/Pentium®/Celeron® Processors (Socket 1151) - Digi Power design - 14 Power Phase design - Supports Intel® Turbo Boost 2.0 Technology - Supports Intel® K-Series unlocked CPUs - Supports ASRock BCLK Full-range Overclocking - Supports ASRock Hyper BCLK Engine
Chipset	- Intel® Z170
Memory	- Dual Channel DDR4 Memory Technology - 2 x DDR4 DIMM Slots - Supports DDR4 4500+(OC)*/4366(OC)/4333(OC)/4266(OC)/4133(OC)/4000(OC)/3866(OC)/3800(OC)/3733(OC)/3666(OC)/3600(OC)/3466(OC)/3400(OC)/3333(OC)/3300(OC)/3200(OC)/3000(OC)/2933(OC)/2800(OC)/2600(OC)/2400(OC)/2133 non-ECC, un-buffered memory - Supports ECC UDIMM memory modules (operate in non-ECC mode) * 4500+(OC) memory frequency can only be achieved when a single memory module is installed (Single channel memory). * Please refer to the Memory Support List on ASRock's website for more information. (http://www.asrock.com/) - Max. capacity of system memory: 32GB - Supports Intel® Extreme Memory Profile (XMP) 2.0 - 15μ Gold Contact in DIMM Slots
Expansion Slot	- 3 x PCI Express 3.0 x16 Slots (PCIE1/PCIE2/PCIE3: single at x16 (PCIE1); dual at x8 (PCIE1) / x8 (PCIE2); triple at x8 (PCIE1) / x8 (PCIE2) / x4 (PCIE3))* * Supports NVMe SSD as boot disks - Supports AMD Quad CrossFireX™ and CrossFireX™ - Supports NVIDIA® Quad SLI™ and SLI™ - 15μ Gold Contact in VGA PCIe Slot (PCIE1)
Graphics	* Intel® HD Graphics Built-in Visuals and the VGA outputs can be supported only with processors which are GPU integrated. - Supports Intel® HD Graphics Built-in Visuals : Intel® Quick Sync Video with AVC, MVC (S3D) and MPEG-2 Full HW Encode1, Intel® InTru™ 3D, Intel® Clear Video HD Technology, Intel® Insider™, Intel® HD Graphics 510/530 - Pixel Shader 5.0, DirectX 12 - Max. shared memory 1792MB - Dual graphics output: Support HDMI and DisplayPort 1.2 ports by independent display controllers - Supports HDMI with max. resolution up to 4K x 2K (4096x2160) @ 24Hz / (3840x2160) @ 30Hz - Supports DisplayPort 1.2 with max. resolution up to 4K x 2K (4096x2304) @ 60Hz - Supports Auto Lip Sync, Deep Color (12bpc), xvYCC and HBR (High Bit Rate Audio) with HDMI Port (Compliant HDMI monitor is required) - Supports Accelerated Media Codecs: HEVC, VP8, VP9 - Supports HDCP with HDMI and DisplayPort 1.2 Ports - Supports Full HD 1080p Blu-ray (BD) playback with HDMI and DisplayPort 1.2 Ports

Audio	- 7.1 CH HD Audio with Content Protection (Realtek ALC1150 Audio Codec)
	- Premium Blu-ray Audio support
	- Supports Surge Protection (ASRock Full Spike Protection)
	- Supports Purity Sound™ 3
	  - Nichicon Fine Gold Series Audio Caps
	  - 115dB SNR DAC with Differential Amplifier
	  - TI® NE5532 Premium Headset Amplifier (Supports up to 600 Ohm headsets)
	  - Pure Power-In
	  - Direct Drive Technology
	  - PCB Isolate Shielding
	- Supports DTS Connect

LAN	- Gigabit LAN 10/100/1000 Mb/s - Giga PHY Intel® I219V - Supports Wake-On-LAN - Supports Lightning/ESD Protection (ASRock Full Spike Protection) - Supports Energy Efficient Ethernet 802.3az - Supports PXE

Rear Panel I/O	- 1 x PS/2 Mouse/Keyboard Port - 1 x HDMI Port - 1 x DisplayPort 1.2 - 1 x Optical SPDIF Out Port - 2 x USB 2.0 Ports (Supports ESD Protection (ASRock Full Spike Protection)) - 1 x USB 3.1 Type-A Port (10 Gb/s) (ASMedia ASM1142) (Supports ESD Protection (ASRock Full Spike Protection)) - 1 x USB 3.1 Type-C Port (10 Gb/s) (ASMedia ASM1142) (Supports ESD Protection (ASRock Full Spike Protection)) - 4 x USB 3.0 Ports (Intel® Z170) (Supports ESD Protection (ASRock Full Spike Protection)) - 1 x RJ-45 LAN Port with LED (ACT/LINK LED and SPEED LED) - 1 x Clear CMOS Switch - HD Audio Jacks: Rear Speaker / Central / Bass / Line in / Front Speaker / Microphone
Storage	- 6 x SATA3 6.0 Gb/s Connectors by Intel® Z170, support RAID (RAID 0, RAID 1, RAID 5, RAID 10, Intel Rapid Storage Technology 14 and Intel Smart Response Technology), NCQ, AHCI and Hot Plug - 2 x SATA3 6.0 Gb/s Connectors by ASMedia ASM1061, support NCQ, AHCI and Hot Plug - 2 x SATA Express 10 Gb/s Connectors* * Support to be announced * M2_1, SATA3_0, SATA3_1 and SATA_EXP0 share lanes. If either one of them is in use, the others will be disabled. - 1 x Ultra M.2 Socket, supports type 2230/2242/2260/2280/22110 M.2 SATA3 6.0 Gb/s module and M.2 PCI Express module up to Gen3 x4 (32 Gb/s)** ** Supports NVMe SSD as boot disks ** Supports ASRock U.2 Kit
Connector	- 1 x COM Port Header - 1 x Power LED and Speaker Header - 2 x CPU Fan Connectors (1 x 3-pin, 1 x 4-pin) (Smart Fan Speed Control) - 3 x Chassis Fan Connectors (4-pin) (Smart Fan Speed Control) * CPU_FAN1, CHA_FAN_1, CHA_FAN_2 and CHA_FAN_3 can auto detect if 3-pin or 4-pin fan is in use. * The CPU Fan Connector supports the CPU fan of maximum 1A (12W) fan power. - 1 x 24 pin ATX Power Connector - 1 x 8 pin 12V Power Connector (Hi-Density Power Connector) - 1 x Front Panel Audio Connector - 1 x Thunderbolt 2/3 AIC Connector (5-pin) - 1 x Thunderbolt 3 AIC Connector (10-pin) * Only one Thunderbolt AIC Card is supported. - 2 x USB 2.0 Headers (Support 4 USB 2.0 ports) (Supports ESD Protection (ASRock Full Spike Protection)) - 1 x USB 3.0 Header (Supports 2 USB 3.0 ports) (Supports ESD Protection (ASRock Full Spike Protection)) - 1 x Dr. Debug with LED - 1 x Power Switch with LED - 1 x Reset Switch with LED - V-Probe™: 1 x 7-set of onboard voltage measurement points laid - Rapid OC Buttons: +/- buttons to adjust OC frequency - 1 x Menu Button - Post Status Checker (PSC) - 1 x Slow Mode Switch - 1 x LN2 Mode Switch - 1 x BIOS Selection Switch - 1 x XMP Switch - 1 x Direct Key Button
BIOS Feature	- 2 x 128Mb AMI UEFI Legal BIOS with multilingual GUI support (1 x Main BIOS and 1 x Backup BIOS) - Supports Secure Backup UEFI Technology - ACPI 5.0 Compliant wake up events - SMBIOS 2.7 Support - CPU, GT_CPU, DRAM, VPPM, PCH 1.0V, VCCIO, VCCPLL, VCCSA Voltage Multi-adjustment
Support CD	- Drivers, Utilities, AntiVirus Software (Trial Version), Google Chrome Browser and Toolbar
Software and UEFI	Software - ASRock Formula Drive - ASRock Disk Health Report - ASRock Fine-Tuning V-Controller - ASRock Timing Configurator - ASRock USB Key - ASRock APP Charger - ASRock XFast LAN - ASRock XFast RAM - ASRock Fast Boot (Fast Boot, Restart to UEFI) * These utilities can be downloaded from ASRock Live Update & APP Shop. UEFI - ASRock EZ Mode - ASRock Full HD UEFI - ASRock My Favorites in UEFI - ASRock NickShih's OC Profile - ASRock Instant Flash - ASRock Internet Flash - ASRock Crashless BIOS - ASRock OMG (Online Management Guard) - ASRock UEFI System Browser - ASRock UEFI Tech Service - ASRock Easy RAID Installer - ASRock Easy Driver Installer
Hardware Monitor	- CPU/Chassis temperature sensing - CPU/Chassis Fan Tachometer - CPU/Chassis Quiet Fan (Auto adjust chassis fan speed by CPU temperature) - CPU/Chassis Fan multi-speed control - Voltage monitoring: +12V, +5V, +3.3V, CPU Vcore, GT_CPU, DRAM, VPPM, PCH 1.0V, VCCIO, VCCSA
OS	- Microsoft® Windows® 10 64-bit / 8.1 64-bit / 7 32-bit / 7 64-bit * To install Windows® 7 OS, a modified installation disk with xHCI drivers packed into the ISO file is required. Please check our User Manual for more detailed instructions. * For the updated Windows® 10 driver, please visit ASRock's website for details: http://www.asrock.com
Certifications	- FCC, CE, WHQL - ErP/EuP ready (ErP/EuP ready power supply is required)
Accessories	- 1 x ASRock Flexible SLI Bridge Connector Cable - Quick Installation Guide, Support CD, I/O Shield - 2 x SATA Data Cables - 1 x Screw for M.2 Socket

Z170M OC FORMULA

Intel® Z170 Chipset

Designed for Overclockers

OC FORMULA Kit

Power kit

Multiple Filter Cap (MFC)

Digi Power
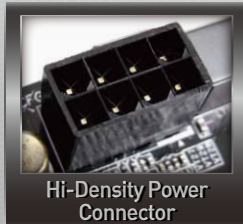
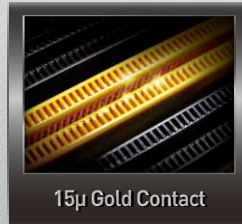Three different kinds of capacitors that deliver enhanced and higher currents to the CPU.

Provides CPU Vcore and memory voltage more efficiently and smoothly.

Connector kit

Hi-Density Power Connector

Reduces 23% power loss and decreases the connector's temperature by 22 degrees Celsius.

15μ Gold Contact

15μ gold within the CPU socket, memory and PCIe x16 slots, thus providing better anti-oxidation protection.
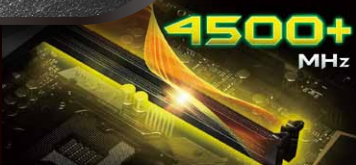
Cooling kit

10 Layer PCB & Backlit LED

The server grade design delivers interference proof memory signals and better efficiency for overclocking.

Supports DDR4 4500+(OC)

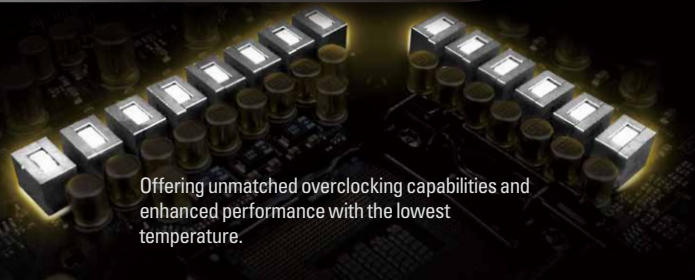4500+ MHz

Supports the latest DDR4 memory modules.

Hyper BCLK Engine

An additional external base clock generator which provides a wider range of frequencies and more precise clock waveforms.

14 Phase CPU Power Design

Offering unmatched overclocking capabilities and enhanced performance with the lowest temperature.

Ultra M.2 32 Gb/s
(PCIe Gen3 x4 & SATA3)

The PCIe Gen3 x4 Ultra M.2 interface pushes data transfer speeds up to 32Gb/s. In addition, it also supports SATA3 6Gb/s M.2 modules, and is compatible with ASRock's U.2 Kit for installing some of the world's fastest U.2 PCIe Gen3 x4 SSDs.

Ultra M.2
GEN3 X4 & SATA3

IR® PowIRStage PWM

The onboard PWM controller delivers the most precise and stable power so that users may achieve optimal performance.

IR Digital PWM

USB 3.1 10 Gb/s Type-A + C

A pair of onboard Type-A and Type-C USB 3.1 connectors for delivering up to 10Gbps data transfer rates.

ASRock

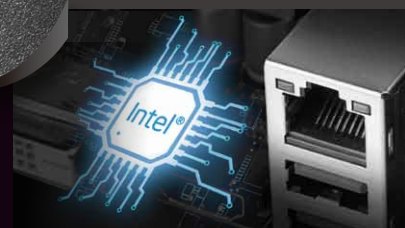# Z170M OC FORMULA

Intel® Z170 Chipset

Purity Sound™ 3

7.1 CH HD audio with Realtek ALC1150 audio codec, Pure Power-In and other technologies to deliver the crispest sound effects.

Intel LAN

Better performance, lowered CPU utilization and enhanced stability.

CPU Cold Bug Killer

This specially designed circuit prevents the system from crashing due to extremely low temperatures while overclocking with liquid nitrogen.

Super Alloy
Motherboard
Stable and Reliable

Premium
60A Power Choke

Provides enhanced Vcore voltage for the motherboard.

Premium
Memory Alloy Choke

Highly magnetic and heat resistant design.

XXL
Aluminum Alloy Heatsink

Keeps everything cool for better stability.

Dual-Stack
MOSFET (DSM)

More efficient power supply for the CPU Vcore.

Combo Caps

A mixture of two different types of capacitors for lesser noise and faster response.
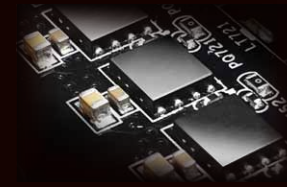
Nichicon
12K Platinum Caps

Capacitors with a lifespan of at least 12000 hours.

I/O Armor

Protects the crucial parts near the rear I/O against static electricity.