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(Image credit: MSI)A motherboard is one of the most important components to purchase when building a new PC as it's the foundation for all of your machine's parts to interact, but it's far from a one-size-fits-all solution in 2025. There are four motherboard sizes available, each with different strengths and weaknesses, with smaller and larger
fiberglass rectangles used for different purposes. As such, there's no easy answer for what the best motherboard can be, so it's vitally important to know the four commercially available sizes, rough pricings, and the sockets available for some of the best processors on the market. After all, compatibility is vital in 2025, particularly if you're eyeing up
some of the best DDR5 RAM, best graphics cards, and other PCIe 5.0 components for the build. From Mini-ITX models up to their EATX counterparts, TechRadar goes into detail about mother board sizes in 2025, which companies are supporting them, the current-generation sockets, and everything else you need to know so that you can build your new
machine with confidence. You may like (Image credit: Asus/Gigabyte/MSI/Future) There are four motherboard sizes available in 2025 from major manufacturers such as Asus, Gigabyte, and MSI, among others. These are Mini-ITX, MicroATX, ATX, and E-ATX. As the naming conventions imply, the two smallest models are the mini-ITX and MicroATX
options, which measure 6.7 x 6.7 inches and 9.6 x 9.6 inches, respectively. The most common motherboard size is ATX, which measures 12 x 9.6 inches are dittle extra headroom for additional components, E-ATX (Extended ATX) offers the largest amount of space with 12 x 13 inches of fiberglass available. As can be evidenced from
the motherboard size chart above, there's quite a dramatic difference in scale between Mini-ITX and MicroATX, with more of a subtle difference when comparing ATX and EATX, generally with the latter having more room on the right-hand side. In terms of use cases, both Mini-ITX and MicroATX motherboards are favored for small form factor (SFF)
work and gaming computers, such as those you may use in a low-profile office setting or a console-sized rig for living room use. As the smaller scales suggest, you can expect fewer PCIe lanes for connecting components (and a more cramped building experience) depending on the PC case you're using. This also means limited room for some of the best
CPU coolers (and more limited airflow in general), so this is something paramount to consider before you invest. As a frame of reference, Mini-ITX is around two-thirds the size of an ATX motherboard. Historically, the former was designed for lower power consumption and efficiency when compared to the more common sizes. However, in 2025, something paramount to consider before you invest.
manufacturers have started catering to gamers and power users in this smaller size, though you (typically) will pay a premium in comparison. (Image credit: Asus) Starting out with Mini-ITX motherboards, these models tend to be the more expensive way of building a small form factor (SFF machine) when compared to microATX which is (generally)
considered to be a more wallet-friendly option. This is consistent in the prices that you'll expect to pay between Mini-ITX and microATX, as reflected in today's popular models from major manufacturers. Socket AM5 options sell for more of a premium in the Mini-ITX form factor, as can be evidenced by the ASRock A620I Lightning Wi-Fi ($139.99),
Gigabyte B850I Aorus Pro ($279.99), MSI MPG B650I Edge WiFi ($299.99) with a rough range of the budget and more premium offerings. In contrast, MicroATX equivalents are (generally) more affordable well under the $200 mark, including the ASRock B650M Pro RS ($139.99), MSI Pro B650M-A Wi-Fi ($159.99), and Gigabyte B850M Gaming X Wi-Fi ($299.99) with a rough range of the budget and more premium offerings. In contrast, MicroATX equivalents are (generally) more affordable well under the $200 mark, including the ASRock B650M Pro RS ($139.99), MSI Pro B650M-A Wi-Fi ($159.99), and Gigabyte B850M Gaming X Wi-Fi ($299.99) with a rough range of the budget and more premium offerings.
Fi 6E ($179.99). Price and size aside, another major difference between Mini-ITX and MicroATX is the number of ports and connections available, Mini-ITX mobos usually only have a single PCIe x16 slot for the graphics card and up to two M.2 SSD ports. Depending on the
manufacturer, there may only be two RAM slots instead of four, and the rear I/O could be more cut down by comparison, resulting in fewer USB ports and other connections. MicroATX, in contrast, usually features four RAM slots, two PCIe x16 slots, up to four M.2 ports, and vastly more expansive options for its rear I/O, because you've got 43% more
space on the motherboard. In theory, MicroATX seems to be a superior option (being cheaper and offering more); however, it's also larger in a way that makes certain small form factor (SFF) builds harder to achieve, being less slick and compact as a result. You should make your choice depending on your use case; do you need more than dual-
channel RAM, two M.2 ports, a graphics card slot, and a basic rear I/O? If so, maybe the silicon needs to be larger. (Image credit: ASRock / MSI)When compared to the two smaller motherboard sizes, ATX and E-ATX variants do not seem as drastically different on the surface. However, the extra space afforded by the 35% more space can be
staggering, depending on the hardware you're planning on using. While ATX motherboards traditionally feature up to four PCIe x16 ports and four RAM slots, E-ATX versions can boost things up to as high as eight PCIe x16 ports and four RAM slots, E-ATX versions can boost things up to as high as eight PCIe x16 ports and four RAM slots, E-ATX versions can boost things up to as high as eight PCIe x16 ports and four RAM slots (though this is unlikely in 2025 compared to historical examples). The
major drawback of E-ATX motherboards is their higher price tag when compared to ATX offerings, as well as more limited availability. While still supported for today's current AM5 and LGA 1851 sockets, you're going to pay a heavy premium for the extra components space on the motherboard itself. Some popular E-ATX options can elipse their ATX
counterparts, as can be seen with the pricing of the ASRock X670E Taichi ($449.99) and the MSI MEG X670E ACE ($499.99). In contrast, similar ATX models are much cheaper, like the ASRock X670E Tomahawk Wi-Fi ($239.99). With that said, is the extra real estate worth potentially paying double
(or more) when compared to an ATX motherboard? It will ultimately depend on the use case. The power user will get the most out of the larger board space, which can be particularly important if you're thinking of forging a high-end creation or gaming PC featuring a custom loop in a far larger E-ATX compatible PC case, complete with bleeding-edge
components. It all comes back to airflow and the space required; E-ATX will afford you as much room as possible, provided you can stomach the sticker price. It's commonly been debated that gamers will not see the benefit of the extra data lanes afforded by an E-ATX motherboard. Instead, those planning a server rig, a deep-learning machine, or
something more granular might find the extra slots and connections of vital importance. Do you need more expansion slots? Then E-ATX may be the solution here, otherwise, ATX will satisfy the vast majority of PC users for just about any task imaginable while also being far more affordable and available. (Image credit: Gigabyte)We've outlined the
four different motherboard sizes available in 2025, their use cases, price differences, and varying features as they stand right now. Choosing a motherboard is not as cut and dry as you would expect, and that's why you need to visualize your rig before putting any money down. Consider the chipset of the board for starters. Will you use AMD's AM4 or
AM5 platform? Similarly, will you pay the premium investing in Intel's latest LGA 1851 socket instead of sticking with the older (and arguably better) LGA 1700 platform that hosted Alder Lake and Raptor Lake? All four motherboard sizes support the latest and greatest of today's processor technology, just in different ways. Mini-ITX is pricey as you're
paying extra for the sleek form factor, whereas MicroATX provides a similarly small (but far cheaper) experience that usually does not boast the same features by comparison. ATX is the most widely used and commonly stocked motherboard, but power users may need the added versatility of an E-ATX board if they're building a server or a dedicated
workstation, even if gamers may not feel the added benefit. Compatibility is the most important factor above all. As such, we recommend dedicated tools such as PCPartPicker when virtually pricing and sizing up a machine; you'll get to see which motherboards support your chosen CPU, GPU, RAM, M.2 SSD, and other components efficiently, as well
as get suggestions for compatible cases. Building a PC the size of a PS5 or Xbox Series X may be an exciting idea, but you may need a Mini-ITX motherboard is the foundation of your whole machine, after all. Sign up for breaking news, reviews,
opinion, top tech deals, and more Not sure whether you need an ATX, mini ITX, or eATX board for your new PC? Weve got you covered. All products featured on WIRED are independently selected by our editors. However, we may receive compensation from retailers and/or from purchases of products through these links. When you first
learn how to build a PC, everything can seem super complicated, but one of the most confusing things you'll come across is motherboard sizing. Depending on the type of case you've bought for your build (and what kind of hardware you want to put in your computer in general) you can have a ton of different size options. Below I'll go through all
the main modern motherboard iterations and what they mean. Looking to learn more about gaming or PC gear? Be sure to have a look at our guides for the Best Gaming Mice, Best 
ignore for just $2.50 $1 per month for 1 year. Includes unlimited digital access and exclusive subscriber-only content. Subscribe Today. If you buy something using links in our stories, we may earn a commission. This helps support our journalism. Learn more. What Is ATX? Ever wonder why most modern computer mother boards look the same? Thats
because they almost all use ATX, a standard for motherboards, power supplies, and desktop cases that defines size, position, and power delivery. This set of rules helps every component work together, regardless of manufacturer. For our purposes, were interested in the physical dimensions. Some elements, like the size and location of the ports on the
back, are consistent across all of the ATX variations. Other aspects of the standard, like the width and length of the board, are indicated by their own acronyms, helping you quickly identify the size and compatibility. Just ATXASUS Tuf Gaming B650-Plus Wifi (Amazon)ASUS Tuf Gaming B650-Plus Wifi (B&H)ATX is both the name of the standard and
also how we refer to the most common size. If you've ever cracked open the side of a computer case, this form factor will likely look familiar. Measuring in at 305 x 244 mm (12 x 9.6 inches), this size of motherboard has plenty of room for four or more RAM slots, multiple PCIe cards at several lengths, and two to four M.2 slots. For example: The ASUS
TUF Gaming B650-Plus WiFi ($200) is a full-size ATX motherboard for the AMD AM5 platform. It boasts four RAM slots, two M.2 slots, and a PCIe 5.0 slot. These are a great choice for basically any PC build, from your humble living room email checker to a powerful gaming rig. Theyre typically the first to release when a new generation launches, and
have all the new features and options without paying a premium price. You dont need a fancy computer to appreciate the benefits, since ATX motherboards also come in the widest variety of budgets and feature sets. Micro ATXMSI Pro B760M-P (Newegg)A slightly smaller option, micro ATX (or mATX for short) is
increasingly common, thanks to constantly improving energy and thermal efficiency. These boards are the same width as the full-size boards, but shortened on one end to be a 244 x 244 mm square. Youll also find many of the same options and features that you can on ATX boards, without too much of a price increase, making these a popular choice
for midrange gaming PCs. For example: The reasonably priced MSI Pro B760M-P ($99) has the CPU slot for the latest generation of Intel chips, a PCIe 4.0 slot, and only one M.2 slot. The smaller square footprint also opens up a world of flexibility when it comes to choosing a case. While most cases that fit ATX boards have a similar tower design, mATX
cases boast a wider variety of layouts, orientations, and shapes. They can also fit in smaller spaces like bookshelves and entertainment centers, so theyre great for rooms where you want some computing horsepower but dont want it to stand out. Mini ITXGigabyte A510I (Amazon) Gigabyte A510I (Newegg) Mini ITX is the smallest size you're likely to
encounter when building a computer at home. These motherboards are ultracompact, and square like mATX boards, but with the same-size IO shield at the back. Youll usually find just the essentials here in terms of onboard connectivity, with one PCIe slot, two memory slots, and a single M.2 slot. For example: Gigabytes A520I ($110) cuts down to two
RAM slots, one M.2 drive, and a single full-length PCIe lane. If you want to build using an ITX board, youll have to plan around similar limitations. Because of their size, these boards often carry a premium price tag, even for basic models. For high-end gaming or production systems, expect to pay more than the comparable ATX or mATX alternatives, if
you can even find the same features. Experienced builders love the flexibility and tiny cases that these motherboards enable, but they arent for the faint of heart. Building and maintaining a tiny system means working in cramped spaces and finding parts that fit in tight tolerances.eATXMSI MEG X670E (Amazon)MSI MEG X670E (B&H)With the
smaller boards out of the way, we can move on to the bigger offerings, the most common of which is eATX. These boards typically have the same length as a standard ATX board, but are a bit wider. They can vary in width a bit, so make sure to double check your case notes for supported widths if you're building a computer. For example: An absolute
beast of a motherboard, the MSI MEG X670E ACE ($700) sports a trio of PCIe 5.0 slots, four M.2 slots under a heatsink, and a massive number of USB ports both on the rear panel and inside the case. This extra space means more room for components, generally more memory slots, and occasionally a socket for a second CPU. You'll really only find
these in high-end systems meant for heavy workloads that need tons of horsepower, or gaming motherboards that need room for activities like liquid cooling and overclocking. Other SizesApple Mac MiniPhotograph: AppleThere are no rules that say a manufacturer has to use the ATX standard. Some prebuilt systems from big box brands may opt for a
different shape in order to make manufacturing easier. High-end gaming PCs may also use special motherboards in order to fit into smaller or more bespoke cases. There are even more compact systems, like the Intel NUC platform, that use custom motherboards that may have the CPU permanently attached. Apple is also a notable exception, using a
different set of standards to build logic boards, the Apple term for a motherboard. It makes sense, considering the novel form factor of its computer lineup, but it does make upgrading or replacing parts much more difficult. That said, if youre building a computer, youre almost certainly looking for one of the ATX motherboard variants. Which one you
choose will depend on your case choice, desired feature set, and how many parts you want to pack inside. If you want some help planning, make sure to check out our full computer building a new PC. The kind of motherboard you pick highly affects the
performance of the PC since all sizes of motherboards come with different types of motherboards sizes. Motherboards come with different types of motherboards, stick to this page and keep reading until the end to learn about Motherboard Sizes. Motherboards form Factor Comparison ChartIn general,
there are four basic motherboard sizes that are most commonly used these days while building a new PC, the Mini-ITX, MicroATX, ATX, and EATX. So, how do they differ from each other apart from their sizes? Lets take a quick peek:ATX EATXMicro-ATXMini-ITXMax Size12 x 9.612 x 139.6 x 9.66.7 x 6.7RAM Slots2 to 82 to 82 to 42RAM
TypeDIMMDIMMDIMMDIMMDIMM, SODIMMExpansion Slots4 to 8 PCIe Slots2 to 4 PCIe Slots2 to 4 PCIe Slots1 to 41 to 30 to 1SATA ports4 to 124 to 82 to 6Different Motherboard Sizes or Form FactorSince you are looking around to find the best motherboard for your upcoming PC build, there are a few facts
about motherboards regarding their size and form factor. You might already have that in mind whether you want to build a small PC, a standard one, or a full-tower. Depending you with max performance. In terms of form-factor, large-sized
motherboards like an EATX or ATX have good enough room for multiple expansion slots, and other components. Hence, a powerful build is easy to make. On the other hand, if you go with smaller motherboard options like a micro-ATX or mini-ITX, you will have comparatively lesser ports available for expansion cards, and that could become
a limiting factor for the overall PC performance. So, to make things clear, lets discuss each type of motherboard one by one so that you can compare them and choose one suitable for your next PC build. 1. ATXLets talk about the elephant in the room first; the ATX motherboards are every PC builders first choice to consider. Since the size of ATX
motherboards is generally around 12 x 9.6, you can easily plan to build a full-tower or mid-tower using such motherboard is comparatively easier than the other options. Since the ATX motherboard is fairly decent, you can expect the motherboard to come with plenty of heat sinks as well
Apart from that, theres always an opportunity to use multiple graphics cards as ATX motherboards generally have 2 to 4 PCIe slots for video cards. Apart from that, if we speak about RAM slots, most ATX motherboards come with 4 DIMM slots supporting dual or quad-channel memory. Moreover, there are usually plenty of expansion slots for video
cards, sound cards, SATA ports, fan headers, and other adapters. Apart from that, these motherboards provide you the best value for your money as they are so widely and commonly used. Pros:IO section has plenty of portsIdeal for multi-GPU setupsRoom for expansionCons:Not ideal for small PC casesA little expensive than smaller motherboards 2.
Extended ATX (EATX)If you look for a slightly bigger motherboard than the ATX ones, theres an extended version of such motherboard are fairly the same as of an ATX motherboard. But, since the size of
the chassis is bigger, EATX motherboards generally have more expansion slots. You can expect an EATX motherboard to come with a few more heat sinks as well that can help to maintain the temperature of the components. In some cases, there can be up to 8 RAM slots on an
EATX motherboard and sometimes up to 2 CPU sockets as well. Having support for dual-sockets allows you to run two processors at the same time which can make your PCs performance quite high. Pros: Some motherboards even have dual CPU socket support for dual-sockets allows you to run two processors at the same time which can make your PCs performance quite high. Pros: Some motherboards even have dual CPU sockets allows you to run two processors at the same time which can make your PCs performance quite high. Pros: Some motherboards even have dual CPU sockets allows you to run two processors at the same time which can make your PCs performance quite high. Pros: Some motherboards even have dual CPU sockets allows you to run two processors at the same time which can make your PCs performance quite high. Pros: Some mother boards even have dual CPU sockets allows you to run two processors at the same time which can make your PCs performance quite high. Pros: Some mother boards even have dual CPU sockets allows you to run two processors at the same time which can make your PCs performance quite high. Pros: Some mother boards even have dual CPU sockets as well.
ATXUnlike the ATX and EATX motherboards, the XL-ATX motherboards are not used quite often as it does not provide any remarkable advantages over the latter. In terms of size, these are the largest motherboards but are actually very rarely seen in the market these days. An average XL-ATX motherboard usually has dimensions around 13 x 10.4.
Since the majority of people are satisfied with the ATX and EATX motherboard, the need for a larger motherboard is vanishing as the hardware components are becoming more powerful and compact with time. You can definitely use one of these in case you need multiple PCIe slots and need to build a multi-GPU setup for gaming. Apart from offering a
few extra expansion slots, and RAM slots, there is no big advantage of using an XL-ATX motherboard. Pros: Has more RAM slots Ideal for full-tower builds cons: Expensive Not compatible with standard size PC cases 4. Micro ATX (mATX) If you trim down the ATX motherboards by a few centimeters across its length and width, you get a smaller version of
it. With smaller size and build, you do sometimes have to sacrifice a few slots as well.Like an ATX motherboard, you do get to see similar specs like 4 RAM slots, but thats the case when you are buying the high-end models. In mATX models, you do get to see similar specs like 4 RAM slots and fewer PCIe slots as compared to other larger
sizes. Although you get most of the features and compatibility as same as the ATX motherboards, the only drawback is that you will have less room for future expansions. As of today, all the mATX motherboards out there are quite similar to ATX ones and support similar to ATX ones and support similar to ATX motherboards out there are quite similar to ATX ones and support similar to ATX motherboards out there are quite similar to ATX ones and support similar to ATX motherboards out there are quite similar to ATX ones and support similar to
ports, the pricing of these mATX motherboards is more affordable. Apart from that, the compact size of these kinds of motherboards allows you to use them even with smaller PC cases. Pros: Less pricey than larger models Ideal for smaller builds Also compatible with ATX cabinets Cons: Fewer expansion slots Not an ideal option for high overclocking 5.
Mini-ITXYou can pretty much guess about the size of these motherboards by just looking at the name. The mini-ITX boards are actually the smallest motherboards out there on which you can use the standard-sized hardware components. The size of these motherboards is generally around 6.7 x 6.7, which makes them the smallest among all, so far.
That said, the availability of a larger VRM section and heatsinks are very rare. With such a smaller form factor, you cannot expect the motherboard to have more than one slot for that. Most mini-ITX motherboards use 4 pin power
componentsFit for small cabinetsCons:Limited VRM performance and HeatsinksNot a good choice for overclocking6. Nano-ITX ones, measuring around 4.7 x 4.7 only. Primarily, these motherboards are designed to consume very low
power. Hence, they are pretty limited and only work with specific hardware components. That said, the nano-ITX motherboards are often used to build small computers ideal for smart entertainment purposes like PVRs, smart TVs, or automation purposes mostly. Pros: Cons:Not compatible with all types of standard PC components 7. Pico-ITXPico-ITX
implemented easily in industrial automation devices, and similar other devices. Pros: Ideal for small IoT devices Less complicated to use Cons: Compatible with a limited range of hardware Conclusion We hope you have got a decent idea about each kind of motherboard by now. While buying a motherboard, basically, you pay for the expansion slots and
other connection ports. That is why the larger-sized motherboards with more slots are expensive as compared to the smaller boards, which have fewer ports. For your upcoming PC build, if you want to utilize multiple GPUs and want to build an extremely powerful PC, an EATX or ATX motherboard can be the best pick for you. On the other hand, if you
motherboard to put in your PC, not only that, but you also have to opt for a size. Motherboards are probably the most important part of your system, as they facilitate all the communication and power delivery between components, which makes it pretty invaluable if you ask us. But what size is best? Motherboard sizes are known as Form Factor,
which have been standardized for a while. You might be familiar with the term ATX which seems to be the most popular. Intel first coined the term in 1995, since then it has been the de facto standard for PCs. Because of this standardization, users can pretty much freely combine whatever case and motherboard they want, and be relatively certain
theyll both fit together. Standardization is a beautiful thing. Back in 2004, Intel tried to release an updated form factor BTX intended to replace ATX. Some manufacturers adopted the new standard, but ultimately Intel ceased all development of BTX in 2006. Trust Intel to be pushing new motherloads. So that means ATX has been the go to form factor
for nearly 30 years, and its the form factor all others are built around (well, the mainstream ones anyway) Remember though, you cant just mishmash EVERY component without consequence, you need a CPU that mont cause a
system bottleneck. With that said, what is the difference between all of the form factors? is there any specific advantages. So, lets explore. Here is a breif overview of the standard sizes of motherboard you can come to expect when building a PC, weve
outlined them in a nifty little chart for you to study. If you need a one-stop-shop to understanding motherboard form factors, then here it is. These are the four main mtherboard form factors, that are produced today, obvuously they come in a wide range of different chisets, sockets, and memory standards, but thats a topic for another article. Now well
go a litte more into what features these different sizes usually carry and what use case? A full-size ATX board has a height of 305mm and a width of 244mm, or 12 x 9.6 inches. When you're planning a build, if you're
ATX motherboard. The ATX board is built for running in all sorts of systems. Usually featuring 4 Memory DIMMs, it can support dual or quad-channel memory, giving the user better performance in specific applications over a board that doesn't support this type of configuration. ATX boards usually have more than one expansion slot, allowing you to
run multiple PCIe devices at the same time, if your case and power supply are up to the task. The number of expansion slots allows users to install quality-of-life upgrades, like a better network card, or a storage card for example. This type of motherboard usually provides manufacturers with enough space to install big heatsinks, an intricate VRM
(voltage regulator module) a bigger rear IO, and more SATA and USB header connectors, giving you a better experience. with more connector for the CPU, allowing you to run high-end processors, and even overclock the processors on unlocked motherboards. You
can provide the excess power by plugging in the additional CPU connector. P Have a complete I/O set Plenty of room for onboard heatsinks Good VRM support and more robust poer delivery (generally) than smaller baords Can't fit into compact form-factor cases More expensive than mATX and mini-ITX motherboards Extended ATX boards (EATX) can
support both mainstream desktop and workstation processors and are slightly bigger than ATX boards. These motherboards measure 305x330mm (12 x 13 inches rather than 12 x 9.6), giving you more PCIe connectors, especially on the workstation variants. This is thanks to the additional PCIe lanes that workstation processes provide over desktop
motherboard supports. Most modern workstation CPUs want more than the standard 4 DIMM slots. Some EATX motherboards run you a lot of money, but they are designed to facilitate the most power and
performance possible; cooling is a big part of that. Some have water cooling built in Often include QOL features Robust power delivery Ususally have better (or more) PCIe connectors Fewer products on the market Can't fit in smaller, more standard PC cases More expensive than ATX motherboards mATX boards have a square shape, measuring
244x244mm (9.69.6 inches). They typically have between 2-4 RAM DIMMs, which is great if you're looking to have a powerful PC in a compact case and have up to 4 expansion slots, allowing you to run with expansion cards should you need them. We have a review of this MSI Project Zero motherboard if you want to know more about it. IO-wise,
you're going to have enough to get by. Manufacturers also often include extra features like built-in WiFi with this type of card, so you won't have to use one of your few expansion slots to have such a feature available. You can still get 4 Memory slots on a micro-ATX motherboard. Though some can have 2. In terms of features, youre not going to find as
many as on a standard ATX form factor. This is because they are much smaller, for many reasons. Power delivery can often be an afterthought on these motherboards, even the high-end chipset variants; again because of the lack of space. But they still deliver in terms of performance. This form factor can be fantastic when youre looking to build a
smaller PC that doesnt compromise on power. Or, when building something like a multi-media PC you want to sit quietly in the corner and not take up much space. Smaller than ATX while retaining most of the features Ability to include in more compact cases Inferior power-delivery, not suitable for high overclocks Not a huge amount of PCIe slots
X670I ROG strix Mini-ITX boards are 170x170mm (6.76.7 inches) and are the smallest type of board that can still run full-sized PC components. While the mATX could still function in most aspects like an ATX board, mini-ITX boards are those matter than two RAM DIMMs on the typical mini-ITX, with a single expansion
slot. With no support for multi-GPU configurations. These motherboards are set out to be as small as possible, not as feature-rich as possible. Weve seen people make portable PCs out of motherboards this size. Mini-ITX motherboards can feature any chipset though the price range varies dramatically as you might expect. Just because its small doesn't also be as small as possible.
mean its bad. A Mini-ITX motherboard can feature all the same technology as a full-sized ATX Z790 motherboard. Modern features Very compact Can still run a fully-fledged PC Limited IO Power delivery is not ideal for high-end components XL-ATX Motherboard Unlike the other featured motherboard sizes, XL-ATX boards do not abide by a standard
height and width. XL-ATX boards are very rare but deserve an honorable mention because of the sustained popularity of the Core in Extreme processors. This form factor has a lot of the similar features and markings of an EATX motherboard, just slightly larger to accommodate for better heatsinks and dedicated power and reset buttons. Think of
these as mostly more dressed-up and refined EATS motherboards. However, they arent really in production anymore. Supports more memory Uses Workstation processor support Very rare Can't fit in most cases Expensive because
of their obsolescence and small quantity You might have seen mention of VRMs in this aticle, and power delivery, but what does that all mean? Its complicated, but essentially, VRM stands for the way power is distributed from the motherboard to
the other components. MOSFET stands for metal oxide semiconductor field-effect transistor. It's essential to ensure that your processor runs efficiently at a stable current, the MOSFETs also amplify or switch the electronic signal to match a particular component's needs.
and transistors, the better the performance and reliability. All in all, it all boils down to personal preference when it comes to motherboard sizes. If you're working with limited space in your home or at the office, then a small form-factor PC is a great choice. A mini-ITX board can still rock a potent CPU-GPU combo, allowing you to run demanding
software with a compact build. While it's easy to source components for a compact system, the building process is kind of a drag and inexperienced PC builders will struggle to get good cable management, resulting in bad airflow and high temperatures during bigger workloads. Fan size is also limited, so this type of system will be louder. If you're not
constricted by space, then we think that an ATX-based PC is the way to go. Most of the time you'll get a better VRM, better cooling, and you can use the expansion slots to further customize your build, and you can use the expansion slots to further customize your build, and you can use the expansion slots to further customize your build, and you can use the expansion slots to further customize your build.
tower cases supporting air, hybrid, and water-cooled builds, and the entire building process is much more user-friendly. If you're a gamer, craving to build your own PC is something that has definitely crossed your mind at least once. But the thought of piecing together all the components yourself can be intimidating. Fortunately, that's what this
article is for; to provide you with step-by-step instructions on how to build a PC. You can also check out our fantastic PC Part Picking website, PC Builder which has an incredibly easy way for you to pick the parts you want, check they are all compatible, ensure they are within the budget you have decided upon and also give you the recommended
retailers to go and purchase them from! To be able to build your own desktop PC, you need to have the right tools. In this article, we'll be covering all the important tools you need to have the median tools you need to have the right tools. In this article, we'll be covering all the important tools you need to have the right tools. In this article, we'll be covering all the important tools you need to have the right tools. In this article, we'll be covering all the important tools you need to have the right tools. In this article, we'll be covering all the important tools you need to have the right tools. In this article, we'll be covering all the important tools you need to have the right tools.
you have an M.2 device, then tag along with you a #0 screwdriver that's it. We recommend using magnetic screwdrivers to easily get into tight places. Bowl Well, it doesn't have to be a bowl, per se, but you will need somewhere to put all of the screws you are using during your build. Workspace Whether a table or floor, make sure it is large. To
prevent unwanted damage from ESD (electrostatic discharge), use a surface that isn't metal preferably, a wood or a glass surface. Also, avoid carpets. Anti-Static electricity. They aren't necessary, but $5 for a flimsy cable is worth
ensuring your several-hundred-dollar rig. Zip Ties Needless to say, tying up the cables so they'll look clean can be a challenging task. This is why you need zip ties. Some cases (like the one in Our Favorite Gaming PC Components section) have Velcro straps. Scissors/Cutter Obviously, you're going to have to cut a few things here and there as you
learn how to build a PC. So, make sure you have a pair of scissors/cutters within your reach. If you want to know how to assemble a computer right. The first part to your plan will be picking parts. There are plenty of things you
need to consider such as compatibility, what you plan on using it for, etc. For the purpose of making the best PC building guide, we'll be using our favorite gaming PC components as an example to teach you how to build your own computer kit from start to finish. However, you might want to get different parts than what you choose. Maybe you want
something cheaper, maybe you prefer AMD to Intel, or maybe you want a smaller form factor case. Whatever your reasoning, we recommend using PCPartPicker to check parts compatibility and keep track of your build. Moreover, you should also be patient enough and wait to snag the best deals online for your parts. For instance, part prices
fluctuate a lot. Using a website like CamelCamelCamel.com to see the price of a product on Amazon as well as other 3rd party sites over the course of its whole shelf life. One last piece of advice before we get hands-on with how to build a PC: reference your manuals. Or put another way, don't be afraid to search for more info while building your PC if
you are uncomfortable. Building computers especially for beginners can get overwhelming and fast. Thankfully, if you are uncertain about how to do a particular step, there are a lot of resources. Of course, you might find that the visual aspect of
YouTube videos helps you better understand exactly what you are supposed to do. Well, not literally breaking it more like stripping it down. Taking the Phanteks P400S ATX Mid Tower Case as an example Step 1: Unscrew the front panel and 2 side panels using the #2 Phillips screwdriver Step 2: Place the screws in a bowl or a mini magnetic parts
tray Step 3: Remove the panels and place them on a safe surface or just put them back inside the case box Step 4: Remove the top magnetic dust filters Now at this point, you'll want to familiarize the case's layout (like I usually do), such as where the SSDs and HDDs go, the direction where the power supply's exhaust should be facing, the mounts,
and which standoffs to use to fit your motherboard. This should give you a general idea where things should be routed to. Further Reading: Best PC Cases Get your motherboard. This should give you a general idea where things should be routed to. Further Reading: Best PC Cases Get your motherboard. This should give you a general idea where things should go and which holes the cables should be routed to. Further Reading: Best PC Cases Get your motherboard. This should give you a general idea where things should go and which holes the cables should go and which should give you a general idea where things should go and which holes the cables should go and the
PSUs are pretty uniform, so if you've installed one PSU, you've installed them all sorta. Don't worry though if you are first time builder, just: Step 1: Open the bracket from the back of the case. Step 2: Place the PSU so that its exhaust is blowing out of the case Step 3: Secure the bracket from the back of the case. Step 4: Screw it back in place. If you're using
an old case, then you might need to push the case firmly against the inside wall of the case before you lock it in place with the four screws. The power supply we're using as an example (Corsair CXM 550W 80+ Bronze PSU) is semi-modular. This means that some of the case firmly against the inside wall of the case firmly against the inside wall of the case before you lock it in place with the four screws.
like the one that leads to the motherboard and which will always be needed, can not be removed from the PSU. Further Reading: Best Power Supply for Gaming During the motherboard prior to installing it. Before you even unbox the CPU, be aware that you should never touch the bottom where the pins are; it's
always best to hold it by its sides. Intel and AMD processors largely install the same way, but there are slight differences as covered below. Step 1: Slide the spring-loaded retention arm out and up. Step 2: Lift the bracket up (don't bother taking off the plastic cover). Step 3: Gently place the processor on top of the socket by matching the golden
triangle located on the bottom-left corner of the Intel processor chip with the triangle on the socket bracket. You shouldn't need to press down on it. If it doesn't align properly, then pick it up and make sure it's placed properly and that none of the pins are damaged. Step 4: Slide the bracket back to its original position Step 5: Slide the spring-loaded
retention arm back down and lock it back in place Note: It's perfectly alright for the plastic cover at this point has served its purpose. Personally, I like to keep it somewhere safe so I can use it to protect the pins on the
motherboard CPU socket in the future in case I want to remove the CPU for upgrade purposes. Step 1: Lift the spring-loaded retention arm out and up. Step 2: Gently place the processor on top of the socket by matching the golden triangle located on the bottom-left corner of the AMD processor with the triangle on the socket. You shouldn't need to
press down on it. If it doesn't align properly, then pick it up and make sure it's placed properly and that none of the pins are damaged. Step 3: Make sure it's in place, it's time to install the RAM or memory sticks. Further Reading: Best CPU for
Gaming The RAM are probably the easiest to install. Step 1: Push the latches on either end of the RAM slots on the motherboard. Step 2: Line up the memory into the slot. The motherboard we're using in this example (MSI H310M Pro-VD Micro
ATX Motherboard) only has 2 RAM slots. If the motherboard you have has 4 or 8 slots, refer to your motherboard's manual to see which slots to fill first to ensure you are running it in Dual Channel mode, and thus wasting its capacity. Further Reading: Best RAM for
Gaming While some components are highly standardized, CPU coolers come in a lot of different shapes and sizes; many third-party CPU coolers even require installing a backplate. As such, you should follow its installation guide. The overall idea is to affix the backplate that comes with the CPU cooler (with the four pins) through the back of your
motherboard first so you can mount the cooler in place later after installing the motherboard inside the case (5. Motherboard (MOBO) Installation). When you're done installing the motherboard with the CPU mount backplate, it's time to install the cooler on the CPU. Keep in mind that most CPU coolers have pre-applied thermal paste. If yours
doesn't, add a small blob of thermal paste, ideally, around the size of a pea, on the center of the CPU. This will then spread out evenly as you mount the cooler in place. It's also important to note that installing an air CPU cooler is different than installing an air CPU cooler. Air CPU cooler is different than installing an air CPU cooler is different than installing an air CPU cooler.
unattached, installing the heatsink onto the pins of the mounting plate first before installing the motherboard inside the case. When done, all you need to do is to simply reattach the fans to the mounting plate first before installing the motherboard. There's more
than one way to find the CPU fan slot: Read the label on the motherboard. Refer to your motherboard manual to see where the CPU fan slot is located. Liquid CPU cooler Installing a liquid CPU cooler follows the general process of installing the mounting plate first before attaching the heatsink onto the CPU. Taking the liquid cooler and the case we
used as an example, put the 240mm liquid CPU cooler at the front of the case as an intake fan and screw it in place using the #2 Phillips screwdriver along with the included radiator. This acts as two intake fans at the same time, so using the #2 Phillips screwdriver along with the included radiator. This acts as two intake fans at the same time, so using the 2nd included fan as a second exhaust will balance the airflow (2 intake fans/2 exhaust). More of this in the 7 included fan as a second exhaust will balance the airflow (2 intake fans/2 exhaust).
Fan Installation section. Also, you may need to plug in a second 4-pin cable dedicated to the AIO cooler for the pump or even a Molex connector if you're quing to use the CPU cooler (Cooler Master Liquid Lite 240 Liquid Cooler) on our example for the RGB lighting setup and whatnot. If you're unsure or confused, always refer to your CPU
cooler manual. When done, it's time to install the motherboard inside the case. Further Reading: Best CPU Coolers Installing the motherboard is kind of tricky. In fact, you will need to have patience with this step of learning how to build a PC. The standoff screws and I/O shield can be notoriously annoying. Both tasks represent a balancing act
between power and dexterity. Still, it's nothing too complex, just annoying. Step 1: Grab the I/O shield and install it by pushing it into the rectangular slot found in the back of the case. Push on the edges not in the middle otherwise, it could break. You need to do this first because you can't put it in place once the motherboard is installed. Step 2:
Check for pre-installed motherboard standoffs and see if it's in line with the holes found on your selected motherboard standoffs for ATX-sized boards while some don't. Make sure you double-check. Step 3: Lay the case down and carefully lay your
motherboard on top of the standoff screws as you line it up with the case to secure the motherboard in. Don't tighten them too much at a time, though, as you can crack your motherboard. It's very important to refer to your
case's and your motherboard's manual to identify which screw to use or if you're simply confused. Further Reading: Best Motherboards for Gaming The Phanteks P400S ATX Mid Tower Case comes pre-installed with 2x 120mm case fans (1 intake and 1 exhaust). But since we included a Cooler Master Master Liquid Lite 240mm Liquid Cooler in this
example, we want to balance things out for maximum airflow. Step 1: Unscrew the included 120mm intake fan from the front panel using the #2 Phillips screwdriver. Step 2: Move it to the top (further to the rear side) as a second exhaust fan and screw it in place. As mentioned above, you want to equalize the number of intake/exhaust to achieve
quality airflow inside the case. You should remember that not all cases have included fans. So, if it only comes with 1 fan, then your best bet is to place it at the rear to act as an exhaust. Just make sure you get another 120mm fan as an intake later on. Further Reading: Best Case Fans Now, it's time to install the hard disk drives (HDD) and the solid
state drives (SSD) or even the M.2 SSD if you decided to use this instead. If we go back to 1. Breaking the Case, you should already have an idea where the drives should go in your case. And if we use the case from our example (Phanteks P400S ATX Mid Tower Case), we can put the Hitachi Ultrastar 7K3000 2TB HDD inside the hard drive bay found
at the back of the case (not the rear). We can also put the ADATA Ultimate SU800 512GB SSD on this side by screwing it in its respective place. If you have an M.2 SSD, refer to your motherboard manual to see where it should go. These things go directly into your motherboard and is not designed to be placed in any drive bays. As always, refer to
your case manual if you're confused or unsure where to store your storage devices. And remember that there are computer cases that may restrict access to specific hard drive bays if you use a radiator-type cooling system as an intake. As such, make sure you do your research prior to making any selection. Further Reading: Best Budget SSDs After
installing the storage devices, it's time to install the graphics card the heart of every gaming PC. And often the most exciting bit for gamers when you learn how to build a PC. When you first take it out from the anti-static bag, place it on a safe, non-metal surface and make sure you do the following: Step 1: Locate the PCIe slot on your motherboard
that is closest to your CPU. Step 2: Remove the 2x PCIe slot covers with the PCIe slot covers with the PCIe slot until you hear a click sound,
indicating it's locked in place. Step 5: Screw the PCIe slot cover you just unscrewed to secure the graphics card. Don't forget to always check the dimensions of the graphics card before purchasing so you can evaluate and see whether or not it'll fit just right inside the case. In particular, some of the high-end GPUs have large, dedicated
 coolers that can make it hard to squeeze into cases, even the standard ATX Full-tower cases. Further Reading: Best Graphics Card for Gaming Along your motherboard, you will have a lot of different pins and ports. Honestly, this can be one o
the most challenging tasks when building a computer. You have a lot of small cords with sometimes very similar connectors all going to different places. In fact, I still have problems with this from time to time. To make sure you're plugging the right cables to the right ports, refer to your motherboard installation manual. Some cases come with LED
lights (like the Phanteks P400S ATX Mid Tower Case), and they have to be oriented correctly with the + and pins on the board. Now that everything's in place, it's time to hook the cables go to which ports by now if you followed the very first step. So do that if you haven't
already or proceed and check which holes the cable should be routed to. Step 1: Connect the 8-pin EPS from the PSU and slide it through the cable management hole to get to the
24-pin ATX port of the motherboard, usually located at the right side of the motherboard Step 3: Take the SATA data pins are located at the lower right portion of the
motherboard just below the 24-pin port. Step 4: Connect the PCIe 6-pin connector from the PSU to the graphics card through the cable management holes For now, the cables don't have to be orderly. First, we need to test that the machine is actually running as intended. At this point, you will need to bring some of your peripherals into the picture,
like a monitor, keyboard, and mouse. Connect the power supply to an electrical outlet or an automatic voltage regulator (AVR) and turn the switch behind the power supply on! It's very common for builders including me! to forget about this.) If it turns on, hit the delete key until the BIOS screen pops up. Try to
check the CPU temperatures and make sure it operates somewhere around 30-40 degrees Fahrenheit). Similarly, check if the drives are registered and whether or not your memory is operating at the right frequencies. If you get to this part of the building process, you're good to go. But if you didn't get any of this, check
everything from the start and make sure you didn't miss a thing. Now that you're sure you have a working computer, you can now tidy up the cables at the back and use the Velcro straps and zip ties to secure everything in place. Now that your computer is working, you can bring it to where it'll spend the rest of its life and hook up all of your
peripherals for good this time. Now, well install the operating system. Modern PC setups don't have optical drives so you'll need to download the Windows 10 installer from this link. Keep in mind you will need a product key if you wish to install a paid version of Windows. And in
case you can't afford Windows 10 right now, you can install a Linux distribution (Ubuntu or Mint). This obviously lacks many common Windows, so most software, including games, so you will likely want to get Windows 10 eventually. When you're done, make sure the computer is turned off and follow the
steps below: Step 1: Plug the flash drive that has the OS installed in your computer. Step 2: Turn the computer on and constantly hit the delete (Del) key to enter BIOS. Step 3: Browse around and find the Boot order by prioritizing the flash drive that contains the OS. Step 5:
Save the changes and restart your computer. Step 6: Follow the instructions indicated to complete the installation, Remember, this will take a little while. NOTE: It'll take some time to complete the installation process but once installation pro
right chipset driver for your motherboard and graphics card. To do this Step 1.1: Head over to the motherboard manufacturer's website and download the respective motherboard drivers. Here are some of the more popular motherboard manufacturer's website and download the respective motherboard drivers.
straightforward since there are really only two viable competitors. Click this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA graphics card drivers or this link to download AVIDIA
does so. Step 3: Restart your computer after installation (or it may automatically do it for you) and you're done! At this point, you're basically done so CONGRATULATIONS! That wasn't so hard after all, right? From here, you'll want to install the programs you need. For instance, if you're a gamer, online gaming platforms such as Steam or EPIC
Games are probably at the top of your list. So now youve found out how to build a PC and have been through the complete steps, you can enjoy the achievement of owning a PC you put together yourself. It's not as hard as many would believe to put a computer together, but we hope keeping this article close by for reference was a good idea! What are
the popular motherboard form factors and how are they different? Get the plain English answers here with our motherboard size guide. While there are dozens of form factors and how are they different? Get the plain English answers here with our motherboard size guide. While there are dozens of form factors and how are they different? Get the plain English answers here with our motherboard size guide. While there are dozens of form factors for desktop computers, most of them are either obsolete or developed for specialized purposes. As a result, almost all consumer motherboards sold today belong to one of these
form factors: Mini-ITX, MicroATX and ATX.To help you compare the difference in motherboard form factor Side by side in the image below: Motherboard form factor Side by side in the image below: Motherboard form factor Side by side in the image below: Motherboard form factor Side by side in the image below: Motherboard form factor Side by side in the image below: Motherboard form factor Side by side in the image below: Motherboard form factor Side by side in the image below: Motherboard form factor Side by side in the image below: Motherboard form factor Side by side in the image below: Motherboard form factor Side by side in the image below: Motherboard form factor Side by side in the image below: Motherboard form factor Side by side in the image below: Motherboard form factor Side by side in the image below: Motherboard form factor Side by side in the image below: Motherboard form factor Side by side in the image below: Motherboard form factor Side by side in the image below: Motherboard form factor Side by side in the image below: Motherboard form factor Side by side in the image below: Motherboard form factor Side by side in the image below: Motherboard form factor Side by side in the image below: Motherboard form factor Side by side in the image below: Motherboard form factor Side by side in the image below: Motherboard form factor Side by side in the image below: Motherboard form factor Side by side in the image below: Motherboard form factor Side by side in the image below: Motherboard form factor Side by side in the image below: Motherboard factor Side by side in the image below: Motherboard factor Side by side in the image below: Motherboard factor Side by side in the image below: Motherboard factor Side by side in the image below: Motherboard factor Side by side in the image b
inRAM Slots22 to 42 to 8RAM TypeDIMM, SODIMMDIMMExpansion Slots12 to 44 to 7Graphics Cards0 to 11 to 31 to 4SATA ports2 to 64 to 84 to 12In addition to the above difference, you will often find that the cheapest motherboards are in MicroATX form. This makes sense since Mini-ITX boards require more refined manufacturing while
ATX boards have more components. That being said, high-end motherboards come in all three form factors including MicroATX ones. What do Mini-ITX, MicroATX and ATX Motherboards share a surprising number of common traits: 1. They can support the
same CPUAs long as they are of the same generation, all three form factors will have the same CPU socket. This is a big deal, since it means that a Mini-ITXmotherboard is able to pack as much as itsfull-sized ATX cousin (provided you're not overclocking or going fortop end CPUs like Intel-E).2. They run the same graphics
cards...IF the motherboard has aPCI-Express x 16 slot AND the graphics card is able to fit into thecomputer case. However, high-end graphics cards tend to be massive somost Mini-ITX cases (and some MicroATX ones) won't have enough space toaccommodate these behemoths. For those of you relying on integrated graphics, the good news is
that mother board size no longer affects graphics performance ever since Inteland AMD fused their graphics processing unit with the CPU (instead of leaving it on the mother board). Their back panel ports are similar.
Rather, the number and type ofback panel ports on a motherboard are influenced by its price(expensive board = more and better ports). SEE ALSO: Recommended Motherboard to put in your PC, not only that, but you also have to
opt for a size. Motherboards are probably the most important part of your system, as they facilitate all the communication and power delivery between components, which have been standardized for a while. You might be familiar with
the term ATX which seems to be the most popular. Intel first coined the term in 1995, since then it has been the de facto standardization, users can pretty much freely combine whatever case and motherboard they want, and be relatively certain theyll both fit together. Standardization is a beautiful thing. Back in
2004, Intel tried to release an updated form factor BTX intended to replace ATX. Some manufacturers adopted the new standard, but ultimately Intel ceased all development of BTX in 2006. Trust Intel to be pushing new motherloads. So that means ATX has been the go to form factor for nearly 30 years, and its the form factor all others are built
around (well, the mainstream ones anyway) Remember though, you cant just mishmash EVERY component without consequence, you need a CPU that matches the same socket as your motherboard, memory standard, and a GPU that wont cause a system bottleneck. With that said, what is the difference between
all of the form factors? is there any specific advantages. So, lets explore. Here is a breif overview of the standard sizes of motherboard you can come to expect when building a PC, weve outlined them in a nifty little chart for you to study. If you need a
one-stop-shop to understanding motherboard form factors, then here it is. These are the four main mtherboard form factors that are produced today, obvuously they come in a wide range of different chisets, sockets, and memory standards, but thats a topic for another article. Now well go a little more into what features these different sizes usually
carry and what use case they are best for. You might know the size you want, but will that motherboard have a the features needed to fulfil your specific use case? A full-size ATX board has a height of 305mm and a width of 244mm, or 12 x 9.6 inches. When you're planning a build, if you're picking up an ATX motherboard, you're going to want to pair
it with an ATX-compatible PC case. These can either be super-towers, full-towers, middle-towers, middle-towers, middle-towers, full-towers, middle-towers, m
sorts of systems. Usually featuring 4 Memory DIMMs, it can support dual or quad-channel memory, giving the user better performance in specific applications over a board that doesn't support this type of configuration. ATX boards usually have more than one expansion slot, allowing you to run multiple PCIe devices at the same time, if your case and
power supply are up to the task. The number of expansion slots allows users to install quality-of-life upgrades, like a better network card, or a storage card for example. This type of motherboard usually provides manufacturers with enough space to install big heatsinks, an intricate VRM (voltage regulator module) a bigger rear IO, and more SATA and
USB header connectors, giving you a better experience with a 6/8-pin connector for the CPU, allowing you to run high-end processors, and even overclock the processors on unlocked motherboards. You can provide the excess power by plugging in the additional CPU
connector.P Have a complete I/O set Plenty of room for onboard heatsinks Good VRM support and more robust poer delivery (generally) than smaller baords (EATX) can support both mainstream desktop and workstation processors
and are slightly bigger than ATX boards. These motherboards measure 305x330mm (12 x 13 inches rather than 12 x 9.6), giving you more PCIe connectors, especially on the workstation variants. This is thanks to the additional PCIe lanes that workstation processes provide over desktop processors. They sometimes have dual-socket support, allowing
you to run two CPUs using the same board, but this configuration is old now and there are not many newer examples of this with current generations. You can usually tell its a workstation configuration (by the chipset, usually) or take a look at the amount of memory DIMM slots that the motherboard supports. Most modern workstation CPUs want
more than the standard 4 DIMM slots. Some EATX motherboards include in-built water cooling CPU blocks on standard desktop configurations because the extra space allows for them. These motherboards run you a lot of money, but they are designed to facilitate the most power and performance possible; cooling is a big part of that. Some have
water cooling built in Often include QOL features Robust power delivery Ususally have better (or more) PCIe connectors Fewer products on the market Can't fit in smaller, more standard PC cases More expensive than ATX motherboards mATX boards have a square shape, measuring 244x244mm (9.69.6 inches). They typically have between 2-4 RAM
DIMMs, which is great if you're looking to have a powerful PC in a compact case and have up to 4 expansion slots, allowing you to run with expansion slots, allowing you to run with expansion cards should you need them. We have a new enough to get by. Manufacturers also often include
extra features like built-in WiFi with this type of card, so you won't have to use one of your few expansion slots to have such a feature available. You can still get 4 Memory slots on a micro-ATX motherboard. Though some can have 2. In terms of features, youre not going to find as many as on a standard ATX form factor. This is because they are much
smaller, for many reasons. Power delivery can often be an afterthought on these motherboards, even the high-end chipset variants; again because of the lack of space. But they still deliver in terms of performance. This form factor can be fantastic when youre looking to build a smaller PC that doesn't compromise on power. Or, when building
something like a multi-media PC you want to sit quietly in the corner and not take up much space. Smaller than ATX while retaining most of the features Ability to include in more compact cases Inferior power-delivery, not suitable for high overclocks Not a huge amount of PCIe slots X670I ROG strix Mini-ITX boards are 170x170mm (6.76.7 inches)
and are the smallest type of board that can still run full-sized PC components. While the mATX could still function in most aspects like an ATX board, mini-ITX, with a single expansion slot. With no support for multi-GPU configurations. These
motherboards are set out to be as small as possible, not as feature-rich as possible. Weve seen people make portable PCs out of motherboards this size. Mini-ITX motherboards can feature any chipset though the price range varies dramatically as you might expect. Just because its small doesn't mean its bad. A Mini-ITX motherboard can feature all the
same technology as a full-sized ATX Z790 motherboard. Modern features Very compact Can still run a fully-fledged PC Limited IO Power delivery is not ideal for high-end components XL-ATX boards are very rare but
deserve an honorable mention because of the sustained popularity of the Core i9 Extreme processors. This form factor has a lot of the similar features and markings of an EATX motherboard, just slightly larger to accommodate for better heatsinks and dedicated power and reset buttons. Think of these as mostly more dressed-up and refined EATS
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motherboards. However, they arent really in production anymore. Supports more memory Uses Workstation processor support Very rare Can't fit in most cases Expensive because of their obsolescence and small quantity You might have seen mention of VRMs in this aticle, and power delivery, but what does that all mean? Its complicated, but essentially, VRM stands for the voltage regulator module. It's comprised of MOSFETs, chokes, and capacitors. Each of them impacts the way power is distributed from the motherboard to the other components. MOSFET stands for metal oxide semiconductor field-effect transistor. It's essential to ensure that your processor runs efficiently at a stable current, the MOSFETs also amplify or switch the electronic signal to match a particular component's needs. All you need to know really is the more power

ges and the more robust the delivery system, the better. Whether you're planning on buying a premium gaming motherboard or are looking to snatch a good price on a clean-looking, business-branded model, you should always purchase a product that has an intricate VRM. The more chokes, MOSFETs, and transistors, the better the performance and the office, then a small form-factor PC is a great choice. A mini-ITX board can still rock a potent CPU-GPU combo, allowing you to run demanding software with a compact build. While it's components for a compact system, the building process is kind of a drag and inexperienced PC builders will struggle to get good cable management, resulting in bad airflow and higher process is also limited, so this type of system will be louder. If you're not constricted by space, then we deen proceed PC builders will struggle to get good cable management, resulting in bad airflow and higher process is also limited, so this type of system will be louder. If you're not constricted by space, then we have a great choice. A mini-ITX board can still rock a potent CPU-GPU combo, allowing you for un demanding software with a compact build. While it's component sort is a great choice. A mini-ITX board can still rock a potent CPU-GPU combo, allowing you for un demanding software with a compact build. While it's component sort is a great choice. A mini-ITX board can still rock a potent CPU-GPU combo, allowing you for un demanding software with a compact build. While it's a great choice. A mini-ITX board can still rock a potent CPU-GPU combo, allowing you for un demanding software with a compact build in the potent of th	s easy to t an ATX- water- luence ze for E-
It motherboards can vary, as there is no strict industry standard for this form factor. The size given above is a common dimension, but it's always best to check the specifics for a particular E-ATX motherboards metword and tooling solutions. Expansion Capabilities: They typically come with 4-7 PCIe slots kin means plenty of room for multiple GPUs, sound cards, and other PCIe devices. ATX PC motherboards are ideal for user applications. Memory and Storage Options: Most ATX motherboards support four or more RAM slots, enabling dual or quad-channel memory configurations. They also offer numerous SATA and M.2 slots for ample storage options. Connectivity and Features: These motherboards often include a wide range of connectivity options like USB offer numerous SATA and M.2 slots for ample storage options. Connectivity and Features: They they also offer numerous SATA and M.2 slots for ample storage options. Connectivity and Features: They are ideal for user also common ideal for gamers who want to customise their rig. Micro-ATX Motherboards: Compact Size: Measuring 244mm x 244mm, Micro-ATX motherboards are smaller than ATX but larger than Mini-ITX. This size sance between space-saving and functionality. Expansion Slots: They typically have 2-4 PCIe slots, sufficient for a single GPU setup and a couple of additional cards. This makes them suitable for most gaming and general computing needs. Memory Support furior-ATX boards usually support up to four RAM slots, similar to ATX, and popular choice for budget-conscious builders who still want room for system growth. Mini-ITX motherboards are fitten more affordable than ATX mother boards are deslowing for smoor cases. They are ideal for compact, space-efficient builds. Limited Expansion: Typically, they have only one PCIe slot, which is usually occupied by a graphics card. This limits expansion but is sufficient for many gaming and media centre setups. Memory and Storage: Most Mini-ITX motherboards have two RAM slots and a limited number of many figurations. Measure the	diting or B 3.x, strikes a decent mall form of SATA tages, its get?Your
al motherboard size depends on your specific needs and the size of your computer case. If you have a large case and need multiple expansion slots for GPUs, RAM and other components, an ATX motherboard is a good choice. For smaller builds, like home theatre PCs or compact gaming systems, a Micro-ATX or Mini-ITX motherboard could Consider what components you plan to use and how much space you have when tossing up between computer motherboard sizes. Are all motherboard sizes. Are all motherboard sizes vary. There are several different form factors, each with its own standard size. Common types include the previously discussed ATX, Micro-ATX at and Nano-ITX, which have different dimensions. The size you choose depends on your computing needs. Are all ATX motherboards are exactly the same size. The standard dimensions for an ATX motherboard are 305mm x 244mm. However, the slight variations in size within the ATX specification, especially with some models offering additional features or unique designs. It's always a good idea to check the specific dimensions of the motherboard motherboards (like ATX) offer more expansion slots and features or unique designs. It always a good idea to check the specific dimensions of the motherboard motherboard motherboard motherboard motherboard motherboards (like ATX) offer more expansion slots and features or unique designs. It always a good idea to check the specific and interpretation of the specific properties of a motherboard motherboard motherboard motherboards (like ATX) offer more expansion slots and features or unique designs. It always a good idea to check the specific properties of a motherboard motherboard features or unique desig	and there can tibility ld's after the
ate. Your generated images will be more polished thanever. See What's NewExplore how consumers want to see climate stories told today, and what that means for yourvisuals. Download Our Latest VisualGPS ReportData-backed trends. Generative AI demos. Answers to your usage rights questions. Our original video podcast covers it allnow ondemand. Watch NowEnjoy sharper detail, more accurate color, lifelike lighting, believable backgrounds, and more with our new model update. Your generated images will be more polished thanever. See What's NewExplore how consumers want to see climate stories told today, and what that means for yourvisuals. Download Our Latest VisualGPS ReportData-backed trends. Generative AI demos. Answers to your usage rights questions. Our original video podcast covers it allnow ondemand. Watch NowEnjoy sharper detail, more accurate color, lifelike lighting, believable backgrounds, and more with our new model update. Your generated images will be more polished thanever. See What's NewExplore how consumers want to see climate stories told today, and what that means for yourvisuals. Download Our Latest VisualGPS ReportData-backed trends. Generative AI demos. Answers to your usage rights questions. Our original video podcast covers it allnow ondemand. Watch NowEnjoy sharper detail, more accurate color, lifelike lighting, believable backgrounds, and more with our new model update. Your generated images will be more polished thanever. See What's NewExplore how consumers want to see climate stories told today, and what that means for yourvisuals. Download Our Latest VisualGPS ReportData-backed trends. Generative AI demos. Answers to your usage rights questions. Our original video podcast covers it allnow ondemand. Watch NowEnjoy sharper detail, more accurate color, lifelike lighting, believable backgrounds, and more with our new model update. Your generated images will be more polished thanever. See What's NowEnjoy sharper detail, more accurate value and sharper sharper sharper sharper sharper sharper sha	alGPS t's anded or her as traces, When
open up your computer and take out the motherboard, you would probably get pretty confused about all the different and computer, it might look like this. Click here to read a detailed guide on ways of testing motherboard for faults. To understand how computers word to get a thorough knowledge of every part of the motherboard. However, it is good to know some of the basic parts and how the motherboard connects the various components of a computer system together. Here are some of the typical parts: A CPU socket In fact CPU is directly soldered onto the socket. Since high-speed CPUs creat eat, there are heat exhaust and mounting points for fans right next to the CPU socket. A power connector that distributes power to the CPU and other related parts. Slots for the systems main memory, typically in the shape of DRAM chips. A chip forms an interaction between the CPU, the main memory and other components. On many types therefore the control of the input and output functions. It does not connect directly to the CPU but to the Northbridge and southbridge controls the input and output functions. It does not connect directly to the CPU but to the Northbridge instead. This controller is referred to as the southbridge and Southbridge combined are known as the chipsent. Several nectors, which provide the physical connection between input and output devices and the motherboard. Normally the Southbridge instead. Normally the Southbridge handless such connections. Slots for one or more hard disk drives to connections are Integrated Drive Technology (ROM) chipset, which contains the firmware. This is also called the BIOS. A slot for a video card or dedicated graphics card. Additional slots hardware connection in the form of Peripheral Component Interconnect (PCI) slots. Motherboard Size Variations. Unfortunately, the motherboard manufacturers don't provide much information regarding the effect of motherboard size Chart that explains all of your questions. Unfortunately, the motherboard manufacturers don't provide much informat	ates a lot es of al .A read- ent sizes rd sizes
ording to relevant tasks. This guide about motherboard sizes will give you all the necessary information you need to know when picking your next motherboard. In this guide. This Motherboard Size Chart will cover Pico-ITX, Mini-ITX, Micro-ATX, and Extended-ATXSome general breakdown pertinent to some other motherboard sizes of difference in this Motherboard Size Chart: Motherboard TypesWidthHeightOfficial StandardSSI EEB13 in 12 in YesXL-ATX10.3 in 13.5 in NoHPTX15 in 13.6 in NoPico-ITX Motherboard subject. ATX10.3 in 13.5 in NoHPTX15 in 13.6 in NoPico-ITX Motherboard for specialty applications which require an extremely small, low-power computations. The compact size of a Pico-ITX motherboard is about 100mm x 72mm (or about 4 inches by 3 inches). Pico-ITX motherboards usually include only a few basic connections usually increasing popular format for specialty applications which require an extremely small, low-power computations. In the special popular format for specialty applications which require an extremely small, low-power computations. In Normal Size of a Pico-ITX motherboard is about 100mm x 72mm (or about 4 inches by 3 inches). Pico-ITX motherboards usually include only a few basic connections. Pico-ITX motherboards usually increasing popular format for specialty applications which require an extremely small, low-power computations. Pico-ITX motherboards usually increasing popular format for specialty applications which require an extremely small, low-power computations. Pico-ITX motherboards usually increasing popular format for specialty applications which require an extremely small, low-power computations which a specialty applications which require an extremely small increasing popular format for specialty applications which require an extremely small in creasing popular format for specialty applications which require an extremely small in size and some format for specialty applications. Pico-ITX motherboards in Nord-ATX in the mother popular mother format for specialty applications which require an	uter w power 56 ooards t for any onto a
ro-ATX board.ATX MotherboardIt is the most popular motherboard format of the last decade and a half. The ATX history goes all the way back to 1995. From that time onwards, it has become the most commonly used standard for motherboards. ATX motherboards usually have a size of 305mm x 244mm (12in x 9.6in) and will, of course, fit a case, although the actual body size of the board is very much larger for Mini-ITX and Micro-ATX cases. Just because of the fact that ATX format is so popular there is a limitless combinatured for almost every chipset and possess a vast range from very low budget boards products with multiple PCI Express slots and a cluster of connections.ATX motherboards are well suited for any build except for these months and parts, is simply a larger for many format of the biggest advantages of having this card is its extra length that provides more romations of the biggest advantages of having this card is its extra length that provides more romation and parts, but this is the only major difference between ATX and Extended-ATX months mostly used just in selected workstations and some servers. There are several points to be noted from both the picture and the breakdown above. Firstly, you may be wondering how SSI EEB and E-ATX have the same measurements but in our image, they have different sizes. Well the EVGA X580 Classified that we used is officially E-ATX bustations or value servers. They even define by the Server System Infrarative (SSI) forunt acin workstations or value servers. They even define the placement of each CPU to standardize the cooling solutions. The boards do share many of the same standards. It is found that on the line up. A few slight customization and they of this factor, finding cases that are official standards. It is quite hard to not talk about motherboard sizes without mentioning that XL-ATX and HPTX are actually not official standards. It is pointed that will be caused the size of this factor, finding cases that will actually fit there be a very difficult.XL-ATX and HPTX	s to high- size, nerboards out it m for One
no both Gigabyte and EVGA. HPTX, on the other hand, was a form factor that EVGA came out with for their SR-2 motherboards. I am really hopeful that my compact and to point write up has helped you understand motherboard sizes is imperative to building your first PC setup. Go into this complex journey blind, and it could end in disaster. Motherboards inches/Lam end to point write up has helped you understand motherboard sizes in a literature with ease. Thanks for reading my article and septent your valuable time with my compact and to point write up has helped you understand motherboard sizes in a literature with ease. Thanks for reading my article and septent your valuable time with my compact and to point write up has helped you understand motherboard sizes and to point write up has helped you understand motherboard sizes and to point write up has helped you understand motherboard sizes and to point write up has helped you understand motherboard sizes and to point write up has helped you understand motherboard sizes and to point write up has helped you understand motherboard sizes and to point write up has helped you understand motherboard sizes and to point write up has helped you understand motherboard sizes and to point write up has helped you understand motherboard sizes and to point write up has helped you understand motherboard sizes and to point write up has helped you understand motherboard sizes and to point write up has helped you understand motherboard sizes and to point write up has helped you understand motherboard sizes and to point write up has helped you understand motherboard sizes and to point write up has helped you understand motherboard sizes and to point write up has helped you reaches and to point write up has helped you reaches and to point write up has helped you reaches and to point write up has helped you reaches and the first helped you reaches and the f	e a nice rifics, lets h size, her various
therboard sizes: FlexATX (9 x 7.5) MicroATX (9.6 x 9.6) Mini ATX (11.2 x 8.2) ATX (12 x 13) WTX (14 x 16.75) Are these sizes important? Yes! Depending on the size of your motherboard, you can install more or fewer components. For example, a standard ATX motherboard has a maximum of seven PCI or PCI-Express expanses, while a MicroATX only has four. Generally speaking, a larger motherboard offers more slots than a smaller one. However, most of them are compatible in terms of mounting points. Thus, a computer case that fits an ATX motherboard will also hold a MicroATX. And getting the smaller one is occasionally a good idea. If you dont need to be er-computer with extra slots, theres no point in spending more for a larger motherboard. When deciding to build a computer, its always good to start by determining the motherboard size and only decide upon a desktop case and all the other components afterward. Weve learned that a motherboard will offer more slots depending on size. The subject of the components of the motherboard components afterward. Were learned that a motherboard will offer more slots depending on size. The subject is a physical interface on a motherboard designed to hold and connect a central processing unit (CPU). The CPU is the primary component in a computer case that fits an ATX motherboard designed to hold and connect a central processing unit (CPU). The CPU is the primary component in a computer case that fits an ATX motherboard designed to hold and connect a central processing unit (CPU). The CPU is the primary component in a computer case that fits an ATX motherboard designed to hold and connect a central processing unit (CPU). The CPU is the primary component in a computer case that fits an ATX motherboard designed to hold and connect a central processing unit (CPU). The CPU is the primary component in a computer case that fits an ATX motherboard designed to hold and connect a central processing unit (CPU). The CPU is the primary component in a computer to the computer case in the primary ca	ouild a The tasks, ter is a ore GPU
s, for example, for an entirely customizable product. Ensure you double-check the design and the placement of these slots its not uncommon for some graphics cards to come with a motherboard might offer. RAM slots RAM slots in a computer are physical ports or connectors on the motherboard common types of RAM modules. Different types of RAM modules require other slots or connectors on the motherboard. The RAM modules are inserted into the slots or connectors on the motherboard and secured in place using retaining clips or other mechanisms. Once installed, the RAM can communicate with the CPU and other components on the motherboard, providing the computer with the memory it needs to run applications and perform tasks. Some motherboards only have two RAM slots, while others can hold up to fall the computer with the memory it needs to run applications and perform tasks. Some motherboards only have two RAM slots, while others can hold up to fall the memory it needs to run applications and perform tasks. Some motherboards only have two RAM slots, while others can hold up to fall the computer system) and CMOS (Bosic Input/Output/Output/Output/Output/System) and CMOS (Complementary Metal-Oxide-Semiconductor) work together to control and manage the systems hardware. BIOS is provided to computer some performance and the motherboard on a chip on the motherboard and the motherboard components, and provided the computer case and the computer case. CMOS stores BIOS stores BIOS stores BIOS stores BIOS stores and other components, the motherboard would be unable to boot your operating system and optimize performance. Input & output ports A motherboard contains several input and output ports that connection between the motherboard and the computer case, sometimes called a case connector is a set of pins and sockets connection between the motherboard and the computer case, sometimes called a case connector is a set of pins and sockets connection between the motherboard and the computer case, sometimes called a case connector. The	n the four. oviding a powered ces and nnecting
motherboard to the computer case. This connection provides power and connectivity to various components and features of the case, such as the power connector for a PC is a cable that connects the power supply unit (PSU) to the components of a contemporary providing the electrical power needed for the system to function. The power connector carries electrical power from the PSU to the motherboard, CPU, graphics card, storage devices, and other components. Wrapping up Choosing the right motherboard size is critical when building a PC. It determines the type of components you can be of expansion slots available, and the overall form factor of your system. By considering your budget, intended use, and future upgrade plans, you can decide which motherboard size will work best for you. In this case, bigger is better because a larger motherboard provides more options to connect peripherals and components. If you provides your setup sometime in the future, doing so is much easier with a bigger motherboard. Still, you can use a smaller microATX can to create powerful, custom-made gaming PCs. It determines the type of components you can decide which motherboard provides more options to connect peripherals and components. If you provides more options to connect peripherals and components is used to expansion slots a smaller microATX can to create powerful, custom-made gaming PCs will work be storage motherboard you pick highly a right-size motherboard you pic	use, the plan to of the PC asic DIMM, garding
r size and form factor. You might already have that in mind whether you want to build a small PC, a standard one, or a full-tower. Depending on that, you have to pick the right size of motherboard that could fit in the chassis while still providing you with max performance. In terms of form-factor, large-sized motherboards like an EATX or A'd enough room for multiple expansion slots, RAM slots, and other components. Hence, a powerful build is easy to make. On the other hand, if you go with smaller motherboard options like a micro-ATX or mini-ITX, you will have comparatively lesser ports available for expansion cards, and that could become a limitherboard one by one so that you can compare them and choose one suitable for your next PC build. 1. ATXLets talk about the elephant in the eleph	PC nd 12 x an orts, fan ook for a
netimes up to 2 CPU sockets as well. Having support for dual-sockets allows you to run two processors at the same time which can make your PCs performance quite high. Pros:Some motherboards wen have dual CPU socket supportMore RAM slots are available Expansion slots are present in about screen for dual-sockets allows you to run two processors at the same time which can make your PCs performance quite high. Pros:Some motherboards see available Expansion slots are available Expansion slots are present in about screen for size, these are the largest motherboards sust are available Expansion slots are available Expansion slots are available. These are the largest motherboards sust are available Expansion slots are available Expansion slots are available. These are the largest motherboard is vanishing as the hardware components are actually very rarely seen in the market these days. An average XL-ATX motherboard us are available Expansion slots are available Expansion should be a market the expansion of size, these are the largest motherboards but are actually very rarely seen in the market these days. An average XL-ATX motherboard us are available Expansion should be available Expansion should be a market these days. An average XL-ATX motherboard us are available Expansion should be a market these days. An average XL-ATX motherboard us are available Expansion should be available Expansion should b	EATX ople are ots, and od build, t of the mATX ach guess
A section and heatsinks are very rare. With such a smaller form factor, you cannot expect the motherboard to have more than 2 RAM slots. Apart from that, building a mini-ITX is not possible either, as you don't get more than one slot for that. Most mini-ITX motherboards use 4 pin power connectors; hence power del not great either. Hence, overclocking dreams can never come true with such builds in most cases. However, the major benefit of using a mini-ITX is that they are cheap, and can fit easily inside a small-sized PC case. Pros: Can help you build a compact PC buildCan work with standard-sized hardware components. That said, the nano-ITX motherboards are often used to build small computers ideal for smart entertainment purposes like PVRs, smart TVs, or automation purposes mostly. Pros: Cons: Not components. That said, the nano-ITX motherboards are quite often used in devices designed for IoT and automation purposes. These boards are a great choice for such devices since the power consumption is quite low and can be implemented easily in industrial automation devices, an er devices. Pros: Ideal for small IoT devices. Less complicated to useCons: Compatible with a limited range of hardwareConclusionWe hope you have got a decent idea about each kind of motherboard, basically, you pay for the expansion slots and other connection ports. That is why the larger-sized mother to more slots are expensive as compared to the smaller boards, which have fewer ports. For your upcoming PC build, if you want to build an extremely powerful PC, and the powerful PC and the power consumption is quite low and can be the expansion slots and other connection ports. That is why the larger-sized mother to build a small powerful PC and the	Limited k with ven nd similar rboards aller PC,
reAlike If you remix, transform, or build upon the material, you must distribute your contributions under the same license as the original. No additional restrictions You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits. You do not have to comply with the license for element of the public domain or where your use is permitted by an applicable exception or limitation. No warranties are given. The license may not give you all of the permissions necessary for your intended use. For example, other rights such as publicity, privacy, or moral rights may limit how you use the material.	ments of

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